Horizon 2020

Call: H2020-SC5-2015-one-stage

Topic: SC5-05b-2015

Type of action: CSA

Proposal number: 689029

Proposal acronym: ECOMS2

Table of contents

How to fill in the forms

The administrative forms must be filled in for each proposal using the templates available in the submission system. Some data fields in the administrative forms are pre-filled based on the previous steps in the submission wizard.

Proposal ID **689029** *Acronym* **ECOMS2**

1 - General information

Topic SC5-05b-2015 Type of action CSA

Call identifier H2020-SC5-2015-one-stage Acronym ECOMS2

Proposal title* European Climate Observations, Modelling and Services - 2

Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: < > " &

Duration in months *60*

Fixed keyword 1 *Project management and coordination* Add

Fixed keyword 2 *Communication networks, media, information society* Add Remove

Fixed keyword 3 *Climatic research* Add Remove

Free keywords *Earth system modelling, climate services, coordination, network*

Abstract

The ECOMS2 Action will coordinate and support Europe's knowledge base to enable better management of climate-related risks and opportunities thereby creating greater social and economic value. ECOMS2 has 4 main objectives:
1. Develop a European framework for Earth-system modelling and climate service activities. The framework will be built around a managed network of European, national and international activities and organisations. Such a network does not yet exist but is becoming increasingly necessary.
2. Coordinate and integrate European climate modelling, climate observations and climate service infrastructure initiatives (including JPI-Climate, Climate-KIC, Copernicus C3S) and facilitate dialogue among the relevant stakeholders, including climate science communities, funding bodies, providers and users. This will improve synergies, reduce fragmentation and promote alignment between activities. The user communities will include public sector, businesses, industry and society.
3. Establish multi-disciplinary expert groups to assess the state-of-the-art in Earth-system modelling and climate services in Europe; and identify existing gaps, new challenges and emerging needs.
4. Enhance communication and dissemination activities with stakeholders, in particular through events to bring the network together and showcase progress; stakeholder-oriented reports on the state-of-the-art in Earth-system modelling and climate services in Europe; operating a website; and undertaking additional stakeholder interactions to increase awareness and maximise project impacts.

This CSA will deliver a range of highly beneficial impacts. Two key impacts are (i) to greatly enhance the transfer of information between suppliers and users to improve the resilience of European society to climate change and mitigation of the risk of dangerous climate change; and (ii) to improve coordination to increase efficiency, reduce fragmentation and create synergies with international R&I programmes.

Remaining characters 1

Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under the 7th Framework Programme, Horizon 2020 or any other EU programme(s)? ○ Yes ◉ No

Proposal ID **689029** *Acronym* **ECOMS2**

Declarations

1) The coordinator declares to have the explicit consent of all applicants on their participation and on the content of this proposal.	☒
2) The information contained in this proposal is correct and complete.	☒
3) This proposal complies with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct).	☒

4) The coordinator confirms:

- to have carried out the self-check of the financial capacity of the organisation on https://ec.europa.eu/research/participants/portal/desktop/en/organisations/lfv.html or to be covered by a financial viability check in an EU project for the last closed financial year. Where the result was "weak" or "insufficient", the coordinator confirms being aware of the measures that may be imposed in accordance with the H2020 Grants Manual (Chapter on Financial capacity check); or	○
- is exempt from the financial capacity check being a public body including international organisations, higher or secondary education establishment or a legal entity, whose viability is guaranteed by a Member State or associated country, as defined in the H2020 Grants Manual (Chapter on Financial capacity check); or	◉
- as sole participant in the proposal is exempt from the financial capacity check.	○

5) The coordinator hereby declares that each applicant has confirmed:

- they are fully eligible in accordance with the criteria set out in the specific call for proposals; and	☒
- they have the financial and operational capacity to carry out the proposed action.	☒

The coordinator is only responsible for the correctness of the information relating to his/her own organisation. Each applicant remains responsible for the correctness of the information related to him and declared above. Where the proposal to be retained for EU funding, the coordinator and each beneficiary applicant will be required to present a formal declaration in this respect.

According to Article 131 of the Financial Regulation of 25 October 2012 on the financial rules applicable to the general budget of the Union (Official Journal L 298 of 26.10.2012, p. 1) and Article 145 of its Rules of Application (Official Journal L 362, 31.12.2012, p.1) applicants found guilty of misrepresentation may be subject to administrative and financial penalties under certain conditions.

Personal data protection

Your reply to the grant application will involve the recording and processing of personal data (such as your name, address and CV), which will be processed pursuant to Regulation (EC) No 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. Unless indicated otherwise, your replies to the questions in this form and any personal data requested are required to assess your grant application in accordance with the specifications of the call for proposals and will be processed solely for that purpose. Details concerning the processing of your personal data are available on the privacy statement. Applicants may lodge a complaint about the processing of their personal data with the European Data Protection Supervisor at any time.

Your personal data may be registered in the Early Warning System (EWS) only or both in the EWS and Central Exclusion Database (CED) by the Accounting Officer of the Commission, should you be in one of the situations mentioned in:
-the Commission Decision 2008/969 of 16.12.2008 on the Early Warning System (for more information see the Privacy Statement), or
-the Commission Regulation 2008/1302 of 17.12.2008 on the Central Exclusion Database (for more information see the Privacy Statement) .

Proposal ID **689029** *Acronym* **ECOMS2**

List of participants

#	Participant Legal Name	Country
1	MET OFFICE	United Kingdom
2	AGENCE NATIONALE DE LA RECHERCHE	France
3	BARCELONA SUPERCOMPUTING CENTER - CENTRO NACIONAL DE SUPERCOMPUTACION	Spain
4	CENTRO EURO-MEDITERRANEO SUI CAMBIAMENTI CLIMATICI SCARL	Italy
5	Climate-KIC (UK) Limited	United Kingdom
6	EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS	United Kingdom
7	HELMHOLTZ-ZENTRUM GEESTHACHT ZENTRUM FUR MATERIAL- UND KUSTENFORSCHUNG GMBH	Germany
8	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	France
9	KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT-KNMI	Netherlands
10	REPUBLICKI HIDROMETEOROLOSKI ZAVODSRBIJE	Serbia
11	SVERIGES METEOROLOGISKA OCH HYDROLOGISKA INSTITUT	Sweden

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **MET OFFICE**

2 - Administrative data of participating organisations

PIC	***Legal name***
999892685	*MET OFFICE*

Short name: MET OFFICE

Address of the organisation

Street FitzRoy Road

Town EXETER

Postcode EX1 3PB

Country United Kingdom

Webpage www.metoffice.gov.uk

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes

Legal person ..... yes

Non-profit ..... no

International organisation ..... unknown

International organisation of European interest ..... unknown

Secondary or Higher education establishment ..... unknown

Research organisation ..... no

Enterprise Data

SME self-declared status ..... unknown

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code - Not applicable

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **MET OFFICE**

Department(s) carrying out the proposed work

Department 1

Department name	Met Office Hadley Centre
	☒ Same as organisation address
Street	FitzRoy Road
Town	EXETER
Postcode	EX1 3PB
Country	United Kingdom

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **MET OFFICE**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: (•) Male ( ) Female

First name: **Chris** Last name: **Hewitt**

E-Mail: **chris.hewitt@metoffice.gov.uk**

Position in org.: Head (Climate Service)

Department: Met Office Hadley Centre

☒ Same as organisation address

Street: FitzRoy Road

Town: EXETER Post code: EX1 3PB

Country: United Kingdom

Website: www.metoffice.gov.uk

Phone: +441392884520 Phone 2: +447753880749 Fax: +441392885681

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Paula	Newton	paula.newton@metoffice.gov.uk	+441392884834
Katie	Herring	katie.herring@metoffice.gov.uk	+441392884364

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **ANR**

PIC	***Legal name***
998711613	*AGENCE NATIONALE DE LA RECHERCHE*

Short name: ANR

Address of the organisation

Street 50 avenue Daumesnil

Town PARIS

Postcode 75012

Country France

Webpage www.agence-nationale-recherche.fr

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes

Non-profit ..... yes

International organisation ..... unknown

International organisation of European interest ..... unknown

Secondary or Higher education establishment ..... no

Research organisation ..... unknown

Legal person ..... yes

Enterprise Data

SME self-declared status ..... unknown

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **ANR**

Department(s) carrying out the proposed work

Department 1

Department name	ANR Environment & Biological Resources Department
	☒ Same as organisation address
Street	50 avenue Daumesnil
Town	PARIS
Postcode	75012
Country	France

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **ANR**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: (•) Male ( ) Female

First name: **Patrick** Last name: **Monfray**

E-Mail: **patrick.monfray@agencerecherche.fr**

Position in org.: Deputy Head

Department: ANR Environment & Biological Resources Department

☒ Same as organisation address

Street: 50 avenue Daumesnil

Town: PARIS Post code: 75012

Country: France

Website: www.agence-nationale-recherche.fr

Phone: +331 78098166 Phone 2: *+xxx xxxxxxxxx* Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Dalar	Hamon-Arslanyan	dalar.hamon-arslanyan@agencerecherche.f	+331 73548280

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **BSC**

PIC	***Legal name***
999655520	*BARCELONA SUPERCOMPUTING CENTER - CENTRO NACIONAL DE SUPERCOMPUTACION*

Short name: BSC

Address of the organisation

Street Calle Jordi Girona 31

Town BARCELONA

Postcode 08034

Country Spain

Webpage www.bsc.es

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes

Non-profit ..... yes

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... yes

Legal person ..... yes

Enterprise Data

SME self-declared status ..... 2011 - no

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code 72 - Computer & related activities

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **BSC**

Department(s) carrying out the proposed work

Department 1

Department name	Earth Sciences Department
	☐ Same as organisation address
Street	Jordi Girona 29
Town	Barcelona
Postcode	08034
Country	Spain

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **BSC**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Prof. Sex: (•) Male ( ) Female

First name: **Francisco** Last name: **Doblas-Reyes**

E-Mail: **francisco.doblas-reyes@ic3.cat**

Position in org.: Department Director

Department: Earth Sciences Department

[ ] Same as organisation address

Street: Jordi Girona 29

Town: Barcelona Post code: 08034

Country: Spain

Website: www.bsc.es/earth-sciences

Phone: +34934137719 Phone 2: +34934134082 Fax: +34934137721

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Oriol	Pineda	oriol.pineda@bsc.es	+34934137525
Marina	Azor	marina.azor@bsc.es	+34934134082

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **CMCC**

PIC	***Legal name***
999419422	*CENTRO EURO-MEDITERRANEO SUI CAMBIAMENTI CLIMATICI SCARL*

Short name: CMCC

Address of the organisation

Street VIA A IMPERATORE 16

Town LECCE

Postcode 73100

Country Italy

Webpage www.cmcc.it

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... no

Non-profit ..... yes

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... yes

Legal person ..... yes

Enterprise Data

SME self-declared status ..... 2013 - no

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code 721 -

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **CMCC**

Department(s) carrying out the proposed work

Department 1

Department name	CSP - Climate Simulations and Predictions Division
	☐ Same as organisation address
Street	Via Aldo Moro 44
Town	Bologna
Postcode	40127
Country	Italy

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **CMCC**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr.

Sex: (•) Male ( ) Female

First name: **Silvio** Last name: **Gualdi**

E-Mail: **silvio.gualdi@ingv.it**

Position in org.: Director of CSP Climate Simulations and Predictions Division

Department: CSP - Climate Simulations and Predictions Division

[ ] Same as organisation address

Street: Via Aldo Moro 44

Town: Bologna Post code: 40127

Country: Italy

Website: www.cmcc.it

Phone: +390513782655 Phone 2: *+xxx xxxxxxxxx* Fax: +390513782655

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Giulia	Galluccio	giulia.galluccio@cmcc.it	+390243986856

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **Climate-KIC (UK) Limited**

PIC	***Legal name***
933682425	*Climate-KIC (UK) Limited*

Short name: Climate-KIC (UK) Limited

Address of the organisation

Street 31-35 Kirby Street

Town London

Postcode EC1N 8TE

Country United Kingdom

Webpage http://www.climate-kic.org

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... no

Non-profit ..... yes

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... no

Legal person ..... yes

Enterprise Data

SME self-declared status ..... 2014 - no

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **Climate-KIC (UK) Limited**

Department(s) carrying out the proposed work

Department 1

Department name	Department of Physics
	☐ Same as organisation address
Street	Huxley Building, Exhibition Rd
Town	LONDON
Postcode	SW7 2AZ
Country	United Kingdom

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **Climate-KIC (UK) Limited**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Prof. Sex: (•) Male ( ) Female

First name: **Ralf** Last name: **Toumi**

E-Mail: **r.toumi@imperial.ac.uk**

Position in org.: Head of Space and Atmospheric Physics

Department: Imperial College

[ ] Same as organisation address

Street: Huxley Building, Exhibition Road

Town: LONDON Post code: SW7 2AZ

Country: United Kingdom

Website: www.imperial.ac.uk

Phone: +442075947668 Phone 2: *+xxx xxxxxxxxx* Fax: +442075947772

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Jason	Gouveia	jason.louisgouveia@climate-kic.org	+442075942857

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **ECMWF**

PIC	***Legal name***
999916741	*EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS*

Short name: ECMWF

Address of the organisation

Street SHINFIELD PARK

Town READING

Postcode RG2 9AX

Country United Kingdom

Webpage www.ecmwf.int

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes

Non-profit ..... yes

International organisation ..... yes

International organisation of European interest ..... yes

Secondary or Higher education establishment ..... no

Research organisation ..... yes

Legal person ..... yes

Enterprise Data

SME self-declared status ..... unknown

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code - Not applicable

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **ECMWF**

Department(s) carrying out the proposed work

Department 1

Department name	Research
	☒ Same as organisation address
Street	SHINFIELD PARK
Town	READING
Postcode	RG2 9AX
Country	United Kingdom

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **ECMWF**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: (•) Male ( ) Female

First name: **Jean-Noel** Last name: **Thepaut**

E-Mail: **jean-noel.thepaut@ecmwf.int**

Position in org.: Deputy Director of Research

Department: Research

☒ Same as organisation address

Street: SHINFIELD PARK

Town: READING Post code: RG2 9AX

Country: United Kingdom

Website: www.ecmwf.int

Phone: +441189499000 Phone 2: *+xxx xxxxxxxxx* Fax: +441889869450

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Rebecca	Calnan	rebecca.calnan@ecmwf.int	+441189499418
Adam	Zonic	adam.zonic@ecmwf.int	+441189499211

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **HZG**

PIC	***Legal name***
999507401	*HELMHOLTZ-ZENTRUM GEESTHACHT ZENTRUM FUR MATERIAL- UND KUSTENFORSCHUNG G*

Short name: HZG

Address of the organisation

Street Max-Planck-Strasse 1

Town GEESTHACHT

Postcode 21502

Country Germany

Webpage www.hzg.de

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... no

Non-profit ..... yes

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... yes

Legal person ..... yes

Enterprise Data

SME self-declared status ..... 2007 - no

SME self-assesment ..... unknown

SME validation sme ..... 2007 - no

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code 721 -

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **HZG**

Department(s) carrying out the proposed work

Department 1

Department name	Climate Service Center 2.0
	☐ Same as organisation address
Street	Fischertwiete 1
Town	Hamburg
Postcode	20095
Country	Germany

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **HZG**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Prof. Sex: ○ Male ◉ Female

First name: **Maria** Last name: **Manez Costa**

E-Mail: **maria.manez@hzg.de**

Position in org.: Senior scientist

Department: Climate Service Center, Department Climate Impacts and Economics

☐ Same as organisation address

Street: Fischertwiete 1

Town: Hamburg Post code: 20095

Country: Germany

Website: www.climate-service-center.de

Phone: +4940 226 338 408 Phone 2: *+xxx xxxxxxxxx* Fax: +4940 226 338 163

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Hans-Joerg	Isemer	hans-joerg.isemer@hzg.de	+494152871661

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **CNRS**

PIC	***Legal name***
999997930	*CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE*

Short name: CNRS

Address of the organisation

Street Rue Michel -Ange 3

Town PARIS

Postcode 75794

Country France

Webpage www.cnrs.fr

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes

Non-profit ..... yes

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... yes

Legal person ..... yes

Enterprise Data

SME self-declared status ..... 2013 - no

SME self-assesment ..... unknown

SME validation sme ..... 2013 - no

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code 721 -

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **CNRS**

Department(s) carrying out the proposed work

Department 1

Department name	Institut Pierre Simon Laplace - IPSL
	☐ Same as organisation address
Street	11 Boulevard d'Alembert
Town	Guyancourt cedex
Postcode	78280
Country	France

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **CNRS**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: ○ Male ◉ Female

First name: **Sylvie** Last name: **Joussaume**

E-Mail: **sylvie.joussaume@lsce.ipsl.fr**

Position in org.: Director of Research

Department: FR636 CNRS - Institut Pierre-Simon-Laplace (IPSL)

☐ Same as organisation address

Street: LSCE-IPSL Orme des Merisiers bat 712 Saclay

Town: Gif sur Yvette Post code: 91191

Country: France

Website: www.lsce.ipsl.fr

Phone: +33169085674 Phone 2: +33169088595 Fax: +33169823568

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Marie	Parinet	marie.parinet@lsce.ipsl.fr	+33169088595
Nizar	Larabi	nizar.larabi@cnrs.fr	+33145075301

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **KNMI**

PIC	***Legal name***
999518944	*KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT-KNMI*

Short name: KNMI

Address of the organisation

Street UTRECHTSEWEG 297

Town DE BILT

Postcode 3731 GA

Country Netherlands

Webpage www.knmi.nl

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes
Non-profit ..... yes
International organisation ..... no
International organisation of European interest ..... no
Secondary or Higher education establishment ..... no
Research organisation ..... yes
Legal person ..... yes

Enterprise Data

SME self-declared status ..... 2007 - no
SME self-assesment ..... unknown
SME validation sme ..... 2007 - no

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code L - Public administration & defence

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **KNMI**

Department(s) carrying out the proposed work

Department 1

Department name	Weather and Climate Research
	☒ Same as organisation address
Street	UTRECHTSEWEG 297
Town	DE BILT
Postcode	3731 GA
Country	Netherlands

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **KNMI**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Prof. Sex: (•) Male ( ) Female

First name: **Bart** Last name: **van den Hurk**

E-Mail: **bart.van.den.hurk@knmi.nl**

Position in org.: Senior Scientist

Department: Weather and Climate Research

☒ Same as organisation address

Street: UTRECHTSEWEG 297

Town: DE BILT Post code: 3731 GA

Country: Netherlands

Website: www.knmi.nl

Phone: +31302206338 Phone 2: *+xxx xxxxxxxxx* Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Annemarie	Koot	annemarie.koot@knmi.nl	+31302206911

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **RHMZ**

PIC	***Legal name***
972870328	*REPUBLICKI HIDROMETEOROLOSKI ZAVODSRBIJE*

Short name: RHMZ

Address of the organisation

Street KNEZA VISESLAVA 66

Town BEOGRAD

Postcode 11030

Country Serbia

Webpage www.hidmet.gov.rs

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes

Non-profit ..... yes

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... yes

Legal person ..... yes

Enterprise Data

SME self-declared status ..... 2011 - no

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code L - Public administration & defence

Proposal ID **689029**	*Acronym* **ECOMS2**	*Short name* **RHMZ**

Department(s) carrying out the proposed work

Department 1

Department name	Department of National Centre for Climate Change
	☒ Same as organisation address
Street	KNEZA VISESLAVA 66
Town	BEOGRAD
Postcode	11030
Country	Serbia

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **RHMZ**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mrs

Sex: ○ Male ◉ Female

First name: **Aleksandra** Last name: **Krzic**

E-Mail: **aleksandra.krzic@hidmet.gov.rs**

Position in org.: Numerical programmer for regional climate scenarios

Department: Department of National Center for Climate Change

☒ Same as organisation address

Street: KNEZA VISESLAVA 66

Town: BEOGRAD Post code: 11030

Country: Serbia

Website: www.hidmet.gov.rs

Phone: +3812066926 Phone 2: +3813050923 Fax: +3813050847

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Zoran	Krajinovic	zoran.krajinovic@hidmet.gov.rs	+ 381 30 50 828
Slobodan	Nickovic	slobodan.nickovic@hidmet.gov.rs	+ 381 20 66 901

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **SMHI**

PIC	***Legal name***
999507983	*SVERIGES METEOROLOGISKA OCH HYDROLOGISKA INSTITUT*

Short name: SMHI

Address of the organisation

Street Folkborgsvaegen 1

Town NORRKOEPING

Postcode 601 76

Country Sweden

Webpage www.smhi.se

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... yes

Non-profit ..... yes

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... no

Legal person ..... yes

Enterprise Data

SME self-declared status ..... unknown

SME self-assesment ..... unknown

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

NACE code L - Public administration & defence

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **SMHI**

Department(s) carrying out the proposed work

Department 1

Department name: Rossby Centre

☒ Same as organisation address

Street: Folkborgsvaegen 1

Town: NORRKOEPING

Postcode: 601 76

Country: Sweden

Dependencies with other proposal participants

Character of dependence	***Participant***	

Proposal ID **689029** *Acronym* **ECOMS2** *Short name* **SMHI**

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: (•) Male ( ) Female

First name: **Ralf** Last name: **Doescher**

E-Mail: **ralf.doescher@smhi.se**

Position in org.: Scientific Coordinator

Department: Rossby Centre

☒ Same as organisation address

Street: Folkborgsvaegen 1

Town: NORRKOEPING Post code: 601 76

Country: Sweden

Website: www.smhi.se

Phone: +46114958583 Phone 2: +46114958000 Fax: +46114958001

Other contact persons

First Name	*Last Name*	*E-mail*	*Phone*
Madeleine	Benderyd	madeleine.benderyd@smhi.se	+46114958640

Proposal ID **689029** *Acronym* **ECOMS2**

3 - Budget for the proposal

No	Participant short name	Country	(A) Direct personnel costs/€	(B) Other direct costs/€	(C) Direct costs of sub-contracting/€	(D) Direct costs of providing financial support to third parties/€	(E) Costs of inkind contributions not used on the beneficiary's premises/€	(F) Indirect Costs / € (=0.25(A+B-E))	(G) Special unit costs covering direct & indirect costs / €	(H) Total estimated eligible costs / € (=A+B+C+D+F +G)	(I) Reimbursement rate (%)	(J) Max. grant / € (=H*I)	(K) Requested grant / €
1	Met Office	UK	351 880	81 250	0	0	0	108282,50	0	541412,50	100	541412,50	541412,50
2	Anr	FR	130 000	30 000	0	0	0	40000,00	0	200000,00	100	200000,00	200000,00
3	Bsc	ES	150 000	30 000	0	0	0	45000,00	0	225000,00	100	225000,00	225000,00
4	Cmcc	IT	162 000	49 000	5 000	0	0	52750,00	0	268750,00	100	268750,00	268750,00
5	Climate-kic (U	UK	270 836	10 000	0	0	0	70209,00	0	351045,00	100	351045,00	351045,00
6	Ecmwf	UK	31 050	15 400	0	0	0	11612,50	0	58062,50	100	58062,50	0,00
7	Hzg	DE	182 520	118 000	140 000	0	0	75130,00	0	515650,00	100	515650,00	515650,00
8	Cnrs	FR	147 000	50 000	0	0	0	49250,00	0	246250,00	100	246250,00	246250,00
9	Knmi	NL	216 112	40 000	20 000	0	0	64028,00	0	340140,00	100	340140,00	340140,00
10	Rhmz	RS	38 500	35 000	0	0	0	18375,00	0	91875,00	100	91875,00	91875,00

Proposal ID **689029** *Acronym* **ECOMS2**

No	Participant short name	Country	(A) Direct personnel costs/€	(B) Other direct costs/€	(C) Direct costs of sub-contracting/€	(D) Direct costs of providing financial support to third parties/€	(E) Costs of inkind contributions not used on the beneficiary's premises/€	(F) Indirect Costs / € (=0.25(A+B-E))	(G) Special unit costs covering direct & indirect costs / €	(H) Total estimated eligible costs / € (=A+B+C+D+F+G)	(I) Reimbursement rate (%)	(J) Max. grant / € (=H*I)	(K) Requested grant / €
11	Smhi	SE	156 400	15 000	0	0	0	42850,00	0	214250,00	100	214250,00	214250,00
	Total		1 836 298	473 650	165 000	0	0	577487,00	0	3052435,00		3052435,00	2994372,50

Proposal ID **689029** *Acronym* **ECOMS2**

4 - Ethics issues table

1. HUMAN EMBRYOS/FOETUSES		Page
Does your research involve Human Embryonic Stem Cells (hESCs)?	○ Yes ◉ No	
Does your research involve the use of human embryos?	○ Yes ◉ No	
Does your research involve the use of human foetal tissues / cells?	○ Yes ◉ No	
2. HUMANS		**Page**
Does your research involve human participants?	○ Yes ◉ No	
Does your research involve physical interventions on the study participants?	○ Yes ◉ No	
3. HUMAN CELLS / TISSUES		**Page**
Does your research involve human cells or tissues (other than from Human Embryos/ Foetuses, i.e. section 1)?	○ Yes ◉ No	
4. PERSONAL DATA (ii)		**Page**
Does your research involve personal data collection and/or processing?	○ Yes ◉ No	
Does your research involve further processing of previously collected personal data (secondary use)?	○ Yes ◉ No	
5. ANIMALS (iii)		**Page**
Does your research involve animals?	○ Yes ◉ No	

Proposal ID **689029** *Acronym* **ECOMS2**

6. THIRD COUNTRIES		Page
Does your research involve non-EU countries?	○ Yes ◉ No	
Do you plan to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)? (v)	○ Yes ◉ No	
Do you plan to import any material from non-EU countries into the EU? *For data imports, please fill in also section 4.* *For imports concerning human cells or tissues, fill in also section 3.*	○ Yes ◉ No	
Do you plan to export any material from the EU to non-EU countries? *For data exports, please fill in also section 4.* *For exports concerning human cells or tissues, fill in also section 3.*	○ Yes ◉ No	
If your research involves low and/or lower middle income countries, are benefits-sharing measures foreseen? (vii)	○ Yes ◉ No	
Could the situation in the country put the individuals taking part in the research at risk?	○ Yes ◉ No	
7. ENVIRONMENT & HEALTH and SAFETY See legal references at the end of the section. (vi)		Page
Does your research involve the use of elements that may cause harm to the environment, to animals or plants? *For research involving animal experiments, please fill in also section 5.*	○ Yes ◉ No	
Does your research deal with endangered fauna and/or flora and/or protected areas?	○ Yes ◉ No	
Does your research involve the use of elements that may cause harm to humans, including research staff? *For research involving human participants, please fill in also section 2.*	○ Yes ◉ No	
8. DUAL USE (vii)		Page
Does your research have the potential for military applications?	○ Yes ◉ No	
9. MISUSE		Page
Does your research have the potential for malevolent/criminal/terrorist abuse?	○ Yes ◉ No	
10. OTHER ETHICS ISSUES		Page
Are there any other ethics issues that should be taken into consideration? Please specify	○ Yes ◉ No	

Proposal ID **689029** *Acronym* **ECOMS2**

I confirm that I have taken into account all ethics issues described above and that, if any ethics issues apply, I will complete the ethics self-assessment and attach the required documents. ☒

How to Complete your Ethics Self-Assessment

Proposal ID **689029** *Acronym* **ECOMS2**

5 - Call specific questions

Open Research Data Pilot in Horizon 2020

If selected, all applicants will participate in the Pilot on Open Research Data in Horizon 2020[1] , which aims to improve and maximise access to and re-use of research data generated by actions. Participating in the Pilot does not necessarily mean opening up all research data. Actions participating in the Pilot will be invited to formulate a Data Management Plan in which they will determine and explain which of the research data they generate will be made open.

Applicants have the possibility to opt out of this Pilot and must indicate a reason for this choice.

Participation in this Pilot does not constitute part of the evaluation process. Proposals will not be evaluated favourably because they are part of the Pilot and will not be penalised for opting out of the Pilot.

We wish to opt out of the Pilot on Open Research Data in Horizon 2020.	○ Yes	◉ No

[1] *According to article 43.2 of Regulation (EU) No 1290/2013 of the European Parliament and of the Council, of 11 December 2013, laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006.*

Data management activities

The use of a Data Management Plan (DMP) is required for projects participating in the Open Research Data Pilot in Horizon 2020, in the form of a deliverable in the first 6 months of the project.

All other projects may deliver a DMP on a voluntary basis, if relevant for their research.

Are data management activities relevant for your proposed project?	◉ Yes	○ No

A Data Management Plan will be delivered (Please note: Projects participating in the Open Research Data Pilot **must** include a Data Management Plan as a deliverable in the first 6 months of the project).	☒
Data Management is part of a Work Package.	☒
Data Management will be integrated in another way.	☐

Title of proposal:
ECOMS2
European **C**limate **O**bservations, **M**odelling and **S**ervices – 2

LIST OF PARTICIPANTS

Participant No	Participant organisation name	Acronyms	Country
1 (Coordinator)	Met Office	MET OFFICE	United Kingdom
2	Agence Nationale De La Recherche	ANR	France
3	Barcelona Supercomputing Center – Centro Nacional de Supercomputación	BSC	Spain
4	Centro Euro-Mediterraneo sui Cambiamenti Climatici S.c.a.r.l	CMCC	Italy
5	Climate-KIC (UK) Limited	Climate-KIC	International
6	European Centre for Medium-Range Weather Forecasts	ECMWF	International
7	Helmholtz-Zentrum Geesthacht Zentrum Für Material- Und Küstenforschung GmbH	HZG	Germany
8	Centre National de la Recherche Scientifique	CNRS-IPSL	France
9	Koninklijk Nederlands Meteorologisch Instituut-KNMI	KNMI	Netherlands
10	Republicki Hidrometeoroloski Zavod Srbije	RHMSS	Serbia
11	Sveriges Meteorologiska Och Hydrologiska Institut	SMHI	Sweden

TABLE OF CONTENTS

1. EXCELLENCE

1.1 Objectives of ECOMS2

> **Mission statement:** Coordinate and support Europe's knowledge base to enable better management of climate-related risks and opportunities, thereby creating greater social and economic value

The ECOMS2 Coordination and Support Action (CSA) has four primary objectives:

1. **Develop a Europe-wide framework for Earth-system modelling and climate service activities**. This framework will be built around a managed network of European, national and international activities and organisations. The network currently does not exist but is becoming increasingly necessary, and will be cross-disciplinary.

2. **Coordinate and integrate on-going and future European climate modelling, climate observations and climate service infrastructure initiatives**, and facilitate dialogue among the relevant stakeholders, including climate science communities, funding bodies, providers and users. This will improve synergies, reduce fragmentation and promote alignment between national, European and international activities. The user communities will include public sector, businesses, industry and society.

3. **Establish multi-disciplinary expert groups to assess the state-of-the-art in Earth-system modelling and climate services in Europe, and identify existing gaps, new challenges and emerging needs**, including specific recommendations to the European Commission on future research and innovation priorities. Such assessments are desperately needed but currently do not exist.

4. **Enhance communication and dissemination activities with stakeholders**, in particular through a series of events to bring the network together and showcase progress, produce stakeholder-oriented reports on the state-of-the-art in Earth-system modelling and climate services in Europe, operate a website, and undertake additional stakeholder interactions to increase awareness and maximise project impacts.

These objectives will be met through the outputs of the CSA's Work Packages (WPs) detailed in Section 3, including:

- a managed network of users, intermediaries, providers, funders and researchers (WP2);
- syntheses (in the form of periodic open reports) of the state-of-the-art in Earth-system modelling and climate services in Europe (WPs 3, 4, 6);
- syntheses (in the form of recommendations) of challenges and emerging needs for Earth-system modelling and climate services (WPs 3, 4, 6);
- regular events for ensuring the network is active and for dissemination of the syntheses (WP5).

The objectives and resulting outputs of the CSA will help deliver a range of highly beneficial impacts as listed in Section 2.1, of which two key ones are: (i) enhanced transfer of information between suppliers and users; and (ii) improved communication of trustworthy and timely science-based information for evidence-based policy, planning and adaptation decisions. The aim is to improve the resilience of European society to climate change, and mitigation of the risk of dangerous climate change through improved sharing of best practices, increased efficiency, reduced fragmentation and the creation of synergies with international research and innovation (R&I) programmes.

For clarity and consistency, the following definitions will be used throughout the proposal:

- **Network**: term to encompass everybody who the CSA will engage with, thus allowing open exchange of knowledge, expertise and data. The network will consist of the following broad cross-disciplinary categories:
    - **User communities**: Policy makers (including national and European), businesses, industry, public sector bodies (such as the European Environment Agency (EEA)), professional federations. Others will be identified once the CSA begins. These users will be at the regional, national, European and international level
    - **Scientific user communities**: Will include scientific communities beyond the Earth system modelling and climate services communities. For example, physical and natural sciences, social sciences, humanities
    - **Information providers**: Climate services, observations, Earth system modelling and research communities, research and innovation projects and programmes, existing initiatives and networks, climate service centres, National Meteorological and Hydrological Services (NMHSs), etc.
    - **International Activities**: Globally coordinated Programmes/Organisations/Initiatives. For example World Meteorological Office (WMO), World Climate Research Programme (WCRP), Global Framework for Climate Services (GFCS)
    - **Funding Bodies**: Entities providing funding for specified activities, including European Commission (EC) and governments
- **General public**: All European citizens (they are not a specific category within the network, being too broad and numerous to effectively engage in a managed network)
- **Stakeholder Group**: Subset of the network, comprising key individuals and organisations that will provide information, advice and insight which will guide and influence the direction and prioritisation of activities within the Action. Members of the Stakeholder Group will ensure there is sufficient and accurate representation from each of the categories above (apart from the general public)
- **Festival**: An extended workshop and interactive communication event, to which interested parties will be invited.

1.2 Relation to the work programme

The proposed ECOMS2 CSA directly responds to the call *H2020-SC5-2015: Coordinating and supporting research and innovation for climate action; Topic 05b-2015: earth-system modelling and climate services.* ECOMS2 builds on a previous, but much smaller-scale activity (ECOMS), which ensured close coordination and cooperation across European Commission Framework Programme 7 (FP7) climate modelling and climate service projects from 2012-2016. ECOMS2 is significantly larger in scope, objectives and resources and will operate for five years through Horizon 2020 (H2020).

Sizeable and sustained investments from the European Commission, Member States, Research Councils, and the activities of a wide range of organisations involved in research, development and innovation have ensured that Europe is at the forefront of Earth-system modelling and climate service development. There is now a diverse range of climate-related research and innovation activities in Europe and beyond (Figure 1.2.1).

Some of these activities are connected with other activities (albeit to varying degrees) or are creating their own networks, for example: ECOMS linking FP7 projects relating to climate observations, modelling and services; JPI-Climate to coordinate aspects of climate research in 14 European countries; the European Institute of Innovation and Technology's (EIT) Climate-KIC to create innovation through linking business, academia and small and medium-sized enterprises; Copernicus Climate Change Service (C3S) for development and delivery of operational climate service products; the European Climate Adaptation Platform (Climate-ADAPT) hosted by the EEA to support Europe in adapting to climate change; European Climate Research Alliance (ECRA) to share national research facilities.

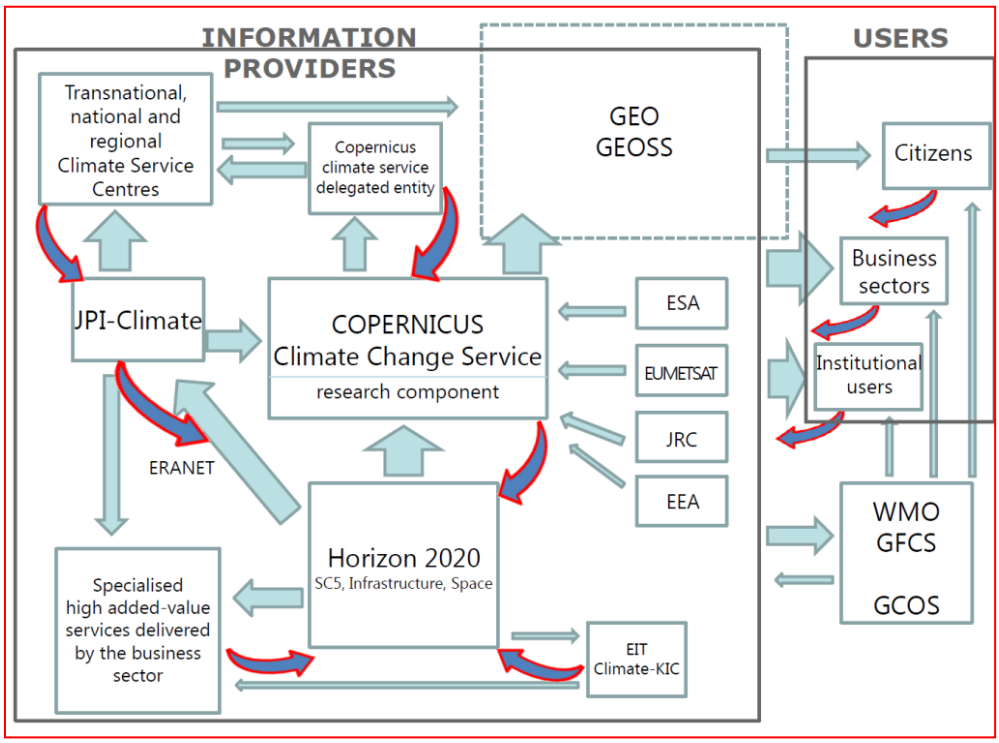


Figure 1.2.1: Schematic diagram of key activities and relationships within the European climate services landscape (from presentations by Andrea Tilche, European Commission)

However, there is no overall management and coordination of these networks to provide a framework to bring them all together and thereby exploit synergies and reduce duplication of effort. This lack of coordination can create confusion amongst users, researchers, intermediaries and funding bodies (who often see a disparate range of unconnected, sometimes competing, activities and services, rather than a set of coordinated approaches). As well as the apparent disparate nature of the activities, it is difficult for funders, researchers and users to properly assess what is underway, to effectively coordinate research and innovation programmes, and to identify future research and innovation priorities.

ECOMS2 will address the above issues, ensuring more efficient use of resources and scientific developments. ECOMS2 will create this new Europe-wide Earth-system modelling and climate service framework, with a managed network at its core, to better integrate and coordinate European climate modelling, climate observations and climate service infrastructure initiatives, and to enhance communication and dissemination activities among the relevant scientific communities, funding bodies and user communities throughout the duration of Horizon 2020.

The network will develop a close partnership with existing European initiatives, projects and organisations representing the Earth-system modelling and climate services landscape (such as JPI-Climate, Climate-KIC, C3S, and the European Network on Earth System Modelling (ENES), all of which are represented in the consortium; as well as relevant FP7 and Horizon 2020 projects, many of which are also well represented in the consortium). The network will operate at the Europe-wide scale, including key national activities, and will create strong links with related international programmes (for example the United Nation's (UN) GFCS, as shown in Figure 1.2.1). This will enable exchange of knowledge, expertise and data between the different communities. An important outcome will be more coherent and reliable science-based climate information, structured to be of direct utility to the needs of the policy and business sectors, accompanied by significant improvements in the delivery and communication of this information and more accurate simulations of the evolution of climate.

The network will also ensure better engagement between climate science and broader communities. This is because the network will include information providers, users and specialist agencies (e.g. the WMO) as shown in Figure 1.2.1, although it should be noted that Figure 1.2.1 doesn't contain an exhaustive list of such providers, users and agencies. The network will facilitate the development of joint programmes and projects (with the JPI-Climate for example), assess and openly exchange information and research results relating to Earth-system modelling and climate services, provide forward-looking analyses to establish emerging needs for research and innovation, strengthen the interfaces between science and policy, and disseminate key research findings. In Figure 1.2.1, the ECOMS2 network is analogous to the red box around all the other activities.

The ECOMS2 framework through its network and communication and dissemination activities will enable and encourage the exchange of knowledge, expertise, and relevant data, beyond the climate science community. This will significantly increase the utility of European climate information and knowledge for decision and policy making across Europe at local, national and regional scales and increase public awareness about climate science and research results.

All of this is desperately needed and will improve European society's resilience and adaptation to climate change and mitigation of the risk of dangerous climate change, and enhance implementation of the EU 2050 Roadmap and relevant initiatives. Finally, the European Commission has recently launched the "Roadmap for Climate Services [1]", and ECOMS2 will help implement elements of that Roadmap, as detailed below in Section 1.3.

1.3 Concept and approach of ECOMS2, quality of the coordination and support measures

Overall Concept

Through significant and sustained investments from the European Commission and national governments, Europe is currently at the leading edge of Earth-system modelling and climate service development. This has the potential to directly improve the lives of European citizens who face the impacts of climate variability and extreme weather events and need to adapt to and mitigate a changing climate. Changes in the climate are affecting many sectors but the audience of decision- and policy-makers is so wide and varied that the requirements from each application can be quite different. There are a growing number of initiatives at the international and European level, from research networks of data providers, operational services, impact assessments, to coordination of government initiatives and provision of policy relevant recommendations; all provided on a wide range of timescales. The landscape of activities is very diverse. Users and providers of climate information currently face significant challenges in understanding this complex landscape. If we are to maximise the benefits of the investments and provide European citizens with the information and technology to develop a climate-smart society, then a mechanism is needed to coordinate the impressive and varied research and innovation effort.

The overall concept behind the proposed ECOMS2 CSA is to create and manage a framework to coordinate, integrate and support Europe's research and innovation activities in the fields of Earth-system modelling and climate services. The purpose of this concept is to create greater social and economic value for Europe through improved preparation for, and management of, climate-related risks and opportunities arising from making European world-class knowledge more useable and thus more applicable to policy- and decision-making. This value will be felt by a range of actors including the public sector, governments, business and industry. ECOMS2 will provide a comprehensive overview of all the relevant activities to ensure the society at large can take full advantage of the investment Europe is making in research and innovation and associated development of services.

Approach

Central to the success of this framework will be the development of an active Europe-wide network (WP2) and communication and dissemination activities (described in the following paragraphs). The network will engage users

[1] http://bookshop.europa.eu/en/a-european-research-and-innovation-roadmap-for-climate-services-pbKI0614177/

and providers of climate information along with intermediary organisations working at the interface between users and providers. ECOMS2 will build upon, rather than duplicate, activities that are already taking place, with an aim to increase the overall utility of these activities for Europe as a whole.

The network will coordinate and cluster activities, reduce fragmentation and increase synergies between national, European and international activities. In particular, the network will improve alignment between major European initiatives and international initiatives, as listed in the following section.

The state of the art in Earth-system modelling to support climate services will be assessed in WP3 through targeted expertise from the network, and through dialogue between users, providers and researchers. WP4 will undertake forward looking analyses through expert groups to establish emerging needs ensuring the needs of users influence research and innovation agendas, and enhance the socio-economic impact of research and innovation activities.

Festivals, as extended workshop, networking and communication events, will be organised in WP5. Openly available reports will be produced in WP6, based on the outputs of WPs 3 and 4. Communication and dissemination will also be implemented through an open web-site and the use of social media. A range of documents and newsletters will be developed, contributing to the science-stakeholder communication platform (along with other means, such as the network, Festivals and web-site) to encourage open exchange of knowledge, expertise and data, and raise awareness of climate science and services.

The first 12 months of the CSA are crucial for establishing a successful framework and by the end of the first year the CSA should have developed the network, established multi-disciplinary expert groups to assess the state-of-the-art of Earth-system modelling and climate services in Europe, and look into new challenges and emerging needs, and established effective communication and dissemination activities to a range of targeted stakeholders.

In summary, our approach is for WP2 to create the network (which will also be used by all other WPs). WP3 produces standalone reports on the state of the art in Earth-system modelling and climate services. WP4 produces forward-looking recommendations based on the expert groups and WP3 reports. WP5 organizes festivals, which will also generate further insights for WPs 3 and 4. WP6 (among other activities) publishes the WP3 reports, the WP4 recommendations and WP5 festival output.

A small (and affordable) consortium of 11 partners with the mix of skills described further in Section 3.3, and with geographic reach across all of Europe, has been formed. An alternative approach could have been to form a very large consortium representing a wide range of users, providers and intermediaries. Such a large consortium would create project management challenges and ineffective use of available funding. Our approach is to use the consortium's reach into other networks and existing partnerships, and reach out to additional users and intermediaries through our networking, communication and dissemination activities. WP1 will manage a Stakeholder Group (identified through the network created in WP2) to ensure the framework reaches to a wide range of actors through dedicated stakeholder consultation.

It should be noted that ECOMS2 will not itself directly provide climate services or Earth-system model data to policy- and decision-makers. Such services are clearly the responsibilities of the organisations, projects and activities which the network will engage with, and the CSA is not to duplicate or compete, but to coordinate and support.

National and international activities linked to the project

ECOMS2 is deliberately designed to link to, and coordinate, national and international activities in the areas of Earth-system modelling and climate services. The outputs of those activities will feed into this project. The CSA will be

proactive in ensuring that its outputs are available to and used by those national and international activities, particularly through the communication and dissemination work package (WP6).

The research and innovation activities that will be linked to ECOMS2 will evolve during the life of the CSA. At the outset, key international activities include Climate-KIC (which is represented in the consortium); JPI-Climate (linked through ANR and several partners); Copernicus Climate Change Service, C3S (linked through ECMWF and potentially several partners who may subsequently be selected as Copernicus delivery partners); European Network for Earth System modelling, ENES (through CNRS-IPSL and several partners); Coupled Model Intercomparison Project, CMIP (through several partners); World Climate Research Programme, WCRP and in particular its Working Group on Coupled Modelling, Working Group on Seasonal to Interannual Prediction, and the Working Group on Regional Climate (through several partners); European Climate Services Partnership, ECSP and international Climate Services Partnership, CSP (through Met Office and HZG/Climate Service Center CS2); Global Framework for Climate Services, GFCS (through Met Office, KNMI, SMHI); COrdinated Regional climate Downscaling Experiment, CORDEX (through SMHI); European branch of CORDEX, EUROCORDEX (through HZG); relevant EEA topic centres (through CMCC and Met Office); relevant FP7 and Horizon 2020 Earth system modelling and climate service projects (through several partners involvement, including some coordinators of key projects); ESA's Climate Modelling User Group, CMUG (through Met Office and ECMWF); Partnership for Advanced Computing in Europe, PRACE; Future Earth in Europe; European Alliance of Global Change Research Committees; the European Climate Research Alliance, ECRA; Climate-ADAPT, the European Climate Adaptation Platform of the EEA, Climate-ADAPT; IPCC; Future Earth and Belmont Forum.

The above list of international activities is already impressive, and long. The list of national activities is potentially far longer, so ECOMS2 will target key activities, to be identified by partners and the network as it evolves (WP2). At the outset, key national activities are likely to include the following: the UK's Joint Weather and Climate Research Programme with the Natural Environment Research Council (NERC); the UK Environment Agency's Climate Ready service; the German medium-term climate forecasts (MIKLIP) research project; the German Klimanavigator; the Drias Futures of Climate project in France; the Swiss National Centre for Climate Services; the Climate Change Centre Austria; the Norwegian Climate Change Adaptation Programme; the Polish Klimada project; the Dutch Knowledge for Climate Research programme.

The European Commission has recently launched the "Roadmap for Climate Services". The Roadmap contains three main challenges: *enabling market growth*; *building the market framework*; and *enhancing the quality and relevance of climate services*. 25 specific actions are proposed to meet these main activities. The CSA is well placed to help implement the Roadmap's main activities and several of the specific actions, in particular:

- Growing the climate services market – establishing the means of enhancing the awareness of and promoting climate services (action 1.2b in the Roadmap);
- Communities and infrastructure to support and grow the climate services market – developing a viable climate services community that engages users, providers, purveyors and researchers (2.1a);
- International cooperation – engaging the European climate service community internationally (2.3a);
- Strengthening the scientific basis and relevance of climate services – improving modelling and prediction capacity relevant to improving climate services (3.2a);
- Strengthening the scientific basis and relevance of climate services – identifying and evaluating the implications of scientific developments on climate processes in terms of improving climate services (3.2c);
- Climate information and end-user needs: innovation and products – making better use of available climate information and knowledge (3.3a).

Sex and/or gender analysis

ECOMS2 does not have a gender dimension explicitly integrated into it. The consortium does recognise however, the obligation under Horizon 2020 to promote gender equality. ECOMS2 will take measures to address the following gender equality objectives in the implementation of this Action:

'Gender balance in decision making' – The consortium will be proactive in ensuring there is gender balance amongst individuals who are on any evaluation panels and Expert groups within the Action (obviously taking into account the situation in the specific subject field of the CSA). ECOMS2 will encourage equality in the involvement in decision making processes within the Action itself (i.e., decisions of the General Assembly). One way, for example, that this will be facilitated is through the adoption of family friendly mechanisms for meetings, such as the availability of tele- or e-conferencing facilities, thus negating the need to travel.

'Gender balance in research teams at all levels' – ECOMS2 will aim for a balanced participation of women and men in the consortium activities within the Action (again taking into account the situation in the field of the CSA and complying with legislation concerning gender equality). Positive and equal working practises will be adopted and there will be an action to raise awareness of gender equality within the consortium.

'Gender dimension in research and innovation content' – ECOMS2 will consider the mechanisms that it adopts when identifying the relevant parties to be in the network and Stakeholder group, thus ensuring that there is no gender bias in selection and in the forums where the relevant parties will network. Also, gender considerations can be highly relevant when communicating; therefore consideration will be given to the Action's communication and dissemination activities, and the design of communication material; for example, avoiding stereotypes and avoid using inclusive language. There will be a focus on the Festivals, ensuring that there is no accessibility bias.

A Gender Strategy and Action Plan (Milestone 1 (MS1)) will be produced and updated detailing how gender considerations will be managed within the Action.

2. IMPACT

2.1 Expected impacts of ECOMS2

The ECOMS2 objectives are designed to answer the expected impacts of the call. These impacts are listed below and the corresponding objectives from Section 1.1 are referenced.

i) "Evidence-based policy and appropriate, cost-effective management, planning and adaptation decisions by the public sector, businesses, industry and society through the provision and effective communication of trustworthy and timely science-based information"

The CSA will develop a Europe-wide framework based on a managed network, and associated communication and dissemination activities. The framework will involve a range of actors from the public sector, business, industry and society. The network and its communication and dissemination activities will ensure the actors have access to trustworthy and timely science-based information for the development of evidence-based policy-making and decision-making. This will be achieved through existing Earth-system modelling and climate service activities, the reports produced by ECOMS2, the Festivals and the web-site, which will be oriented to satisfy the evolving requirements of the users concerned by climate vulnerable policy, planning and adaptation. This activity is linked to all four objectives.

ii) "Enhanced impact of research and innovation activities through better identification of climate change research and innovation priorities"

Expert Groups will be formed, drawing on expertise and knowledge from the Europe-wide network, to map and analyse the current Earth-system modelling and climate service activities. This analysis will identify gaps, assess new challenges and emerging needs to enable the better identification of R&I priorities. The findings will be communicated and disseminated via reports and the Festivals. As well as identifying priorities, this activity will also enhance the impact of current initiatives through better integration and raised awareness of climate science and research results to the wide range of stakeholders. This impact will be outcomes from objectives 2, 3 and 4.

iii) "Improved coordination of European, Member States' research and innovation programmes and funded activities, and synergies with international research and innovation programmes and actions"

The Europe-wide framework (developed under objective 1) and the managed network that will be developed within it (objective 2) will ensure a coordination of existing R&I activities, something that is currently lacking. The network will also engage with international R&I programmes and actions, as described in Section 1.3. The communication and dissemination activities described in Section 2.2 (as part of objective 4) will be key to ensuring the coordination is useful, and to developing synergies within Europe and beyond.

iv) "Better coordination of relevant research and innovation in the EU, including cooperation with the European Institute of Innovation and Technology (EIT)"

The scene of European research and innovation in Earth-system modelling and climate services is complex, as described in Section 1, spreading through a myriad of scientific disciplines and professional communities. In addition to the coordination of relevant European R&I described above, cooperation with the EIT will be ensured through the Climate-KIC representatives in the consortium (the Climate-KIC is supported by the EIT). The Climate-KIC will facilitate the cooperation of the more business-oriented EIT with European and national research, developing links with relevant aspects of international research and innovation. This impact will be possible through the tasks addressing objectives 1, 2 and 4.

v) "Enhanced implementation of the EU 2050 Roadmap and relevant initiatives through improved dissemination of key research findings"

Objective 3 includes issuing specific recommendations to the European Commission on future research and innovation priorities through, among other tasks, the establishment of multi-disciplinary expert groups. Such groups will be

encouraged, in the same way as the ECOMS2 partners will, to consider the EU 2050 Roadmap in their recommendations to determine new challenges and emerging needs. This will allow the recommendations formulated by the ECOMS2 partners to be relevant to address the priorities identified by the Roadmap. The communication and dissemination activities (under objective 4) will also enhance implementation of the EU 2050 Roadmap and relevant initiatives, in particular those listed in Section 1.3.

vi) European society's improved resilience to climate change and mitigation of the risk of dangerous climate change

The vulnerability of European society to climate change and variability is multi-faceted, as are the measures to assess and mitigate the risk of dangerous climate change. Improving resilience and mitigation are crucially dependent on access to the best available climate information targeted to the specific application. This impact could also be indirectly achieved by increased collaboration and knowledge sharing from involvement in the ECOMS2 network leading to improvements in the research community's ability to accurately simulate climate evolution. This will lead to improved reliability of science-based climate information at local, regional and global scales, therefore improving society's resilience. Objectives 1, 2 and 4 will make a significant difference in the European context because, for the first time, they will bring together and disseminate information from the wide range of initiatives described in Section 1.3.

In addition to the expected impacts in the call, ECOMS2 also expects to contribute to the implementation of elements of the European Commission's "Roadmap for Climate Services". This is providing useful guidelines to European research on engaging in the fast-developing climate services field. However, the Roadmap appears to be focussing on the climate observations, modelling and services communities. The ECOMS2 objectives 3 and 4 offer a unique opportunity to enlarge the sectors that are familiar with the Roadmap and can engage in the creation of a society sensitive to the risks of climate change and variability, while fostering a more resilient and green economy that can make Europe more competitive in the international scene.

In summary; through open and transparent working practices, including making information available on the methodologies used, ECOMS2 will engender trust within the communities that it engages with. The CSA will be of much interest to a range of users, so this approach should act to improve the relationship between the scientific community, and policy- and decision-makers from across society. All of these impacts will improve European society's resilience and adaptation to climate change and mitigation of the risk of dangerous climate change.

Barriers and obstacles to achieving impacts

The benefits listed above have some dependence on factors external to ECOMS2's scope, influence and objectives, and so the impacts could be lessened as a result. Some of the potential barriers are:

- The usefulness and/or value of the climate information that the network draws on is insufficient for user communities to actively engage in the network and ECOMS2's activities;
- Insufficient future funding available to properly resource the identified research and innovation priorities;
- Synergies will only be fully realised if the international programmes and activities engage sufficiently;
- The "Roadmap for Climate Services" was only launched in March 2015, so it is unknown at this stage how, or if, it will be implemented; and
- The complex nature of the landscape could prevent ECOMS2 meeting all expectations regarding increasing transparency and access to available climate information.

While these barriers could exist, the interactions with stakeholders throughout the CSA will provide an open space for exchange of ideas and information which will afford the opportunity to decrease the impacts of such barriers.

2.2 Measures to maximise impact

For ECOMS2 to achieve all of the expected impacts, effective engagement will be established with the target audiences both within and beyond the network. Making dissemination, communication and exploitation measures integral to the way in which ECOMS2 will operate will ensure maximum coordination of the relevant research and innovation, as well as maximum societal benefit. WP6 will have responsibility for ensuring effective communication and dissemination, and WP1 will oversee this as part of the Coordinator role, as well as specifically taking responsibility for communicating with the EC and with policy and decision makers.

2.2a Dissemination and Exploitation of Results

The draft 'Plan for dissemination and exploitation' is given below. During the project, WP6 will use this as the basis on which to further develop the Dissemination and Exploitation Plan. The first version of this plan (Deliverable 6.2 (D6.2)) will be delivered in month 6 of the project and there will be annual updates thereafter. This updated Plan will also include the communication strategy and plan. Once the project is underway, specific audiences for dissemination and communication will be identified and more detail will be given about specific requirements, deadlines, methods, procedures and evaluation measures. These will then be used as working documents to ensure effective management of these activities and their integration into the project as a whole. The evaluation measures will be reported against when updates are provided to EC as part of the periodic reports.

Since ECOMS2 will not be producing or providing climate services or Earth-system model data, the nature of the results to be disseminated is different to a traditional research project. What ECOMS2 will provide is open-access aggregated information on current and recommended Earth-system modelling and climate service activities, and an effective science-stakeholder communication platform, which will take the form of the wide-reaching network of stakeholders through which information and expertise can be exchanged, the ECOMS2 website and the associated internet communication platform. The types of ECOMS2 results are listed in turn below, and the draft plan indicates how they will be disseminated and exploited, and how this will lead to ECOMS2 achieving the Expected Impacts.

2.2a.1 Draft Plan for the dissemination and exploitation of ECOMS2 results

Network

The ECOMS2 consortium involves representatives from major European Earth-system modelling and climate service network organisations, including research and modelling communities, operational climate service organisations, and business networks. Reaching far beyond the consortium, ECOMS2 will identify stakeholders interested in climate services and earth-system modelling and will involve them in the ECOMS2 network.

ECOMS2 partners are well placed to use existing connections and establish new ones to ensure inclusion of relevant stakeholders, and to use existing dissemination channels. An important aspect of the network will be engaging with communities beyond Europe to ensure international dissemination of information. Membership of the network will grow as the project progresses.

There will be opportunities to meet (face to face and remotely) through workshops and forums that will be established through WP2 (Task 2.2). The network will enable access to relevant stakeholder panels, boards and meetings linked to ongoing activities organised by C3S, JPI-climate, Climate-KIC, the European Commission and the individual research and innovation projects. ECOMS2 will utilise this network to gather information, and the network will also be the audience of this aggregated information when it is disseminated.

The large number of stakeholders who will be engaged with the project through the network should lead to maximum exploitation of ECOMS2 results because they will be aware of the need for this aggregated information and will have helped to produce it. The network will mean that stakeholders also become aware of other stakeholders that will be useful to them – for example in a similar research area and requiring or producing similar data. The network will be

able to match providers with users and will allow cross-disciplinary visibility of ongoing activities. This will benefit work in the future – aiding collaboration and helping to avoid duplication, therefore improving the rate of exploitation of future work done within Europe. It may also increase the exploitation of previous and existing research – as different stakeholders become aware of available information that they weren't before. Even if the network does not continue in its managed form beyond the life of ECOMS2, the relationships built and links identified should be enduring and help ongoing awareness of activities and therefore exploitation of results.

The network will help to achieve expected impacts 2.1*(I, iii, iv and v)* through enabling more efficient communication between all stakeholders and therefore improved dissemination of research findings, increased cooperation and better coordination. There will also be better understanding of limitations and requirements between users and providers which should lead to the information provided being more useful and timely.

Reports on current and recommended products, services and activities

WP3 will gather information into reports on European Earth System Modelling for Climate Services (D3.1), Progress on the Integration of Climate Services and Earth System Modelling (D3.2) and Matching New Demands of Climate Services with Evolving Earth System Modelling and Prediction Capabilities (D3.3). WP4 will produce reports on integration of Earth system modelling and climate (D4.1), lessons and practice of co-developing climate services with users (D4.2), research needs and European funding landscape (D4.3) and recommendations on research needs (D4.4). These will then be edited into the "State of European Earth-system modelling and climate services" publication series by WP6, which will be released in Months 20, 40 and 60 of the project (D6.5).

The WP6 reports will be disseminated to all stakeholders in the network, and will be openly accessible. They will be promoted, made available on the ECOMS2 website and in various dissemination formats to be determined by WP6.

These WP6 reports are key deliverables of ECOMS2 as they present the aggregated information which currently does not exist. They will present what has been disparate information in a coherent way, which will aid exploitation of existing and future work by making all audiences aware of ongoing research and available climate information.

The reports will help to achieve expected impacts 2.1*(i, ii and v)* by synthesising ongoing activities and clearly explaining current research and innovation activities, highlighting gaps and making recommendations for the future.

Targeted products, materials and engagement activities

WP6 will produce a range of multimedia materials and organise various engagement activities. Each will have a different purpose and will be intended for different target audiences. WP6 will determine the most appropriate dissemination methods for each audience. They are likely to include: factsheets and summary reports; e-newsletters; internal project wiki for use within the consortium; press briefings; policy briefings; materials for participation at user specific workshops and events; scientific review papers; visits and interviews with key stakeholders; representation on stakeholder advisory boards; online discussion sessions; use of social media networks; targeted workshops and events. These dissemination methods will use the ECOMS2 website, and be disseminated directly to relevant audiences within the network and promoted as per the communications strategy to audiences outside of the network.

WP6 will identify the needs of each audience and tailor the dissemination and communication of the findings of ECOMS2 into targeted content and language which is suitable for their specific needs. The attention and care that will be taken over dissemination and communication will ensure that the audiences will be able to exploit the information provided to its maximum potential. Exploitation will also be aided by the interactive communication measures listed above. WP6 will gather information and will feed this back to all other WPs. Visits and interviews with key

stakeholders, targeted workshops and social media networks, amongst others will also assist in exploitation by allowing active engagement with audiences.

The expected impacts directly achieved by targeted materials and activities are 2.1(*i and vi*) as these will be designed to be as beneficial as possible to their intended audiences. The intention is that each audience can make better informed decisions, which will in turn lead to European society's improved resilience to climate change.

Platforms

Platforms are results of ECOMS2 in themselves which enable dissemination and communication to take place. ECOMS2 will produce two key platforms, the Festivals and the website which are described below.

The ECOMS2 website will be the central communications hub. It will host all relevant information for stakeholders allowing dissemination and communication of project progress and results, as well as being the portal through which all of the target audiences can engage. It will be regularly updated and representative of project identity and activities. Anticipated content includes; information about ECOMS2, all public (i.e. unrestricted) deliverables, details of current work within the project, and an overview of the network. It will have multimedia content and a corresponding internet communication platform which will be interactive – including discussion forums and social media links. There will also be an area specifically for the media/press audience.

By ensuring that the website is at the centre of all dissemination and communication activities, all those interested in project results will know immediately where to find information. The variety of tools and information that the website will host, mean that there will be content suitable for a wide range of audiences, including the public. The website will be openly accessible.

There will be three festivals held during ECOMS2 (D5.1, 5.2, 5.3) which will be promoted across and beyond the network. The festivals will be one of the key ways in which ECOMS2 ensures exploitation of its findings. The work of the project will be showcased, explained and its usefulness demonstrated. The festivals will also be a key networking event for stakeholders, and will allow exchange of knowledge and development of lasting working relationships.

Festivals and the associated literature and presentations will be made available on the project website. They can therefore benefit those not able to attend and be of use after the project has finished. It is hoped that relationships and contacts established at the festivals will be maintained beyond the life of the project.

These platforms will help to achieve 2.1(*i, ii, iii, iv, v*) through their ability to provide information and opportunities for interaction to so many stakeholders.

Approach to Innovation

ECOMS2 has great innovation potential. The network and the outcomes that ECOMS2 will produce do not currently exist, but will be welcomed by stakeholders. The availability of aggregated information will mean that innovation based on previously unknown research or untried collaborations will be possible.

Partners will use innovative methods to develop and maintain a successful network in WP2, and to engage, disseminate and communicate with the wide ranging target audiences (WP6). The consortium have also identified three key areas of the project which will be subcontracted to experts in event management, communications and web design to ensure a state of the art and innovative approach to the project. Further details on innovation management can be found in Section 3.2.10.

Open Data Research Pilot

Although data creation and management is not a key or central component to the CSA, ECOMS2 will provide aggregated information and therefore will take part in the Horizon 2020 Open Data Research Pilot. A Data Management Plan (DMP) has been included as a deliverable in Work Package 1 (D1.2) and will be provided in month 6. The strategy and implementation of the DMP will be continually reviewed. The DMP will be aligned to the Dissemination and Exploitation Plan.

The following data management aspects have been considered, and will be expanded upon in the DMP:

- Types of data that the project will generate: as detailed above, project results will be in the form of a network, aggregated information in the form of reports and targeted materials and facilitating platforms.
- Data standards that will be used: due to the type of data being collected and generated, this is not considered to be applicable. This will be reconsidered for the DMP (D1.2) and monitored throughout the project.
- How will this data be exploited and/or shared/made accessible for verification and re-use? If data cannot be made available, explain why: ECOMS2 will make its results openly available, therefore they will be available for re-use and through the network this will be encouraged. ECOMS2 will gather data from a variety of stakeholders. As described in Section 3.2.10, only organisational data will be collected as opposed to any personal data. Commercially sensitive data will be identified and withheld as appropriate and as requested by the stakeholder concerned.
- Curation and preservation of the data: results and information relevant to ECOMS2 will be available on the website, throughout and beyond the life of the project. It will remain available for use by future coordination actions, but will not be actively updated by ECOMS2 after the project has ended.

2.2a.2 Outline strategy for knowledge management and protection

Knowledge management

ECOMS2 will adopt a strategy for knowledge management that encapsulates the guiding principles of Horizon 2020 on Intellectual Property (IP) management and will define a range of effective management protocols. It will be managed by the Met Office through WP1 and a suitable strategy will be developed (Task 1.5). All results and outcomes of ECOMS2 will be openly disseminated at the appropriate time. The Project Office will ensure that ECOMS2 complies with the Grant Agreement and fulfils any requirements with regards to knowledge management and protection.

Achieving the ECOMS2 objectives will involve the sharing of information on ongoing and future work, capabilities of climate services and modelling, as well as user needs and requirements. It is expected that the majority of this information will be openly available, however for the circumstances in which it isn't, suitable identification and recording processes will be put in place to log all background that is brought to the project. The Consortium Agreement will then describe how this background is protected and may be used within the project. It will also describe how the results will be used, and will clarify procedures for arrangements such as joint ownership.

Open access to peer-reviewed scientific publications

ECOMS2 will adopt the "gold" model for open access to peer-reviewed journal articles where possible. In parallel, "green" open access will also be adopted by using the institutional and subject-based repositories made available through the partners. Authors will endeavour to avoid entering into any copyright agreements with publishers that will not allow them to fulfil the EC Open Access requirement. The Project Office will be involved in the process, and these publications will be advertised and logged through the project website. All published material will contain an acknowledgement to the research funding from the European Union and Horizon 2020.

Protection

The protection of the knowledge/IP that the partners bring to the project and then the subsequent knowledge generated will be regulated through the project Consortium Agreement (CA), and aligned with the specific requirements from the

Horizon 2020 Model Grant Agreement. Specific procedures for governing access and use of IP, plus the type of IP right, will also be included in the CA.
Each of the partners will have the right to exclude specific pre-existing knowledge (background IP) from the other partners' access, as far as the restrictions are announced before the signature of the Grant and Consortium Agreements or before the effective joining of a new partner.
Foreground IP will be identified at the point of creation and steps taken to ensure its protection. Partners will respect their own, and each others, protection protocols/IP Rights (IPR). In the event the creation of a new piece of knowledge as a result of the work of a single partner of the project and solely the result of individual intrinsic skills rather than shared knowledge, this partner will be the exclusive owner of the results, subject to granting access rights to the other partners where necessary for their execution of the project or to the use of their own results. For the case in which the designated owner of the results waives its option to start registration proceedings the coordinator will follow a procedure outlined in the CA to allow other project partners the opportunity to obtain or maintain such protection.
Access rights will be considered on a case by case basis and where appropriate after consultation with the partners concerned, to ensure that a partner's legitimate interests are not compromised. IP awareness training will be available through the Met Office for personnel working on the project; and the partners' legal teams will be engaged to provide support and advice on IPR matters. However, the overall aim of the knowledge management strategy and protection will be to maximise the chances of effective exploitation of the project's research results.

2.2b Communication activities

In order to successfully communicate about ECOMS2, and its progress, findings and achievements, it is important to identify suitable communication measures. The intention of these is to promote ECOMS2 and to provide information for all the stakeholders. Not only will this be beneficial for the project, but it will also illustrate what successful collaboration across Europe has achieved, and will highlight the relevance and benefits of European research to society.

The central narrative and messages for communication will be defined very early on in the project. Based on the concept of ECOMS2 which is described in Section 1.3, it will encompass this message: "Europe is currently at the leading edge of Earth-system modelling and climate service development. This has the potential to directly improve the lives of European citizens who today face the impacts of climate variability and extreme weather events and need to adapt to and mitigate a changing climate. The landscape of activities is very diverse, covering research, operational services, impact assessments, policy relevant recommendations and training activities, on a wide range of time scales. ECOMS2 will provide a comprehensive overview of all these activities to ensure the society at large can take full advantage of the investment Europe is making in research and innovation and associated development of services".

WP6 will provide an update to the outline below as part of the Project Dissemination and Exploitation Plan in month 6 of the project, and in annual updates thereafter. The Communications Strategy within this will identify the challenges of communication that ECOMS2 will face. It will identify the audiences and suitable communication methods in more detail.

ECOMS2 may be of interest to the media, and so in co-ordination with the Press Offices of the partner institutions and in line with Open Data principles, the project will decide how to manage ad hoc media enquiries, FOI requests, routine communication of progress and negative media coverage, amongst other things. The Coordinating institute (Met Office) also has an experienced Communications department who will be able to support ECOMS2 with social media and other public communication activities. Another part of the plan will specifically focus on successful communications with policy and decision makers. This is a specific task under WP1 (Task 1.5). Initially a number of distinct target audiences have been identified and the proposed communication activities are outlined below.

Table 2.2.1 ECOMS2 Communication measures

Target Audience	Objectives	Material/content (and responsibility)	Method/Communication Measures	Frequency
ECOMS2 partners	•Ensure an effective and integrated project	•Progress and results (WP1) •Risks/benefits/issues (WP1) •Queries/questions (WP1)	•Internal project wiki •General Assemblies •Email, Web and teleconferencing	•Regular updates of wiki •Regular General Assemblies
Stakeholder Group	•Ensure Stakeholder Group is fully informed of progress	•Progress and results of ECOMS2 (WPs1, 5 and 6) •Aggregated information on Earth-system modelling and climate services (WPs3, 4, 6)	•ECOMS2 website •Festivals •Workshops at dedicated events •Fact sheets and summary reports •ECOMS2 members on advisory boards	•Regular website updates •Festivals in years 1, 3, 5 •Publications as per deliverable schedule •Regular use of social media
EC project officer	•Ensure EC is fully informed of project progress	•Overall project progress (WP1) •Issues (WP1) •Deliverable progress (WP1)	•One page progress reports/summaries •Deliverable reports •Periodic reports •ECOMS2 website	•Quarterly throughout project •As per deliverable dates •As per reporting periods
EC	•Provide advice on existing gaps and planned research and innovation activities •Ensure EC is informed of CSA progress and findings	•Progress and results of ECOMS2 (WP1) •Aggregated information on Earth-system modelling and climate services (WPs3, 4, 6)	•ECOMS2 website with news items •Brochures of the major European activities in the field of Earth-system modelling and climate services •Synthesis of recommendations on future R&D of European Earth-system modelling and climate services	•Regular website updates •Festivals in years 1, 3, 5 •Publications as per deliverable schedule
Businesses, industry, public sector and professional federations	•Appropriate and cost-effective management, planning and adaptation decisions •Engagement with expert network	•Progress and results of ECOMS2 (WPs5, 6) •Aggregated information on Earth-system modelling and climate services (WPs3, 4, 6)	•ECOMS2 website •Festivals •Workshops at dedicated events •Fact sheets and summary reports •Periodic reports on "State of European Earth-system modelling and climate services" •ECOMS2 members on advisory boards	•Regular website updates •Festivals in years 1, 3, 5 •Publications as per deliverable schedule •Regular activity on social media
National and European policy and decision	•Improved evidence-based policy •Provide policy makers with a better understanding of	•Progress and results of ECOMS2 (WPs5, 6) •Aggregated information on Earth-system modelling and	•ECOMS2 website •Policy briefings and press briefings •Festivals	•Regular website updates •Festivals in years 1, 3, 5 •Publications as per

makers	relevant activities. •Engagement with expert network	climate services (WPs3, 4, 6)	•Workshop events organised at targeted conferences •Fact sheets and summary reports •Periodic reports on "State of European Earth-system modelling and climate services"	deliverable schedule
Scientific community	•Share knowledge, expertise and data across disciplines •Maximise impact and exploitation •Integration of groups and projects	•Progress and results of ECOMS2 (WPs5, 6) •Knowledge, expertise and data gathered by ECOMS2 (WP6)	•ECOMS2 website •Festivals •Scientific conferences and presentations •Multimedia content •Project factsheets and e-newsletters •Regular social media updates	•Regular website updates •Regular communication with the network •Festivals in years 1, 3, 5
Existing initiatives and networks, and funding bodies	•Shared understanding and awareness of ECOMS2 •Involvement in ECOMS2 network •Share knowledge, expertise and data between groups •Maximise impact and exploitation	•Progress and results of ECOMS2 (WPs5, 6) •Knowledge, expertise and data of all in the network (WP6)	•ECOMS2 website •Festivals •Multimedia content •Project factsheets and e-newsletters •Regular social media updates •Reviews of Earth-system modelling and services •Knowledge exchange and collaboration from different groups through workshops and conferences	•Regular website updates •Regular communication with the network •Festivals in years 1, 3, 5
Public and Wider Society	•Ensure project is visible and raise public awareness of climate science and results •Provision of credible information on research •Engagement with scientists	•Relevant results and their implications (WPs1, 6) •FAQs (WPs1, 6)	•ECOMS2 website •Multimedia content •Social media •Links through other web portals •Project e-newsletters and flyers	•Regular website updates •Proactive media activity, social media updates and e-newsletters/flyers publication
Media	•Ensure project is visible to public •Ensure project is reliably communicated	•Project progress and results (WP6) •Significance of results and impacts (WP6)	•ECOMS2 website – media area •Press briefs and media contacts •Multimedia content •Project factsheets and e-newsletters •Regular social media updates	•Regular website updates •Regular press briefs, as required •Invitations to relevant events
Education/ training	•Ensure knowledge is passed on through education	•Project progress, impacts and results (WP1, WP6) •ECOMS2 methodologies (WP1)	•ECOMS2 website •Factsheets and e-newsletters	•Regular website updates •Fact sheets and e-newsletters

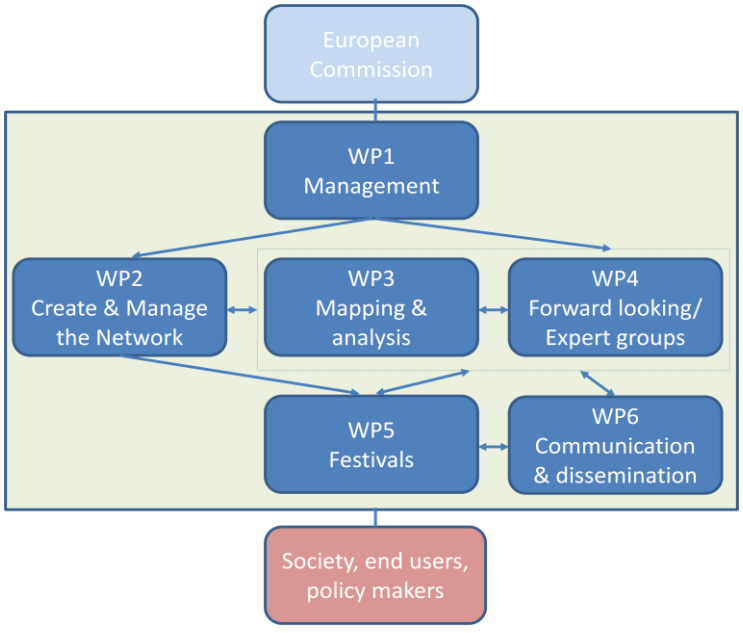
3. IMPLEMENTATION

3.1 Work plan – Work packages, deliverables and milestones

The work plan is structured around the following six interconnected Work Packages as shown in Figure 3.1.1:

- WP1 is the management work package (WP); for project management, monitoring, and administration and reporting. This WP will also coordinate and facilitate collaboration and coordination between partners within ECOMS2, and facilitate efficient running of Expert groups, Stakeholder group and Editorial teams. It will also be responsible for the high level engagement with the European Commission.
- WP2 will create and manage the network, and ensure it evolves, in order to integrate and coordinate ongoing and future climate change research and innovation initiatives within the EU and beyond. It will provide forums to ensure that the network is active and effective. Key experts and key activities will be identified to support mapping (in WP3), assessment of new challenges (WP4) and outreach (WP5 and WP6).
- WP3 will set up procedures for creating reports on the state of Earth system modelling and climate service provision in Europe, involving expertise from these communities and a range of stakeholders. The WP will undertake a mapping and analysis of the relevant current activities, create the content of the reports, collect feedback from all involved and take responsibility for the contents of the reports.
- WP4 will assess new challenges and determine emerging needs relating to Earth system modelling and climate services, through the use of expert groups and the reports from WP3. The WP will provide recommendations to the European Commission on future research and innovation priorities for Earth system modelling and climate services.
- WP5 will support a two-way communication process between different communities. WP5 will enable exchange of knowledge among providers and users through showcases (Festivals) of European climate services and Earth system modelling. The Festivals will also present the results from the mapping and forward looking analyses of WP3 and WP4.
- WP6 will undertake communication and dissemination activities. This will include producing the "State of European Earth-system modelling and climate services" publication series, based on the mapping and reports in WP3, the recommendations in WP4 and WP5 festival output; providing communication channels to strengthen the science-policy interface and ensure optimum information exchange with other users; developing and maintaining a website and other outreach platforms, and incorporating outcomes from the networking activities.

Figure 3.1.1: Graphical presentation of the components showing how they inter-relate



Timing of the work packages and their components

Below is a Gantt chart detailing the timings of the work packages and their components:

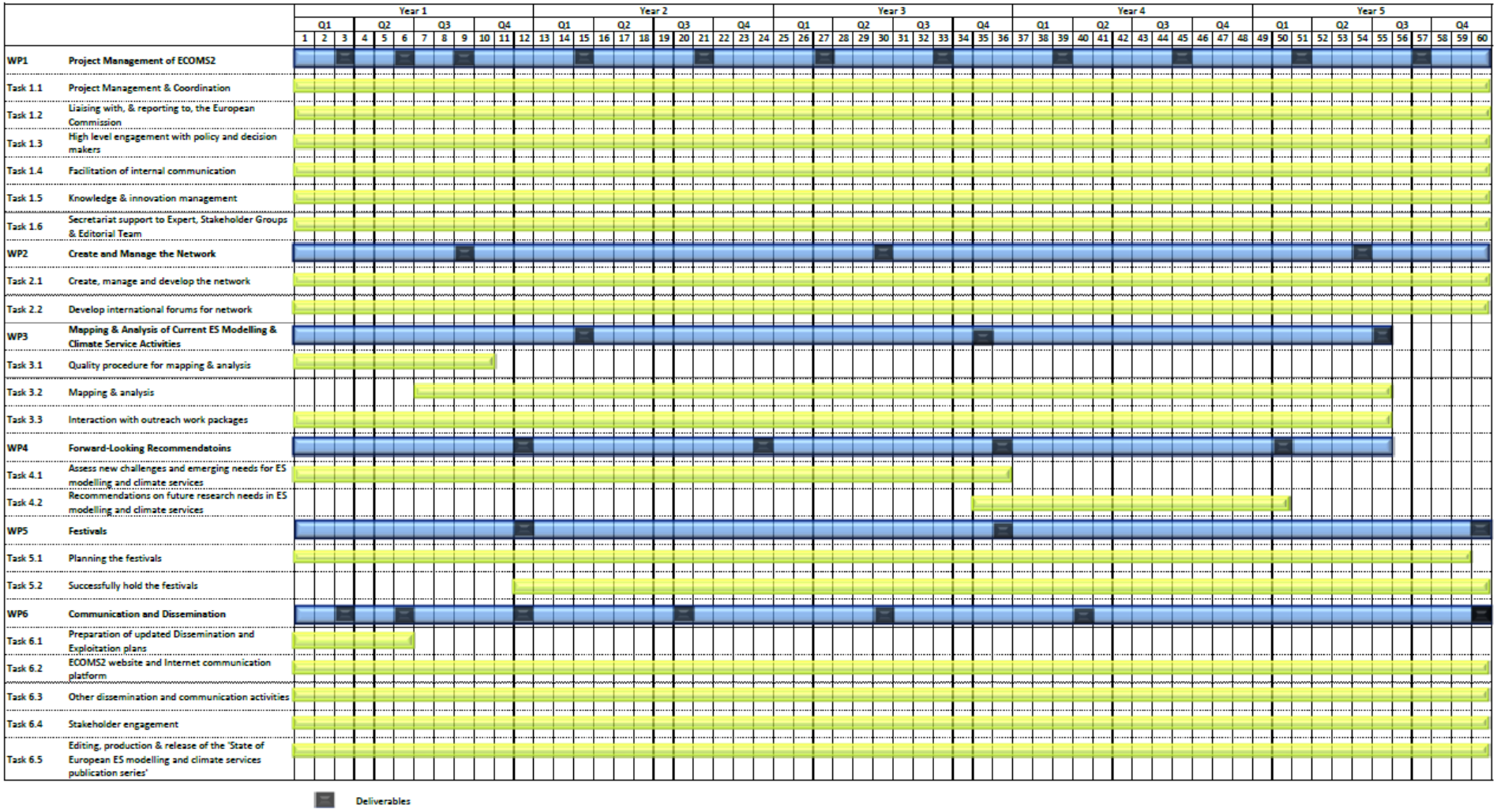


Figure 3.1.2: Timings of the work packages and their component

ECOMS2 Work Package descriptions (Tables 3.1.1)

The following tables describe each Work Package in turn, and give details of the work involved.

Work package number	1	**Start Date or Starting Event**	M1
Work package title	Project Management of ECOMS2		
Participant number	**1**		
Short name of participant	**Met Office**		
Person/months per participant:	**25**		

Objectives

- Undertake project management and coordination to enable objectives, deliverables and impacts to be effectively and efficiently achieved on time and within the resources budgeted
- Establish and maintain an effective interaction and communication with the European Commission, including regular reporting on progress
- Coordinate and facilitate relationships, collaboration and coordination between partners within ECOMS2, including sharing of information associated with project management
- Facilitate efficient running of groups, such as Expert groups, Stakeholder group and Editorial teams

This work package is led by Met Office.

Description of work

The management of ECOMS2 is described in detail in Section 3.2, and summarised below through the following tasks.

Tasks

T1.1 [M1-M60] Project Management and Coordination (Lead: Met Office)

Manage the project using effective management procedures based on PRINCE2 (Projects IN Controlled Environments) formal project management methodology. These will primarily be the responsibility of the Met Office. Managing the project includes the following (non exhaustive) activities:

(i) Implementation and maintenance of the Grant Agreement and the preceding Consortium Agreement. The Consortium Agreement will layout the rules for participation of the partners, including agreement of ownership and access to knowledge and results (i.e., Intellectual Property Rights), the processes for making decisions, and also for resolving disputes;

(ii) Overall legal, financial, administrative management and reporting; and

(iii) Appropriate management of gender aspects (MS1), ethics issues, disputes/complaints and risks/issues/benefits on behalf of the General Assembly of partners.

The following coordination activities are the responsibility of the Coordinator to reinforce coordination at both strategic and technical level:
(i) Ensuring all reports and deliverables for the European Commission are prepared, delivered on time and are of high quality;
(ii) Controlling the overall consistency between the progress and achievements of the CSA, and compliance with the work plan and the Action's objectives;
(iii) Monitoring and controlling the overall consistency and synthesis between the WPs' activities and outcomes – including avoiding duplication of effort and identifying any gaps in activity; and
(iv) Endorsement of recommendations from the CSA and decisions made.

T1.2 [M1-M60] Liaising with, and reporting to, the European Commission (Lead: Met Office)
Maintain regular and comprehensive contact with the European Commission in Brussels. This will be partially fulfilled through the provision of regular summary reports outlining progress (D1.1). The Coordinator will be the interface between ECOMS2 and the European Commission, and will ensure that the appropriate project obligations from the Grant Agreement are carried out. The Coordinator will inform the European Commission of any significant project achievements and also any deviations from plans, and also invite the European Commission to major project-organised meetings/workshops including the festivals.

T1.3 [M1-M60] High level engagement with policy and decision makers (Lead: Met Office)
The coordinator will engage with policy and decision makers to communicate the impact and significance of the ECOMS2 network and reports (for example, through participation in decision making bodies, such as advisory boards and panels, executive and steering committees). The coordinator will use output from WP6 which will be specifically written for this audience, with the aim of strengthening the science-policy interface. This will ensure that ECOMS2 remains well aligned with European and national requirements throughout the lifetime of the Horizon 2020.

T1.4 [M1-M60] Facilitation of internal communication (Lead: Met Office)
Sharing knowledge and information across the project partners. The project office will ensure optimal internal information exchange through regular and routine communications. Building upon the experience of the partners in a number of FP7 and Horizon 2020 projects, the Project Office will provide and manage an information sharing platform in the form of a dedicated internal project website/wiki (MS2). This will host templates, documents and tools that the project office will develop to aid management and reporting, along with contractual documents and consortium documents, calendars of future meetings. There will be space for each partner and work package in order to encourage continual conversations, dialogue and knowledge exchange amongst the partners. The wiki will host a continually updated table detailing all the dissemination activities and publications resulting from the Action. Keeping this table up to date will be the responsibility of the project office. This task will also ensure the implementation and maintenance of mailing lists for partners.

T1.5 [M1-M60] Knowledge and innovation management (Lead: Met Office)
This task is linked with WP2, 3, 4, 5, and 6. However, it is the responsibility of the Coordinator through this task, to take the overview and ownership of the strategies and processes around exploitation, knowledge and innovation management within this Action.

A knowledge management strategy will be kept up to date and the Coordinator will ensure that the associated protocols are adhered to. One of the specific knowledge management activities carried out under this task is the review of the project's dissemination materials to ensure quality and adherence to European Commission guidelines.

A simple Data Management Plan (DMP) will be produced and implemented, in coordination with WP6 (D1.2). It will be drafted in compliance with the guidelines given on data management in Horizon 2020 by the European Commission. The strategy and implementation of the DMP will be continually reviewed. The DMP will be aligned to the Dissemination and Exploitation Plan (written and managed through WP6). This task will also oversee the participation in the Open Research Data Pilot, including ensuring that peer-reviewed publications will be accessed through an Open Access mechanism.

This task will oversee effective innovation management for this Action. This links strongly with WP6 in ensuring that innovative products are created and innovative communication mechanisms are used to disseminate them.

T1.6 [M1-M60] Provide secretariat function in supporting the Expert groups, Stakeholder Group and Editorial Teams (Lead: Met Office)
The Project Office will provide a secretariat function for the Expert Groups, the Stakeholder Group and Editorial Teams and support partners where possible. This task will ensure the implementation and maintenance of mailing lists for partners, the expert groups and stakeholders.

Deliverables (Summary)
D1.1: Summary reports on project progress – a one page summary report will be provided to the European Commission every six months, starting at month 3 (**M3, 9, 15, 21, 27, 33, 39, 45, 51, 57**)
Lead: Met Office; **Participants:** All

D1.2: Data Management Plan **(M6)**
Lead: Met Office; **Participants:** All

Work package number	2	**Start Date or Starting Event**						M1	
Work package title	Create and Manage the Network								
Participant number	**1**	**2**	3	4	5	6	7	8	9	
Short name of participant	**Met Office**	**ANR**	BSC	CMCC	CLIMATE-KIC	ECMWF	HZG	CNRS-IPSL	KNMI	
Person/months per participant:	**10**	**26**	6	2	5	1	3	3	3	

Objectives
- Create a network, and ensure it evolves, to integrate and coordinate ongoing and future research and innovation activities in the fields of Earth-system modelling and climate services within the EU and beyond

- Provide forums to ensure the network is active and effective

This work package is led by Met Office (lead) and ANR (co-lead).

Description of work

WP2 will define and establish a coordination mechanism for ongoing and future research and innovation activities in the fields of Earth-system modelling and climate services within the EU and beyond, including relevant existing networks. Non-research activities will also be taken into account. This will create an active community of users, providers and intermediaries throughout the duration of Horizon 2020, and will assist implementation of the Climate Services Roadmap recently launched at the European Commission.

The coordination mechanism will be created by (i) identifying, as an ongoing activity, the relevant parties and establish a clear point of contact for each one; (ii) identifying and designing suitable forums where the relevant parties will network; (iii) facilitate the networking for better alignment and synergy (including through the other WPs).

This network will also coordinate, create synergies between, and better align EU initiatives (see Task 2.1 below) and nationally funded climate research and innovation actions. The network will connect the various actors around common areas of interest and action, and provide a forum to enable development of joint projects and programmes, develop international forward looking analyses on emerging needs and increase the overall attractiveness and competitiveness of the European Research Area (see Task 2.2 below).

This network will ensure the other WPs are able to access the relevant initiatives, organisations and individuals to maximise the overall impact of the European research and innovation and to increase awareness and effective use of climate science and knowledge.

Tasks

T2.1 [M1-M60] Create, manage and develop the network (Lead: Met Office, Participants: All in WP**)**

The network will include, as far as is practically possible, ongoing and future European climate modelling, climate observations and climate service infrastructure initiatives, and will engage beyond Europe. An initial list of organisations, initiatives and individuals will be created at the start of the CSA (MS3) and will constantly evolve. For each organisation and initiative, a key individual will be identified and contacted. The initial list will be consistent with the activities listed in Section 1.3. The network will also identify policy makers, businesses, industry, professional federations and funding bodies through existing contacts, and through contacts as the network evolves (D2.1). The network will be managed through specific activities detailed in WPs3-6, and those activities will also lead to an updating of the network through additional organisations, initiatives and individuals. Reports on the effectiveness of the network (D2.2) and on recommendations for the network in the future (D2.3) will also be made openly available.

T2.2 [M1-M60] Develop international forums to ensure the network is active, attractive and effective (Lead: ANR, Participants: All in WP**)**

Suitable forums, i.e. meetings and medium for the network to exchange ideas on particular issues, will be identified to ensure that the network is active and effective (D2.1 and MS6). The forums need to be designed to attract the actors identified in Task 2.1 and to bring them together effectively to ensure ECOMS2's objectives are met, with funders as a key audience to co-align strategies. Most of the forums will be interactive, to ensure high levels of

involvement and interest, and some will be more passive where appropriate.

A range of forums have already been identified as essential to the success of the CSA and have dedicated tasks and WPs, particularly the Expert groups, Stakeholder group, Festivals, interactive elements of the web-site, social media and workshops (see Table 2.2.1). WPs 5 and 6 will play particularly important roles to ensure the forums are effective. The forums in WPs 5 and 6 will be of great use in identifying ideas for improving these forums or developing new ones (D2.2 and D2.3). For example, for research funders, the forums will facilitate links between the networks of research funders of key European initiatives (such as C3S; Climate-KIC; the Joint Programming Initiatives (JPIs) for Water, Urban, Oceans, and Climate (including the JPI Climate's 2015 ERAnet for Climate Services) and Agriculture, Food Security and Climate Change) or international initiatives (such as GFCS, Future Earth, Belmont Forum). It will be done in close cooperation with the High Level Group on Joint Programming (GPC), the DG R&I "Climate action and resource efficiency" and the European Strategic Forum for International Cooperation (SFIC), to engage MS and EC together.

The learning from the forums will be of use to all of the existing networks involved, such as the JPIs.

Deliverables

D2.1: Report documenting the initial list of organisations in the network and the international forums to be used to ensure the network is active **(M9)**
Lead: ANR; **Participants:** All other participants

D2.2: Report on the status of the network and effectiveness of integration and coordination and future plans for the network **(M30)**
Lead: Met Office; **Participants:** All other participants

D2.3: Report on potential future sustainability and improvement of the network **(M54)**
Lead: Met Office; **Participants:** All other participants

Work package number	3	**Start Date or Starting Event**								M1
Work package title	Mapping and analysis of current Earth system modelling and climate service activities									
Participant number	1	**3**	4	5	6	7	8	9	10	**11**	
Short name of participant	Met Office	**BSC**	CMCC	CLIMATE-KIC	ECMWF	HZG	CNRS-IPSL	KNMI	RHMSS	**SMHI**	
Person/months per participant:	6	**15**	4	5	1	3	3	3	5	**14**	

Objectives

- Establish procedures for creating reports on the state of Earth system modelling and climate service provision in Europe, involving expertise from Earth-system modelling, climate services and stakeholders
- Create the content of the reports, collect feedback from all involved and write the reports

This work package is led by SMHI (lead) and BSC (co-lead).

Description of work

WP3 will map, assess and analyse the state-of-the-art of European Earth system modelling for climate services and produce reports, which will form the base for forward-looking recommendations (in WP4). The WP3 reports will be of use for climate scientists, climate service developers, and a range of policy- and decision-makers. Summaries of the reports will be created targeting those different audiences.

Tailor-made dissemination and editing of the reports (in WP6) will lead to an improved understanding of the current activities in Europe with the potential to foster new interactions (in WP4) between provider and users and promote the identification of new spaces for co-development and innovation. WP4 makes use of the potential with involvement of expert groups, who will feed back to WP3, and WPs 3 and 4 will be closely connected. The reports will also form the basis to identify the most relevant topics that will inspire the climate festivals (WP5).

Tasks

T3.1 [M1-M10] Quality procedure for mapping and analysis (Lead: BSC, Participants: Climate-KIC, HZG, SMHI**)**

A robust procedure will be created for mapping the European landscape of Earth-system modelling and climate services, and for creating the reports in Task 3.2 (MS4). A network of key experts from Earth system modelling and climate services institutions, as well as users' perspectives will be involved, identified in WP2. The analysis will use a wide range of sources including existing initiatives and projects, publications, interviews, stakeholder conferences and expert assessment.

The analysis will utilise the relevant initiatives in Earth-system modelling and climate service research, including contact points, which are brought together in WP2. The different initiatives will be categorised and appropriate communication channels will be established for each category.

T3.2 [M7-M55] Mapping and analysis (Lead: SMHI, Participants: All in WP**)**

Based on the procedure established in Task 3.1, reports will be created at months 15, 35 and 55. Expert contributors will be used. Qualified editing will be carried out by the WP partners, and a team of scientists and stakeholders will review the reports.

The reports will be print-ready integrated sources of information for Earth-system modelling and climate service professionals. The information will be disseminated to stakeholder and user audiences by WP6, which also provides an executive summary. Information gathered will be made regularly available through the ECOMS2 dissemination portal (WP6), often before the reports are finalised.

The first report (D3.1) will focus on the state of the art of European Earth System modelling (ESM), which forms a key foundation of climate services. The ESMs' ability to perform long-term climate projections, and seasonal-to-decadal scale predictions will be scrutinized in relation to the complexity of model configurations, uncertainties and

opportunities for climate services. Stakeholder-oriented application often requires regionalization of the global climate change signal. Therefore the report will review the state of downscaling efforts in the CORDEX community. Further refinement techniques such as bias correction and selection techniques for all the type of data sources considered will be reviewed. The state of the art of the rising European climate services research and its links to the climate adaptation community will also be mapped. Currently, sector-oriented products based on climate modelling output are distributed by scattered providers before they can be bundled as European services. These products need to be mapped to fully understand the complete chain from ESM research to user-oriented services. A special focus needs to be given to the interfaces and liaisons between different products and providers, which constitute a network.

The second report (D3.2) will update the first report and provide progress on the integration of climate services and Earth-system modelling. As CMIP6 will be in a mature phase, the report will also cover opportunities in ESM applications during CMIP6, regionalization and evolving links to climate services, including a survey of marketable products as well as selection of success stories. The report will also review the process of bundling climate service products from a stakeholder perspective. As far as possible the focus will be on the identifications of the "unknown knowns" which are the subset of our Earth system knowledge that can be relevant to the users and that has not yet been identified. This will include a validation of the evolving landscape with an emphasis on usability, coordination of dissemination methods, and missing features. The status of balancing advancing user expectations with ESMs, downscaling capabilities and uncertainties will be described. The report will summarize lessons learned from the ongoing convergence in climate services to serve recommendations to be issued by WP4, and dissemination to various sectors in WP6.

The third report (D3.3) will review progress compared to the second report and, in addition, assess the impact of forward-looking recommendations during the ECOMS2 project. The use of the key scientific projects CMIP6 and CORDEX for climate services will be evaluated, and the results of multi-model operational seasonal-to-decadal forecast systems will be critically analysed with respect to results and usability. Experiences with evolving climate services during the first four years of the project will need to feed back to the ESM and climate prediction community. By mapping this essential feedback, and by directly involving stakeholders, the stakeholder perspective in the report for innovation is crucially strengthened.

T3.3 [M1-M55] Interaction with outreach work packages (Lead: Climate-KIC, Participants: BSC, CMCC, HZG, KNMI, SMHI**)**
The reports feed into and interact with the forward-looking recommendations (WP4), network communication festivals (WP5) and dissemination activities (WP6). The recommendations and festivals receive "ground truth" information from the reports. WP6 exploits the reports with the aim of extracting the most relevant parts of the reports for dissemination.

This task will also provide a flow of current information to the outreach WPs as soon as available, e.g. in between the formal reports. This will ensure the project web site contains the latest information identified, making the project web site a live portal of network information in tune with what is being discovered for the next due reports.

Deliverables (Summary)
D3.1: Report on European Earth System Modelling for Climate Services **(M15)**
Lead: SMHI; **Participants:** Met Office, BSC, HZG, CNRS-IPSL, KNMI

D3.2: Report on Progress on the Integration of Climate Services and Earth System Modelling **(M35)**

Lead: BSC; **Participants:** CMCC, Climate-KIC,ECMWF, HZG, KNMI, SMHI

D3.3: Report on Matching New Demands of Climate Services with Evolving Earth System Modelling and Prediction Capabilities **(M55)**
Lead: Climate-KIC; **Participants:** BSC, KNMI, RHMSS, SMHI

Work package number	4	**Start Date or Starting Event**					M1	
Work package title	Forward Looking Recommendations							
Participant number	1	3	4	5	7	**8**	**10**	11
Short name of participant	Met Office	BSC	CMCC	CLIMATE-KIC	HZG	**CNRS-IPSL**	**RHMSS**	SMHI
Person/months per participant:	6	6	2	3	3	**15**	**6**	3

Objectives

- Assess new challenges and determine emerging needs relating to Earth system modelling and climate services, through the use of expert groups
- Provide recommendations to the European Commission on future research and innovation priorities for Earth system modelling and climate services

This work package is led by CNRS-IPSL (lead) and RHMSS (co-lead).

Description of work

The WP will assess new challenges and determine emerging needs related to Earth system modelling and climate services, with a focus on Europe. The assessment will be conducted through multi-disciplinary expert groups and will use the networks created in WP2, the analysis conducted in WP3 and outcomes from the festivals. Where appropriate, the expert groups will involve end users and stakeholders. WP4 will provide recommendations for future research (for example for investment under future Framework Programmes) required to fill gaps and improve the quality of climate services. It will address both research and infrastructures aspects.

Expert groups will address challenging issues and emerging needs. Expert groups will draw on the knowledge and expertise from the network created in WP2, and will be informed by WP3, the European Commission, stakeholders and users. Additional topics may also be identified during the course of the CSA.
The output of this WP will be communicated through events such as the festivals developed in WP5, reports produced by WP6, and feed back to WP3 to inform further analyses therein.

Tasks

T4.1 [M1-M36] Assess new challenges and emerging needs for Earth system modelling and climate services (Lead: RHMSS, Participants: All in WP**)**

Expert groups will be created (drawing on expertise from ECOMS2 and other experts from the network developed in WP2 if needed). The expert groups will use information from the ECOMS2 network and from the analysis in WP3. Each expert group will produce a report that will be disseminated through WP5 and WP6. Each year will be dedicated to the production of one expert group report (D4.1, D4.2 and D4.3), each led and co-led by different participating partners. Expert groups will address in priority the following issues:

(i) Integration between Earth system modelling and climate services, emphasizing research needs, infrastructure issues such as exchange of data beyond the research community, identification of unknown-knowns, how to enhance data usage (D4.1).

(ii) Co-development of climate services with users, sharing experience, dealing on how to foster co-development, developing standards for user engagement and effective communication of science to stakeholders, policy-makers and users (D4.2)

(iii) Improving the global vision of who does what in Europe on Earth system modelling and climate services based on the WP2 network and mapping of WP3 (D4.3)

T4.2 (M35-50) Recommendations on future research needs in Earth system modelling and climate services (Lead: CNRS-IPSL, Participants: All in WP**)**

Drawing on the output from WP3, expert groups reports (Task 4.1), as well as discussions from festivals, an expert group will be convened to produce recommendations for addressing the challenges and emerging needs for Earth system modelling and climate services. A scoping workshop (MS8) involving experts from the network and Principle Investigators from relevant Horizon 2020 projects will provide a consultation on research needs and provide a first version of the D4.4. Outcome from Task 4.2 will be further discussed with the scientific community through an open forum.

Deliverables (Summary)

D4.1: Report on integration of Earth system modelling and climate services **(M12)**
Lead: BSC; **Participants:** co-lead RHMSS, with all other participating partners

D4.2: Lessons and practice of co-developing climate services with users **(M24)**
Lead: HZG; **Participants:** co-lead RHMSS, participation Met Office, Climate-KIC

D4.3: Research needs and European funding landscape **(M36)**
Lead: Met Office; **Participants:** all other participating partners

D4.4: Recommendations on research needs **(M50)**
Lead: CNRS-IPSL; **Participants:** co-lead Met Office, with all other participating partners

Work package number	5	**Start Date or Starting Event**			M1
Work package title	Festivals				
Participant number	1	4	**5**	**7**	
Short name of participant	Met Office	CMCC	**CLIMATE -KIC**	**HZG**	
Person/months per participant:	3	6	**3**	**15**	

Objectives

WP5 will organise Festivals to:

- Enable exchange of knowledge among the network (including users, providers, intermediaries, funders) through showcases of European climate services and Earth System modelling
- Provide results from mapping and forward looking analyses developed in WP3 and WP4 to a larger audience
- Strengthen science-policy and science-use interface

This work package is led by HZG (lead) and Climate-KIC (co-lead).

Description of work

This WP organises and delivers three festivals to showcase climate services and Earth System modelling within Europe, to reflect on existing gaps in those fields and to strengthen the science-policy and science-user interfaces to support the uptake of science-based services .The festivals will be an opportunity for climate service providers (including climate researchers, data re-users and data providers), users, intermediaries and funders in the EU and elsewhere to display best in class outcomes and engage in world class networking. As described in Section 2.2, the festivals are a key platform for communication and dissemination within ECOMS2.

Tasks

T5.1 [M1-M59] Planning the festivals (Lead: HZG, Participants: All in WP**)**

Three festivals will be held during the project, in years 1, 3 and 5, each lasting 2-5 days (D5.1, 5.2, 5.3). Planning these will include identifying the key target audiences, the desired outcomes and measures of success for the festivals, choosing suitable locations, options for remote participation and designing an innovative, useful and engaging programme of festival workshops, presentations and other activities. Planning documents will be produced ahead of each festival to assist with this (MS5, MS7 and MS9). MS7 and MS9 will include lessons learned from previous festivals.

The potential participants will include all of those in the network developed through WP2, for example the wider scientific community (natural sciences, social sciences and humanities), all other users, providers of climate services and Earth system modelling and funding bodies. While many of the participants will be European representatives, international organisations will be represented in the ECOMS2 network, and the intention is to attract relevant users

and providers from around the world.

WP5 will ensure that the mapping activities in WP3 are used as guidelines for festival participants. A carefully developed stakeholder analysis, building on existing surveys and activities, will provide a list of key participants who should attend the festivals. The festivals need to be sufficiently large to attract and be representative of key stakeholders, and should still be able to allow efficient networking. It is anticipated that the festivals will grow in size through the project, with the first one attended by up to 100 participants and the final one by 200-300 participants. The Festivals could be structured in a flexible/rotational way, with participants varying according to the relevance of sessions on a particular day.

There will be sessions on the use of climate services in the public and private sectors. Some sessions will be of general interest and some will be targeted (for example to gather key sectors together), therefore making them very applicable and attractive to different users and decision-makers. The Festival will encompass best practice and lessons learned from other successful meetings (e.g. Annual Meeting of the World Economic Forum in Davos, Switzerland) and will be of high quality. There will be a mixture of open and closed sessions, networking will be a key outcome of the festivals and will be actively facilitated. This is also true of remote participation, and technological solutions such as online streaming so that they are available to a wide audience will be used.

The festivals will be held within Europe and the location will need to have suitable facilities, be readily accessible and value for money, amongst other considerations. The location will be carefully chosen by the General Assembly.

T5.2 [M12-M60] Successfully hold the festivals (Lead: HZG, Participants: All in WP**)**
The festivals will be delivered professionally through HZG who will take primary responsibility for them, along with a team of professional moderators and advisors with expertise to ensure that the key aims of the festival are achieved. These will be based around the following statements.

The festivals will:
- demonstrate the progress of European climate service and Earth System modelling, building on the network, mapping and outreach activities in other WPs
- offer two-way engagement to delineate the contents of the ECOMS2 reports and to present findings
- support the uptake of services by decision and policy makers in a range of sectors, in order to improve society's resilience to climate change and to mitigate the risk of dangerous climate change
- actively facilitate interaction between suppliers, users and funders of climate services
- publicise the outcomes of the WP4 expert groups and the outcomes of the forward look analysis
- develop the capabilities of participants through knowledge transfer

The presentations, recordings and all other material from the Festivals will be made available through the project website.

T5.3 [M13-M60] Gathering Feedback (Lead: Climate-KIC, Participants: All in WP**)**
Feedback on the festivals needs to be actively collected during and after the events to improve the quality of future events and ensure their usefulness. This will help the festivals to achieve an overarching aim, which is to better integrate and coordinate the on-going and future climate change research and innovation initiatives within the EU and beyond.

Deliverables (Summary)
D5.1: First Festival held **(M12)**
Lead: HZG; **Participants:** all other participating partners

D5.2: Second Festival held **(M36)**
Lead: HZG; **Participants:** all other participating partners

D5.3: Third Festival held **(M60)**
Lead: HZG; **Participants:** all other participating partners

Work package number	6	**Start Date or Starting Event**					M1
Work package title	Communication and Dissemination						
Participant number	1	3	**4**	5	7	**9**	11	
Short name of participant	Met Office	BSC	**CMCC**	CLIMATE-KIC	HZG	**KNMI**	SMHI	
Person/months per participant:	4	3	**20**	4	3	**20**	5	

Objectives
- To establish, facilitate and coordinate the dissemination, exploitation and communication strategies, processes and activities for ECOMS2
- Produce widely accessible "State of European Earth-system modelling and climate services" publication series
- Provide science-stakeholder communication channels which will strengthen the science-policy interface and ensure optimum information exchange amongst providers and users
- Develop and maintain the ECOMS2 website and other innovative dissemination and communication methods

This work package is led by KNMI (lead) and CMCC (co-lead).

Description of work
This WP will coordinate all dissemination (ensuring that the project results are available to the target audiences that are identified) and communication (providing information about, and promoting, ECOMS2 and the results to the identified audiences), consistent with Sections 2.2a and 2.2b respectively.

The collection, synthesis and sharing of information with stakeholders is at the heart of ECOMS2. Communication and dissemination methods are therefore not simply a "broadcasting service", but information, knowledge and expertise is exchanged in all directions, and is targeted appropriately to audiences and information channels. For

example: (i) the EC will be provided with aggregated information which illustrates the European playing field of Earth-system modelling and climate services; (ii) climates services, observations and Earth-system modelling research communities will be targeted with the aim of promoting cooperation and co-creation between different disciplines and institutions, and to accelerate exchange of knowledge and requirements between themselves and information users; (iii) the information users will benefit from aggregated information tailored to their various needs, access to users and providers through the ECOMS2 network and interaction through targeted events and existing professional networks. For detailed communication measures see Section 2.2b.

Tasks

T6.1 [M1-M6] Preparation of updated Dissemination and Exploitation plans (Lead: KNMI, Participants: Met Office, CMCC**)**

A Dissemination and Exploitation plan will be developed at the beginning of the project, and updated on an annual basis (D6.2). It will be based on the measures outlined in Section 2.2a, and will provide detail on dissemination activities, audiences and deadlines and the exploitation strategy within ECOMS2. It will also contain a detailed plan for ECOMS2 communication measures, and will be an updated version of the information in Section 2.2b.

T6.2 [M1-M60] ECOMS2 website and Internet Communication Platform (Lead: CMCC, Participants: KNMI**)**

This will be the central dissemination and communications hub for ECOMS2 (D6.1). It will be the official project platform and will host all relevant information about the project, project activities and its results. It will be for all target audiences and will enable engagement with those audiences. Project reports will be published here, and WP2 and 3 will utilise the website for collecting information that they require.

As part of the website there will also be an interactive internet communication platform. This will be the area through which the network and other stakeholders can interact with each other. This will be done via discussion forums, chat rooms and other methods. The website will be a dynamic and multimedia tool. Brief articles will be made available on the web site which will highlight the potential benefits of the project and which can be used to promote events such as the festivals (WP5). Intended content is listed in Section 2.2a.

Website construction and design will be carried out by a specialised subcontractor. An ECOMS2 editorial board will be responsible for the content and functionality of the internet service.

T6.3 [M1-M60] Other dissemination and communication activities (Lead: KNMI and CMCC, Participants: All partners**)**

As indicated in the draft Dissemination and Exploitation plan, this WP will determine the most suitable methods of dissemination and communication with the appropriate target audiences (identified by WP2 and 3) and will carry out these activities. The list of activities that it is anticipated will take place are given in Section 2.2a.1. These include policy briefings and factsheets (D6.3) and scientific review papers (D6.4) amongst much other targeted material.

T6.4 [M1-M60] Stakeholder engagement (Lead: KNMI, Participants: All in WP**)**

This task focuses on effective interaction and engagement with key stakeholders, and will ensure that two-way communication is established. Activities that have already been identified to enable this are; visits and interviews with stakeholders, gaining ECOMS2 representation on established stakeholder boards, online discussion sessions focusing on evaluation of scientific findings, development of European policy, tailoring and application of climate services, and targeted workshops where ECOMS2 results such as reports and fact sheets can be presented and reviewed.

T6.5 [M1-M60] Editing, Production and Release of the "State of European Earth-system modelling and climate services" publication series. (Lead: SMHI, Participants: All in WP**)**
This task is responsible for editing, producing and releasing the three reports produced in WP3. The final reports produced under this task will be publically and openly available. The publication series will also include edited versions of the recommendations from WP4 and insights that are available from the Festivals in WP5. Specific activities in this task will include; designing and editing of the report structure, in close cooperation with the content providers and agreement of the final versions; production of the reports, including implementation on various digital platforms; official release, dissemination and communication of the reports to all identified audiences (D6.5).

Deliverables (Summary)

D6.1: Website and Internet Communication platform **(M3)**
Lead: CMCC; **Participants:** All other participating partners

D6.2: Updated dissemination and exploitation plan **(M6)**
Lead: KNMI; **Participants:** Met Office, CMCC

D6.3: Policy briefings and fact sheets **(M12, M30, M60)**
Lead: CMCC; **Participants:** All other participating partners

D6.4: Scientific review papers **(M12, M30, M60)**
Lead: KNMI; **Participants:** All other participating partners

D6.5: "State of European Earth-system modelling and climate services" publication series releases **(M20, M40, M60)**
Lead: SMHI; **Participants:** All other participating partners

List of work packages

The table below lists the six work packages.

Table 3.1.2: List of Work Packages (WPs)

WP No	WP Title	Lead (Co-lead) Participant No	Lead Participant Short Name	Person-Months	Start Month	End month
1	Project Management	1	Met Office	25	1	60
2	Create and manage the network	1 (2)	Met Office (co-lead ANR)	59	1	60
3	Mapping and analysis of current Earth system modelling and climate service activities	11 (3)	SMHI (co-lead BSC)	59	1	55
4	Forward-looking recommendations	8 (10)	CNRS-IPSL (co-lead RHMSS)	44	1	55
5	Festivals	7 (5)	HZG (co-lead Climate-KIC)	27	1	60
6	Communication and Dissemination	9 (4)	KNMI (co-lead CMCC)	59	1	60
Total				273		

List of Deliverables

The table below lists the deliverables.

Table 3.1.3: List of deliverables

Deliverable (number)	Deliverable name	WP No	Short name of lead participant	Type	Dissemination level	Delivery date
D1.1	Summary reports on project progress	1	Met Office	R	CO	M3, 9, 15, 21, 27, 33, 39, 45, 51, 57
D1.2	Data Management Plan	1	Met Office	R	PU	M6
D2.1	Initial list of organisations in the network and the international forums to be used to ensure network is active	2	ANR	R	PU	M9
D2.2	The status of the network and effectiveness of integration and coordination, and future plans for the network	2	Met Office	R	PU	M30

D2.3	Potential future sustainability and improvement of the network	2	Met Office	R	PU	M54
D3.1	Report on European Earth system modelling for climate services	3	SMHI	R	PU	M15
D3.2	Progress on the integration of climate services and Earth system modelling	3	BSC	R	PU	M35
D3.3	Matching new demands of climate services with evolving Earth system modelling and prediction capabilities	3	Climate-KIC	R	PU	M55
D4.1	Integration of Earth system modelling and climate services	4	BSC	R	PU	M12
D4.2	Lessons and practice of co-developing climate services with users	4	HZG	R	PU	M24
D4.3	Research needs and European funding landscape	4	Met Office	R	PU	M36
D4.4	Recommendations on research needs	4	CNRS-IPSL	R	PU	M50
D5.1	First festival held	5	HZG	OTHER	PU	M12
D5.2	Second festival held	5	HZG	OTHER	PU	M36
D5.3	Third festival held	5	HZG	OTHER	PU	M60
D6.1	Website and Internet Communication Platform	6	CMCC	DEC	PU	M3
D6.2	Updated dissemination and exploitation plan	6	KNMI	R	CO	M6
D6.3	Policy briefings and fact sheets	6	CMCC	R	PU	M12, 30, 60
D6.4	Scientific review papers	6	KNMI	R	PU	M12, 30, 60
D6.5	State of European Earth-system modelling and Climate Services publication series releases	6	SMHI	R	PU	M20, 40, 60

3.2 Management structure and procedures

The ECOMS2 Coordination and Support Action brings together 11 European partners, and will be managed through a management Work Package (WP1) which has been explicitly included in the project. Top level formal management of the project will be provided and this includes facilitating the use of mechanisms to support internal project communication. Individuals' responsibilities and decision making delegations will be clearly defined.

The project will be led and coordinated by Dr Chris Hewitt, who has considerable experience in leading projects within large climate research and climate service work programmes, including European Commission funded projects such as ENSEMBLES under FP6 and EUPORIAS under FP7, as well as experience and leadership in European and global climate service initiatives.

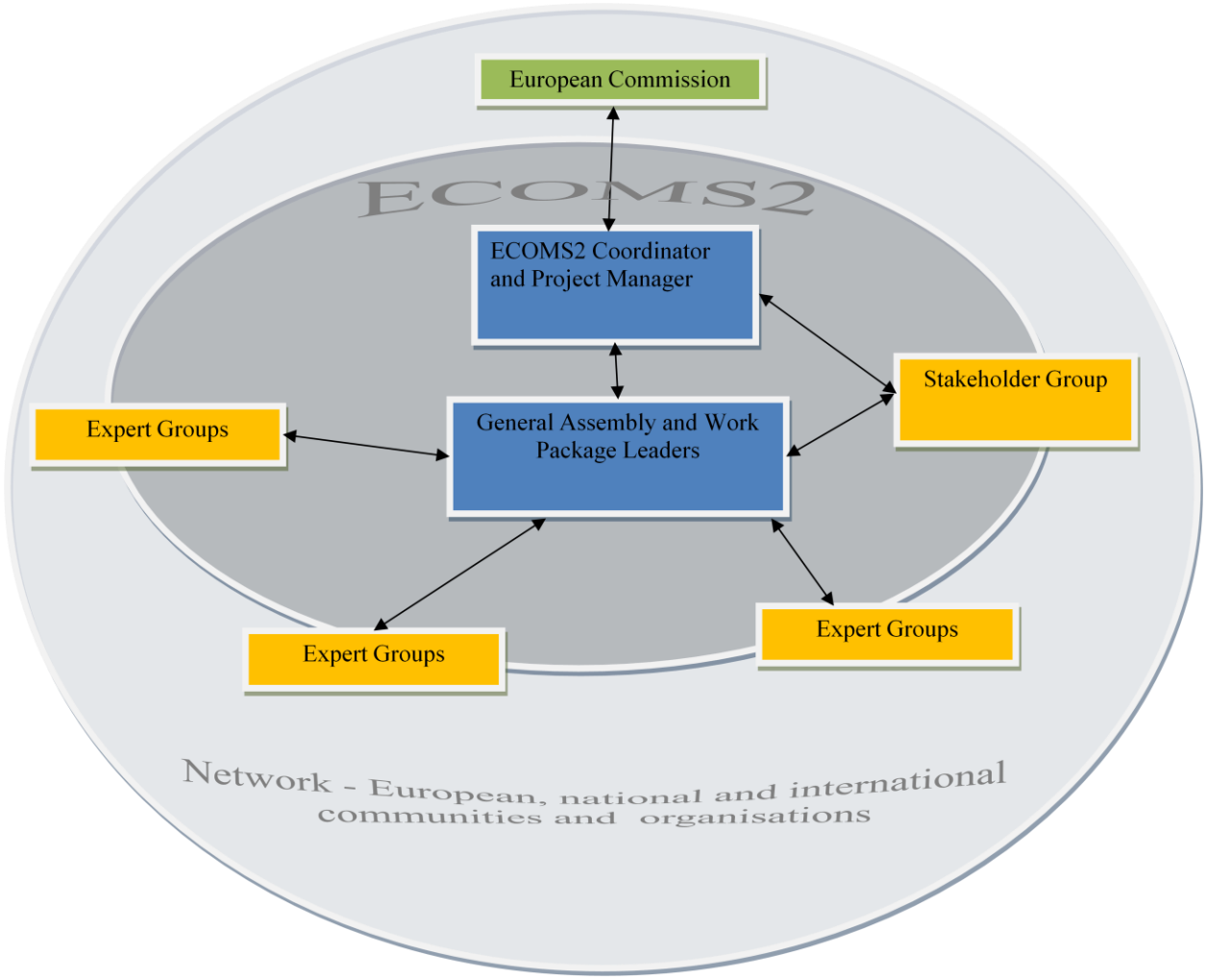


Figure 3.2.1: ECOMS2 Management Structure

3.2.1 Overview of structure and decision-making bodies/mechanisms

Details of the components of the management structure, identified in Figure 3.2.1, are given in the sections below, together with the specific roles and decision making responsibilities of individuals associated with each group. In summary:

- The General Assembly is the overall decision making body for this Action and will be the supervisory body ensuring a successful execution of the project. It constitutes representatives from all 11 institutions, and will be chaired by the Coordinator. It is the arbitration body for managing any associated project issues (such as ethics, intellectual property, disputes and complaints);
- The Coordinator is responsible for the overall coordination of the Action, acting as point of contact for the European Commission. The Coordinator has ultimate responsibility for delivering the Action;
- The Project Office will conduct the day-to-day management of the project on behalf of the General Assembly and the Coordinator;
- The Work Package Leaders (and their co-leads) have responsibility to ensure delivery of their work package's tasks and deliverables, but also to work closely with the Coordinator to provide support for delivering against the overall objectives of the Action;

- A number of Expert groups, comprised of multi-disciplinary experts from the ECOMS2 partners and network, will form for finite periods of time during the Action;
- The Stakeholder Group will influence and advise on activities and priorities of the Action from a stakeholder (including user) perspective.

3.2.2 General Assembly

The General Assembly consists of all of the partner institutions, and will have oversight of the entire Action. It will be chaired by the Coordinator. The purpose of the General Assembly will be to:

- Act as the overall decision-making body for the Action and be responsible for agreeing on how to implement these decisions;
- Ensure delivery of the objectives, deliverables and milestones of the Action;
- Oversee political and strategic orientation of the Action;
- Share and disseminate knowledge as widely as possible across and beyond the Action;
- Agree the work plan and any changes to the plan, and monitor its implementation
- Ensure the proper operation of the consortium, including financial management, reporting and liaison with the European Commission;
- Make and approve recommendations in the event of changes to the consortium composition or budget allocations;
- Act on any necessary alterations to the Consortium Agreement (agreement which specifies the relationship amongst the partners), including changes in intellectual property rights;
- Recommend any resolutions of any disputes and complaints between partners
- Oversee and manage risks, benefits and issues (including any ethical issues) of ECOMS2
- Oversee the cross-cutting theme of gender balance.

The General Assembly will delegate the management of some of its responsibilities to other bodies within the management structure.

General Assembly meetings will be held remotely (i.e., via video-conferencing/Skype/WebEx) as opposed to face to face. These will be every 6-12 months; with the European Commission in attendance if they wish. Due to the nature of the work plan, and the nature of the activities this action links to, there will be plenty of opportunities for the partners to meet physically at the meetings and events they attend, thus allowing informal face-to-face discussions.

In principal, formal approval by the General Assembly to any decisions taken outside of the core General Assembly meetings, shall be given by e-mail vote. The framework for these voting procedures will be laid down in the Consortium Agreement.

No launch event is planned for the start of ECOMS2; however, WP6 will ensure that there is an appropriate level of communication associated with the start of ECOMS2. A physical meeting at the start of the Action can be arranged at the request of the European Commission if deemed essential.

3.2.3 Coordinator and Project Office

The ECOMS2 CSA will be coordinated in all the administrative, financial and management aspects by the Met Office. This is at the delegation of the General Assembly. Day-to-day management tasks are listed below:

i) Implementation and maintenance of the Grant Agreement and the preceding Consortium Agreement. The Consortium Agreement will layout the rules for participation of the 11 partners, including agreement of ownership and

access to knowledge and results (i.e., Intellectual Property Rights), the processes for making decisions, and also for resolving disputes;

(ii) Overall legal, financial, administrative management and reporting, including:

- Designing and maintaining partner specific templates for collecting inputs into the required European Commission documents;
- Implementing and maintaining a project-specific process for reporting (internal reporting in order to monitor progress and activities, and external reporting to the European Commission through periodic reports);
- Preparing, and collecting the information required for, the periodic reports to the European Commission;
- Reporting all publications and dissemination activities resulting from this Action to the European Commission;
- Preparing for, and post-processing, the reviews from the European Commission including support in the implementation of recommendations;
- Handling of day-to-day requests from partners and external bodies, and project correspondence;
- Financial management – including transfer of project funds to partners, providing clarification on any financial issues, monitoring and controlling the project budget;
- Adaptation of project and management structure after changes to the work plan and/or consortium;
- Scheduling, organisation, chairing and recording of meetings relating to the management of the project, plus ensuring all actions and outcomes are taken forward.

(iii) Appropriate management of gender aspects, ethics issues, disputes/complaints and risks/issues/benefits on behalf of the General Assembly of partners;

Coordinator

The Coordinator will be responsible for the overall coordination of the Action; ensuring consistency across the CSA, managing progress and ensuring compliance with the work plan and objectives. Other coordination activities include ensuring synthesis between the work packages so that activities are aligned, avoiding duplication of effort and identifying any gaps. The Coordinator will act as the intermediary between the European Commission and the Action, including communicating any significant achievements and proposed deviations from agreed plans; will coordinate and monitor the gender balance strategy, the knowledge and innovation management strategy and oversee participation in the Open Research Data Pilot. The Coordinator will have overall responsibility for the management of the risks within the Action; will chair the Stakeholder Group and represent it at the General Assembly; provide formal reports to the European Commission and will be assisted by the project manager.

Project Manager

Responsible for facilitating internal communication within the project; providing support and planning tools for work package management; scheduling and organising meetings of the project including providing agendas and minutes; managing, monitoring and reporting of project finances and budget; management of the risks, benefits and issues registers; production of Gender Action Report; providing administrative support to the Coordinator. The project manager reports to the General Assembly. Specialist support (e.g. finance, legal and communications) will be provided to the Project Manager by the appropriate Met Office departments (who have extensive experience of European research programmes and climate service initiatives); and other partner institutes when necessary.

3.2.4 Work Package Leaders

Work Package Leaders (WPL) and Co-Leaders have been appointed. WPLs will have the autonomous responsibility for coordinating the tasks within their work package to contribute to the delivery of the Action's goals and deliverables. The WPLs will ensure that: the work and activities at work package level are carried out according to plan and budget; deliverables are produced and milestones are attained on time; and decisions taken at the General Assembly level are implemented at work package level. They will make sure that the progress of their work package is

monitored and reported on, including highlighting any departure from the work plan, disputes or difficulties as early as possible to the Coordinator.

3.2.5 Expert Groups

A number of Expert groups will form for finite periods of time during the Action. These will be small groups comprising of multi-disciplinary experts from the network and ECOMS2 partners. These groups will be coordinated through WP4, drawing from the network coordinated through WP2, and they will assess and address new challenges and emerging needs relating to Earth System modelling and climate services.

3.2.6 Stakeholder Group

A number of stakeholders will be identified and invited to form the Stakeholder Group through the network identified in WP2, ensuring appropriate representation across sectors, regions, activities and initiatives. As with the methodology to identify and form the network, a process will be developed to identify the entities that will form the Stakeholder Group. The Coordinator will chair the Stakeholder Group and will represent them at General Assemblies, communicating any concerns or points that they wish to raise. All stakeholders will be engaged in the network through the relevant activities and tasks in the WPs, in particular through WP6.

3.2.7 External Expert Advisory Board (EEAB) – not currently planned

The nature of the CSA is such that finding independent external advisors who are not part of the network is not necessary. Anyone identified to be on the Board would also be a natural addition to the network. An EEAB has therefore not been formed, but it can be formed if required by the European Commission. Such a group could consist of distinguished international experts whose specialist subject matter is relevant to this Action. They could provide independent evaluation and recommendations about improvements to the Action's work plan, progress and direction. The EEAB would receive information detailing the project status and results from the Coordinator. However, the nature of the CSA's activities provide ample opportunity for independent comments and recommendations, seemingly rendering an external Advisory Board unnecessary.

3.2.8 How the organisational structure is appropriate to ECOMS2

ECOMS2 brings together a small number of European partners and comprises only six work packages. This means that the management structure can be kept simple and efficient to reflect these small numbers, and also optimise important interactions between all parties. Each partner (apart from ECMWF) is either a work package leader or co-leader. So ECOMS2 only has one management body, which is its General Assembly.

ECOMS2 aims to facilitate networking, coordination, dialogue and dissemination within the complex landscape of European and international Earth-system modelling and climate services. The internal structure therefore has many linkages and there are a vast number of external interactions planned. It is therefore important that all partners are kept well involved at all times. All partners will be involved in major decisions that need to be made.

The General Assembly will delegate some responsibilities and decisions to specific subsets of the General Assembly. For example, the management of specific areas of importance such as gender, ethics and IPR will be carried out centrally through the Project Manager and Coordinator.

As the Stakeholder Group formed from the network is central to this action, it is important that these stakeholders are represented consistently at all levels. Hence the Coordinator will be responsible for ensuring that the stakeholders are represented at the General Assembly and thus considered in any relevant decisions.

The management structure has been designed to ensure efficient communication channels exist between the ECOMS2 partners, Expert groups, Stakeholder Group, network and the European Commission.

3.2.9 List of Milestones

Table 3.2.1 details the project's milestones. These milestones will ensure that the project's progress is continually monitored.

Table 3.2.1: List of milestones

Milestone number	Milestone name	Related work package(s)	Estimated date	Means of verification
MS1	Gender Action Plan	1	M3	Plan written and agreed by consortium
MS2	Design and implement internal communication platform and tools	1	M3	Internal communication platform ready for use
MS3	Identification of the relevant parties to be involved in the network	2	M6	General Assembly to approve a list of parties
MS4	Procedure for quality reports ready	3	M10	Report approved by General Assembly
MS5	Planning document for the 1st Festival (including structure, location, invitation list)	5	M10	Document written and approved by General Assembly
MS6	Identification of suitable forums for networking	2	M12	General Assembly to approve the planned forums
MS7	Planning document for the 2nd Festival (including structure, location, invitation list)	5	M30	Document written and approved by General Assembly
MS8	Scoping workshop to assess research needs on Earth-system modelling and climate services	4	M38	Workshop held with successful outcomes to enable recommendations to be made
MS9	Planning document for the 3rd Festival (including structure, location, invitation list)	5	M54	Document written and approved by General Assembly

3.2.10 Innovation Management

The Coordinator will be responsible for ensuring an effective process for innovation management within this Action, which will require a complete overview of activities. By nature of the structure of the consortium and the work packages within the project, both the technical and market aspects of innovation will be addressed and combined. There is both technical expertise, and user expertise within the consortium. Through the Coordinator these elements

will be brought together and will ensure that innovative approaches are taken, a set of clear principles are adopted, and that the partners have an environment within ECOMS2 where innovation is encouraged.

The goal is to use creativity and innovation within each of the work package tasks in order to meet ECOMS2's objectives. At each stage of the action, innovation will be used in slightly different ways. Within WP2 the focus will be on the creation of the network and will look at innovative ways to create the required relationships to engage with this network, and ensure that they remain in place beyond their initial formation. Enhancing effective communication and dissemination activities (all carried out by WP3, 4, 5 and 6) will involve innovative methods and ideas, so that outreach and engagement is optimised. For example, the festivals will be organised in such a way that they will be attractive to targeted attendees. The internet communication platform developed in WP6 will be designed by experts in IT and communications to encourage optimal use by a variety of target audiences.

The work packages are designed so that there will be close interactions, and feedbacks, between them. To ensure that the action responds to the information gained and feedback from the network in the most efficient way, the timings of the deliverables and milestones of the work packages have been planned to allow sufficient time to incorporate feedback. This ensures the action is responsive to the valuable insight that will be provided, and ensure that the outcomes are of clear value to the European Commission and Earth-system modelling and climate service communities.

Several partners (including the Met Office) have established innovation management processes in place and innovation specialists. ECOMS2 will be able to draw on the experience that it has in successfully integrating new ideas and ways of working into its activities and outcomes.

3.2.11 Further Management Considerations

Gender Balance

The promotion and monitoring of gender equality throughout the Action will be the responsibility of the Coordinator, with support from the Project Manager. The ECOMS2 consortium is committed to meeting the Horizon 2020 gender balance objectives as fully as possible. Therefore, a Gender Strategy and Action Plan will be produced by month three, and updated during the Action. This will ensure that gender aspects of the Action are fully considered within the activities that are being carried out, and that ECOMS2 acts to promote gender equality wherever possible. In ECOMS2, eight of the 27 (30%) named individuals to work on ECOMS2 are female, and two of work package leaders/co-leaders are female.

Ethics

The Ethics criteria have been considered. However, the nature of the activities proposed under ECOMS2 means that there are very few ethical issues and it is not anticipated that the criteria will be applicable.

Consideration has been given to the external groups and organisations who will be involved in the Action, and only organisational data will be collected as opposed to any personal data. Where commercially sensitive data is concerned, this will be identified and the relevant information will be withheld accordingly. All information will be gathered in accordance with guidelines laid down by the European Commission, and national legal requirements.

Knowledge Management

The partners have a collective responsibility to ensure that any knowledge collected, generated and disseminated by this Action, is appropriately protected and shared (intellectual property). At the heart of ECOMS2 is the collection of research information, and ECOMS2 will synthesise this knowledge and disseminate it. KNMI and CMCC will play a

key role in this through WP6. However, the Coordinator is responsible for the action's knowledge management strategy and ensuring it is kept up to date and that the associated protocols are adhered to.

3.2.12 Critical Risks for Implementation

The General Assembly will be responsible for dealing with the risks, issues and benefits realisation of the Action. The Coordinator will be responsible for management of these risks, including mitigating the risks, and proposing preventative and corrective solutions in case of their occurrence. Day-to-day maintenance of the risk register will be undertaken by the Project Manager.

Critical risks to the Action's implementation, which have the potential to impact the objectives being achieved, have been identified and described in Table 3.2.2 below. These risks will be actively managed and monitored throughout the period of the Action, as will any new risks that arise. Where there are risks that exist specifically within individual WPs, these have been identified already and the design of the WPs has taken account of preventative measures for each.

Table 3.2.2: Critical Risks for Implementation

Description of risk	WPs involved	Proposed risk-mitigation measures
Lack of effective involvement of key nations or regions in Europe	WP2	Ensure that network created (WP2) includes appropriate representation from activities and organisations in key nations and regions. Consortium members, their networks, and the evolving ECOMS2 network will be drawn upon to ensure this is achieved.
Ineffective framework arising from stakeholder fatigue leading to lack of engagement	WPs 2, 5, 6	Ensure that network is well managed (WP2) with compelling plans for stakeholder engagement activities (WP5 and WP6) and that feedback from Festival participants is taken into account
Individual partners are unable to complete tasks assigned to them	All	Regular communication within WPs and with the Coordinator will ensure that any potential problems will be identified quickly, actions can be discussed, and tasks can be reassigned as required
Insufficient engagement from key ongoing and future European Earth-system modelling and climate service initiatives	All	Ensure the network is well managed (WP2), the mapping and analysis are actively undertaken with proactive engagement with the key initiatives (WP3), the Festivals (WP5) and other communication and dissemination activities (WP6) are designed to be sufficiently inspiring to ensure effective engagement.
Non-objectivity and partiality (personal, political or organisational).	All	Ensure open debate on issues allowing everyone to discuss issues as objectively and impartially as possible, and encouraging everyone to do so. General Assembly can discuss resolutions if needed.

3.3 Consortium as a whole

The ECOMS2 consortium, consisting of 11 partners from across Europe, is a combination of leading figures and institutions who are involved in Earth system modelling and climate services. The consortium brings together a critical mass of expertise. It was decided to form a small (and affordable) consortium of partners with the appropriate mix of skills, with geographic reach across Europe and strong engagement, networking and reach in this arena.

The consortium brings together a critical mass of expertise in an effective way, as highlighted in the following bullet points:

- The consortium is not too large to become unmanageable, and is efficiently sized to properly utilise the funding and resources available to the CSA;
  An alternative approach could have been to form a very large consortium representing a wide range of users, information providers and international activities. Such a large consortium would create project management challenges and ineffective use of available funding;
- Organisations and key people in the consortium are representatives of key initiatives and projects in the European arena of Earth-system modelling and climate services;
- ECOMS2 has representatives and coordinators of existing key European projects and initiatives. Details about the consortium's current key activities are presented in Section 1.3;
- ECOMS2 has very strong engagement and networking into national, European and international activities;
  The consortium has been deliberately chosen as it has existing engagement at each of the national, European and international level. Again details are provided in Section 1.3 under "*National and international activities linked to the project*". Key examples are:
  - National level: There are three National Met Services (NMSs) within the consortium (Met Office, KNMI and SMHI) which are at the heart of national activities for Earth-system modelling and climate services. Other consortium members are in similar positions within their countries. Consortium members are closely involved in a multitude of programmes at national level. For example, the Met Office, in partnership with the UK's Natural Environment Research Council (NERC) coordinates a Joint Weather and Climate Research Partnership. One of the primarily areas of focus of this programme is the UK Earth System Model project.
  - European level: For example, Climate-KIC is the largest public-private innovation partnership focusing on climate change challenges and RHMSS has established the sub-regional South-East European Virtual Climate Change Centre (SEEVCCC).
  - International activities: Globally coordinated programmes are represented; with some primary examples being links to WCRP, the UN's Global Framework for Climate Services (through Met Office, KNMI, SMHI) and Climate Services Partnership (Met Office, HZG).
- The consortium has locations spread across Europe, thus maximising its geographic reach across Europe;
- The consortium has a mix of skills covering networking, research and innovation, service development and delivery, user understanding and engagement, communication and dissemination. The cross-disciplinary mix of skills that the partners bring to ECOMS2 ensures that all categories within the network are represented by the consortium; from the user communities (i.e. European Environment Agency through CMCC; national governments through the NMSs and Climate Services Centres) to information providers (i.e., CMIP). Communication and dissemination expertise was also considered when forming the consortium. KNMI and CMCC have specific communications teams and IT experts who will be involved in ensuring optimal outreach.

All of the above bullet points demonstrate that the consortium provides the solid foundation and starting point for carrying out the activities planned under this Action. There is a wealth of existing knowledge and networks represented by the partners across all categories of the proposed CSA network. Careful consideration was given to the combination of partners and appropriate mix of expertise, so that the optimal set of consortium partners chosen gives fair representation of the current landscape and optimal outreach capacity.

The resulting consortium is a renowned, work-leading set of respected partners; who will bring credibility to ECOMS2. This will therefore command trust from all entities that ECOMS2 links with, so that they are more likely to engage with the activities of the Action.

The core consortium is represented by:

- Dr Chris Hewitt and Dr Carlo Buontempo at Met Office as coordinator, key climate modelling and service centre in Europe, coordinator of relevant FP7 and Horizon 2020 projects
- Dr Patrick Monfray at ANR as senior nominated JPI-Climate representative
- Prof Francisco Doblas-Reyes at BSC as a key climate modelling and service centre in Europe
- Dr Silvio Gualdi and Dr Antonio Navarra at CMCC, as a key climate modelling and service centre in Europe, especially for the Mediterranean Region, and leading the EEA topic centre on climate change adaptation
- Prof Ralf Toumi and Harilaos Loukos of the Climate-KIC (supported by the EIT)
- Dr Jean-Noel Thepault at ECMWF as Copernicus Climate Change Service operator
- Dr Daniela Jacob and Prof Maria Manez at HZG, as a key climate modelling and service centre in Europe
- Dr Sylvie Joussaume and Dr Eric Guilyardi at CNRS-IPSL as a key climate modelling centre in Europe, and as representative of ENES and IS-ENES, key infrastructure activities
- Prof Bart van den Hurk at KNMI as a key climate modelling and service centre in Europe, coordinator of relevant Horizon 2020 projects
- Dr Slobodan Nickovic at RMHSS as a key climate modelling and service centre particularly in south-east Europe where RHMSS has established the sub-regional South-East European Virtual Climate Change Centre (SEEVCCC)
- Ralf Doescher at SMHI as a key climate modelling and service centre in Europe, host of the CORDEX office, coordinator of relevant Horizon 2020 projects

As of 1st January 2014, Serbia became an Associated Country to Horizon 2020. Therefore, RHMSS is now eligible for funding under the Horizon 2020 Programme.

We believe the ECOMS2 consortium contains the necessary expertise to realise the Action's objectives.

3.4 Resources to be committed

The total requested European Commission contribution for ECOMS2 is 2,994,373 €. The 11 partners have offered 273 person months to the Action.

3.4.1 Financial planning approach

The largest percentage of the funding for ECOMS2 is required for personnel costs, as the project will rely on the skills and many years of expertise of the partner organisations and key personnel involved. Therefore it was key that the budget was calculated using an estimation of the costs associated with these experts that have been identified to deliver the action's objectives. As tasks and the scope and description of ECOMS2 developed; the associated estimate of personnel resources developed. This iterative approach to calculating the required budget will ensure a good estimate of the resources required; and associated funding required.

Partners assessed their own 'other direct cost' items (travel budget, costs for hosting workshops, meetings, festivals etc.) after the work packages and associated travel and meeting plans were drafted. These budgets were then challenged and compared to ensure consistency. It is appreciated that as this is a coordinating action, there will be a substantial amount of travel required. However, all unnecessary travel will be avoided, and alternative forms of communication will be used if possible (i.e., teleconference/Skype); certainly in the case of internal meetings and discussions.

3.4.2 Distribution and breakdown of resources

3.4.2.1 Personnel costs

Personnel costs represent 75% (including associated indirect cost) of the budget. Table 3.4.1 shows the amount of staff effort broken down by beneficiary and by work package. WP2 has approximately 22% of the budget as it is a core activity to create, manage and engage with the vast network. Whilst WPs 2, 3, and 4 carry out all of the coordination, facilitation and support activities of the CSA, directed dissemination and communication of the methodologies and outcomes from these activities is key. Therefore, another 22% of the budgeted number of person months will be linked to dissemination activities.

Management activities – 25 person months (PM) are allocated to project management and the coordination of ECOMS2. These are allocated to the Met Office. All partners will undertake some (relatively minor) activities relating to project management but this has not been itemised under WP1, but will be conducted through their activities across the CSA. ECOMS2 is aiming for some flexibility around allocation of budget to allow for these activities by partners (specifically CMCC and KNMI, who will be involved in developing the Data Management Plan).

Table 3.4.1: Summary of staff effort

	WP 1	**WP 2**	**WP 3**	**WP 4**	**WP 5**	**WP 6**	**Total Person Months per Participant**
1/Met Office	**25**	**10**	6	6	3	4	**54**
2/ANR	0	**26**	0	0	0	0	**26**
3/BSC	0	6	**15**	6	0	3	**30**
4/CMCC	0	2	4	2	6	**20**	**34**
5/Climate-KIC	0	5	5	3	**3**	4	**20**
6/ECMWF	0	1	1	0	0	0	**2**
7/HZG	0	3	3	3	**15**	3	**27**
8/CNRS-IPSL	0	3	3	**15**	0	0	**21**
9/KNMI	0	3	3	0	0	**20**	**26**
10/RHMSS	0	0	5	**6**	0	0	**11**
11/SMHI	0	0	**14**	3	0	5	**22**
Total Person/Months	**25**	**59**	**59**	**44**	**27**	**59**	**273**

3.4.2.2 Other direct costs

Travel budget – Each partner drafted a meeting/conference plan and associated budget. 12% of the CSA's budget (including associated indirect cost) has been put aside for travel. This includes a small allocation for some members of the Stakeholder Group and Expert groups who may require travel funds, including funds to attend the festivals.

Others – In addition to attending externally organised meetings/events, there will be meetings organised by the partners themselves. For example, WP4 plans two large foresight meetings in order to discuss future research requirements, with the appropriate expert groups in attendance. The three festivals in WP5 will showcase the outcomes, activities and status of the CSA. In order for these festivals to be successful, adequate funding needs to be provided for their organisation and running. Therefore, the budget calculated for the organisation of the festivals was based on experience with running other major events of this size. The draft dissemination and exploitation plan detailed in Section 2.2a details a host of reports and targeted material that will be published open access. Therefore, 58,000 € has been put aside for associated publication and printing costs.
Two partners (Met Office and HZG) will require **external audits** (for certification of financial statements).

Nine of the partners have other direct costs budgets that are greater than 15% of their personnel costs. It is not surprising that this is a large proportion of the partners, as central to the CSA is the requirement to attend and host appropriate meetings, workshops, conferences etc. Table 3.4.2 provides the breakdown in detail of these other direct costs.

Table 3.4.2: Summary of other direct costs for participants (all excluding Climate-KIC and SMHI)

1/ Met Office	Cost (euros)	Justification
Travel	17,000	Travel/subsistence associated with management, coordination & high level engagement (WP1)
	14,500	Travel/subsistence to WP meetings and events (WP2, 3, 4, 6)
	18,000	Travel/subsistence to Festivals (WP5)
	10,000	Travel/subsistence to Festivals (WP5)
Equipment	0	None
Other goods/services	7,000	Logistical support for organising management & other 'project' meetings
	3,000	Technical support for setting up & managing e-mail lists and internal wiki
	7,000	Publication/open access & printing charges (WP6)
Total	76,500	

2/ ANR	Cost (euros)	Justification
Travel	30,000	Travel/subsistence to WP meetings, and events which will facilitate creation and management of network (WP2)
Equipment	0	None
Other goods/services	0	None
Total	30,000	

3/ BSC	Cost (euros)	Justification
Travel	22,000	Travel/subsistence to WP meetings and events (WP2, 3, 4, 6)
Equipment	0	None
Other goods/services	2,000	Logistical support for organising/hosting management meetings
	6,000	Publication/open access & printing charges (WP6)
Total	30,000	

4/ CMCC	Cost (euros)	Justification
Travel	8,000	Travel/subsistence to WP meetings and events (WP2, 3, 4)
	3,000	Travel/subsistence to Festivals (WP5)
	18,000	Travel/subsistence in association with dissemination and communication in capacity as WP6 co-leader
Equipment	0	None
Other goods/services	20,000	Publication/open access & printing charges (WP6)
Total	49,000	

6/ ECMWF	Cost (euros)	Justification
Travel	15,400	Travel/subsistence to WP meetings and events (WP2, 3)
Equipment	0	None
Other goods/services	0	None
Total	15,400	

7/ HZG	Cost (euros)	Justification
Travel	13,600	Travel/subsistence to WP meetings and events (WP2, 3, 4, 6)
	24,400	Travel/subsistence for festival attendees (WP5)
Equipment	0	None
Other goods/services	70,000	Technical and logistical support in organising/hosting the three festivals
	2,000	Laptop
	5,000	Publication/open access & printing charges (WP6)
Total	115,000	

8/ CNRS-IPSL	Cost (euros)	Justification
Travel	10,000	Travel/subsistence to WP meetings and events (WP2, 3, 4)
	20,000	Travel/subsistence for members of Expert groups (WP4)
Equipment	0	None
Other goods/services	20,000	Costs for small expert meetings and two large foresight meetings (WP4)
Total	50,000	

9/ KNMI	Cost (euros)	Justification
Travel	20,000	Travel/subsistence to WP meetings and events (WP2, 3, 6), mainly in association with dissemination in capacity as WP6 leader
Equipment	0	None
Other goods/services	20,000	Publication/open access & printing charges (WP6)
Total	40,000	

10/ RHMSS	Cost (euros)	Justification
Travel	35,000	Travel/subsistence to WP meetings and events (WP3, 4)
Equipment	0	None
Other goods/services	0	None
Total	35,000	

Large research infrastructure – None of the participants will be declaring costs of large research infrastructure under Article 6.2 of the General Model Grant Agreement.

Sub-contracts – CMCC, HZG and KNMI are planning to sub-contract discrete elements of the ECOMS2 work. These partners will comply with applicable national law on public procurement procedures and the rules for sub-contracting as laid out in the Horizon 2020 General Model Grant Agreement (Article 13). This includes awarding the sub-contracts under conditions of transparency and equal treatment and ensuring best value for money. See Section 4.2 for further details of the planned three sub-contracts.

3.4.3 Contributions from beneficiaries

ECMWF is contributing two person months of effort to this CSA, but is not requesting any EU funding. This is in their capacity as Copernicus Climate Change Service (C3S) operator, thus ensuring that ECOMS2 is intrinsically connected to the strategies and activities of C3S. Their costs have been estimated, but will not be reimbursed and will not be taken into account for the calculation of the grant (in accordance with Article 9 of the General Model Grant Agreement).

Declarations of support

The ECOMS2 consortium has not formally approached organisations or programmes regarding their potential involvement in the CSA's activities. However, some key programmes have already committed their support to the concept, approach and combination of partners that ECOMS2 proposes. Here are extracts from the declarations of support that have been received from WCRP and CORDEX.

William J. Gutowski, Jr, Co-chair (CORDEX Science Advisory Team)

"We are writing as the co-chairs of the Science Advisory Team of the World Climate Research Programme's (WCRP) Coordinated Regional Downscaling Experiment (CORDEX) to express our support for the formation of the ECOMS2 consortium in response to the European Commission call for a Coordination Support Action on Earth System Modelling and Climate Services. The choice of partners and structure of ECOMS2 will ensure an effective coordination of a large body of activities in this area, including users, providers and intermediaries. The proposal is designed to merge the networks and expertise of a large group of active European entities, including JPI-Climate, Climate-KIC, Copernicus Climate Change Service, CORDEX/CMIP6, European Climate Services Partnership and a number of ongoing and planned European and national projects in the field of climate modelling and climate services. The ambition is to reduce fragmentation and improve synergies between national, European and international activities. The consortium consists of members that have active links with other entities, and this ensures an efficient and fairly complete coordination of ongoing activities. The coordination will lead to a periodic synthesis of ongoing actions, a targeted dissemination of this synthesis to a range of stakeholder groups, and a periodic event that provides an excellent networking and dissemination opportunity.

CORDEX is a focal point of the regional climate modelling community, not just in Europe but across the globe and as such would be an important stakeholder for the potential ECOMS2 project to determine the regional climate community landscape. Further we would hope that the proposed structure of ECOMS2 would facilitate knowledge exchange between the regional and global modelling communities, which has been highlighted as a clear need.

In conclusion we feel that this proposal has both much to offer, and much to benefit from, the CORDEX community. Should it be successful we look forward to becoming a key stakeholder of ECOMS2."

Dr David Carlson, Director (WCRP Joint Planning Staff)

I am writing on behalf of the World Climate Research Programme (WCRP) in support of the proposal which you are leading its preparation and submission to the EU Horizon 2020 Coordination and Support Action, in the area of earth system modeling and climate services (ECOMS2).

WCRP is very pleased with the objectives and expected outcomes of the project, aligned very nicely with WCRP work plans: to develop a synergetic Europe-wide framework for earth-system modeling and climate service activities through coordinated modeling, observations and service infrastructure initiatives; and to enhance communication and dissemination mechanisms through multi-disciplinary community efforts. Such a project will greatly contribute to address WCRP's emerging priority on providing actionable climate information for regional and global applications.

I believe the proposal will make substantial contributions to bridge our scientific knowledge to service provision, and to demonstrate the best practice for communication among the relevant climate scientific communities, funding bodies and user communities. Once the project is realized, it will directly contribute to the WCRP Coordinated Regional Climate Downscaling Experiment (CORDEX) effort, and to responding to the needs of the Vulnerability, Impact and Adaptation (VIA) community by enhanced dissemination of climate information. WCRP also recognizes the experience and strength of the proposed team and leadership, and strongly supports the international partnership as described.

In summary, I expect substantial progress and benefit from the expected project on WCRP's work programmes in delivering robust and trustworthy climate information to European researchers, policymakers and the public. We will be pleased to respond to any inquiry in the process of evaluation.

Cordially,

Dr David Carlson
Director, WCRP Joint Planning Staff

4. MEMBERS OF THE CONSORTIUM

4.1 Participants (applicants)

Participant 1: Met Office (Met Office)

The Met Office was founded in 1854 and has been the UK's National Meteorological Service (NMS) since then. Throughout its long history, the Met Office has been at the forefront of meteorological scientific advance and in the last few decades has become one of the recognised world leading organisations in the fields of climate science and climate services through its Met Office Hadley Centre. There are over 500 people actively involved in all areas of weather and climate science, including observational research, weather/climate model development and assessment on all timescales from days to centuries, as well as climate impacts and consultancy for both governmental and industry partners.

The Met Office has strong connections with Earth-system modelling and climate service organisations in Europe and world-wide, through extensive and numerous collaborations on research projects and programmes, and involvement in a wide-range of international activities (such as CMIP, CORDEX, Intergovernmental Panel on Climate Change (IPCC) and WCRP). The Met Office has strong engagement with a range of actors including the European Commission, public sector and private sector organisations, often through contracted work as well as through personal and organisational collaboration. The Met Office also plays a central role in several key networks such as the European Climate Services Partnership. These connections, collaboration and experience will be used in the Met Office's role as WP2 leader as overall Coordinator and contributor to all WPs.

The Met Office will project manage this Action. There is a team of experienced project managers, who hold formal project management qualifications. This team has much experience in managing projects involving multiple partners and users. The Met Office has coordinated projects such as the FP6 ENSEMBLES project, FP7 EUPORIAS and EUCLEIA, and H2020 EUSTACE; and will coordinate H2020 PRIMAVERA which will begin in November 2015.

Short profile of key personnel involved:

Dr Chris Hewitt (male), Head of Climate Service Development [Coordinator and Co-leader WP2]: Chris is responsible for developing strategic partnerships and networks in Europe and worldwide to improve, and maximise the use of, climate service capabilities. He has over 20 years experience covering climate research, team leader, project manager and senior manager. He was the Science Coordinator for the EC's FP6 ENSEMBLES project on climate change and climate change impacts, and is currently the overall coordinator for the FP7 EUPORIAS project on climate services. He has considerable international networking experience through research collaborations, project and programme management, international panels, as a lead writer for the Global Framework for Climate Services, Chair of the WMO Expert Team on User Interfaces, a founding member of the international Climate Services Partnership, co-chair of the European Climate Services Partnership, and chair of ECOMS.

Dr Carlo Buontempo (male), Manager European Climate Service Development: After leading the Climate Adaptation team at the Met Office, Carlo is now leading the Climate Service team for Europe. His role is to develop new tools that help decision makers manage their climate risk portfolio. In this capacity Carlo is the scientific coordinator of EUPORIAS (www.euporias.eu), and the team leader for BRACED (UK Government funded programme focussing on building resilience and adaptation to climate extremes and disasters in the sub-Saharan and south Asian regions). He is also contributing to a number of other European-funded projects on climate services, such as H2020 IMPREX.

Carlo has extensive experience in generating regional climate scenarios through regional climate modelling and in developing numerical and statistical models to derive climate related information.

Relevant publications, and/or products, services, achievements:
Hewitt, C. D., S. Mason and D. Walland, 2012: The global framework for climate services, Nature Climate Change, DOI:10.1038/nclimate1745.

Hewitt, C. D., C. Buontempo, P. C. Newton, 2013: Using climate predictions to better serve society's needs. Eos, 94, 105--107, DOI:10.1002/2013EO110002.

Hewitt, C.D., lead writer of the Implementation plan for the Global Framework for Climate Services, World Meteorological Organization, 2014, http://www.gfcs-climate.org/sites/default/files/implementation-plan//GFCS-IMPLEMENTATION-PLAN-FINAL-14211_en.pdf

Jancloes, M., M. Thomson, M. M. Costa, **C. D. Hewitt**, C. Corvalan, T. Dinku, R. Lowe and M. Hayden, 2014: Climate services to improve public health. Int. J. Environ. Res. Public Health, 11. 4555—4559

Buontempo, C., C.D. Hewitt, F.J. Doblas-Reyes and S. Dessai (2014). Climate service development, delivery and use in Europe at monthly to inter-annual timescales. Climate Risk Management, 6, 1-5, doi:10.1016/j.crm.2014.10.002.

Relevant previous projects or activities:
Chair of current **ECOMS** coordination across EU FP7 climate modelling and climate service projects.

Lead writer (Dr Chris Hewitt) of the UN's Global Framework for Climate Services (**GFCS**) and ongoing ad-hoc secondee to **WMO** for GFCS.

Dr Chris Hewitt is a founding member of the international **Climate Services Partnership** (CSP) and co-chair of the **European Climate Services Partnership** (ECSP).

FP7 **EUPORIAS** project on climate services. Dr Hewitt is the Coordinator, and Dr Buontempo is the Science leader. EUPORIAS aims to develop end-to-end climate impact prediction services, operating on seasonal to decadal timescales, and demonstrating their value in informing decision making. Working closely with several European stakeholders, including those from the energy, health, forestry, agriculture, transport and water sectors, EUPORIAS is developing prototype climate services, thus the project will have many social and economic benefits for regional and national authorities and businesses.

FP7 **EUCLEIA** project (Met Office, Coordinator) focussing on the development and testing or attribution products with the aim of developing a quasi-operational attribution system. This will provide well verified assessments of how the risk of extreme weather events has changed in Europe due to human-caused climate change. EUCLEIA will deliver user-relevant information in the aftermath of extreme events and will work closely with targeted stakeholder groups, including the insurance industry, regional managers and policy makers, general public and the legal field.

Relevant significant infrastructure and/or any major items of technical equipment:
Not applicable.

No third parties involved.

Participant 2: National Research Agency, France (ANR)

ANR was established by the French government in 2005 to fund research projects based on competitive schemes, giving researchers the best opportunities to carry out their projects and paving the way for ground-breaking new knowledge. The main mission of ANR is to fund the best basic research but also targeted and applied research, in particular through partnerships between companies and public sector laboratories. It is also ANR's mission to strengthen international cooperation by contributing to the funding of international consortia in partnership with other funding agencies in Europe and beyond.

In the context of climate research, ANR has funded research projects through thematic programmes (2006-2008 "Vulnerability: Environment, Climate & Societies"; 2009-2011 "Global Environmental Changes & Societies"; 2012-2013 "Facing Societal, Climate & Environmental Changes"), as well as through its Blue Sky programme since 2005. Since 2014, climate-related issues are addressed mostly through the ANR Societal Challenge "Efficient resource management and adaptation to climate change". Between 2005 and 2014, over 300 research projects related to climate research have been funded with a budget circa 150 M€. Furthermore at transnational level, ANR has participated in Belmont Forum joint calls (2012, 2013, 2014 and 2015) and had initiated the first calls of JPI Climate in 2013 as call secretariat, then again in 2015 through a joint Belmont Forum-JPI Climate call.

ANR is strongly involved in international climate programming, by vice-chairing the European JPI Climate GB and co-chairing the international Belmont Forum, a network of main research funders in environment and climate fields involving post-industrialised countries (G7), European Commission (DG R&I) and emergent countries (BICS). These capacities demonstrate why ANR is best positioned to co-lead WP2, in particular Task 2.2 associated with the development of an international fora to ensure an effective network.

Short profile of key personnel involved:

Dr Patrick Monfray (male), Deputy Head of "Environment, Biological Resources, Ecology, Earth Science and Astronomy" Department at ANR [Co-leader WP2]: As Research Director of CNRS (Centre Nationale de la Recherche Scientifique), in the 1990's he developed the French WMO atmospheric CO_2 monitoring network and innovative coupled climate-carbon simulations, now a reference for IPCC. Patrick co-founded the Integrated Marine Biogeochemistry and Ecosystem Research within ICSU/IGBP (International Council for Science/International Geosphere-Biosphere Programme) and ICSU/SCOR (Scientific Committee on Oceanic Research). In the 2000's, he headed the Laboratory of Space Geophysics and Oceanography (Toulouse), and then the Ocean-Atmosphere Department at CNRS/INSU (Paris), supervising 30 French laboratories. In 2010, he joined ANR to supervise global environmental change programmes. He has been vice-chair of the European JPI Climate since 2013, and also co-chair of Belmont Forum and member of Future Earth Governing Board (2012-2015).

Relevant publications, and/or products, services, achievements:

Friedlingstein P., L. Bopp, P. Ciais, J.-L. Dufresne, L. Fairhead, H. LeTreut, **P. Monfray**, and J. Orr, Positive feedback between future climate change and the carbon cycle, Geophys. Res. Lett. Vol. 28, No. 8, p. 1543-1546 , 2001.

deYoung B., M. Heath, F. Werner, F. Chai, B. Megrey and **P. Monfray**, Challenges of Modelling Ocean Basin Ecosystems, Science, 304, 1463-1464 , 2004.

Hall J., D.A. Hansell, **P. Monfray** et al., IMBER Science Plan and Implementation Strategy. IGBP Report No. 52, IGBP Secretariat, Stockholm, 76pp., 2005.

The Belmont Challenge: A Global, Environmental Research Mission for Sustainability, Belmont Forum, 17pp, 2011. https://igfagcr.org/belmont-challenge.

Future Earth Initial Design, Report of the Transition Team, 100pp., 2013, Paris: International Council for Science (ICSU), ISBN 978-0-930357-92-4, http://www.futureearth.info/sites/default/files/Future-Earth-Design-Report_web.pdf.

Relevant previous projects or activities:
Co-organiser of the following transnational calls relevant for climate research:
2015 JPI Climate/Belmont Forum Call on Climate Predictability and Inter-Regional Linkages
2015 ANR Call on Societal challenge "Efficient resource management and adaptation to climate"
2013 JPI Climate Call on Societal Transformation in the Face of Climate Change
2013 ANR Call on Facing Societal, Climate & Environmental Changes
2012 G8HORCs and Belmont Forum Joint Call on Freshwater Security

Relevant significant infrastructure and/or any major items of technical equipment:

Not applicable.

No third parties involved.

Participant 3: Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC)
BSC, formed in 2005, has a mission to research, develop and manage information technology in order to facilitate scientific progress. At the BSC, more than 350 people from 40 different countries perform and facilitate research into Computer Sciences, Life Sciences, Earth Sciences and Computational Applications in Science and Engineering. The BSC is one of the four hosting members of the European PRACE Research Infrastructure as well as one of the first eight Spanish "Severo Ochoa Centre of Excellence" awarded by the Spanish Government.

The Earth Sciences Department of the BSC (ES-BSC) was established with the objective of carrying out research in Earth system modelling. The ES-BSC conducts research on emissions, air quality, mineral dust and global and regional climate modelling and prediction. It also undertakes research on the development of dynamical and statistical methods for the prediction of global and regional climate, on time scales ranging from a few weeks to several years, with a special focus on technologies that allow high-resolution modelling. The formulation of the predictions includes the development and implementation of techniques to statistically downscale, calibrate and combine dynamical ensemble and empirical forecasts to satisfy specific user needs in the framework of the development of a climate service.

Making progress in dynamical global climate modelling with a focus on monthly-to-decadal climate prediction is one of the main objectives of the ES-BSC, for which it uses EC-Earth and develops initialisation methods that lead to improvements in different aspects of the forecast quality. The assessment of the sources of predictability and the limitations of current climate prediction systems to exploit them, especially over Europe, inspires many of the publications by the unit.

The department operates the high-resolution air quality forecasting system CALIOPE for Europe and Spain; it also maintains the BSC-DREAM8b model for daily operational mineral dust forecasts for the Euro-Mediterranean region, collaborates with the WMO and the Spanish Meteorological Agency (AEMET) to host the Regional Centre for Sand and Dust Warning System (SDS-WAS) covering Europe, Northern Africa and the Middle East and is an active member of the EC-Earth consortium, whose global climate model is widely used at ES-BSC for research and teaching purposes.

Over the years, the department has been active in numerous European Projects including, including MEDSPA-91, INCO, EUREKA, EARLINET, DEISA, EC-EARTH, EARLINET-ASOS, ACTRIC, IS-ENES and FIELD_AC ,DENFREE (2011), IS-ENES 2 (2013), PREFACE (2013), EUCLEIA (2014) and EUPORIAS (2012), and two computing projects granted by PRACE (HighResClim and SPAITAC) focusing on high-resolution climate predictions. The Earth Science department is the coordinator of the European project SPECS (2012). We also participate and receive grants from the Spanish Government for various R&D projects: RUCSS, PICA-ICE and RESILIENCE.

The BSC is the most active actor in climate services research in Spain. It also connects with different WMO international activities (World Weather Research Programme (WWRP) through the Polar Prediction Project, World Climate Research Programme through the Working Group on Seasonal to Interannual Prediction and CLIVAR, the Global Framework for Climate Services). They are unique in southern Europe and are very active in the climate modelling community, in particular for climate prediction.

Short profile of key personnel involved:
Prof. Francisco Doblas-Reyes (male), Head of ES-BSC [Co-leader WP3]: Francisco is an expert in the development of seasonal-to-decadal climate prediction systems. He has been involved in the development of the EC-Earth climate forecast system since its inception. He was an IPCC lead author in the Fifth Assessment Report, serves in WCRP and WWRP scientific panels, is a member of the ENES HPC Task Force, has participated in a number of FP4 to FP7 projects and is author of more than 100 peer-reviewed papers. He is shaping BSC's plans for the development of a weather and climate modelling service that brings the latest developments of HPC and Big

Data research to the Earth science community, increasing at the same time the resilience of the European society to weather, air quality and near-term climate extremes.

Prof. José Mª Baldasano (male), Head of the Earth Sciences Department: José is a full Professor in Environmental Engineering in the Technical University of Catalonia (UPC). His research activities are in air quality and climate modelling. He is author of more than 320 publications, 360 communications and 200 invited lectures, 90 conferences, co-editor and author of 19 books in environmental topics, co-chairman of nine environmental international conferences, and has been advisor of more 90 companies and administrations. He is member of the Scientific Steering Committee of PRACE HPC European Initiative; and member of the IPCC. Has been member of "Steering Group of National Experts on Ambient Air Quality, European Union, Commission DG XI" for development of Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management.

Melanie Davis (female), Head of Climate Services Group in ES Department: Melanie is an expert in the development of climate services, with particular experience in the application of climate information in the renewable energy sector. She is responsible for the climate services group at the Department of Earth Sciences and coordinates the work of three scientists and a communications officer. She represents the BSC in the Climate Services Partnership and ensures the links of the department with a wide range of private actors.

Relevant publications, and/or products, services, achievements:

Kirtman, B., S. Power, J.A. Adedoyin, G.J. Boer, R. Bojariu, I. Camilloni, **F.J. Doblas-Reyes**, A.M. Fiore, M. Kimoto, G.A. Meehl, M. Prather, A. Sarr, C. Schär, R. Sutton, G.J. van Oldenborgh, G. Vecchi and H.J. Wang (2013). Near-term climate change: Projections and predictability. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.), Cambridge University Press, Cambridge, United Kingdom and New York, USA, 953-1028, doi:10.1017/CBO9781107415324.023.

Doblas-Reyes, F.J., J. García-Serrano, F. Lienert, A. Pintó Biescas and L.R.L. Rodrigues (2013). Seasonal climate predictability and forecasting: status and prospects. WIREs Climate Change, 4, 245-268, doi:10.1002/WCC.217.

Doblas-Reyes, F.J., I. Andreu-Burillo, Y. Chikamoto, J. García-Serrano, V. Guemas, M. Kimoto, T. Mochizuki, L.R.L. Rodrigues and G.J. van Oldenborgh (2013). Initialized near-term regional climate change prediction. Nature Communications, 4, 1715, doi:10.1038/ncomms2704.

Buontempo, C., C.D. Hewitt, F.J. Doblas-Reyes and S. Dessai (2014). Climate service development, delivery and use in Europe at monthly to inter-annual timescales. Climate Risk Management, 6, 1-5, doi:10.1016/j.crm.2014.10.002.

Caron, L.-P., L. Hermanson and **F.J. Doblas-Reyes** (2015). Multi-annual forecasts of Atlantic U.S. tropical cyclone wind damage potential. Geophysical Research Letters, doi:10.1002/2015GL063303.

Relevant previous projects or activities:

SPECS (http://www.specs-fp7.eu/) is a project funded by the European commission under FP7 and is coordinated by **Prof. Francisco Doblas-Reyes**. SPECS aims to deliver a new generation of European climate forecast systems, with improved forecast quality and efficient regionalisation tools; therefore producing reliable, local climate information over land at seasonal-to-decadal time scales. The improved understanding and seamless predictions will offer better estimates of the future frequency of high-impact, extreme climatic events and of the prediction uncertainty. New services to convey climate information and its quality will be used.

EU FP7 project **EUPORIAS** aims to develop end-to-end climate impact prediction services, operating on seasonal to decadal timescales, and demonstrating their value in informing decision making. Working closely with several European stakeholders, including those from the energy sector, EUPORIAS is developing prototype climate services, thus the project will have many social and economic benefits for regional and national authorities and businesses. Melanie Davis leads the energy sector user engagement activities, which are linked to the Resilience project referenced below.

RESILIENCE (http://www.euporias.eu/prototype/resilience-energy) is a nationally-funded project coordinated by **Melanie Davis.** This project aims to secure the provision of energy to society. The rapidly evolving energy system is in an increasingly vulnerable position due to the growth of highly variable wind power contributing to the total energy supply, and unusual temperatures affecting demand. Temperature and wind speed as a function of energy demand and supply are the focus.

APPRAISAL brings together all major activities on air quality and health assessment. Indeed the Consortium is composed of highly experienced groups working on both Air quality and Health impacts assessment and involved in the key projects related to these fields and of direct relevance to this Call. The Consortium Partners are spread over most of Europe ensuring that the review process is built on a representative set of EU information. Local/regional groups focusing their work on air pollution in EU hot spots (e.g. Po Valley, Benelux) are part of the Consortium, which guarantees that the methodologies in these non-compliant regions are directly considered in the review process and subsequent analysis. A group of stakeholders will work in close connection with the Consortium to ensure that there is a direct line of communication with the key policy makers. The main tasks for BSC in APPRAISAL are focussed on the emissions abatement strategies in Spain (national, regional and local level), modelling air quality assessment and quality assurance in air quality models.

EU FP7 **IS-ENES** and **IS-ENES2** combine expertise in climate modelling, computational science, data management and climate impacts. The BSC has two main tasks, one of them is to provide a publically available universal monitoring and scheduling solution for weather and climate modelling, whose name is Autosubmit. The other activity consists of improving the computational efficiency of climate models, such as EC-Earth and NEMO, and offering a solid link to the computational science community. This is a unique capability that no other climate modelling institution in Europe can offer.

The central point of entry to IS-ENES services, the ENES Portal, integrates information on the European climate models and provides access to models and software environments needed to run and exploit model simulations, as well as to simulation data, metadata and processing utilities. Joint research activities improve the efficient use of high-performance computers and enhance services on models and data. Networking activities increase the cohesion of the European ESM community and advance a coordinated European Network for Earth System modelling.

Relevant significant infrastructure and/or any major items of technical equipment:

Not applicable.

Participant 4: Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)
CMCC is a non-profit research institution (http://www.cmcc.it/). Its mission is to investigate and model our climate system and its interactions with society to provide reliable, rigorous, and timely scientific results, which will in turn stimulate sustainable growth, protect the environment, and develop science-driven adaptation and mitigation policies in a changing climate. CMCC also supports policymakers in setting and assessing costs of mitigation and adaptation policies.

Within the action, CMCC will be involved in WP2, where it will contribute to creating a network which will integrate and coordinate ongoing and future climate change research and innovation initiatives. In WP3, CMCC will contribute to producing the reports mapping the "State of European climate modelling and climate services". In WP4, it will be involved in the identification and analysis of the emerging needs related to Earth system modelling and climate services development in Europe, and in WP5, it will contribute to the organisation and delivery of the action's festivals. Finally, CMCC will be co-leader of WP6, where it will contribute to the development of the dissemination and exploitation plan, to the activity reports and to the editorial for targeted and general audiences. Also, CMCC will lead the design, the development and the management (content and infrastructure) of the Action's website and of the Internet Communication Platform; a digital, multimedia environment that will represent the major and official information channel of the action, providing clear information on the action's activities and outcomes.

Short profile of key personnel involved:
Dr Silvio Gualdi (male, Lead for CMCC), Senior Scientist at the Istituto Nazionale di Geofisica e Vulcanologia (INGV) and at CMCC [Co-Leader WP6]: At CMCC, Silvio leads the "Climate Simulations and Predictions" Division. He holds a degree in Physics (Modena, Italy) and a PhD in Geophysics (Hamburg, Germany) and has 20 years of experience in climate modelling and simulations. He is teacher for the "Science and Management of the Climate Change" PhD Programme of the University of Venice Cà Foscari and he is author of more than 70 peer-reviewed publications.

Dr Antonio Navarra (male), President of the CMCC: Antonio graduated in Physics in Bologna in and got a PhD at the Geophysical Fluid Dynamics Laboratory at Princeton University. He is Dirigente di Ricerca at the INGV, where he carries out his activity in the field of the climate simulation with numerical models. Dr Navarra teaches in the PhD Programme on "Science and Management of Climate Science" at Universita' Ca' Foscari, Venice. He is the author of several books and articles of general interest, and contributes to national newspapers.

Mauro Buonocore (male), CMCC Communication and Media Officer: Mauro coordinates the communication activities, including the development of online and offline communication strategies, the management of media contact, and the dissemination activities at the CMCC. He also coordinates the editorial activities of the magazine Climate Science and Policy. In recent years, he has been focusing his activities on the research of innovative techniques to disseminate and to divulgate scientific content to a large and differentiated public. His communication efforts are directed to traditional media (contributing to national newspapers and magazines) and to digital media such as web and mobile applications. He graduated with honors in Journalism, Communication and New Media at the Roma Tre University (2001). This experience ensures that Mauro is well placed to participate in WP6.

Andrea Russo (male) CMCC Information and Communication Technology Developer: Andrea deals with Information and Communication Technologies (ITC), management, administration and maintenance of the technological infrastructure for information and communication activities at CMCC's Communication Office. He is an expert developer in a variety of languages (e.g. Clojure, Common Lisp, Java, C, C++, Objective-C, Swift, JavaScript, ClojureScript, PHP). Andrea specializes in web services development (REST api, microservices), web applications using frameworks and libraries like React.js, OpenLayers and d3.js. He is also experienced in mobile applications for iOS. Andrea will therefore be working in WP6.

Carlo Palma (male), System Administrator: Carlo is an ITC developer and manager at CMCC**.** He is a software developer and system administrator with more than ten years of experience in designing, developing, maintaining and fixing server/desktop/web and mobile software applications. In recent years he has focused his efforts on creating sophisticated, imaginative and efficient back-end and front-end software solutions for scientific and research projects at the CMCC. Carlo will be working in WP6.

Relevant publications, and/or products, services, achievements:

Navarra A. and L Tubiana (Eds), 2013: Regional assessment of Climate Change in the Mediterranean, Springer-Verlag, 965 pp.

Gualdi S., and co-authors, 2013: The CIRCE Simulations: Regional Climate Change Projections with Realistic Representation of the Mediterranean Sea. *Bull. Amer. Meteo. Soc*., **94**, 65-81.

Drobinski P.,…**Gualdi S.**, and co-authors, 2014: HyMeX, a 10-year Multidisciplinary Program on the Mediterranean Water Cycle, *Bull. Amer. Meteo. Soc.*, **95**, 1063-1082.

Clima2014.it – a collection of video, text and pictures to explain and disseminate the IPCC AR5 contents to the public opinion with the words of the Italian authors of the Report (**www.cmcc.it**)

Relevant previous projects or activities:

CIRCE (EU FP6, CMCC Coordinator): This project concentrates on the quantification of the physical impacts of climate change in the Mediterranean and assessment the consequences for the population of the region.

ETC/CCA (EEA, European Topic Centre on Climate Change impacts, vulnerability and Adaptation, CMCC coordinator) supports the EEA in informing policy development and implementation in the area of CCIVA by means of data, information, indicators and assessments.

IS-ENES2 (EU FP7, Infrastructure for the European Network for Earth System modelling – Phase 2, partner) integrates the European climate modelling community, stimulates common developments of models software, fosters the execution and exploitation of high-end simulations and supports the dissemination of model results to the climate research and impact communities.

JPI–Climate CSA (EU FP7, Joint Programming Initiative Connecting Climate Knowledge for Europe – Coordination and Support Action, partner) contributes to highly coordinated knowledge development funded by EU Member States, connecting that knowledge with decision-making on major investments in economic and societal sectors in Europe.

CLIPC (EU-FP7, CLimate Information Platform for Copernicus, partner) provides access to climate information of direct relevance to a wide variety of users, from scientists to policy makers and private sector decision makers.

Relevant significant infrastructure and/or any major items of technical equipment:

Not applicable.

Participant 5: Climate-KIC (UK) Limited (Climate-KIC)
Climate-KIC is Europe's largest public-private innovation partnership, working together to address the challenge of climate change. Climate-KIC drives innovation in climate change through creative partnerships large and small, local and global, between the private, public and academic sectors.

All partners bring their industry experience to the community and are connected through a national or regional centre. Climate-KIC connects global and local, small and large partners from the private, public and academic sectors. The split across the three sectors is approximately 50% business, 30% academic and 20% public and not for profit.

There are 13 European centres under Climate-KIC. They are organised through national centres, each managed by a director, and regional centres, collectively managed by a director and co-ordinated via a steering group. The central office is based in London, UK. Climate-KIC receives funding from academic and private sector partners as well as an annual grant from the European Commission through its European Institute of Innovation and Technology (EIT).

Climate-KIC is an essential partner in this consortium as it will address the specific challenge of this call to enable "better integration and coordination of on-going and future climate change research and innovation initiatives within the EU."

Professor Ralf Toumi (male), Professor of Atmospheric Physics [Co-leader WP5]: Upon award of his PhD from the University of Cambridge, Ralf was then appointed a temporary lecturer in the Chemistry Department in Cambridge and a Fellow in Physical Chemistry at Christ's College Cambridge. In 1994 he became a Lecturer in the Physics Department at Imperial College and joined the Space and Atmospheric Physics group there. He was promoted to Professor of Atmospheric Physics in 2005 at the age of 39. He was awarded the Phillip Leverhulme Prize by the Leverhulme Trust for "scholars of outstanding distinction" (2002), a Merit Award by Imperial College for outstanding achievement in research (2004), a Royal Society Industry Fellowship with BP (2006-2010) and a NERC Knowledge Exchange Fellowship (2009-2012). He has co-authored and reviewed many international reports such as WMO Ozone Assessments, SPARC and IPCC Reports. He has served on the ESA mission advisory group and is a referee for the Earth Explorer missions. He is the European climate theme lead for the Climate KIC (Knowledge Innovation Community). He is a director of OASIS Loss Modelling Framework LTD which is providing new open source solutions to the insurance industry. He is also the Imperial Consultant fellow and industry champion in the Department of Physics.

Relevant publications, and/or products, services, achievements:
The OASIS software has come out a Climate-KIC funded project it. It is an open source tool to improve the assessment of catastrophic risk (www.oasislmf.org/) by using climate services.

OASIS Palm Tree Ltd was created to support the use of the OASIS software.

OASIS LMF Ltd is not for profit company, co-funded by Climate-KIC to promote and develop the use of the OASIS software (www.oasislmf.org/).

The Climate Impact Expert System (www.climateimpactsonline.com).

Extreme Event for Energy Providers web portal (http://web.aria.fr/creator/E3P/index.php).

Relevant previous projects or activities:
Climate-KIC has created several adaptation projects (details on http://www.climate-kic.org/themes/adapting-to-climate-change/) including:

1. Adaptation Tool for Local Authorities
2. Climate Data Factory
3. Demand Supply Mapping for Local Actors
4. Interface applications and serious games
5. Smart wiring for power grid stability.

Relevant significant infrastructure and/or any major items of technical equipment:

Not applicable.

No third parties involved.

Participant 6: European Centre for Medium-Range Weather Forecasts (ECMWF)
The European Centre for Medium-Range Weather Forecasts (ECMWF) is an independent intergovernmental organisation supported by 34 states.

ECMWF is both a research institute and a 24/7 operational service, producing and disseminating numerical weather predictions (NWPs) to its Member States. This data is fully available to the national meteorological services in the Member States. The Centre also offers a catalogue of forecast data that can be purchased by businesses worldwide and other commercial customers. The supercomputer facility (and associated data archive) at ECMWF is one of the largest of its type in Europe and Member States can use 25% of its capacity for their own purposes.

The organisation was established in 1975 and now employs around 280 staff from more than 30 countries. ECMWF is one of the six members of the Co-ordinated Organisations, which also include the North Atlantic Treaty Organisation (NATO), the Council of Europe (CoE), the European Space Agency (ESA), the Organisation for Economic Co-operation and Development (OECD), and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).

ECMWF operates the Copernicus Climate Change Service (C3S) on behalf of the European Union and will bring together expertise from across Europe to deliver the service. This Service will combine observations of the climate system with the latest science to develop authoritative, quality-assured information about the past, current and future states of the climate in Europe and worldwide. It will also provide key indicators on climate change drivers such as carbon dioxide and impacts, for example, reducing glaciers. The aim of these indicators will be to support European adaptation and mitigation policies in a number of sectors.

Having ECMWF as a partner not receiving EU funding through ECOMS2, will allow ECOMS2 to keep abreast of operational climate service activities operated under Copernicus, and to factor these activities in developing its own coordination agenda.

Short profile of key personnel involved:
Dr Jean-Noël Thépaut (male), Head of Copernicus Climate Change Service: Until December 2014, Jean-Noël was the Head of the Data Division, and Deputy Director of the Research Department at ECMWF. His group was in charge of the development of world-class data assimilation algorithms for NWP, the exploitation of satellite observations from operational and research EO platforms; and the development and production of state-of-the-art climate reanalyses.

Jean-Noël is “ingénieur de la météorologie” from Météo-France. He received his PhD from PARIS-VI University in 1992, in the field of atmospheric data assimilation. He was involved in the early development of the 3D and 4D-Var system at ECMWF and Météo-France, for which he developed an incremental formulation that is now used operationally worldwide. He devoted part of his career to the exploitation of a wide variety of satellite data in NWP. He has served on a number of Committees, including the EUMETSAT Mission Expert Team, the NASA Global Modeling and assimilation Office Advisory Board, and the ESA Scientific Advisory Committee. Jean-Noël is currently co-chair of the WCRP JSC/CAS Working Group on Numerical Experimentation.

Relevant publications, and/or products, services, achievements:
See www.copernicus-climate.eu for a detailed description of the Copernicus Climate change Service.

See also http://www.era-clim.eu/ for a detailed description of global reanalysis for climate monitoring activities currently running at ECMWF.

Relevant previous projects or activities:
EU FP7 **ERA-Clim** and **ERA-Clim 2** (www.era-clim.eu), ECMWF co-ordinator.

ESA-CCI **CMUG group** (www.esa-cmug-cci.org).

Relevant significant infrastructure and/or any major items of technical equipment:

Not Applicable.

No third parties involved.

Participant 7: Helmholtz-Zentrum Geesthacht Zentrum Für Material- Und Küstenforschung Gmbh (HZG)
HZG is one of 18 national research centres in Germany belonging to the Hermann von Helmholtz Association (HGF). HZG has three sites at Geesthacht, Teltow near Berlin, and Hamburg, with approximately 850 employees in total.

The Climate Service Center 2.0 (CS2) is an Institution at the Helmholtz-Zentrum Geesthacht. It was initiated by the German Government in 2009 and funded by the Federal Ministry of Education and Research. The CS2 is furthermore supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety as well as by the Federal Ministry of Transport, Building and Urban Development. It is a fundamental part of the German high tech-strategy for climate protection. The CS2 offers a wide range of science-based information and services. In doing so, it responds to the rapidly growing need for advice on climate related questions and fills a gap between science and users. The CS2 relies on a network of cooperating partners, which includes German academic and private research institutions and other climate service establishments. Involving the customers of climate-information, the CS2 works at the same time to strengthen this network and develops new partnerships with decision-makers from economy and industry.

Short profile of key personnel involved:
Prof Dr María Máñez Costa (female), Senior Scientist [Leader WP5]: Maria works in the Economics and Policy Department of the Climate Service Center 2.0, as well as being a visiting professor at the Universities of Valencia and Barcelona, Spain where she teaches Water Economics. At CS2.0 she is responsible for economic modelling and capacity development. Maria's research explores the vulnerability and adaptive capacity of social ecological systems to climate change. Her research focuses on the development of capacities for adaptation to climate change and the development of methods for managing and communicating climate impacts. She has coordinated various projects at the national and international level, including the EC (FP6 and FP7), working on the topic of "Global environmental change".

Dr Daniela Jacob (female), Acting Director at the Climate Service Center 2.0: Daniela has been leading the "Climate System" department of the Climate Service Center since 2010 and has been serving as Acting Director since June 2014. As one of the primary authors of the IPCC 5th Assessment Report on Climate Change, she possesses rich experience and is well connected within the world of climate science. Daniela has extensive experience in project management and coordination within different framework programmes, including CLAVIER (2006-2009) and IMPACT2C (2011-2015). She has participated as Principal Investigator in climate change assessment, risk management and impact studies (CLARIS-LPB 2008-2012, ACQWA 2008-2013, SafeLand 2009-2012, CARBO-EXTREME 2009-2013), LAIC 2009-2011 and 'Climate for Culture' 2009-2013); adaptation and mitigation projects (CCTAME 2008-2013, HIGHNOON 2009-2012); and European climate information services (ECLISE 2011-2014).

Relevant publications, and/or products, services, achievements:
CS2.0 works in the development of prototypes and climate services customising climate information for various users (private and public sector).

Máñez Costa, M. K. Schwerdtner Manez and S Husain (2013): Adaptation to climate change under changing urban patterns. The climatic perspective of migration. In Ruppel, Roschmann and Ruppel-Schlichting: Climate Change: International Law and Governance.

Tsanis, I.K., M.G. Grillakis, A.G. Koutroulis and **D. Jacob** (2013): Reducing uncertainty on global precipitation projections. Journal of Earth Science & Climatic Change. Vol. 5, Issue 178. DOI: 10.4172/2157- 7617.1000178.

Vautard, R., A. Gobiet, **D. Jacob**, M. Belda, A. Colette, M. Déqué, J. Fernández, M. García-Díez, K. Goergen, I. Güttler, T. Halenka, T. Karacostas, E. Katragkou, K. Keuler, S. Kotlarski, S. Mayer, E. van Meijgaard, G. Nikulin,

M. Patarčić, J. Scinocca, S. Sobolowski, M. Suklitsch, C. Teichmann, K. Warrach-Sagi, V. Wulfmeyer and P. Yiou (2013): The simulation of European heat waves from an ensemble of regional climate models within the EURO-CORDEX project. Climate Dynamics. Vol. 41, pp. 2555-2575. DOI: 10.1007/s00382- 013-1714-z.

Jacob, D. et al. (2014): EURO-CORDEX: New high-resolution climate change projections for European impact research. Regional Environmental Changes. Vol. 14, Issue 2, pp. 563-578. DOI: 10.1007/s10113-013-0499-2

Jancloes M, Thomson M, **Máñez Costa M**, Hewitt C, Corvalan C, Dinku T, Lowe R, Hayden M. (2014) Climate Services to Improve Public Health. International Journal of Environmental Research and Public Health 11(5):4555-4559.

Relevant previous projects or activities:

EU FP7 **ENHANCE** (HZG WP4 leader, Maria is part of the scientific steering group of the project). The main goal of the ENHANCE project is to develop and analyse new ways to enhance society's resilience to catastrophic natural hazard impacts, by providing new scenarios and information in selected hazard cases, in close collaboration with stakeholders, and by contributing to the development of new Multi-Sector Partnerships (MSPs) to reduce or redistribute risk. Innovation in MSPs is essential, as ineffective cooperation between public, private and civil society institutions often leads to failures in risk management. The ENHANCE proposal is unique as it studies the potential for new MSPs for managing different catastrophic hazards, related to heat waves, forest fires, flood, drought, storm surge, and volcanic eruptions.

EURO-CORDEX. **CO**ordinated **R**egional climate **D**ownscaling **EX**periment over Europe. (European branch of WCRP CORDEX initiative). Coordinated by HZG and Wegener Center University of Graz. Within EURO-CORDEX, a unique set of high resolution climate change simulations for the 21st century for Europe on 0.11° horizontal resolution is currently established.

EU FP7 **IMPACT2C** (HZG Coordinator, Daniela Jacob). Quantifying projected impacts under 2°C warming. Enhances knowledge, quantifies climate change impacts, and adopts a clear and logical structure, with climate and impacts modelling, vulnerabilities, risks and economic costs, as well as potential responses, within a pan-European sector based analysis.

EU FP7 **ECLISE** (2011-2013). Enabling Climate Services for Europe. HZG WP7 leader. A European effort in which researchers in close cooperation with stakeholders, developed local climate services in order to support climate adaption policies. The central objective of ECLISE was to take the first step towards the realisation of a European Climate Service.

Relevant significant infrastructure and/or any major items of technical equipment:

Not applicable.

Participant 8: Centre National de la Recherche Scientifique (CNRS)

CNRS is the main French public research institution under the responsibility of the French Ministry of Education and Research. CNRS acts here in the name of the Institut Pierre Simon Laplace (IPSL), which is a federal institute located in Paris and is composed of nine research laboratories working on global environmental and climate studies. IPSL gathers about 1,000 scientists and represents more than a third of the French research potential in atmospheric and oceanic sciences. One of the main objectives of IPSL is to understand climate variability, both natural and anthropogenic, and future evolution, at global and regional scales. IPSL's work relies on the development of Earth system models of different complexity. IPSL is strongly involved in IPCC Working Group 1. IPSL chairs the scientific board of ENES and coordinates the infrastructure projects IS-ENES and IS-ENES2. IPSL is also involved in several EU projects related to Earth system modelling.

Short profile of key personnel involved:

Dr Sylvie Joussaume (female), Senior Scientist [Leader WP4]: Sylvie has been a researcher at CNRS since 1983. She is an expert in climate modelling. She has coordinated IS-ENES (EU FP7) phases 1 and 2 since 2009 and is Chair of the ENES Scientific Board. She has been involved in IPCC since the Third Assessment Report. Sylvie is involved in the Management Committee of JPI Climate and chairs the module on climate science. She has also been involved in several EU committees, such as the ERC starting grants panel on Earth system science, ESFRI environmental expert group and Climate-KIC.

Dr Eric Guilyardi (male), Senior Scientist: has been a researcher at CNRS since 2002. He is an internationally recognised expert in tropical climate variability, climate change, in decadal predictability and in ocean-atmosphere modelling. He was a Lead Author for IPCC AR5 in the "Model Evaluation" chapter. He has coordinated the FP7 METAFOR project (through University of Reading) that established standard model and simulation descriptions for CMIP5 and now co-leads the ES-DOC international initiative to prepare the related CMIP6 metadata standards. Within the JPI-Climate, he is in charge of coordinating a roadmap: "Towards a European strategy for climate modeling: strengthening coordination and preparing the next generation of climate models".

Relevant publications, and/or products, services, achievements:

Baker J., Duby A., Gadgil S., Haymet T., **Joussaume S.**, Kondo H., Moura A.D., Noble I., Dahe Q., Smith N., Cesarsky C., Hong Y., Alverson K., de Boois H., Cutler P., Review of the World Climate Research Program, Report from an ICSU-WMO-IOC-IGFA Review Panel, pp 44, Feb 2009.

Lawrence, B.N., Balaji, V., Bentley, P., Callaghan, S., DeLuca, C., Denvil, S., Devine, G., Elkington, M., Ford, R.W., **Guilyardi, E.**, Lautenschlager, M., Morgan, M., Moine, M.-P., Murphy, S., Pascoe, C., Ramthun, H., Slavin, P., Steenman-Clark, L., Toussaint, F., Treshansky, A. and Valcke, S. (2012) *Describing Earth system simulations with the Metafor CIM*. Geoscientific Model Development, 5 (6). pp. 1493-1500. ISSN 1991-9603 doi: 10.5194/gmd-5-1493-2012.

Mitchell J., R. Budich, **S. Joussaume**, J. Marotzke, B. Lawrence, Infrastructure strategy for the European Earth system modelling community 2012-2022, 33 pp, 2012. (http://enes.org).

Déandreis C., C. Pagé, P. Braconnot, L. Bärring, E. Bucchignani, W. Som de cerff, R. Hutjes, **S. Joussaume**, C. Mares, S. Planton, M. Plinger, Towards a dedicated impact portal to bridge the gap between the impact and climate communities: lessons from use cases, Climatic Change, 125, 333-347, 2014 DOI 10.1007/s10584-014-1139-7.

Relevant previous projects or activities:

Infrastructure projects: coordination of EU FP7 **IS-ENES** and **IS-ENES2**. IS-ENES, in its two phases, provides the common e-infrastructure for climate modelling in Europe, gathered within the European Network for Earth System Modelling (ENES) and promotes greater integration throughout this research community. It supports international coordinated simulations which are developed under the WCRP and which are backing the work of the IPCC. It is

designed to advance the development of models, intensify the use of simulations to improve the understanding of climate and its variations, and facilitate the application of modelling to support research into climate change impacts on society. It provides services on models, tools and access to data from climate simulations and enables exchange of expertise and the development of a common strategy. After supporting data from global climate models in its first phase, IS-ENES2 now encompasses results from coordinated experiments at regional scale, with a focus on Europe and Africa.

Contribution to the EU FP7 **METAFOR** project on common metadata for climate modelling.

Contribution to other ENES projects: FP6 **ENSEMBLES**, FP7 **COMBINE**, FP7 **EUCLIPSE**, H2020 **CRESCENDO** (due to commence November 2015).

Relevant significant infrastructure and/or any major items of technical equipment:
See description of EU FP7 IS-ENES and IS-ENES2 above.

No third parties involved.

Participant 9: Royal Netherlands Meteorological Institute (KNMI)
KNMI is the national research and information centre for weather, seismology, climate and climate change in the Netherlands. KNMI has a long tradition in operational and scientific activities. Climate research at KNMI is focussed on observing, understanding and predicting changes in the climate system. KNMI produces climate scenarios to support stakeholders for developing adaptation and mitigation strategies. KNMI has initiated the development of the global climate model EC-Earth and has been a leading partner in the consortium ever since.

KNMI will co-lead WP6 of the Action, exploiting the wide expertise it has with matching user requests for climate information with scientifically based assessments of (regional) climate change, and the interplay between climate and (extreme) weather.

Short profile of key personnel involved:
Prof. Bart van den Hurk (male), Head of the Modelling Research&Development division of KNMI [Co-Leader WP6]: Bart holds a chair at VU University Amsterdam. His main expertise are in diagnosing and understanding land-atmosphere interaction, developing climate scenarios for the Netherlands, and interpretation of complex climate information for society stakeholders. He has coordinated an EU-funded project (ELDAS) and national climate research projects (Tailoring Climate Scenarios), and will coordinate H2020 IMPREX (H2020-2015 Water call, currently in Grant Agreement preparation stage, start date October 2015).

Dr Janette Bessembinder (female), Advisor, Project leader: Janette has worked for KNMI since 2005 on projects related to climate services development, inventories of user requirements related to climate (change) data and information, and tailoring of climate data for specific users. Since 2009 she has led several tailored climate services projects and she was work package leader of "Climate services" in Theme 6 (High quality climate projections) of the national "Knowledge for Climate" programme. She has been involved in the development of the KNMI'06 and KNMI'14 climate scenarios, in particular focusing on the communication and tailoring of climate scenarios afterwards. Currently she is involved in work packages on user interaction and dissemination in the EU-projects EUSTACE (H2020) and PRIMAVERA (H2020, due to commence November 2015).

Bernadette Overbeek (female), Scientific communications expert: Bernadette has worked for KNMI since 2009 on projects focusing on bridging the gap between climate scientists, users of climate information and policymakers. In 2012 she organised a three-day school for PhD students on dealing with and communicating uncertainties in climate- and socio-economic scenarios, in impact models and in the decision making process. The result of the course was a common frame of reference for the use of scenarios and dealing with uncertainties. From 2009-2014 she was working for Theme 6 (High quality climate projections) of the national "Knowledge for Climate" programme as communications officer. From 2012-2014 she was involved in the user interaction for the KNMI'14 climate scenarios. For this, she organised several workshops, a user feedback group and undertook the coordination and editing of the newsletters, brochures and website. Now she is working at the Weather- and Climate Services division on products in which weather and climate are brought together.

Relevant publications, and/or products, services, achievements:
Van den Hurk, B.J.J.M., A.M.G. Klein Tank, G. Lenderink, A. van Ulden, G.J. van Oldenborgh, C. Katsman, H. van den Brink, F. Keller, **J. Bessembinder**, G. Burgers, G. Komen, W. Hazeleger and S. Drijfhout, 2007. New climate change scenarios for the Netherlands; Water Science and Technology, 56, 4, 27-33, doi:10.2166/wst.2007.533.

Van den Hurk, B., A. Klein Tank, C. Katsman, G. Lenderink, and A. te Linde, 2013. Vulnerability Assessments in the Netherlands Using Climate Scenarios. Climate Vulnerability: Understanding and Addressing Threats to Essential Resources. Elsevier Inc., Academic Press, 257–266 pp.

Berkhout, F., B. v**an den Hurk, J. Bessembinder**, J. de Boer, B. Bregman and M. van Drunen (2014). Framing climate uncertainty: using socio-economic and climate scenarios in assessing climate vulnerability and adaptation; Regional and Environmental Change 14 (3), 879-893.

Van den Hurk, B., Geert Jan van Oldenborgh, Geert Lenderink, Wilco Hazeleger, Rein Haarsma and Hylke de Vries, 2014. Drivers of mean climate change around the Netherlands derived from CMIP5; Climate Dynamics, 42, 1683-1697; DOI: 10.1007/s00382-013-1707-y.

Relevant previous projects or activities:
H2020 IMPREX (2015), Coordinator (Bart van den Hurk). IMPREX aims to improve prediction and management of hydrological extremes.

EU FP7 **SPECS** (ongoing) and FP6 **ENSEMBLES** (finished): These projects are devoted to improving projections and predictability of climate extremes at season to decadal timescales. KNMI is participating in several work packages in both projects.

EU FP7 **EUPORIAS**: EUPORIAS is devoted to improving the interaction between climate scientists and stakeholders (including users). KNMI is responsible for a number of climate services and stakeholder interaction activities.

RoadAPT, Coordinator: Research project funded under the CEDR Transnational Road Research Programme focusing on climate change and estimating the consequences of these changes on transportation needs.

Relevant significant infrastructure and/or any major items of technical equipment:
EC-Earth (global climate modelling centre, www.ec-earth.org)

Climate Explorer (climate data analysis tool; www.climexp.knmi.nl)

KNMI'14 (Regional climate change scenarios; www.klimaatscenarios.nl)

Participant 10: Republic Hydrometeorological Service of Serbia (RHMSS)

RHMSS is the national weather service of Serbia. It is a special organisation within the framework of state administration, and it performs professional tasks and state administration activities related to systematic meteorological, climate and hydrological measurements and observations; monitoring, research, analysis and forecasting of weather, climate and water; early warning and alerts on the occurrence of extreme meteorological, climate and hydrological events and disasters and trans-boundary atmospheric transport of radioactive substances in the event of nuclear accidents; fulfillment of international commitments in the field of meteorology and hydrology, as well as other duties provided by the Law. The Republic of Serbia is a member of the WMO, IPCC, ECMWF, EUMETSAT, WCRP, GEO, and EUMETNET. RHMSS acts as the national institution which directly represents the country in these international organisations. In addition, RHMSS participates in the implementation of the United Nations Framework Convention on Climate Change (UNFCCC).

In the last couple of years, RHMSS has made significant developments within the state administration reform and capacity building process. RHMSS has established (in 2007) the SEEVCCC (sub-regional South-East European Virtual Climate Change Centre) which strengthened regional cooperation in the field of monitoring, research and forecasting of regional and local climate change. As host of SEEVCCC, RHMSS conducted all the necessary activities to include SEEVCCC into the European Network of WMO Regional Climate Centres (Regional Association VI – Europe). This has resulted in SEEVCCC beginning to perform its binding sub-regional functions related to climate monitoring, forecasting and research within the WMO's World Climate Programme (WCP) and recently-established GFCS.

Thanks to the research and development activities that have been conducted, RHMSS/SEEVCCC has at its disposal regional climate models, a global atmospheric non-hydrostatic model, models for hydrological and dust forecasts, and state-of-the-art technologies for database management. The ongoing activities include further development of SEEVCCC through the implementation of the South East European (SEE) Research and Development Programme of regional climate modeling for 2012-2017, particularly through further development of Earth modeling system and its subsystems coupling regional climate model with ocean, hydrological and aerosol numerical components.

RHMSS has an experienced team, with knowledge and practical experience of participating in bilateral technical cooperation programmes, as well as of the realization of international projects financed through the EU's South-East Europe Transnational Cooperation Programme and FP7.

Short profile of key personnel involved:

Dr Slobodan Nickovic (male), Senior adviser for development of meteorological and climate models: During his career Slobodan has been employed at the University of Belgrade, Yugoslav Federal Hydrometeorological Institute, and as a visiting scientist at Universities of Athens and Malta. He has coordinated, or participated in, more than 30 international scientific projects, including projects funded by the EU, Food and Agriculture Organisation, and NASA. He has published 48 peer reviewed articles in scientific journals, including Science, ACP, JGR, JRL, and Atmospheric Environment. He developed original research/operational modelling tools and/or numerical methods such as Dust Regional Atmospheric model (DREAM) and is a coauthor of the Hydrology Prognostic Model (HYPROM). He is Adjunct Professor at the University of Arizona. As the scientific officer in the WMO (2005-2013), among other duties in the mesoscale atmospheric research, he was the architect of the WMO Sand and Dust Warning Advisory and Assessment System (SDS-WAS).

Goran Pejanovic (male), Director of National Climate Center, RHMSS and head of SEEVCCC: Goran is responsible for regional climate monitoring and seasonal forecasting at RHMSS. He has been an employee of Yugoslav Federal Hydrometeorological Institute, Euro-Mediterranean Centre on Insular Coastal Dynamics (ICoD, Malta), Hydrometeorological Service of Montenegro and Serbian South Environment and Weather Agency (SEWA). He has participated in a number of international projects (ORIENTGATE, CARPATCLIM, DRIHM, MEDPOL, EMME1, MEDUSE, RAMSES, ADRICOSM-STAR, LSIEMP,etc. and NASA sponsored projects

concerning dust and pollen transport: PHAiRS, EMPHASYS, etc.). Goran has over 25 years of experience in modelling of earth system dynamics (atmosphere, ocean, land water, aerosol transport, etc.) and is skilled in working with number of different numerical models for short range, and long range forecast and climate simulations. Recently he has been a co-author on several scientific peer-reviewed papers concerning numerical modelling of dust transport and overland hydrology, and a number of papers that were presented on national and international conferences concerning climate simulations, climate impact studies, aerosol and hydrology modeling.

Aleksandra Krzic (female), Numerical programmer for regional climate scenarios [Co-leader WP4]: Aleksandra is a graduate meteorologist. She works in the National Climate Center at RHMSS. She has participated in several international projects (ORIENTGATE, DMCSEE, SEERISK, ECRAN), and in operative and research work carried out in the RHMSS.

Relevant publications, and/or products, services, achievements:

Nickovic S, G Kallos, A Papadopoulos, O Kakaliagou, 2001: A model for prediction of desert dust cycle in the atmosphere J. Geophys. Res. 106, 18113-18130.

Nickovic S, G Pejanovic, V Djurdjevic, J Roskar, and M Vujadinovic, 2010: HYPROM hydrology surface-runoff prognostic model, Water Resour. Res., 46, W11506, doi:10.1029/2010WR009195.

Krzic A, I Tosic, V Djurdjevic, K Veljovic, B Rajković, 2011: Changes in climate indices for Serbia according to the SRES-A1B and SRES-A2 scenarios. Climate Research 49:73-86.

Bellafiore D, E Bucchignani, S Gualdi, S Carniel, V Djurdjevic, G Umgiesser, 2012: Assessment of meteorological climate model inputs for coastal hydrodynamics modelling. Ocean Dynamics, 62/4, 555-568, doi:10.1007/s10236-011-0508-2.

Stojanovic D, **A Krzic**, B Matovic, S Orlovic, A Duputiec, V Djurdjevic, Z Galic, S Stojnic, 2013: Prediction of the European beech (Fagus sylvatica L.) xeric limit using a regional climate model: An example from southeast Europe, Agric. Forest. Meteorol. 176 (2013) 94–10, doi:10.1016/j.agrformet.2013.03.009.

Relevant previous projects or activities:

EU FP7 "Distributed Research Infrastructure for Hydro-Meteorology" (**DRIHM**), scientific project; with a main objective to facilitate cooperation in the field of meteorological and hydrological research and practice, including the climate change issues and flood forecasting (implementation period: 09/2011-02/2015).

EU SEE Transnational Cooperation Programme "A Structured Network for Integration of Climate Knowledge into Policy and Territorial Planning" (**ORIENTGATE**). The general objective of the project is to foster concerted and coordinated climate adaptation actions across the SEE region and to perform the analysis of the climate change effects on particular economic sectors (07/2012-12/2014).

EU SEE Transnational Cooperation Programme "Joint Disaster Management Risk Assessment and Preparedness in the Danube Region"(**SEERISK**) project. SEERISK aims to develop the unique natural hazard risk assessment methodology which will be widely applicable across the Region (07/2012-12/2014).

"**Building Resilience to Disasters in Western Balkans and Turkey**". The UNISDR and WMO manage this project which was realised by favour of financial support of EC (IPA funds). The main objective is to facilitate regional cooperation and to build capacity within the scope of natural risk management, climate change adaptation and improving of early warning system (05/2012- 09/2014).

EU SEE Transnational Cooperation Programme “Drought Management Centre for South East Europe” (**DMCSEE**) project. The objective of DMCSEE was to improve drought preparedness - early warning system and vulnerability and risk assessment as a basis for reducing the drought impacts in SEE Region (12/2009-09/2012).

Relevant significant infrastructure and/or any major items of technical equipment:

Not applicable.

No third parties involved.

Participant 11: Swedish Meteorological & Hydrological Institute (SMHI)
SMHI is a government agency under the Swedish Ministry of Environment, offering products to support decision-making in the environmental sector. SMHI is responsible for national meteorological, hydrological and oceanographic forecasting and the production of climate change projections. The main fields of research include weather and climate modelling, data assimilation, hydrology, oceanography and air quality. Climate research is a cross departmental activity, with all six research sections contributing to the development of climate projections, impact assessments and communication with stakeholders, regional authorities and major utilities.

The Rossby Centre is part of the SMHI Research Department and is a leading centre for both regional and global model development and evaluation of data, as well as modelling applications for process studies and climate change research in support of impact and adaptation studies. This breadth of expertise, involvement in numerous national and international projects, and wide network ensures that the Rossby team have an excellent overview of both the latest earth system modelling developments and also the stakeholder landscape of the emerging climate services sector.

Short profile of key personnel involved:
Ralf Döscher (male), Science Coordinator of Rossby Centre, [leader WP3]: Ralf has a background in coupled climate modelling. He is currently chair of the EC-Earth Earth System Model consortium. Current research activities include Arctic climate processes research, climate prediction and ESM development. Ralf is involved in a range of national and international projects and networks, such as EMBRACE, CRESCENDO, IMPREX, ECRA and the Nordic ESM collaboration NORDESM.

Lars Barring (male), Senior Research Scientist: Lars is the IPCC contact point for Sweden, and adjunct professor at Lund University. He has considerable experience in applying climate change simulations with a range of impact assessment studies and has worked extensively in the field of communicating climate change information and associated uncertainties with stakeholder groups. He also has extensive experience of working in EU-funded projects directed towards climate impacts and services, such as FP7 ECLISE, IMPACT2C and IS-ENES.

Prof. Erik Kjellström (male), Head of Rossby Centre: Erik is a member of the Bolin Centre for Climate Research at Stockholm University. Erik has a background in short term forecasting and a strong record in regional climate model analysis. Recent studies focus on high resolution representation of precipitation in regional climate models. Erik is involved in the EU FP7 projects HELIX, ECLISE and IMPACT2C.

Dr Eleanor O'Rourke (female), Director of International Project Office for CORDEX (IPOC) and project manager of FP7 EMBRACE and SWITCH-ON: Eleanor has a PhD in Physical Oceanography and is experienced in dissemination of scientific research to the public (initiating and contributing to public outreach events, project public websites), policy makers (including three months providing briefings on scientific issues to UK parliamentarians) and the research community (as part of FP7 project management and coordination of scientific workshops/meetings).

Relevant publications, and/or products, services, achievements:
Döscher, R. and Koenigk, T. (2013): Arctic rapid sea ice loss events in regional coupled climate scenario experiments, Ocean Sci., 9, 217-248, doi:10.5194/os-9-217-2013, 2013.

Kjellström, E., Thejll, P., Rummukainen, M., Christensen, J. H., Boberg, F., Christensen, O. B., & Maule, C. F. (2013). Emerging regional climate change signals for Europe under varying large-scale circulation conditions. *Clim. Res*, *56*, 103-119.

Déandreis, C., Pagé, C., Braconnot, P., **Bärring, L.**, Bucchignani, E., de Cerff, W. S., ... & Plieger, M. (2014). Towards a dedicated impact portal to bridge the gap between the impact and climate communities: Lessons from use cases. *Climatic Change*, *125*(3-4), 333-347.

Döscher, R., Vihma, T., & Maksimovich, E. (2014). Recent advances in understanding the Arctic climate system state and change from a sea ice perspective: a review. Atmospheric Chemistry and Physics, 14(24), 13571-13600. www.atmos-chem-phys.net/14/13571/2014/doi:10.5194/acp-14-13571-2014

Lindstedt, D., Lind, P., **Kjellström, E.**, & Jones, C. (2015). A new regional climate model operating at the meso-gamma scale: performance over Europe. *Tellus A*, *67*.

Relevant previous projects or activities:
Coordination of the **FP7 EMBRACE** project, which aims to make targeted improvement to key process failings in present-day Earth System Models to reduce systematic biases.

Participation in **FP7 IMPACT2C,** conducting high-resolution climate simulations focussed 2°C global warming thresholds and further in the **FP7 HELIX** project running high-resolution simulations at 2, 4 and 6°C, conducting bias correction, and supporting dissemination.

Analysis and provision of climate scenario data for the **FP7 ECLISE** project.

Host institute of the International Project Office for WCRP **CORDEX**.

Relevant significant infrastructure and/or any major items of technical equipment:
SMHI is the central hub for development of the current version of EC-EARTH European consortium climate model, participating in the IPCC climate change assessments and used for generating tailored (high resolution) climate information products.

SMHI operates the Swedish ESGF date node jointly with the National Supercomputing Centre.

No third parties involved.

4.2 Third parties involved in the project (including use of third party resources)

4.2.1 Third parties (ICREA and UPC) and their relation to ECOMS2 partner BSC

BSC applies a Third Party modality where the third party is making its resources available to the beneficiary under Article 12 of the H2020 General Model Grant Agreement – "Use of in-kind contributions provided by third parties free of charge".

Some of the work carried out at the Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS) will be contributed free of charge by Third Parties: Universitat Politècnica de Catalunya (UPC) and the Institució Catalana de Recerca i Estudis Avançats/ Catalan Institution for Research and Advanced Studies (ICREA).

The BSC is a consortium that is composed of the following member institutions: Universitat Politècnica de Catalunya (UPC), Spanish Council for Scientific Research (CSIC), as well as the Spanish and the Catalan governments. Both UPC and CSIC contribute in kind by making human resources available to work on projects. The relationship between BSC and CSIC / UPC (respectively) is defined in an agreement with each institution that was established prior to the submission of this proposal. The BSC thus recognises these institutions as Third Parties for many of the EU Projects in which the BSC participates.

The UPC is a university with a consolidated worldwide reputation and an international vision that generates technological innovation and attracts talent. According to the agreement between BSC and UPC, several professors of the UPC are made available to the BSC to work on research projects. Dr. José M. Baldasano is a UPC researcher affiliated with the BSC-CNS. He carries out his research in association with the BSC-CNS on the BSC-CNS premises.

ICREA will provide resources free of charge to the BSC as a third party. ICREA is a foundation supported by the Catalan Government and guided by a Board of Trustees which aims to recruit top scientists for the Catalan Research&Development system: scientists capable of leading new research groups, strengthening existing groups, and setting up new lines of research. Following the rules of ICREA, although the salary costs of Prof. Doblas-Reyes are paid by ICREA, he is assigned to physically work at the Earth Sciences Department of the BSC and considered a full member of the BSC. The beneficiary, BSC, is free to use these resources at will. They are therefore assimilated as "own resources" of the beneficiary, and will be charged to the project without being considered as a receipt. The cost will be declared by the beneficiary and it will be recorded in the accounts of the third party. These accounts will be available for auditing if required.

In accordance with the ECOMS2 budget, the majority of the effort from BSC will be allocated to Prof Doblas-Reyes and Dr Baldasano under this arrangement.

4.2.2 Implementation of action tasks by subcontractors to CMCC, HZG and KNMI

CMCC, HZG and KNMI are planning to subcontract discrete elements of the ECOMS2 work. These partners will comply with applicable national law on public procurement procedures and the rules for sub-contracting as laid out in the H2020 General Model Grant Agreement (Article 13):

CMCC, WP6: The website, the Internet Communication Platform and the communication tools and products will be graphically designed in a professional style which will guarantee complete consistency with the image (logo) of the entire action, in an effective and up-to-date graphic fashion. To ensure achieving this, a subcontract will be required with a professional graphic designer. 5,000 € has been put aside for this subcontract.

HZG, WP5: HZG will be responsible for the organisation of the three festivals. Some of the mandatory support services related to these festivals, including professional moderation of panels, translation, and printing of materials

in high quality, will be awarded to external service providers. The value of these subcontracts is estimated at 140,000 € for all three festivals.

KNMI, WP6: KNMI will subcontract editorial expertise for generating text for specific target-groups, media use and for other publication materials. The subcontract will be granted via an open tendering procedure, aiming to recruit an agency that can provide the best benefit given the contract cost, which will be maximized at 20,000 €.

5. ETHICS AND SECURITY

5.1 Ethics

There are no ethics issues to declare.

5.2 Security

The ECOMS2 action will **NOT** involve:

- Activities or results raising security issues; nor
- 'EU-classified information' as background or results.

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