Agència de Gestió d'Ajuts Universitaris i de Recerca
AGAUR

ANNEX DE LA SOL·LICITUD D'AJUTS BP 2016

Aquest document només és vàlid per annexar-lo, **en format PDF**, al formulari de sol·licitud d'ajuts per a la incorporació de personal investigador postdoctoral al sistema de ciència i tecnologia català dins del programa Beatriu de Pinós (BP 2016).

ANNEX TO APPLICATIONS FOR 2016 BP GRANTS

This document is valid only when attached, **in PDF format**, to the application form for grants for incorporation of postdoctoral research staff into the Catalan science and research systems within the Beatriu de Pinós programme (BP 2016).

Dades de la persona responsable de la sol·licitud / *Details of person responsible for the application*

Nom / *Name:* Francisco J. Doblas Reyes
Telèfon / *Telephone:* (+34) 934137719
Adreça electrònica / *Email:* francisco.doblas-reyes@bsc.es

Dades de la persona candidata / Details of the candidate

Nom / *Name:* Alvaro de la Cámara Illescas
Telèfon / *Telephone:* (+1) 303 497 1874
Adreça electrònica / *Email:* acamara@ucar.edu
ORCID: http://orcid.org/0000-0002-8831-4789
ResearcherID: P-7062-2016
Scopus Author ID: 27967611900
Google Scholar: https://scholar.google.es/citations?user=abLYasAAAAAJ&hl=es&oi=sra
(En cas d'indicar qualsevol referència, cal tenir indexades totes les publicacions / *If any reference is indicated all publications must be indexed*)

Altres pàgines web amb informació complementària / *Other web pages with complementary information*:

https://staff.ucar.edu/users/acamara

https://sites.google.com/site/homepagealvarodelacamara/

https://www.researchgate.net/profile/Alvaro_De_La_Camara

1. Currículum de la persona candidata / *Candidate's curriculum vitae*

1.1 Estudis i formació acadèmica / *Academic studies and training*

December 2012. **PhD in Physics (Atmospheric Dynamics)**, Universidad Complutense de Madrid (UCM), and ICMAT (CSIC), Madrid, Spain. Title: "Study of Lagrangian transport of air masses in the stratospheric polar vortex of the Southern Hemisphere". Advisors: Prof. E. Serrano (UCM, Spain), Dr. A. M. Mancho (ICMAT-CSIC, Spain), and Prof. C. R. Mechoso (UCLA, USA).

June 2007. **MSc in Meteorology and Geophysics**, UCM, Spain. Master project title: "Stratosphere-troposphere connection and the wintertime rainfall variability in Europe". Advisor: Prof. E. Serrano.

September 2005. **BSc in Physics** (5 year program), UCM, Spain. Academic project: "The influence of ENSO on the precipitation anomalies in the Iberian Peninsula". Advisor: Prof. E. Serrano.

1.2 Experiència professional, incloses beques, ajuts i contractes de recerca postdoctorals (Copieu i enganxeu el format proposat tantes vegades com us sigui necessari) / *Professional experience, including postdoctoral grants, funding and research (copy and paste the proposed format as often as required)*

Experiència professional / ***Professional experience***	
Posició actual / *Current position*: Postdoctoral fellow of the Advanced Study Program (ASP) (Competitive fellowship)	
Centre / *Centre*: National Center for Atmospheric Research (NCAR)	
Grup de recerca/departament / *Research group/department*: Atmospheric Modeling group / Atmospheric Chemistry, Observations and Modeling Laboratory (ACOM)	
Localitat / *Town/city*: Boulder (Colorado)	**País / *Country*:** USA
Durada (mesos) / *Duration (months):* *15 (ongoing)*	**Dates d'inici i fi / *Start and end dates*:** 14-09-2015 / 14-09-2017

Experiència professional / ***Professional experience***	
Posicions anteriors / *Previous positions*: Postdoctoral position	
Centre / *Centre*: Ecole Normale Supérieure de Cachan / Centre National de la Recherche Scientifique	
Grup de recerca/departament / *Research group/department* Centre de Mathématiques et de Leurs Applications (CMLA)	
Localitat / *Town/city*: Cachan	**País / *Country*:** France
Durada (mesos) / *Duration (months):* *6*	**Dates d'inici i fi / *Start and end dates*:** 01-03-2015 / 31-08-2015

Experiència professional / ***Professional experience***	
Posicions anteriors / *Previous positions*: Postdoctoral position	
Centre / *Centre*: Ecole Normale Supérieure / Centre National de la Recherche Scientifique	
Grup de recerca/departament / *Research group/department* Laboratoire de Météorologie Dynmique (LMD)	
Localitat / *Town/city*: Paris	**País / *Country*:** France
Durada (mesos) / *Duration (months):* *25*	**Dates d'inici i fi / *Start and end dates*:** 01-03-2013 / 28-02-2015

Experiència professional / ***Professional experience***	
Posicions anteriors / *Previous positions*: PhD Student with a FPI-UCM fellowship (Competitive fellowship)	
Centre / *Centre*: Universidad Complutense de Madrid	
Grup de recerca/departament / *Research group/department* Departamento Física de la Tierra, Astronomía y Astrofísica I	
Localitat / *Town/city*: Madrid	**País / *Country*:** Spain
Durada (mesos) / *Duration (months):* *48*	**Dates d'inici i fi / *Start and end dates*:** 01-02-2009 / 31-01-2013

Experiència professional / ***Professional experience***	
Posicions anteriors / *Previous positions*: Graduate Researcher	
Centre / *Centre*: Universidad Complutense de Madrid	
Grup de recerca/departament / *Research group/department* Departamente de Física de la Tierra, Astronomía y Astrofísica I	
Localitat / *Town/city*: Madrid	**País / *Country*:** Spain
Durada (mesos) / *Duration (months):* *5*	**Dates d'inici i fi / *Start and end dates*:** 01-09-2008 / 31-01-2009

Experiència professional / ***Professional experience***	
Posicions anteriors / *Previous positions*: Graduate Researcher	
Centre / *Centre*: University of California Los Angeles (UCLA)	
Grup de recerca/departament / *Research group/department* Department of Atmospheric and OCeanic Sciences	
Localitat / *Town/city*: Los Angeles (California)	**País / *Country*:** USA
Durada (mesos) / *Duration (months):* *8*	**Dates d'inici i fi / *Start and end dates*:** 01-01-2008 / 31-08-2008

Experiència professional / ***Professional experience***	
Posicions anteriors / *Previous positions*: Graduate Researcher	
Centre / *Centre*: Universidad Complutense de Madrid	
Grup de recerca/departament / *Research group/department* Departamento de Física de la Tierra, Astronomía y Astrofísica I	
Localitat / *Town/city*: Madrid	**País / *Country*:** Spain
Durada (mesos) / *Duration (months):* *21*	**Dates d'inici i fi / *Start and end dates*:** 01-04-2006 / 31-12-2007

1.3 Experiència en recerca, incloent la participació en projectes de recerca, contractes i convenis. Indiqueu el càrrec o posició que ocupàveu, les tasques realitzades, la institució i la durada / *Research experience, including participation in research projects, contracts and agreements. Indicate office or position you held, the duties performed, the institution and duration.*

Participation in projects with contractual relationship

September 2015 – August 2017. **ASP post-doctoral fellow** at the National Center for Atmospheric Research (**NCAR**), USA. Working on dynamics and modelling of the middle atmosphere.

March 2015 – August 2015. **Post-doctoral researcher** at the Centre de Mathématiques et de Leurs Applications (**CMLA**), Ecole Normale Supérieure de Cachan, France. Working with Dr. C. Millet on the impact of gravity waves on infrasound propagation in the atmosphere, under the European project **ARISE2 (Horizon 2020, GAN653980)**.

February 2013 – February 2015. **Post-doctoral researcher** at Laboratoire de Météorologie Dynamique (**LMD**), Ecole Normale Supérieure de Paris, France. Working with Dr. F. Lott on stochastic parameterizations of gravity waves for general circulation models, under the European project **EMBRACE (FP7, grant agreement 282672)**.

January 2009 – December 2012. **Ph.D. student** at Dept. Geofísica y Meteorología, **UCM**, Madrid, Spain. Working on mass transport and dynamics of the stratospheric polar vortex, under an FPI-UCM fellowship.

September 2008 – December 2008. **Graduate researcher** at Dept. Geofísica y Meteorología, **UCM**, Madrid, Spain. Working with Prof. E. Serrano on climate variability (stratosphere-troposphere coupling), under the Spanish Ministry of Science project **AVACOA (ref: CGL2005-06600-C03-02)**.

January 2008 – August 2008. **Graduate researcher** at AOS dept (**UCLA**, USA). Working with Prof C. R. Mechoso on mass transport and dynamics of the Antarctic stratospheric polar vortex, under the **NSF project NSFATM-0732222**.

April 2006 – December 2007. **Graduate researcher** at Dept. Geofísica y Meteorología, **UCM**, Madrid, Spain. Working with Prof. E. Serrano on climate variability (stratosphere-troposphere coupling), under the Spanish Ministry of Science project **AVACOA (ref: CGL2005-06600-C03-02)**.

Participation in research projects without contractual relationship

June 2016 – May 2018. Spanish national project 'Dynamics and predictability of the ENSO teleconnection in the North Atlantic-European region **(DANAE)' (ref: CGL2015-68342-R)**. PI: Dr. J. García-Serrano (BSC).

2013 – 2016. ANR French National project 'Stratospheric Dynamics and Variability **(STRADYVARIUS)' (ref: ANR-13-BS06-0011-01)**. PI. Prof. R. Plougonven (LMD, Ecole Polytechnique).

January 2013 – December 2015. Spanish national project 'Precursors of stratosphere-troposphere coupling affecting European climate: observational and modelling studies **(PRESTAMOS)' (ref: CGL2012-34997)**. PI: Prof. E. Serrano (UCM).

January 2009 – December 2011. Spanish national project 'Stratosphere-troposphere coupling in the Northern Hemisphere and its connection to climate change' **(ref: CGL2008-06295)**. PI: Prof. E. Serrano (UCM).

September 2008 – June 2012. Spanish national project 'Modelling global climate variability using a hierarchy of climate models. Relevance for the Iberian Peninsula climate **(MOVAC)' (ref: 2008-00050084028)**. PI: Prof. M. L. Montoya (UCM).

1.4 Publicacions (Copieu i enganxeu el format proposat tantes vegades com us sigui necessari) / *Publications (copy and paste the proposed format as often as required)*

Indicadors generals de recerca (cal especificar la base de dades (Web of Science, Scopus, etc..) utilitzada per calcular els valors / *General research indicators. You must specify the database (Web of Science, Scopus, etc.) used to calculate the values*
Base de dades / *Database*: Scopus / Google Scholar
Número total de cites / *Total number of citations*: 69 / 109
Número total d'articles / *Total number of articles*: 10 (12 in total, the 2 last publications are very recent and do not appear in Scopus yet (they do appear in Google Scholar), and 2 other manuscripts under review)
Número total d'articles de Q1 / *Total number of Q1 articles*: 8 out of 10 (10 out of 12)
Índex-h / *h-index:* 5 / 7 (Scopus / Google scholar)

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: Díaz-Durán, A., B. Ayarzagüena, E. Serrano, M. Abalos, and **A. de la Cámara**	
Títol / *Title*: Intra-seasonal variability of extreme boreal stratospheric polar vortex events and their precursors	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Climate Dynamics (under review, CLDY-D-16-00348)	
Any / *Year*: 2016	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 4.708 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	N/A
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: Plougonven, R., **A. de la Cámara**, A. Hertzog, V. Jewtoukoff, and F. Lott	
Títol / *Title*: On the relation between gravity waves and wind speed in the lower stratosphere over the Southern Ocean	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of the Atmospheric Sciences (under review, JAS-D-16-0096)	
Any / *Year*: 2016	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 3.578 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	N/A
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: García, R. R., A. K. Smith, D. E. Kinnison, **A. de la Cámara**, and D. Murphy	
Títol / *Title*: Modification of the gravity wave parameterization in the Whole Atmosphere Community Climate Model: Motivation and results	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of the Atmospheric Sciences, doi: 10.1175/JAS-D-16-0104.1, in press	
Any / *Year*: 2016	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 3.578 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	N/A
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: Berner, J., and 26 other co-authors, including **A. de la Cámara** (5th in the order)	
Títol / *Title*: Stochastic parameterization: Towards a new view of weather and climate models	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Bulletin of the American Meteorological Society, doi: 10.1175/BAMS-D-15-00268.1, in press	
Any / *Year*: 2016	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 7.929 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	N/A / 7 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, and M. Abalos	
Títol / *Title*: Climatology of the middle atmosphere in LMDz: Impact of source-oriented parameterizations of gravity wave drag	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of Advances Modeling Earth Systems, 8, doi:10.1002/2016MS000753, in press.	
Any / *Year*: 2016	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 6.417 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	0 / 0 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, V. Jewtoukoff, R. Plougonven, and A. Hertzog	
Títol / *Title*: On the gravity wave forcing during the southern stratospheric final warming in LMDz	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of the Atmospheric Sciences, 73, 3213-3226, doi:10.1175/JAS-D-15-0377.1	
Any / *Year*: 2016	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 3.578 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	0 / 1 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Consigneu els índexs d'impacte corresponents a l'any de publicació de l'article / Include impact factors for the article's year of publication

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: Jewtoukoff, V., A. Hertzog, R. Plougonven, **A. de la Cámara**, and F. Lott	
Títol / *Title*: Comparison of gravity waves in the Southern Hemisphere derived from balloon observations and the ECMWF analyses	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of the Atmospheric Sciences, 72, 3449-3468, doi:10.1175/JAS-D-14-0324.1	
Any / *Year*: 2015	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 3.578 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	4 / 6 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: García-Serrano J., C. Frankignoul, G. Gastineau, and **A. de la Cámara**	
Títol / *Title*: On the predictability of the winter Euro-Atlantic climate: lagged influence of autumn Arctic sea-ice	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of Climate, 28, 5195–5216, doi:10.1175/JCLI-D-14-00472.1.	
Any / *Year*: 2015	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 4.850 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	4 / 7 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

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Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, and F. Lott	
Títol / *Title*: A parameterization of gravity waves emitted by fronts and jets	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Geophysical Research Letters, 42, 2071–2078, doi:10.1002/2015GL063298	
Any / *Year*: 2015	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 4.212 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	6 / 5 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, and A. Hertzog	
Títol / *Title*: Intermittency in a stochastic parameterization of nonorographic gravity waves	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: *Journal of Geophysical Research: Atmospheres*, 119, 11,905-11,919, doi:10.1002/2014JD022002	
Any / *Year*: 2014	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 3.426 (year 2015) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	5 / 8 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, C. R. Mechoso, A. M. Mancho, E. Serrano, and K. Ide	
Títol / *Title*: Isentropic transport within the Antarctic polar vortex: Rossby wave breaking evidence and Lagrangian structures	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of the Atmospheric Sciences, 70, 2982-3001, doi:10.1175/JAS-D-12-0274.1	
Any / *Year*: 2013	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 3.036 (year 2013) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q2
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	11 / 13 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, A. M. Mancho, K. Ide, E. Serrano, and C. R. Mechoso	
Títol / *Title*: Routes of transport across the Antarctic polar vortex in the southern spring	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Journal of the Atmospheric Sciences, 69, 741-752, doi:10.1175/JAS-D-11-0142.1	
Any / *Year*: 2012	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 2.672 (year 2012) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q2
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	17 / 24 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: García-Serrano, J., B. Rodríguez-Fonseca, I. Bladé, P. Zurita-Gotor, and **A. de la Cámara**	
Títol / *Title*: Rotational atmospheric circulation during North-Atlantic European winter: The influence of ENSO	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Climate Dynamics, 37, 1727-1743, doi:10.1007/s00382-010-0968-y.	
Any / *Year*: 2011	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 4.602 (year 2011) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	12 / 24 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Articles a revistes amb avaluació externa / *Journal articles with peer review*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, C. R. Mechoso, K. Ide, R. Walterscheid, and G. Schubert	
Títol / *Title*: Polar night vortex breakdown and large-scale stirring in the southern stratosphere.	
Revista (títol, volum, pàgina inicial- final) / *Journal (title, volume, start and end page)*: Climate Dynamics, 35, 965-975, doi:10.1007/s00382-009-0632-6	
Any / *Year*: 2010	**Clau (A: article, R: review) / *Key (A: article, R: review)*:** A
Índex d'impacte / *Impact factor* (SCI/SSCI/AHC): 3.843 (year 2010) JCR SCI	**Quartil i àrea / *Quartile and area* (SCI/SSCI/AHCI):** Q1
Número de cites / *Number of citations* (SCI/SSCI/AHCI):	10 / 14 (Scopus / Google scholar)
Altres índexs de qualitat (consignar base de dades i índex d'impacte) / *Other quality indices (state database and impact factor)*:	

Llibres i capítols de llibre / *Books and book chapters*	
Autors/res (per ordre de signatura) / *Authors (in signing order)*: Rodríguez-Fonseca, B., C. Rodríguez-Puebla (**A. de la Cámara**, contributing autor)	
Títol / *Title*: Climate teleconnections affecting Iberian Peninsula climate variability. Predictability and expected changes. In Climate in Spain: Past, Present and Future	
Pàgines (inicial-final) / *Pages (start-end)*: 53-67	
Editorial / *Publishing house*: CLIVAR and MICINN (F. F. Pérez, R. Boscolo Eds.)	
Any / *Year*: 2010	**Clau (L=llibre, C=capítol, EC=edicions crítiques, E=editor/a) / *Key (B=book, C=chapter, CP=critical publications, E=editor):*** C (Chapter 4)

Altres publicacions (Articles a revistes no indexades, informes tècnics, estudis de casos, traduccions, etc.) / *Other publications (Articles in non-indexed publications, technical reports, case studies, translations, etc.)*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, J. García-Serrano, B. Ayarzagüena, M. Ábalos, B. González, and E. Serrano	
Títol / *Title*: ENSO influence on the variability modes of the boreal winter stratosphere	**Any / *Year*:** 2009
Pàgines (inicial-final) / *Pages (start-end)*: Física de la Tierra, 21,167-178	
Editorial / *Publishing house*: Universidad Complutense de Madrid (UCM)	
Institució / *Institution*: UCM, Madrid, Spain	

1.5 Estades de mobilitat de curta durada en altres centres i universitats (Copieu i enganxeu el format proposat tantes vegades com us sigui necessari) / *Short-term mobility stays at other centres and universities (copy and paste the proposed format as often as required)*

Estades de mobilitat / *Mobility stays*	
Centre / *Centre*: Instituto de Ciencias Matemáticas (ICMAT-CSIC)	
Investigador responsable / *Responsible researcher*: Ana M. Mancho	
Grup de recerca/departament receptor / *Host research group/department*: N/A	
Localitat / *Town/city* : Madrid	**País / *Country*:** Spain
Durada (mesos) / *Duration (months):* *15 days*	**Dates d'inici i fi / *Start and end dates*:** 14-07-2014 / 28-07-2014
Tema / *Subject*: Application of Dynamical Systems tools to study transport of trace gasses in the atmosphere	

Estades de mobilitat / *Mobility stays*	
Centre / *Centre*: University of California Los Angeles (UCLA)	
Investigador responsable / *Responsible researcher*: C. Roberto Mechoso	
Grup de recerca/departament receptor / *Host research group/department*: Department of Atmospheric and Oceanic Sciences	
Localitat / *Town/city* : Los Angeles (California)	**País / *Country*:** USA
Durada (mesos) / *Duration (months):* *2*	**Dates d'inici i fi / *Start and end dates*:** March – May 2012
Tema / *Subject*: Dynamics and transport of air masses in the Antarctic stratospheric polar vortex	

Estades de mobilitat / *Mobility stays*	
Centre / *Centre*: University of California Los Angeles (UCLA)	
Investigador responsable / *Responsible researcher*: C. Roberto Mechoso	
Grup de recerca/departament receptor / *Host research group/department*: Department of Atmospheric and Oceanic Sciences	
Localitat / *Town/city* : Los Angeles (California)	**País / *Country*:** USA
Durada (mesos) / *Duration (months):* *3*	**Dates d'inici i fi / *Start and end dates*:** April – July 2011
Tema / *Subject*: Dynamics and transport of air masses in the Antarctic stratospheric polar vortex	

1.6 Ponències a congressos i conferències / *Papers at congresses and conferences*

Below I detail my 38 contributions to scientific conferences, 24 of which as first autor.

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Ribstein, B., C. Millet, F. Lott, **A. de la Cámara**	
Títol / *Title*: Interactions between intermittent gravity waves and infrasounds	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: 69th Annual Meeting of the American Physical Society's Division of Fluid Dynamics	
Publicació / *Publication*: abstract M13.00009	
Lloc celebració / *Venue*: Portland, Oregon (USA)	**Data / *Date*:** November 2016
Organisme/institució organitzadora / *Organising body/institution*: APS Division of Fluid Dynamics	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, V. Jewtoukoff, R. Plougonven, A. Hertzog, M. Abalos	
Títol / *Title*: The impact of source-related nonorographic gravity wave parameterizations on the circulation of the middle atmosphere	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: International Symposium on the Whole Atmosphere	
Publicació / *Publication*: http://pansy.eps.s.u-tokyo.ac.jp/iswa/ISWA-program.html	
Lloc celebració / *Venue*: University of Tokyo (Japan)	**Data / *Date*:** September 2016
Organisme/institució organitzadora / *Organising body/institution*: VarSITI/SCOSTEP, Inoue Foundation for Science, Kyoto University, RISH, SOKENDAI (The Graduate University for Advanced Studies), The Meteorological Society of Japan, and The Society of Geomagnetism and Earth, Planetary and Space Sciences (SGEPSS).	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, A. J. R. Albers, T. Birner, R. R. Garcia, P. Hitchcock., D. E. Kinnison, A. K. Smith	
Títol / *Title*: On the sensitivity of sudden stratospheric warmings to previous stratospheric conditions	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: International Symposium on the Whole Atmosphere	
Publicació / *Publication*: http://pansy.eps.s.u-tokyo.ac.jp/iswa/ISWA-program.html	
Lloc celebració / *Venue*: University of Tokyo (Japan)	**Data / *Date*:** September 2016
Organisme/institució organitzadora / *Organising body/institution*: VarSITI/SCOSTEP, Inoue Foundation for Science, Kyoto University, RISH, SOKENDAI (The Graduate University for Advanced Studies), The Meteorological Society of Japan, and The Society of Geomagnetism and Earth, Planetary and Space Sciences (SGEPSS).	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, V. Jewtoukoff, R. Plougonven, A. Hertzog	
Títol / *Title*: The relevance of parameterized momentum flux intermittency during the austral stratospheric final warming as simulated by LMDz	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: SPARC Gravity Wave Symposium	
Publicació / *Publication*: http://adapt.psu.edu/2016SPARCGWSymposium/index.php?loc=programs	
Lloc celebració / *Venue*: Penn State University (USA)	**Data / *Date*:** May 16-20 2016
Organisme/institució organitzadora / *Organising body/institution*: SPARC (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, M. Abalos	
Títol / *Title*: A stochastic parameterization of gravity waves emitted by jets and fronts: Impact on the simulated annual cycle	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: SPARC Gravity Wave Symposium	
Publicació / *Publication*: http://adapt.psu.edu/2016SPARCGWSymposium/index.php?loc=programs	
Lloc celebració / *Venue*: Penn State University (USA)	**Data / *Date*:** May 16-20 2016
Organisme/institució organitzadora / *Organising body/institution*: SPARC (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Plougonven, R., V. Jewtoukoff, **A. de la Cámara**, A. Hertzog, F. Lott	
Títol / *Title* The relation between gravity wave momentum fuxes and background wind speed	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: SPARC Gravity Wave Symposium	
Publicació / *Publication*: http://adapt.psu.edu/2016SPARCGWSymposium/index.php?loc=programs	
Data / *Date*: May 16-20 2016	**Data / *Date*:** May 16-20 2016
Organisme/institució organitzadora / *Organising body/institution*: SPARC (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Jewtoukoff, V., R. Plougonven, A. Hertzog, **A. de la Cámara**, F. Lott, T. Allard	
Títol / *Title* Validation of the gravity waves in ECMWF analyses using balloon observations and interannual variability of the gravity wave momentum fluxes	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: SPARC Gravity Wave Symposium	
Publicació / *Publication*: http://adapt.psu.edu/2016SPARCGWSymposium/index.php?loc=programs	
Data / *Date*: May 16-20 2016	**Data / *Date*:** May 16-20 2016
Organisme/institució organitzadora / *Organising body/institution*: SPARC (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, V. Jewtoukoff, R. Plougonven, A. Hertzog	
Títol / *Title*: Gravity wave forcing during the austral stratospheric polar vortex breakdown as simulated by LMDz	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, Vol. 18, EGU2016-8708, 2016	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2016
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Millet, C., F. Lott, **A. de la Cámara**	
Títol / *Title*: Impact of gravity waves on long-range infrasound propagation	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, Vol. 18, EGU2016-18355, 2016	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2016
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Díaz-Durán, A., B. Ayarzagüena, E. Serrano, M. Abalos, and **A. de la Cámara**	
Títol / *Title* Precursors of weak stratospheric polar vortex events: intra-seasonal variability	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, Vol. 18, EGU2016-13549, 2016	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2016
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Millet, C., **A. de la Cámara,** F. Lott	
Títol / *Title*: Propagation of acoustic pulses in random gravity wave fields	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: 68th Annual Meeting of the American Physical Society's Division of Fluid Dynamics	
Publicació / *Publication*: abstract H30.004	
Lloc celebració / *Venue*: Boston, Massachusetts (USA)	**Data / *Date*:** November 22-24, 2015
Organisme/institució organitzadora / *Organising body/institution*: APS Division of Fluid Dynamics	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, V. Jewtoukoff, R. Plougonven, A. Hertzog	
Títol / *Title*: Gravity wave forcing during the austral stratospheric polar vortex breakdown as simulated by LMDz	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: SPARC regional Workshop on "Chemical and Physical Processes in the Climate System"	
Publicació / *Publication*: -	
Lloc celebració / *Venue*: Boulder (Colorado, USA)	**Data / *Date*:** November 2015
Organisme/institució organitzadora / *Organising body/institution*: SPARC (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, L. Guez, A. Hertzog	
Títol / *Title*: Stochastic parameterizations of the gravity waves emitted from convection and fronts: theory, validation, and impacts of the middle atmospheric circulation	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: International Scientific Conference "Our Common Future under Climate Change"	
Publicació / *Publication*: -	
Lloc celebració / *Venue*: Paris (France)	**Data / *Date*:** July 2015
Organisme/institució organitzadora / *Organising body/institution*: UNESCO	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott	
Títol / *Title*: A stochastic parameterization of the gravity waves emitted by jets and fronts for general circulation models	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 17, EGU2015-4737, 2015	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2015
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Jewtoukoff, V., A. Hertzog, R. Plougonven, **A. de la Cámara**, F. Lott	
Títol / *Title*: Gravity waves in the Southern Hemisphere derived from balloon observations and the ECMWF analyses	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 17, EGU2015-15333, 2015	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2015
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Plougonven, R., A. Hertzog, **A. de la Cámara**, F. Lott	
Títol / *Title*: The relation between gravity waves and the local wind speed in the lower stratosphere	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 17, EGU2015-10155, 2015	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2015
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, A. Hertzog	
Títol / *Title*: Momentum-flux intermittency in a stochastic parameterization of non-orographic gravity waves	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: SPARC regional Workshop on the "Role of the stratosphere in climate variability and prediction	
Publicació / *Publication*:	
Lloc celebració / *Venue*: Granada (Spain)	**Data / *Date*:** January 2015
Organisme/institució organitzadora / *Organising body/institution*: SPARC (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott	
Títol / *Title*: Linking parameterized gravity waves in the LMDz-GCM to theirfrontal sources	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: SPARC regional Workshop on the "Role of the stratosphere in climate variability and prediction	
Publicació / *Publication*:	
Lloc celebració / *Venue*: Granada (Spain)	**Data / *Date*:** January 2015
Organisme/institució organitzadora / *Organising body/institution*: SPARC (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, A. Hertzog	
Títol / *Title*: Momentum-fux intermittency and energy spectra from a stochastic parameterization of non-orographic gravity waves	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 16, EGU2014-7209, 2014.	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2014
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, C. R. Mechoso, A. M. Mancho, E. Serrano and K. Ide	
Títol / *Title*: Unravelling the geometric structures of the stratospheric flow	
Tipus de contribució / *Contribution type*: Oral (Invited)	
Congrés / *Congress*: Mathematics and Geosciences: Global and Local Perspectives	
Publicació / *Publication*:	
Lloc celebració / *Venue*: Madrid (Spain)	**Data / *Date*:** November 2013
Organisme/institució organitzadora / *Organising body/institution*: IGEO, ICMAT (CSIC)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, F. Lott, P. Maury, L. Guez	
Títol / *Title*: A stochastic parameterization of gravity waves: formalism, tests in a GCM, and validation against observations	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: Symposium on Stochastic Parameterisation in Weather and Climate Models	
Publicació / *Publication*:	
Lloc celebració / *Venue*: Bonn (Germany)	**Data / *Date*:** September 2013
Organisme/institució organitzadora / *Organising body/institution*: Max Plank Institute	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, C. R. Mechoso, A. M. Mancho, E. Serrano and K. Ide	
Títol / *Title*: Rossby wave breaking and Lagrangian structures inside the Antarctic stratospheric polar vortex during Vorcore and Concordiasi campaigns	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 15, EGU2013-9298-1, 2013	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2013
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

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Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, A. M. Mancho, K. Ide, E. Serrano and C. R. Mechoso	
Títol / *Title*: Isentropic transport outside, inside and across the Antarctic stratospheric polar vortex	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: 2nd Workshop on Nonlinear Processes in Oceanic and Atmospheric Flows	
Publicació / *Publication*:	
Lloc celebració / *Venue*: Madrid (Spain)	**Data / *Date*:** July 2012
Organisme/institució organitzadora / *Organising body/institution*: ICMAT (CSIC)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, A. M. Mancho, K. Ide, E. Serrano and C. R. Mechoso	
Títol / *Title*: A Lagrangian analysis of transport across the Antarctic polar vortex edge in the southern spring	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: AGU Fall Meeting December	
Publicació / *Publication*: A12C-03 at http://www.agu.org/meetings/fm11/waisfm11.html	
Lloc celebració / *Venue*: San Francisco (USA)	**Data / *Date*:** December 2011
Organisme/institució organitzadora / *Organising body/institution*: American Geosciences Union (AGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Ayarzagüena, B., B. Rodríguez-Fonseca, **A. de la Cámara,** J. García-Serrano and E. Serrano	
Títol / *Title*: A Lagrangian analysis of transport across the Antarctic polar vortex edge in the southern spring	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: AGU Fall Meeting December	
Publicació / *Publication*: A51A-0221 at http://www.agu.org/meetings/fm11/waisfm11.html	
Lloc celebració / *Venue*: San Francisco (USA)	**Data / *Date*:** December 2011
Organisme/institució organitzadora / *Organising body/institution*: American Geosciences Union (AGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, A. M. Mancho, K. Ide, E. Serrano and C. R. Mechoso	
Títol / *Title*: A Lagrangian study of large-scale horizontal transport in the southern stratospheric polar vortex edge	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 13, N 12902, 2011. ISSN: 1029-7006	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2011
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, C. R. Mechoso, K. Ide, R. Walterscheid and G. Schubert	
Títol / *Title*: Large-scale stirring in the southern stratospheric polar vortex during the final warming of 2005	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 12, N 4772, 2010. ISSN: 1029-7006	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** May 2010
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, J. García-Serrano, E. Serano	
Títol / *Title*: Boreal winter modes of circulation in the stratosphere-troposphere system under the infuence of ENSO polarity	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 12, N 5224, 2010. ISSN: 1029-7006	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** May 2010
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: García-Serrano, J., B. Rodríguez-Fonseca, I. Bladé, P. Zurita-Gotor, **A. de la Cámara**	
Títol / *Title*: ENSO contribution to North Atlantic dipolar variability during midwinter	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 12, N 12902, 2010. ISSN: 1029-7006	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** May 2010
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Ayarzagüena, B., **A. de la Cámara**, E. Serrano, M. Abalos, B. González	
Títol / *Title*: The infuence of the stratosphere-troposphere coupling on the Euro-Atlantic climate variability	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: Climate in Spain: Past, present and future. (CLIVAR-Spain)	
Publicació / *Publication*: -	
Lloc celebració / *Venue*: Madrid (Spain)	**Data / *Date*:** February 2009
Organisme/institució organitzadora / *Organising body/institution*: CLIVAR-Spain	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Ayarzagüena, B., E. Serrano, **A. de la Cámara**	
Títol / *Title*: Impact of interannual variability of stratospheric nal warmings on the anomalous spring rainfall regime in the Mediterranean region	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: 2nd ESF-MedCLIVAR Workshop	
Publicació / *Publication*: -	
Lloc celebració / *Venue*: Le Londe les Maures	**Data / *Date*:** October 2007
Organisme/institució organitzadora / *Organising body/institution*: MedCLIVAR	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, C. R. Mechoso, E. Serrano	
Títol / *Title*: Winter stratosphere-troposphere system and precipitation over Europe	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: 7th EMS Annual Meeting	
Publicació / *Publication*: EMS7/ECAM8 Abstracts, Vol. 4, EMS2007-A-00514	
Lloc celebració / *Venue*: San Lorenzo de El Escorial (Spain)	**Data / *Date*:** September 2007
Organisme/institució organitzadora / *Organising body/institution*: European Meteorological Society (EMS)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Ayarzagüena, B., E. Serrano, **A. de la Cámara**	
Títol / *Title*: Variation in the timing of the stratospheric final warming and its dynamical effects on spring tropospheric conditions over Europe	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: 7th EMS Annual Meeting	
Publicació / *Publication*: EMS7/ECAM8 Abstracts, Vol. 4	
Lloc celebració / *Venue*: San Lorenzo de El Escorial (Spain)	**Data / *Date*:** September 2007
Organisme/institució organitzadora / *Organising body/institution*: European Meteorological Society (EMS)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, E. Serano, C. R. Mechoso	
Títol / *Title*: Stratospheric Variability as Predictor of Winter Anomalous Precipitation over Europe	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: WCRP Seasonal Prediction Workshop	
Publicació / *Publication*: -	
Lloc celebració / *Venue*: Barcelona (Spain)	**Data / *Date*:** May 2007
Organisme/institució organitzadora / *Organising body/institution*: World Climate Research Program (WCRP)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, E. Serano, B. Ayarzagüena, C. R. Mechoso	
Títol / *Title*: Winter Rainfall Variability over Europe in the coupled Stratosphere-Troposphere System	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 9, n 08908, 2007. ISSN: 1029-7006.	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2007
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: Yagüe, S. Viana, G. Maqueda, M. F. Lazcano, G. Morales, M. L. Sánchez, E. Serrano, A. de la Cámara, J. García and E. Sánchez	
Títol / *Title*: The Nocturnal Atmospheric Boundary Layer during the field campaign SABLES2006	
Tipus de contribució / *Contribution type*: Poster	
Congrés / *Congress*: EGU General Assembly	
Publicació / *Publication*: Geophysical Research Abstracts, vol. 9, n 02979, 2007. ISSN: 1607-7962.	
Lloc celebració / *Venue*: Vienna (Austria)	**Data / *Date*:** April 2007
Organisme/institució organitzadora / *Organising body/institution*: European Geosciences Union (EGU)	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, E. Serrano, B. Ayarzagüena	
Títol / *Title*: Acoplamiento estratosfera-troposfera en la precipitación anòmala invernal sobre Europa	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: 5º Simpósio de Meteorologia e Geofísica da APMG / 8º Encontro Luso-Espanhol de Meteorologia	
Publicació / *Publication*:	
Lloc celebració / *Venue*: Peniche (Portugal)	**Data / *Date*:** February 2007
Organisme/institució organitzadora / *Organising body/institution*: Associaçâo Portuguesa Meteorologia-Geofísica	

Congressos i conferències / *Congresses and conferences*	
Autors/es (per ordre de signatura) / *Authors (in signing order)*: **de la Cámara, A.**, E. Serrano	
Títol / *Title*: Conexión entre el fenómeno ENSO y las anomalías pluviométricas en la Península Ibérica	
Tipus de contribució / *Contribution type*: Oral	
Congrés / *Congress*: V Asamblea Hispano-Portuguesa de Geodesia y Geofísica	
Publicació / *Publication*: Editores: Madrid, Ministerio de Medio Ambiente, 2006. ISBN: 84-8320-373-1	
Lloc celebració / *Venue*: Sevilla (Spain)	**Data / *Date*:** 2006
Organisme/institució organitzadora / *Organising body/institution*:	

1.7 Experiència en projectes de col·laboració amb empreses i en transferència de tecnologia / *Experience in partnership projects with companies and in technology transfer*

No experience in this area.

1.8 Altres mèrits acadèmics i/o científics rellevants, incloent premis d'investigació, reconeixements, ensenyaments impartits, supervisió d'estudiants, activitats divulgatives, informes, desenvolupament de hardware i software, etc. / *Other relevant academic and/or scientific merits, including research prizes, acknowledgements, teaching given, student supervision, dissemination activities, reports, hardware/software development, etc.*

Additional training

- Graduate course (20 hours), May 2009. "Hydrodynamical instabilities, turbulence and geophysical applications", given by Prof. Friedich H. Busse (Bayreuth University, Germany). Place: Department of Theoretical Physics, Universidad Nacional de Educación a Distancia (UNED), Madrid, Spain.
- Graduate course (30 hours), October – November 2006. "Elementos de Dinámica de Fluidos Geofísicos", given by Prof. C. Roberto Mechoso (UCLA, USA). Place: Departamento de Geofísica y Meteorología, UCM, Madrid, Spain.
- Summer School (50 hours), September 2006. "Predicción del clima: del pasado al futuro" ("Climate prediction, from the past to the future"). Place: Universidad del País Vasco, San Sebastián, Spain.
- Summer School (100 hours), July 2005. "Alternativas energéticas sostenibles: Tratamiento técnico" ("Sustainable Energy sources: Technical overview"). Place: Universidad Complutense de Madrid, Spain.

Teaching experience

- Academic year 2012/2013.
  Teaching Assistant, "Laboratory of Scientific Computation". First year of Degree of Physics, Dept. Geophysics and Meteorology, Universidad Complutense de Madrid, Spain.
- Academic year 2011/2012.
  Teaching Assistant, "Laboratory of Scientific Computation". First year of Degree of Physics, Dept. Geophysics and Meteorology, Universidad Complutense de Madrid, Spain.
- Academic year 2010/2011.
  Mentor to students, "Fundamentos de Física I". First year of Degree of Physics, Dept. Geophysics and Meteorology, Universidad Complutense de Madrid, Spain.
- Academic year 20109/2010.
  Mentor to students, " Laboratory of Scientific Computation". First year of Degree of Physics, Dept. Geophysics and Meteorology, Universidad Complutense de Madrid, Spain.

Participation in education innovation projects

- June 1, 2011 – May 31, 2012.
  "Proyecto de innovación y mejora de la calidad docente: Laboratorio virtual de meteorologia y clima". Funded by Universidad Complutense de Madrid, Spain.
  http://meteolab.fis.ucm.es

Invited seminars as speaker

- April 27, 2016. Ciclo de Seminarios en Física de la Atmósfera, Facultad de Ciencia Físicas, UCM, Madrid, Spain. *Ondas de gravedad en la atmósfera: Modelizando sus efectos en el clima*.
- February 5, 2016. AOS271 Seminar Series at the Department of Oceanic and Atmospheric Sciences, UCLA, Los Angeles, California, USA. *Gravity waves from fronts and jets: Parameterizing their effects on the middle atmospheric circulation*.
- December 12, 2013. Seminar at the Theory of Atmospheric Dynamics and Climate Group at the Geosciences Department, Goethe University, Frankfurt, Germany. *A stochastic parameterization of gravity waves: formalism, tests in a GCM, and validation against observations*.

- June 2011. Department of Atmospheric and Oceanic Sciences, University of Maryland, College Park, Maryland, USA. *Quasi-horizontal transport across the stratospheric polar vortex*.
- March 2009. AOS271 Seminar Series at the Department Atmospheric and Oceanic Sciences, UCLA, Los Angeles, California, USA. *Polar night vortex breaking and air mixing in the southern stratosphere*.

Travel grants

International Symposium of the Whole Atmosphere (ISWA). University of Tokyo. September 2016.

Reviewer of Scientific journals

- Journal of Atmospheric Sciences
- Journal of Geophysical Research: Atmospheres
- Annales Geophysicae

Committee work

- Oct 2015 – present. Research Review Committee member, Advanced Study Program, NCAR.
- 3-6 July 2012. Local committee member in the 2nd International Workshop Nonlinear processes in oceanic and atmospheric flows, ICMAT, Campus Cantoblanco UAM, Madrid, Spain.
- April 2009 – June 2010. Co-founder and organizer of "UCM Seminar Series: Atmospheric Physics Seminars", UCM, Madrid, Spain.
- November 2009. Organizer of "Experiments to understand the Atmosphere and the Ocean, IX Science Week (Dept. Geophysics and Meteorology, UCM, Madrid Spain).

Scientific outreach activities

- January 2016. Poster participation in the exposition "ConCiencia Climática" (Climate Awareness), at the College d'Espagne, Cité Internationale Universitaire de Paris, France.
- May 19, 2014. Ciclo de conferencias del Comité de Residentes del Colegio de España en París. Title: "Conversaciones de ascensor: Hablemos del tiempo", joint seminar with Dr. M. Abalos, Dr. J. García-Serrano, and Dr. P. Ortega.
- May 12, 2014. Ciclo de conferencias del Comité de Residentes del Colegio de España en París. Title: "Breve historia del clima: Pasado, presente y futuro", joint seminar with Dr. M. Abalos, Dr. J. García-Serrano, and Dr. P. Ortega.
- November 2006, 2007, 2008, 2010, 2011, 2012. Monitor of the "Experiments to understand the Atmosphere and the Ocean, VI, VII, VII and X Science Week (Dept. Geophysics and Meteorology, UCM, Madrid Spain).

Participation in observational campaigns

- Field operator in the observational campaign with thethered ballons at CIBA (Centro de Investigación de la Baja Atmósfera) in Valladolid, June 2006. PI: Prof. Carlos Yagüe (UCM)

Languages

- Spanish (native).
- English (Proficiency speaking and writing).
- French (Intermediate).

Computer skills

- Experience in Fortran programming and shell scripting, and MATLAB, NCO, and GrADS for data processing, analysis and visualisation.
- Experience compiling and running the LMDz (IPSL) and WACCM (CESM) climate models.
- LaTeX, MS Word.

2. Entitat i grup de recerca receptor (màxim 8 fulls) / *Host research group and entity (maximum 8 sheets)*

2.1 Breu descripció del grup de recerca receptor i del seu impacte científic internacional incloent les principals publicacions i els projectes de recerca finançats en els darrers cinc anys / *Brief description of the host research group and its scientific/academic impact, including main publications and research projects funded in the last five years*

The Barcelona Supercomputing Center (BSC) was established in 2005 and it is the national supercomputing facility in Spain. The mission of BSC, as a unique fusion of a classic national scientific support structure and a cutting-edge research institute, is to research, develop and manage information technologies in order to facilitate scientific progress in Computer Sciences, Life Sciences, Earth Sciences (ES) and Computational Applications in Science and Engineering. This multi-disciplinary approach and the combination of world-leading researchers and High Computing Performance (HPC) experts with state-of-the-art HPC resources makes BSC a unique research institution.

BSC is located on a campus of the Technical University of Catalonia (Universitat Politècnica de Catalunya - UPC) and has an agreement with the UPC to use university facilities and services. Furthermore, many of the group leaders at BSC are also university professors with broad knowledge and experience in advance research and teaching, i.e., the BSC substantially contributes to and benefits from UPC higher educational environment. The BSC is a key element of and coordinates the Spanish Supercomputing Network, which is the main framework for granting competitive HPC time to Spanish research institutions. Furthermore, BSC is one of six hosting nodes in France, Germany, Italy and Spain that form the core of the Partnership for Advanced Computing in Europe (PRACE) network. PRACE provides competitive computing time on world-class supercomputers to researchers in the 25 European member countries. BSC has been accredited as one of the first eight Severo Ochoa Centers of Excellence. This award is given by the Government of Spain as recognition of leading research centers in Spain that are internationally well known institutions in their respective areas. Specifically, BSC received Severo Ochoa Center of Excellence support and accreditation starting in January 2012 based on accomplishments in scientific research and engineering, applying exascale supercomputers and big data management to tackle major societal problems in areas such as human health and biomechanics, and environment and climate. In terms of attraction of talent, during the period 2011-2015, the BSC has recruited 75 pre-doctoral students, 51 Postdocs and Senior Scientist, 83 technical support staff members and 31 management staff, 146 from Spain, 39 coming from EU countries and 55 from outside Europe, being currently more than 380 staff members, from around 40 countries. Recruitment procedures are based on principles of merit, transparency, competition and gender balance and the centre has been awarded with the badge of Human Resources Excellence in Research (HRS4R) in April 2015. Following a gap analysis, areas for improvement have been identified and new actions are going to be implemented. A Career Plan is made on a yearly basis by all staff members of centre and is revised at the end of the year, through a new online tool accessible by staff members and by their supervisors.

The candidate will be enrolled at the Earth Sciences department of the Barcelona Supercomputing Center (ES-BSC), which conducts multi-facet research in Earth system modelling. Established in 2006, the initial core activity was focused on atmospheric composition modelling. The designation of Prof. Francisco J. Doblas-Reyes as Director of the ES-BSC in 2014 initiated the merging of the ES-BSC with the Climate Forecast Unit of the Institut Català de Ciències del Clima (IC3-CFU), which he was leading and had become in a short time a main European actor in the development of climate predictions and climate services. The newly merged department is structured around four groups with more than 50 employees, including technical and support staff. It is a highly productive scientific entity that has published more than 150 research articles in peer-reviewed journals over the last 5 years, including 5 in prestigious high-impact journals. (For a complete list of the publications of the department: https://earth.bsc.es/wiki/doku.php?id=publications:publications) and with a very dense international collaborative network counting at least 50 institutes worldwide. ES-BSC focuses research on atmospheric emissions, air quality, mineral dust transport, and global and regional climate modelling and prediction. The ES-BSC works on the development of and conducts research with a multi-scale set of comprehensive single-component and coupled general circulation models.

The ES-BSC is structured in four groups: Climate Prediction, Atmospheric Composition, Earth Science Services, and Computational Earth Sciences. The department strategy includes a

management layer made of the department director and the group leaders that ensures the consistency of the activities with the strategic plan and that implements strategies to facilitate an adequate communication at all levels. This layer facilitates the integration of the department in the local and national research and services environment. The ES-BSC makes its best to respond to the requests of policy makers and society and to support as much as possible the growth of a robust air quality and climate modelling Spanish community made of a set of research groups of varied characteristics. The management layer also works towards increasing the visibility of the ES-BSC, becoming more active in the international research programme arena (WWRP, WCRP, etc).

Supervisor:

Prof. Francisco J. Doblas-Reyes, Research Professor at ICREA (Institució Catalana de Recerca i Estudis Avançats) and the chair of ES-BSC, formerly head of the Climate Forecasting Unit at IC3. He is extremely well regarded in the field, having received in 2006 the Norbert Gerbier-MUMM International Award of the World Meteorological Organization (WMO), and being lead author of chapter 11 "Near-term Climate Change: Projections and Predictability" in the fifth assessment report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) Working group I – The Physical Science Basis. He is a member of several international scientific committees: e.g. co-chair of the Working Group on Seasonal-to-Interannual Prediction (WGSIP) and member of the Decadal Climate Prediction Panel (DCPP) of the World Climate Research Programme (WCRP); European Climate, Observations and Modeling for Services panel of the European Commission; European Network for Earth System Modeling High-Performance Computing Task Force. Prof. Doblas-Reyes is a prominent researcher in the fields of climate dynamics and climate prediction with excellent proven project management skills. Besides a long list of more than 100 scientific peer-review papers with high citation impact, this is also demonstrated by the fact that he is currently leading numerous projects at the Earth Sciences Department, mostly funded by the European Commission, the Spanish Government and some private partners. He is actively collaborating with climate research institutions in three continents, like ECMWF, KNMI, SMHI, Met Office, CERFACS, Météo-France, NOAA, APCC, CPTEC and IPSL, among other less frequent collaborations. Both at ES-BSC and IC3, Prof. Doblas-Reyes has provided researchers with exceptional training support and conditions for their scientific growth in many different ways, including improvements in their research and management skills. He has mentored 11 post-doctoral researchers in Climate Prediction, and 3 post-doctoral researchers and 2 managers in Climate Services.

Selected publications of department members in the last 5 years (from more than 150 articles in the last 5 years):

Bellprat, O. and F.J. Doblas-Reyes (2016). Attribution of extreme weather and climate events overestimated by unreliable climate simulations. Geophysical Research Letters, 43, 2158-2164, doi:10.1002/2015GL067189.

Carrassi, A., V. Guemas, F.J. Doblas-Reyes, D. Volpi and M. Asif (2016). Sources of skill in near-term climate prediction. Part I: Generating initial conditions. Climate Dynamics, doi:10.1007/s00382-016-3036-4.

García-Serrano, J. and R.J. Haarsma (2016). Non-annular, hemispheric signature of the winter North Atlantic Oscillation. Climate Dynamics, doi:10.1007/s00382-016-3292-3.

Guemas, V., M. Chevallier, M. Déqué, O. Bellprat and F.J. Doblas-Reyes (2016). Impact of sea ice initialization on sea ice and atmosphere prediction skill on seasonal timescales. Geophysical Research Letters, 43, 3889-3896, doi:10.1002/2015GL066626.

Lienert, F. and F.J. Doblas-Reyes (2016). Prediction of interannual North Atlantic sea surface temperature and its remote influence over land. Climate Dynamics, doi: 10.1007/s00382-016-3254-9.

Massonnet, F., O. Bellprat, V. Guemas and F. J. Doblas-Reyes (2016). Using climate models to estimate the quality of global observational data sets. Science, 6311, 452-455, doi:10.1126/science.aaf6369.

Orsolini, Y., R. Senan, F. Vitart, G. Balsamo, A. Weisheimer and F.J. Doblas-Reyes (2016). Influence of the Eurasian snow on the negative North Atlantic Oscillation in subseasonal forecasts of the cold winter 2009/2010. Climate Dynamics, 47, 1325-1334, doi:10.1007/s00382-015-2903-8.

Osman, M., C.S. Vera and F.J. Doblas-Reyes (2016). Predictability of the tropospheric circulation in the Southern Hemisphere from CHFP models. Climate Dynamics, 46, 2423-2434, doi:10.1007/s00382-015-2710-2.

Prodhomme, C., F.J. Doblas-Reyes, O. Bellprat and E. Dutra (2016). Impact of land-surface initialization on sub-seasonal to seasonal forecasts over Europe. Climate Dynamics, 47, 919-935, doi:10.1007/s00382-015-2879-4.

Volpi, D., V. Guemas, F.J. Doblas-Reyes, E. Hawkins and N. Nichols (2016). Decadal climate prediction with a refined anomaly initialisation approach. Climate Dynamics, doi:10.1007/s00382-016-3176-6.

Batté, L. and F.J. Doblas-Reyes (2015). Stochastic atmospheric perturbations in the EC-Earth3 global coupled model: impact of SPPT on seasonal forecast quality. Climate Dynamics, 45, 3419-3439, doi:10.1007/s00382-015-2548-7.

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, 42, 2417-2425, doi:10.1002/2015GL063303.

Fučkar, N.S., V. Guemas, N.C. Johnson, F. Massonnet and F.J. Doblas-Reyes (2015). Clusters of interannual sea ice variability in the northern hemisphere. Climate Dynamics, 45, 1-17, doi:10.1007/s00382-015-2917-2.

García-Serrano, J., C. Frankignoul, G. Gastineau and A. de la Cámara (2015). On the predictability of the winter Euro-Atlantic climate: lagged influence of autumn Arctic sea ice. Journal of Climate, 28, 5195-5216, doi:10.1175/JCLI-D-14-00472.1.

García-Serrano, J., V. Guemas and F.J. Doblas-Reyes (2015). Added-value from initialization in predictions of Atlantic multi-decadal variability. Climate Dynamics, 44, 2539-2555, doi:10.1007/s00382-014-2370-7.

Guemas, V., J. García-Serrano, A. Mariotti, F.J. Doblas-Reyes and L.-P. Caron (2015). Prospects for decadal climate prediction in the Mediterranean region. Quarterly Journal of the Royal Meteorological Society, 141, 580-597, doi:10.1002/qj.2379.

Pepler, A.S., L.B. Díaz, C. Prodhomme, F.J. Doblas-Reyes and A. Kumar (2015). The ability of a multi-model seasonal forecasting ensemble to forecast the frequency of warm, cold and wet extremes. Weather and Climate Extremes, 9, 68-77, doi:10.1016/j.wace.2015.06.005.

Weber, R.T.J., A. Carrassi and F.J. Doblas-Reyes (2015). Linking the anomaly initialization approach to the mapping paradigm: a proof-of-concept study. Monthly Weather Review, 143, 4695-4713, doi:10.1175/MWR-D-14-00398.1.

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., C.G. Jones and F.J. Doblas-Reyes (2014). Multi-year prediction skill of Atlantic hurricane activity in CMIP5 decadal hindcasts. Climate Dynamics, 42, 2675-2690, doi:10.1007/s00382-013-1773-1.

Carrassi, A., R.J.T. Weber, V. Guemas, F.J. Doblas-Reyes, M. Asif and D. Volpi (2014). Full-field and anomaly initialization using a low-order climate model: a comparison and proposals for advanced formulations. Nonlinear Processes in Geophysics, 21, 521-537, 2014, doi:10.5194/npg-21-521-2014.

Fučkar, N.S., D. Volpi, V. Guemas and F.J. Doblas-Reyes (2014). A posteriori adjustment of near-term climate predictions: Accounting for the drift dependence on the initial conditions.

Geophysical Research Letters, 41, 5200-5207, doi:10.1002/2014GL060815.

Guemas, V., E. Blanchard-Wrigglesworth, M. Chevallier, J.J. Day, M. Déqué, F.J. Doblas-Reyes, N. Fučkar, A. Germe, E. Hawkins, S. Keeley, T. Koenigk, D. Salas y Mélia and S. Tietsche (2014). A review on Arctic sea ice predictability and prediction on seasonal-to-decadal timescales. Quarterly Journal of the Royal Meteorological Society, 142, 546-561, doi:10.1002/qj.2401.

Guemas, V., L. Auger and F.J. Doblas-Reyes (2014). Hypothesis testing for auto-correlated short climate time series. Journal of Applied Meteorology and Climatology, 53, 637-651, doi:10.1175/JAMC-D-13-064.1.

Guemas, V., F.J. Doblas-Reyes, K. Mogensen, S. Keeley and Y. Tang (2014). Ensemble of sea ice initial conditions for interannual climate predictions. Climate Dynamics, 43, 2813-2829, doi:10.1007/s00382-014-2095-7.

Rodrigues, L.R.L., F.J. Doblas-Reyes and C.A.S. Coelho (2014). Multi-model calibration and combination of tropical seasonal sea surface temperature forecasts. Climate Dynamics, 42, 597-616, doi:10.1007/s00382-013-1779-8.

Rodrigues, L.R.L., J. García-Serrano and F.J. Doblas-Reyes (2014). Seasonal forecast quality of the West African monsoon rainfall regimes by multiple forecast systems. Journal Geophysical Research, 119, 7908-7930, doi:10.1002/2013JD021316.

Main research projects (last 5 years):

SPECS: FP7, *Seasonal-to-decadal climate prediction for the improvement of European Climate Services*, PI: F. J. Doblas-Reyes, GA 308378, 1.997.444€, 01/03/2016 - 31/01/2017.

EUCLEIA: FP7, *EUropean CLimate and weather Events: Interpretation and Attribution*, PI: V. Guemas, GA 607085, 64.013,99€, 01/09/2015 - 31/12/2016.

EUPORIAS: FP7, *European Provision Of Regional Impacts Assessments on Seasonal and Decadal Timescales*, PI: I. Jiménez, GA 308291, 1.014.226€, 01/11/2015 - 31/01/2017.

PREFACE: FP7, *Enhancing prediction of tropical Atlantic climate and its impacts*, PI: V. Guemas, GA 603521, 168.267,18€, 01/09/2015 - 31/10/2017.

PRIMAVERA: H2020, *Primavera*, PI: F. J. Doblas-Reyes, GA 641727, 1.277.425,00€, 01/11/2015 - 31/10/2019.

Climateurope: H2020, *European Climate Observations, Modelling and Services – 2*, PI: F. J. Doblas-Reyes, GA 689029, 225.000,00€, 01/12/2015 - 30/11/2020.

APPLICATE: H2020, *Advanced Prediction in Polar regions and beyond: Modelling, observing system design and*, PI: V. Guemas, GA 727862, 677.375,00€, 01/11/2016 - 31/10/2020.

RESILIENCE: MINECO - Retos. Proyectos investigación 2013, *RESILIENCE-Strengthening the European Energy Network using Climate Services*, PI: F. J. Doblas-Reyes, 273.460€, 01/01/2014 - 31/12/2016.

Contrato JRC: EU-JRC, Contract nº CCR.IES.C392632.XO, 15.000,00€, 16/02/2015 - 30/09/2016.

DANAE: MINECO - Plan nacional, RETOS Sociedad*, Dinámica y predecibilidad de la teleconexión de ENSO en la región Euro-Atlántica*, PI: J. García-Serrano, CGL2015-68342-R, 146.410,00€, 01/01/2016 - 31/12/2018.

2.2 Infraestructures i instal·lacions de les que es disposarà per desenvolupar les activitats de recerca previstes / *Installations and facilities to be made available for the carrying out of the planned research activities*

BSC has hosted outstanding HPC facilities since its inception in 2006, investing over 30 million euros in HPC facilities. In addition, BSC has invested 15 million euros during 2011-15 in the construction of a new building (completion due 2017) to house BSC staff and new supercomputing facilities. All the

computational resources that the centre has are going to be available to the candidate to carry out the research plan. In particular, I will have computing allocation to perform the model experiments, as well as store and analyse the output.

- MareNostrum 3 (MN3): Commissioned in January 2013, 70% of capacity is competitively assigned to external users by the PRACE Access Committee, 24% by the BSC/RES Access Committee and 6% is dedicated to BSC internal scientists. MN3 has a compute capacity of 1.1 PFlops, based on 48896 Intel cores and 84 Xeon Phi, connected by Infiniband FDR10 low latency network. Total GPFS storage capacity is 2.3 Pbytes, connected with 10Gigabit Ethernet. Some 100 projects at European and Spanish level are active at any one time, from all scientific domains and disciplines.
- MareNostrum 2 (MN2): MN3's predecessor was installed in 2006 and was operational until September 2012. It had a compute capacity of 94.28 TFlops, with total GPFS storage capacity 280 TBytes. External users were assigned 80% of capacity by the BSC/RES Access Committee and 20% was reserved for BSC researchers.
- MinoTauro: commissioned in October 2011, with a compute capacity of 182TFlops, based on 1536 Intel Cores and 256 NVIDIA M2090 GPUs, connected with Infiniband network. Up to 80% is available to Spanish users using the RES Access Committee.
- Prototypes: Several supercomputer prototypes were installed to support research, including MontBlanc prototypes based on ARM and accelerators technology; and Cell based prototypes.
- SGI Altix: A 128 Intel core shared-memory system with 2.5 TBytes main memory, in operation from 2006 until 2014.
- Shared memory: A total of three systems for data pre and post-processing, or workloads that require a huge number of memory. First, with 128 cores and 1.5 TB of main memory, the second with 80 cores and 2 TB of main memory and the third with 80 cores shared machine with 2 TBytes main memory, installed in February 2014.
- Active Archive: installed in 2012, with a total storage capacity of 4.2 PBytes and 72 Intel cores for services, including capabilities for Big Data and Data analytics, and sharing of scientific data among scientists.

2.3 Mitjans previstos per a la incorporació, coordinació i seguiment de la persona candidata / *Planned resources for the incorporation, coordination and oversight of candidate*

A **Career Development Plan will be drafted with the supervisor** during the first month of the fellowship, which will include specific training and research objectives and will help me monitor the outcomes of the fellowship. Likewise, the proposed project will be managed through **weekly meetings with the supervisor to ensure full coherence between my research and the general objectives of ES-BSC**. At all meetings with Prof. Doblas-Reyes, the advancements of my research will be discussed and the supervisor will provide adequate mentoring in the general background of climate prediction, helping adapt the research programme to the difficulties encountered and encouraging progress in the most promising aspects of the research undertaken. **Regular meetings will take place involving the rest of the ES-BSC members**, especially those in the Climate Prediction and Earth System Services teams, **to ensure an adequate integration of this project into the rest of the research carried out in the host department**. In this context, I will be encouraged to participate in discussions and meetings involving the H2020-funded projects PRIMAVERA (high-resolution global modelling) and APPLICATE (polar prediction and links with lower latitudes), and the national project DANAE (seasonal predictability of European climate), ensuring my integration into and building-up of an international networking. I will also have freedom to manage the fellowship research funds.

Constant interaction with all the managing areas of the BSC, especially the Project Managing Office and the Human Resources unit, will contribute to the correct and timely execution of the action as well all the necessary support for applying to other research funding.

2.4. Activitats per a la formació, especialització i desenvolupament de la carrera investigadora de les persones candidates / *Activities for candidates' training, specialisation and research career development*

The implementation of this proposal in the Earth Sciences Department at BSC offers the best opportunity to strengthen and expand my competences. In particular, I will bridge the gap in my training between my theoretical background in stratospheric dynamics and climate variability diagnosis, and the practical requirements of stratospheric forecasting and climate predictability assessment. In this context, the following training objectives are envisaged during the action:

- The first training objective will be to **deepen my abilities and experience** analysing and running a climate model. During my postdoctoral studies, I have developed a strong understanding of the issues inherent to stratospheric parameterization and post-processing data. The proposed analysis and validation of the EC-Earth model performance in the stratosphere (see section 3), while learning the model characteristics and how to perform experiments with it, will allow me to strengthen my knowledge on stratospheric dynamics and modelling. In this regard, the experience of the host group in designing model experiments will certainly benefit both the action and me as a researcher.
- The second training objective **introduces me to a new field: stratospheric and climate prediction**. I will learn tools and quality scores to both running and evaluating seasonal forecasts (initialization, ensemble generation, drift, etc.). This will take place at the host institution under the supervision of Prof. Doblas-Reyes, who has a vast experience in the field. In this context, I will strongly benefit from participating in discussions and meetings within the H2020-funded PRIMAVERA and APPLICATE projects, in which ES-BSC participates, and the Spanish project DANAE.
- The third objective is to **improve my coding and data analysis skills** via the **PATC courses** (organized by PRACE, the Partnership for Advanced Computing in Europe, at BSC) (https://www.bsc.es/education/training/patc-courses) and the regular training of the Computational Earth Sciences group of the ES-BSC, **my scientific and project writing, project management, presentation skills**, etc., via the formal courses organized by the Education & Training department and Human Resources, and the participation in the regular seminars organized by the department. Aligned with these activities, the HR department has achieved the **Human Resources Excellence in Research** badge during April, 2015.
- And finally, a fundamental training objective is the **assumption of new responsibilities**. Pursuing my own research line, managing a project (scientifically and financially), leading international collaborations, are all required competences to successfully develop a productive and long-lasting scientific career, which the host institution actively encourages.

3. Projecte o activitats de recerca (màxim 8 fulls) / *Research project or activities (maximum 8 sheets)*

3.1 Descripció del projecte o de les activitats de recerca que es volen desenvolupar, fent especial referència a l'estat de la qüestió, a la novetat i la originalitat de la recerca proposada. Descripció dels objectius, de l'enfocament metodològic i del pla de treball / *Description of the intended research project or activities, with special reference to the state of the art, and the innovative nature and originality of the proposed research. Description of goals, methodological focus and work plan.*

Introduction and objectives:

Twice every three years on average, the strong, cyclonic stratospheric polar vortex (SPV) centred on the pole that dominates the wintertime stratospheric circulation in the extratropical Northern Hemisphere (NH) is subject to one of the most impressive dynamical events in the climate system: the so-called sudden stratospheric warming [1] (SSW). During an SSW, the SPV is severely displaced off the pole (i.e. "displacement" event) or split into two smaller vortices (i.e. "split" event) in a matter of few days [2]. Driven by enhanced planetary wave activity, polar temperatures in the stratosphere increase several tens of degrees, and the direction of the zonal mean winds reverses from westerly to easterly [3]. **SSWs are important because associated temperature and wind anomalies descend from the stratosphere to the troposphere, where they induce changes in the storm tracks and impact surface weather for up to two months** [4,5,6]. In particular, the anomalous weather conditions in Europe after SSW events resemble those associated with a negative phase of the North Atlantic Oscillation [5] (NAO), namely anomalously wet and warm conditions in southern Europe and the opposite anomalous conditions in northern Europe.

This stratospheric influence on winter climate variability has been detected and studied for almost two decades, but not until recently have seasonal forecast systems started exploring the enhanced prediction skill provided by this connection [7,8]. Increasing evidence suggests that SSWs are a source of additional predictability in long-range forecasting of winter climate in Europe and eastern North America [9,10]; hence the **importance of assessing the capability of forecast systems to predict SSWs and their potential impacts at the surface**. Unfortunately, the mechanisms behind the explosive growth of stratospheric wave activity that ultimately triggers an SSW are still unclear. Succinctly, two explanations have been proposed. The first and more predominant is that SSWs are initiated by the anomalous injection of wave activity from the troposphere [11,12,13]. Indeed, different processes have been identified to alter the tropospheric planetary wave patterns and thus contribute to the occurrence of SSW events – i.e. blocking anticyclones [14,15], El Niño Southern Oscillation [15,16] (ENSO), the phase of the Quasi-Biennial Oscillation [17] (QBO), etc. The second proposes that the wave amplification that accompanies SSWs is indicative of nonlinear resonance [18,19]. Under this approach, it is the vortex geometry that determines the development of an SSW event, and no anomalously intense tropospheric wave activity is needed to trigger the event [20].

Interestingly, while some studies stress the key role of tropospheric wave activity in providing predictability of SSWs [21,22], Taguchi [23] has recently shown that skilful SSW forecasts depend on the ability of the model to predict the vortex geometry prior to the event, with split events being more challenging than displacement events. On their part, Marshall and Scaife [8] reported an improved SSW predictability as the stratospheric resolution is increased, which suggests that both mechanisms might be at play –with a better resolved stratosphere, stratospheric conditions and wave-mean flow interactions will be better represented. **Disentangling the relative roles of tropospheric precursors and stratospheric conditions on the development of SSWs is, therefore, a much-needed effort**, which will help clarify the predictability sources of SSW events. Does the stratosphere passively respond to tropospheric dynamics during SSWs? Or does it play an active role triggering SSWs? The answer to these questions, in turn, will guide modellers towards improved simulations/predictions of these events and their surface impact in the wintertime European region. The interest of contributing to a better climate prediction in this region is twofold. First, it is one of the most populated areas in the world, and hence the economic and societal benefits of improved climate prediction are broad. And second, this is a region of major scientific challenge since the Euro-Atlantic winter is currently the season with the lowest prediction skill from persistence-based forecasts [24], which can be explained by the high level of atmospheric internal variability. The winter in this region is also the season with the overall largest systematic error in dynamical prediction systems, particularly for the pressure field, surface temperature and precipitation [25].

Generally, the above-mentioned studies focus on the forecast skill of observed SSWs. This adds complexity to the analysis of the predictability, this complexity mainly arising from the model drift towards its climatology when it is initialized with an observed state. Thus, a sensible first step should **tackle the capability of models to predict SSWs that are internally generated by the model**. This way, those inherent problems of predicting an SSW observed in nature will be absent, and the dynamical mechanisms that trigger an SSW event should be easier to identify.

In this context, **the present project aims at giving an important step forward in assessing the capabilities of current seasonal forecast systems to predict SSW events**. Targeted experiments with the state-of-the-art Earth system model EC-Earth are proposed to evaluate the individual role of tropospheric wave injection and stratospheric state for triggering SSWs. The outcome of this action will provide valuable and unique information to design strategies toward the improvement of long-range climate forecasts during the European winter.

The specific objectives that are pursued in this project are:

- *Objective 1:* **Assess the EC-Earth model performance in the stratosphere**. We will use long control runs of the EC-Earth model to evaluate the model's ability to reproduce the observed stratospheric variability and the vertical coupling with the troposphere. Note that the atmospheric component of EC-Earth is the Integrated Forecast System (IFS) model, which is also the atmospheric model of the European Centre for Medium-range Weather Forecasts (ECMWF). The possibility of providing feedback to this operational centre is very attractive. *Expected results:* This analysis will provide detailed information on the model's behaviour in the stratosphere and its interaction with other components of the climate system, and will allow us to identify relevant model biases.
- *Objective 2:* **Estimate the stratospheric predictability during SSW events.** After assessing the model's performance in the coupled stratosphere-troposphere system, we will perform model experiments of SSWs with controlled initial and boundary conditions, as well as controlled injection of tropospheric wave activity. *Expected results:* These experiments will allow us to estimate the range of predictability of SSWs in the forecast system, and to gain further insight into the dynamical mechanisms responsible for their occurrence.

The objectives proposed have not been achieved before in the scientific community. On the one hand, we will perform the first comprehensive evaluation of the EC-Earth model regarding the stratospheric dynamics and interaction with other components of the climate system. On the other hand, we will tackle the issue of SSW predictability with an unprecedented design of sensitivity experiments (see next subsection). Given the observed impact of the stratosphere on climate variability, this is of great importance since EC-Earth is currently used in the host institution to generate seasonal and decadal climate forecast products.

Research methodology and work plan

To achieve the above mentioned objectives, the following set of tasks are proposed:

Objective 1: Assess the EC-Earth model performance in the stratosphere

Task 1.1: *Evaluation of the stratospheric mean state and variability in EC-Earth.*

Two control runs several centuries long under pre-industrial and current climate conditions, already performed and available at ES-BSC with EC-Earth3.2 (CMIP6 version), will be employed.

A set of metrics will be applied to characterize the model performance in the stratosphere, and will be compared to three reanalysis products to estimate observational uncertainty: ECMWF ERA-Interim [26], NASA MERRA [27], and JMA (Japan Meteorological Agency) JRA-55 [28]. Reanalyses are suitable datasets for climate monitoring and research, consisting of an unchanging data assimilation scheme and model that ingest all available observations every 6-12 hours. The metrics to be applied include, but are not limited to, 1) vertical cross-sections of zonal-mean zonal wind and temperature, 2) strength, position, and variability of the stratospheric jet, 3) leading variability modes of the geopotential field north of 20°N using Principal Components Analysis, 4) amplitude and phase of the large-scale planetary waves, and 5) frequency of SSWs (intraseasonal distribution). The

potential preference of SSWs in the model to occur during ENSO events (El Niño/La Niña), after the occurrence of a tropospheric blocking anticyclone, and during a particular phase of the QBO will also be explored.

Task 1.2: *Analysis of tropospheric conditions after SSW events.*

After exploring the stratospheric variability, the tropospheric impacts of the SSWs previously identified, both in EC-Earth and the different reanalyses, will be addressed. Composites of surface variables (2 m temperature, precipitation, sea level pressure, surface wind velocity) from 10 to 60 days after SSW events will be performed for each dataset. The preferred NAO phase after SSWs will be evaluated by calculating Probability Density Functions during that time period.

It has been suggested that displacement and split events produce different tropospheric signatures [29,30]. To evaluate this potential behaviour, we will repeat the analysis stratifying the composites according to the SSW type.

Objective 2: Estimate the stratospheric predictability during SSW events.

Task 2.1: *Predictability of simulated SSWs.*

We will select a number of SSWs identified in Task 1.1. For each SSW, the model will be restarted a number of days before the event (20, 15, 10, and 5 days) and run over approximately 30 days, nudging the winds and temperature in the troposphere to the model free run; these will be the control runs (CTL). The nudging frequency will be set as high as possible, ideally every one hour, and a nudging strength given by a relaxation time of 50 h, which is the value used with the WACCM model at NCAR [31]. A set of sensitivity experiments will be additionally performed:

i. *EXP-S:* The model is restarted with the nudged tropospheric evolution, but this time perturbing the stratospheric state in the initial conditions. Two types of perturbations will be apply: 1) zonally-symmetric perturbations of wind and temperature in geostrophic balance, which will effectively modify the propagation path of the planetary waves throughout the stratosphere, and 2) singular vector perturbations method [32], which is currently used by the Climate Prediction group at the host institution for the ensemble climate forecast system.

ii. *EXP-T:* With the stratospheric initial conditions (before the SSW) unperturbed, several tropospheric evolutions simulated in different model times that are not linked to the development of an SSW will be imposed. There is an obvious risk in these simulations associated with the dynamical mismatch of introducing inconsistent tropospheric data. To minimize the potentially negative effects, such as spurious reflection of planetary waves, the tropospheric initial conditions will be selected in a way that the phases of the planetary waves in the upper troposphere (zonal harmonics one, two and three) are as close as possible to those in the lower stratosphere.

These sensitivity experiments aim at evaluating the relative roles of the stratospheric initial conditions and the injection of tropospheric wave activity in triggering an SSW. The achievement of this goal is ensured by the unprecedented design of the experiments: nudging the tropospheric winds, and letting the stratosphere free, will allow us to evaluate whether a given tropospheric injection of wave activity is enough to trigger an SSW; while perturbing the initial state of the stratosphere will allow us to identify vortex geometries that are more/less likely to trigger an SSW. The set of simulations proposed are schematically presented in Figure 1.

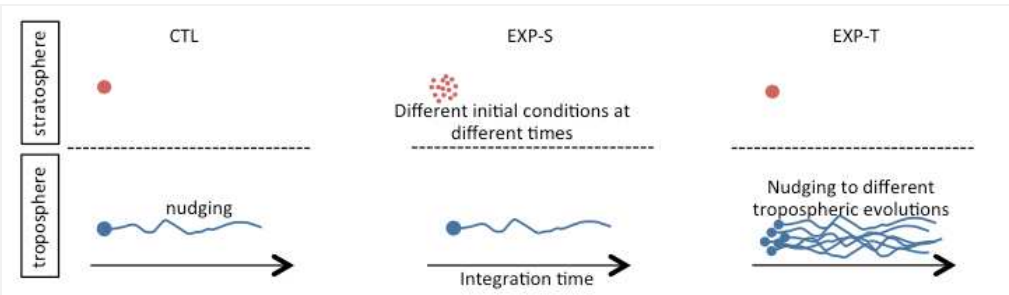

Figure 1: Schematic illustration of the experiments proposed in Task 2.1.

Task 2.2: *Predictability of observed SSWs.*

Predictability has two aspects: predicting something that happened, and not predicting something that did not happen (false alarms and correct rejections). In this task, the focus is on assessing the predictability of events that did happen. Observed SSWs from Task 1.1 will be selected as case studies. A set of retrospective forecasts (i.e. re-forecasts or hindcasts), mimicking the set-up in Task 2.1 concerning the different lead-times, will be carried out using observational estimates of the atmospheric state from ERA-Interim. For each lead-time, a first experiment will aim at reproducing the SSW event by initialising the model with actual atmospheric initial conditions in both the troposphere and stratosphere (INI). Two additional hindcast experiments will be performed initializing the model with either tropospheric (INI-T) or stratospheric (INI-S) conditions respectively. In the three sets of experiments observed sea surface temperature and sea-ice concentration anomalies will be prescribed as boundary conditions. INI will provide information about the forecast quality in EC-Earth, while the comparison with INI-T and INI-S will identify the key predictability sources.

Task 2.3: *Analysis of false alarms.*

In this task, the focus is on events that were predicted by the forecast system, but did not occur in nature (also referred to as false alarms, FA). FAs will be identified in forecast runs that are already performed and available at the host institution. In particular, we will use 7-month long retrospective forecasts initialized on November 1st from 1979 to 2015 with EC-EARTH3.2; 5 members each re-forecast initialized from the 5 members of ECMWF's Ocean Reanalysis System 4 [33], the associated 5-member sea ice reconstruction [34], and atmospheric initial conditions from ECMWF's ERA-Interim including singular vector perturbations. An evaluation of the FAs will be performed, analysing the differences between the forecasts and the reanalysis in tropospheric wave sources and propagation into the stratosphere, stratospheric mean winds and vorticity gradients, and quasi-geostrophic index of refraction for planetary waves. The aim is to identify key differences that help understand the occurrence of these FAs in the forecast system. The analysis will be compared to the assessment performed in Task 1.1 (e.g. frequency and type of simulated SSWs) in order to detect fundamental model biases that could potentially limit prediction skill and to reduce the number of FA events.

The schedule of the tasks described above is presented in the following table:

	First year				Second year			
	Month 3	Month 6	Month 9	Month 12	Month 15	Month 18	Month 21	Month 24
Task 1.1								
Task 1.2								
Task 2.1								
Task 2.2								
Task 2.3								

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3.2 Impacte previst dels resultats del projecte en el camp d'investigació i en la de la seva aplicació en el desenvolupament de nous coneixements, productes o processos / *Forecast impact of project's results in the field of research and in its application in the development of new knowledge, products or processes.*

SSWs are an emerging, major source of skill in subseasonal-to-seasonal climate forecasts in Europe [6,7,9,10]. Because of that, the SPARC (Stratospheric-tropospheric Processes And their Role in Climate, funded by the World Climate Research Programme) initiave dedicates targeted activities to the design and generation of a new intercomparison of stratospheric forecasts (for more information visit http://www.met.reading.ac.uk/~stratclim/snap/intro.php). **Many aspects concerning the ability of forecast systems to simulate SSWs remain poorly understood**. In particular, the relative role and importance of tropospheric forcing versus stratospheric control on triggering SSW events is still an unresolved scientific question [10,20]. **The present project will address it following an unprecedented protocol**: targeted experiments in which the tropospheric evolution is fixed ("nudged" experiments) and the stratospheric initial conditions are perturbed during SSW events. We will target the predictability of SSWs both internally simulated by the model, and observed in nature. This approach **will help disentangling the two mechanisms responsible for the SSW generation and translating potential predictability into actual skill in a common, unique model framework**, close to an operational system.

This project also presents the novelty of evaluating the dynamics and variability of the polar stratosphere, as well as its impact on surface climate, in the EC-Earth model, which is currently used in the host institution to provide seasonal and decadal climate predictions. Besides, this proposal is aligned with a framework of international research interest in using stratospheric dynamics to improve climate forecast systems. **The expected outcome will allow us to have a better knowledge of the predictability of SSWs, and therefore will provide useful information to operational centres**.

The ground-breaking research proposed in this action will introduce me into an area of active research in the climate forecasting community (i.e. prediction of SSWs), while guiding me into the novel approach of contributing to meet societal interest and users' needs (i.e. climate services). In this regard, the results of this project will benefit the development and applications of the climate services currently ongoing at Earth System Services group at ES-BSC. In particular, results from composite maps of temperature and wind speed variables would be especially useful for their **potential application on the balance of the European energy network, contributing to design adaptation and mitigation strategies that facilitate an immediate transition towards an efficient, low-carbon energy system**. The present project will also open a new research line in the host institution, bringing new collaboration opportunities and envisioning cutting-edge, future initiatives.

3.3 Activitats de difusió i de divulgació de la recerca previstes en el marc del projecte de recerca: disseminació dels resultats del projecte, explotació de resultats, comunicació i estratègia de compromís públic de l'acció / *Planned research dissemination activities within the framework of the research project: dissemination of project results, exploitation of results, communication and public commitment to action.*

Dissemination of the research results:

The potential impact of the project on climate forecasting shares common ground with the objectives of some of the projects in which the host institution participate (like PRIMAVERA). The corresponding project meetings, in which I will participate, will constitute an excellent framework to disseminate my results and maximize the impact of the action results on interested research groups. The

achievements of the project will also be submitted for publication to scientific journals of high impact in the atmospheric and climate research area, such as Nature Geoscience, Science, Journal of Climate, Journal of Geophysical Research, or Climate Dynamics. The action aims at complying with the European Commission's policy on open access articles. Likewise, the results will be presented in the most important scientific meetings: General Assemblies of the European and American Geosciences Union (EGU, and AGU), and targeted workshops organized by the different activities of the SPARC initiative, usually around 1-2 meetings per year. My participation in these meetings will also improve my communication skills, key for disseminating results and engaging in new international collaborations and projects. Besides, the project activity will be posted in the BSC web site, news channel and the Earth Sciences department wiki.

To ensure the proper dissemination of the project results, the candidate will closely work with the BSC Communications team, which is in charge of increasing awareness of the centre and disseminating information about research activities both in the scientific and industrial communities, as well as society in general. Its objectives are the following ones:

- Increase the awareness of the center and its excellence,
- Position BSC as an international leader in supercomputing, and
- Communicate BSC initiatives and research results to defined targets and to the general public.

The team is structured including the following areas: internal and digital communication, outreach, European project dissemination, and media and protocol. More information here: http://www.bsc.es/annual-report/2014/INDEX_PHP/MANAGEMENT_DEPARTMENT.HTM.
Besides, the BSC is implementing an Open Access strategy aligned with that of the H2020 framework programme of the European Commission and the "Plan Estatal de I+D" (MINECO). To implement this strategy, the centre uses the institutional repository called UPCommons (https://upcommons.upc.edu/handle/2117/23714).

Exploitation of the action results

The BSC established in the year 2015 a Technology Transfer Office (TTO). This office manages all the technologies developed in the centre in order to find the best transfer strategy for each one identifying those with the highest TRL (Technology Readiness Level) in order to bring them to market. Some of the technologies developed are just published as Open Source, however, some are patented thinking in licence it to companies or spin-offs. In this way, the BSC already has created a spin-off since the founding of the TTO. The candidate will work closely with the TTO team to evaluate the best strategy to exploit the outcome of the project, and will include the following points:

- The scripts, metrics and diagnostic tools to evaluate the stratospheric dynamics and predictability, developed during the action, will be open source and available through the ES-BSC facilities/repository. I will also distribute these products among the EC-Earth consortium, for use in their research projects, ECMWF, and the Spanish Meteorological Agency (AEMET).
- SSWs have a robust impact on the NAO, which largely controls the large-scale surface wind variability over Europe in the winter months. The results of this action will be of high potential interest to companies in the wind energy sector, and will be directly used by the Earth System Services group at ES-BSC to provide more reliable information to end users in the energy and other economic sectors.

Communication and public commitment

It is of great importance to ensure that the research activities are made known to society at large. In this regard, a significant effort will be carried out to guarantee that the results of this action reach and are understood by the broader public. The specific goal here is to **effectively disseminate upon the public** the importance of the interactions between the stratosphere and the closest part of the atmosphere, the troposphere, with an emphasis on the significant impacts of these interactions on weather and climate variability in the North Atlantic-European region. I will participate in the **open day that BSC organizes every year for high school students** (with the Barcelona Open House event), where I will take advantage of the opportunity to engage with young students into science. I will

contribute as well to the **European Researchers Night in Spain, funded by the H2020 programme** through the Marie Skłodowska-Curie Actions. Also, my close connection to the Department of Geophysics and Meteorology at UCM (Madrid, Spain), where I did my undergraduate and graduate studies, will allow me to participate in the yearly **"Semana de la Ciencia"** (Science Week). This event is organized and funded by the local and regional governments of Madrid, and aims at disseminating science to non-specialist public with different outreach activities. I have experience organizing activities and participating in this event. Importantly, the outcomes derived from the present project will greatly benefit from the BSC Communication and Outreach groups, which will further warrant a wide disclosure and public engagement.

All the proposed activities will ensure a direct contact with the public, helping me understand their interests and priorities for science, as well as helping disseminate my results, and the scientific method.

4. Aspectes ètics del projecte de recerca previst / *Ethical aspects of the planned research project*

4.1 Indiqueu si la recerca que es vol desenvolupar inclou algun d'aquests aspectes / *Indicate whether the intended research work includes any of the following aspects*:

Investigació sobre embrions humans/Fetus *Research on human embryos /foetuses*	SI / YES	NO
La investigació proposada implica embrions humans? *Does the proposed research involve human embryos?*	☐	☒
La investigació proposada implica teixits o cèl·lules fetals humanes? *Does the proposed research involve human foetal tissue or cells?*	☐	☒
La investigació proposada implica cèl·lules mare embrionàries humanes? *Does the proposed research involve human embryo stem cells?*	☐	☒
La proposta d'investigació amb cèl·lules mare embrionàries humanes implica cultiu cel·lular o l'obtenció de cèl·lules a partir d'embrions? *Does the proposed research with human embryo stem cells involve cell cultures or the obtaining of cells from embryos?*	☐	☒

Investigació sobre éssers humans *Research on human beings*	SI / YES	NO
La investigació proposada implica la participació de nens? *Does the proposed research involve the participation of children?*	☐	☒
La investigació proposada implica la participació de pacients? *Does the proposed research involve the participation of patients?*	☐	☒
La investigació proposada implica la participació de persones incapacitades per donar el seu consentiment? *Does the proposed research involve the participation of persons incapable of giving their consent?*	☐	☒
La investigació proposada implica voluntaris adults sans? *Does the proposed research involve healthy adult volunteers?*	☐	☒
La investigació proposada implica material genètic humà o mostres biològiques humanes? *Does the proposed research involve human genetic material or human biological specimens?*	☐	☒
La investigació proposada implica la recopilació de dades personals? *Does the proposed research involve the gathering of personal data?*	☐	☒

Privacitat *Privacy*	SI / YES	NO
La investigació proposada implica el processament de la informació genètica o de les dades personals (per exemple, salut, vida sexual, origen ètnic, les opinions polítiques, les conviccions religioses o filosòfiques)? *Does the proposed research involve the processing of genetic information or personal data (for example, health, sex life, ethnic origin, political opinions, religious or philosophical convictions)?*	☐	☒
La investigació proposada implica el seguiment de la ubicació o de l'observació de les persones? *Does the proposed research involve the monitoring of the location or the observation of persons?*	☐	☒

Investigació amb animals *Research with animals*	SI / YES	NO
La investigació proposada implica la investigació amb animals? *Does the proposed research involve research with animals?*	☐	☒
Aquests animals són petits animals transgènics de laboratori? *Are these animals transgenic small laboratory animals?*	☐	☒
Aquests animals són animals de granja transgènics o clonats? *Are these animals transgenic or cloned farm animals?*	☐	☒
Aquests animals són primats no humans? *Are these animals non-human primates?*	☐	☒

Investigació amb els Països en Desenvolupament *Research with developing countries*	SI / YES	NO
La investigació proposada implica l'ús de recursos locals (genètics, animals, vegetals, etc)? *Does the proposed research involve the use of local resources (genetic, animal, plant, etc.)?*	☐	☒
És la investigació proposada en benefici de les comunitats locals (per exemple, la creació de capacitats, accés a la salut, l'educació, etc? *Does the proposed research benefit local communities (for example, skills creation, access to health, education, etc.?*	☐	☒

Doble us *Dual use*	SI / YES	NO
La investigació proposada té un ús militar directe? *Does the proposed research have a direct military use?*	☐	☒
La investigació té un potencial ús terrorista? *Does the research have a potential terrorist use?*	☐	☒

4.2 Si el projecte de recerca que es vol desenvolupar inclou algun tipus d'estudi amb dades personals o genètiques, algun tipus d'experimentació amb éssers humans, la utilització de mostres biològiques d'origen humà o algun tipus d'experimentació amb animals, expliqueu-ne breument els motius. Indiqueu també si el projecte ja compta amb l'aprovació del comitè d'ètica del propi centre. / *If the intended research project includes some kind of study with personal or genetic data, some kind of experiment with human beings, the use of biological samples of human origin or some kind of experiment with animals, briefly explain the reasons. Also indicate whether the project has already been approved by the centre's own ethics committee.*

It does not apply.

4.3 En els casos en que el projecte presentat inclogui algun tipus d'estudi amb dades personals o genètiques o algun tipus d'experimentació amb éssers humans, també caldrà especificar si existeix algun tipus de remuneració o de compensació per als subjectes participants i, en el moment de presentar la sol·licitud, també caldrà adjuntar el model d'informació i de consentiment que rebran els participants / *In cases in which the submitted project includes some kind of study with personal or genetic data or some kind of experiment with human beings, you must also specify whether there is any kind of remuneration or compensation for participating subjects and, at the time of submitting the application, the information and consent form to be received by participants must also be attached.*

It does not apply.