

Climateurope2: Supporting and standardising climate services in Europe and beyond

Francisco Doblas-Reyes (ICREA and Barcelona Supercomputing Center)
on behalf of the Climateurope2 project partners

13 December 2024

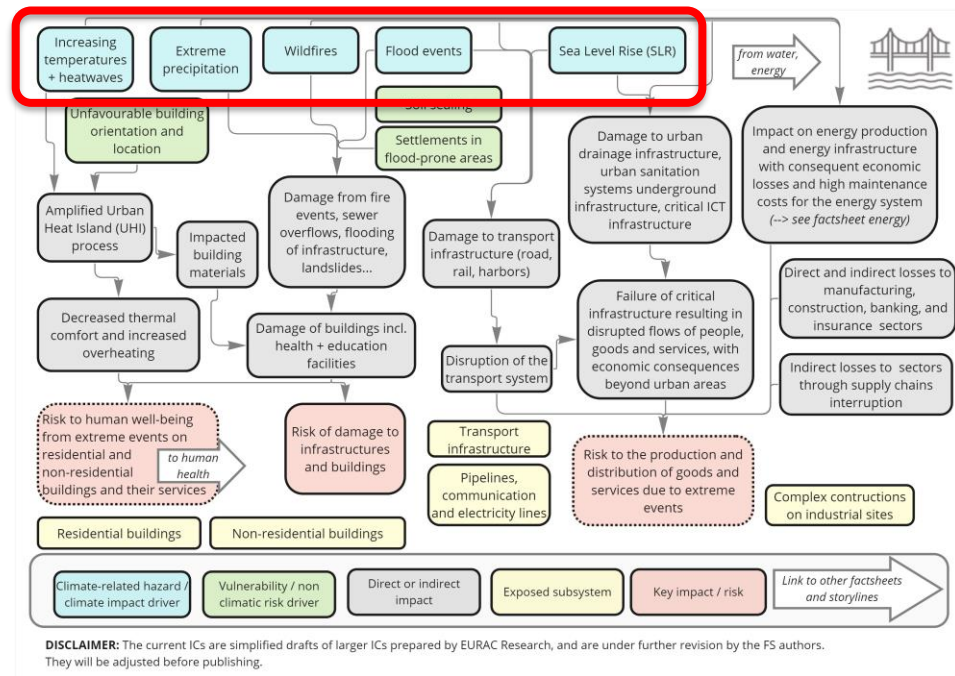


This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101056933. The sole responsibility for the content of this document lies with the Climateurope2 project and does not necessarily reflect the opinion of the European Union.

Climate information and climate services

Climate risk assessment, climate adaptation and climate mitigation require access to **reliable** climate information.

Climate services are the provision of climate information so as to assist decision-making by individuals and organisations. The service involves **appropriate engagement**, an **access mechanism**, and **responsiveness to user needs**. It builds on that fact that **climate is just one out many other drivers**.



What are standards?

Standards are specifications, measurable requirements, processes or performance conventions, aimed at achieving consistency in processes, products, **and services**.

They are developed through consensus by legitimate organisations* to ensure conformity and quality.

*ISO, CEN, ASTM etc.

Why are they needed?

Current challenges

- Lack of widely agreed, auditable criteria for climate services limits transparency, trust, and equitable market growth.
- Fragmented guidance and best practices lacking comprehensive coverage and consensus.

Benefits

- Establish shared terminology and methodologies for comparison and compatibility.
- Ensure product functionality, reduce risks, and uphold health, safety, and rights.
- Build credibility, relevance, and legitimacy in climate services.

Need for comprehensive guidance

- Define clear distinctions between components that can be standardised and those still evolving.
- Establish certification mechanisms and accredited actors for quality assurance.

Path forward

- Involvement of all relevant actors in creating comprehensive, consensus-based standards.
- Equitable participation to build two-way trust between providers and users.
- **Climateurope2**'s approach focuses on addressing these gaps by fostering robust standardisation frameworks.

Climateurope2 project

Standardising

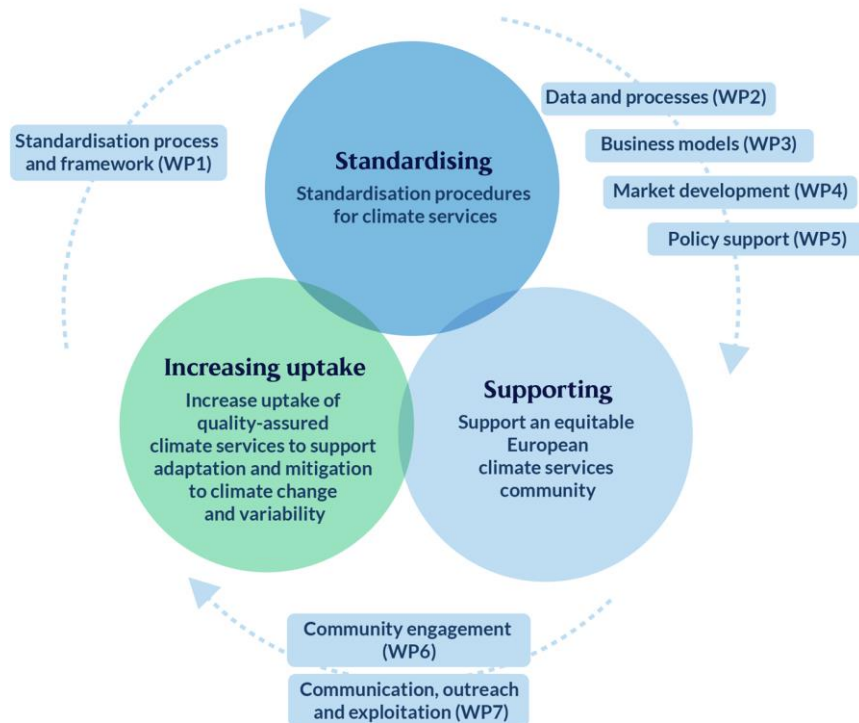
Development of **standardisation** procedures for climate services

Supporting

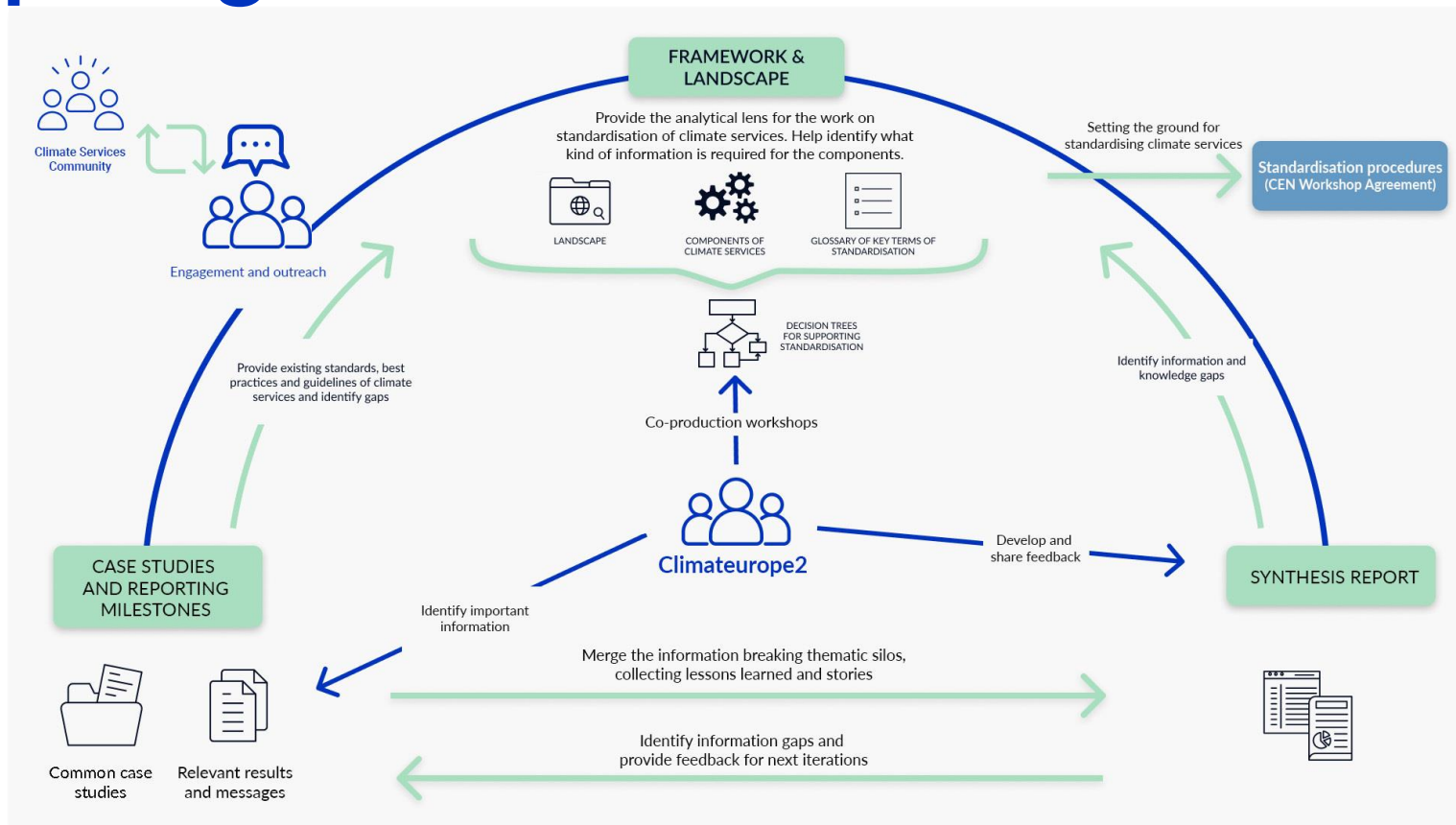
Support of an equitable European climate services community

Increasing uptake

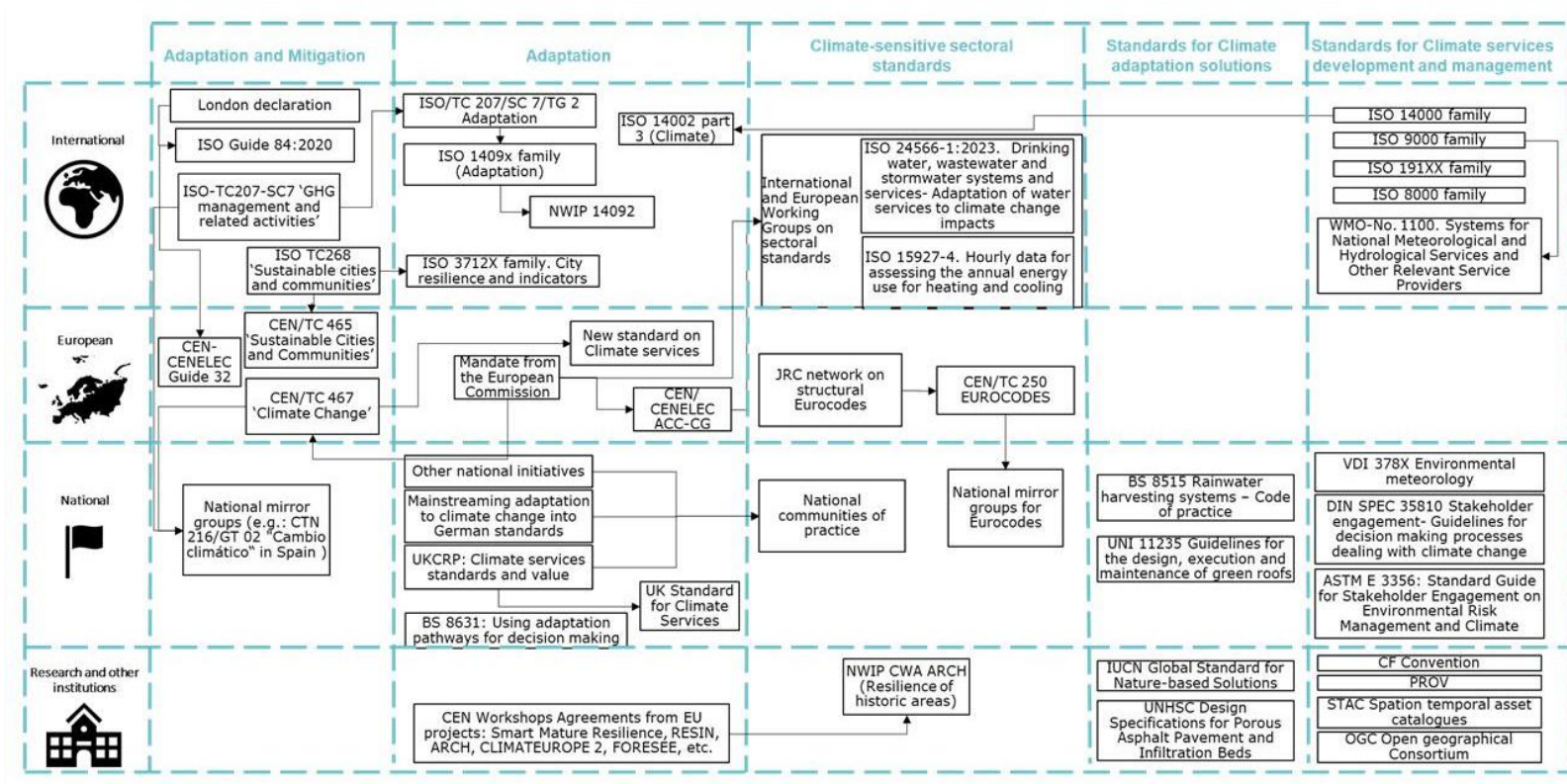
Enhancement of the **uptake** of quality-assured climate services to support climate adaptation and mitigation



Preparing recommendations for standards



Landscape



Climate services components



Climate services components

Decision context

- Completeness of description of decision-making context
- Adaptability and flexibility to e.g., evolving regulatory regimes or transferability for different purposes
- Subsidiarity
- Saliency of climate service/fitness for purpose
- Market creation and innovation friendliness qualities



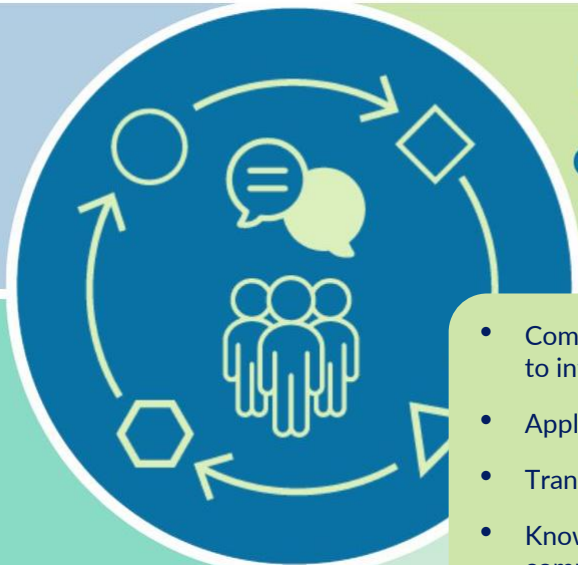
Ecosystem of actors and
co-production processes

Knowledge systems

Climate services components

Decision context

Delivery mode and evaluation



Ecosystem of actors and co-production processes

- Completeness of stakeholder mapping and methodologies to integrate all voices
- Application of knowledge co-production methods
- Transparency on the scope of the service
- Knowledge brokerage, literacy, and diversity of communication channels to ensure awareness of services

Climate services components

Decision context

Delivery mode and evaluation



- FAIR principles (Findable, Accessible, Interoperable and Reusable) for any kind of digital data
- Storylines/narratives approach usage
- Provenance, traceability of climate and other data, information, and knowledge
- Accuracy specifications and uncertainties
- Degree of completeness/use/consideration of multiple types, sources, and systems of knowledge and their integration
- Data and processes quality control and assurance
- File and metadata formats
- Backwards compatibility

Knowledge systems

Climate services components

- Knowledge brokerage, literacy, and diversity of communication channels
- Accessibility of the climate service
- Visualisation
- Timeliness
- Accountability/feedback processes
- Reflexiveness
- Conducive to open science
- Auditability and certifiability

**Delivery mode and
evaluation**



**Ecosystem of actors and
co-production processes**

Knowledge systems

Criterion 1

Criterion 2



Criterion n



Expert elicitation from
WP2-7 to address
information needs of
quadrants 1 and 3 of
the decision tree in the
framework



Synthesis report



Recommendations



Annual iterations until
final version

Link to CEN-CENELEC

TC 467 is tasked with implementing a standardisation request from DG CLIMA

The TC has created a new WG on adaptation

- Develops standards for integrating environmental conditions into existing standards
- It will be in charge of the standardisation of climate services
- It has adopted recommendations from the Adaptation to Climate Change Coordinating Group (ACC CG) for the technical report “Adaptation to climate change – Guidelines on using climate data in infrastructure standards”

Climateurope2 contributes via a CEN Workshop Agreement and has a liaison agreement with CEN-CENELEC

Key messages (v1)

Climateurope2 | Key Messages on standardisation of climate services
Climateurope2 synthesis report



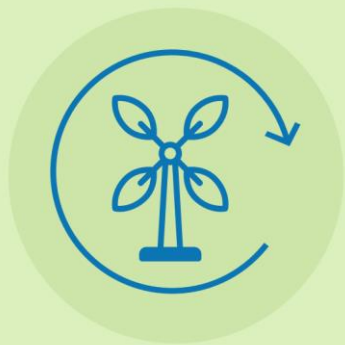
bit.ly/CE2_KeyMessages

- #SUSTAINABLE FUTURE**
The standardisation of climate services supports evidence-based resilience to climate impacts, green investments, and transformations to a sustainable future.
- #CLIMATE SERVICES COMPONENTS**
Breaking down climate services into interrelated components enables the assessment of their quality, efficiency, and effectiveness, and to distinguish what should not be standardised.
- #CLIMATE SERVICES GOVERNANCE**
Climate services can be governed through both, formal standardisation processes and alternative institutional mechanisms.
- #BENCHMARKING**
Climate services shall demonstrate to be user-focused, science-based, transparent, collaborative, timely, accessible, sustainable, and equitable.

- #MULTIPLE COMPETENCIES**
Climate services fitness for purpose require multidisciplinary, transdisciplinary, and multi-faceted competencies, including domain knowledge.
- #DATA AND INFORMATION**
Climate data-related guidance documents are available, although often incomplete and driven by providers rather than users.
- #GROWING MARKET**
The supply side of the climate services market is growing, yet there is lack of clarity on best practices and the suitability of the services offered.
- #COMMUNITY**
Broadening the climate services community through contextualised engagement with stakeholders will advance services' uptake and quality.
- #EQUITY**
Europe should aim to place equity at the centre of standardisation processes, the resulting standards, and the climate service community.



The standardisation of climate services supports evidence-based resilience to climate impacts, green investments, and transformations to a sustainable future.



Climate services are essential for addressing the risks associated with climate variability and change, inform mitigation and adaptation pathways, and ensure robust sustainability reporting and disclosure to unlock sustainable finance. Yet, criteria supporting the quality of these services or how they may be fit for purpose need more guidance, regulation and agreed-upon legitimate standards. Standards, quality assurance, and certification schemes have the potential to enhance the quality, salience, credibility, and legitimacy of climate services, and raise the bar in the climate services market. Lessons harvested from CE2 can catalyse the dialogue to formulate requirements to be considered in standardisation processes.

#SUSTAINABLE FUTURE



The supply side of the climate services market is growing, yet there is lack of clarity on best practices and the suitability of the services offered.

To date, the climate services market has been dominated by public providers who have played a key role in giving access to public climate datasets. There is an increasing number of private climate service providers, who aim to translate climate data to satisfy both public and business needs.

Although the value of climate services (economic, social, cultural) is still poorly understood, it appears that market success is built on an understanding of decision-making contexts and on localising the service provision (e.g., in cities to assess health risks or for financial disclosures). Potential innovative climate service business models need further study, as not all (partly publicly funded) innovations have reached the market.

A taxonomy capturing success factors of climate services and their components will help identify standardisation opportunities.



#GROWING MARKET

Certification, labelling, etc.

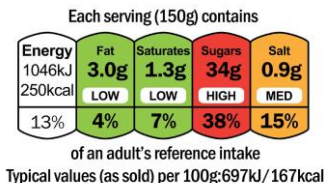
List of agreed terms

Term	Definition	Source
Certification	Third-party attestation related to an object of conformity assessment, except accreditation.	ISO 17000
Quality assurance	Part of quality management focused on providing confidence that quality requirements will be fulfilled.	ISO 9000

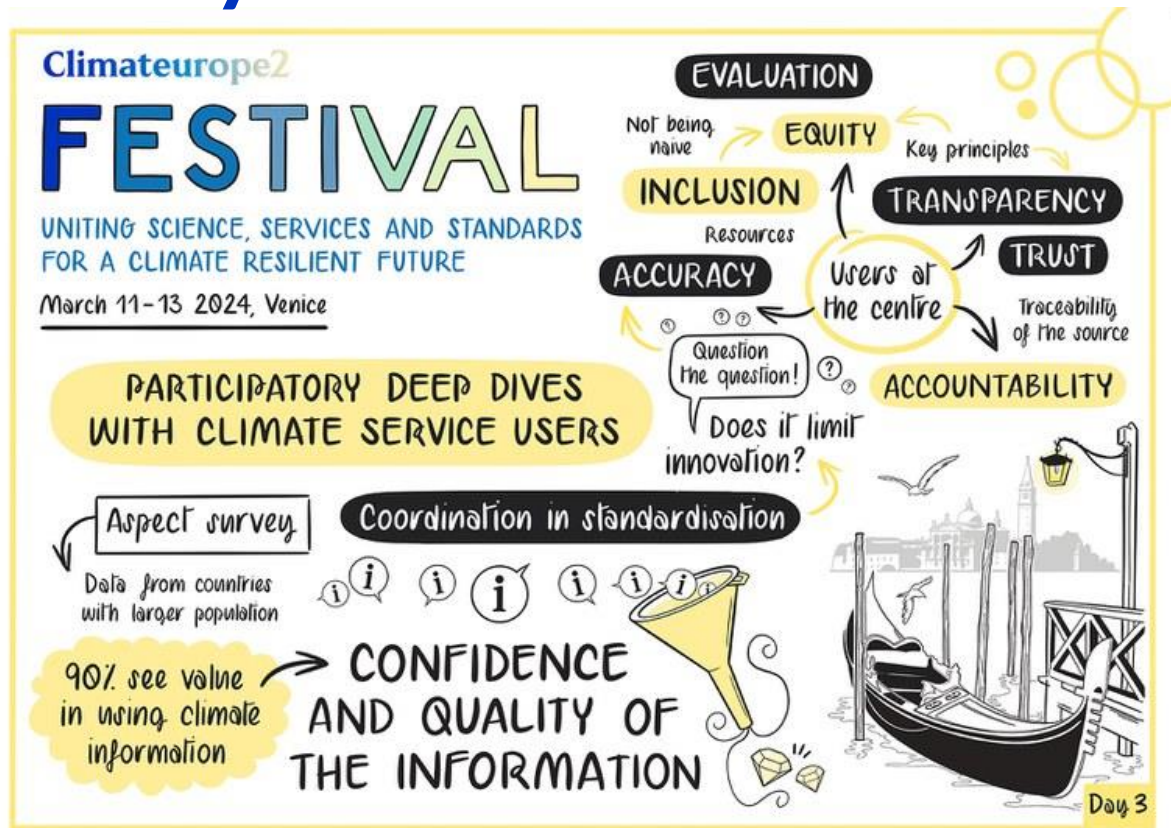
NB: **Accreditation:** The system of rules, procedures and management for carrying out certification, which must always be provided by an independent or third party provider.

Verification	Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled. The term "verified" is used to designate the corresponding status.	ISO 9000
---------------------	--	----------

Labelling: Demonstration of compliance. A label or symbol that conveys a product or service has been verified by an independent party such that discloses information or meets requirements. e.g., food safety labelling; DNV Seal; ecolabels; descriptions of use or side effects...etc



Community activities



Engagement innovation

European Regulation of Climate Services: A Dialogue with Private Providers

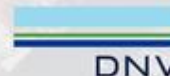
28th and 29th of April 2025 | Barcelona



**Barcelona
Supercomputing
Center**
Centro Nacional de Supercomputación



**WORLD
METEOROLOGICAL
ORGANIZATION**



Climateurope2



**Funded by
the European Union**



European
Commission

| Climateurope2

INFORMATION

<https://climateurope2.eu/>

<https://earth.bsc.es/climateurope2>

CONNECT

contact@climateurope2.com

climateurope2.eu



@climateurope2



climateurope2



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101056933. The sole responsibility for the content of this document lies with the Climateurope2 project and does not necessarily reflect the opinion of the European Union.