National Meteorological and Hydrological Services Perspectives on the Standardisation of Climate Services in Europe

Event report - June 2026

Climate services are a critical enabler of effective, climate-related decision-making. National Meteorological and Hydrological Services (NMHSs) are trusted, public providers of climate services with users across the public and private sectors, ranging from local to international decision-makers.

In January 2026, the Barcelona Supercomputing Center, in collaboration with the World Meteorological Organization and the European Centre for Medium-Range Weather Forecasts, convened an invitation-only workshop involving 30 European NMHSs and key continental and international partners. The workshop provided a forum to exchange perspectives on existing national practices, quality assurance mechanisms, and priorities for the forthcoming standardisation of climate services.[1] This summary sets out the perspectives, insights and recommendations that emerged from the workshop discussions. These findings will inform the ongoing standardisation process and support implementation and uptake of emerging European climate service standards.

The NMHS climate services ecosystem

As national bodies, European NMHSs are uniquely positioned to develop climate services in specific and varied geographical, political and cultural contexts. They have heterogeneous institutional mandates as public, governmental organisations. Service delivery reflects these different contexts and institutional mandates.

European NMHS climate services are:

- Designed and delivered through a wide range of formats and service approaches, from data provision to consulting and advisory services.
- Used across a diverse and growing range of sectors, including agriculture, energy, transport, and finance and insurance.

[1] By the European Commission's Standards Bodies, European Committee for Standardization (CEN) and European Committee for Electrotechnical Standardization (CENELEC). C(2025)6809 – Standardisation request M/617.

- Often publicly accessible, internationally available, and free to use.

User needs are evolving towards greater sector- and risk-specificity, information on climate extremes and multiple hazards, higher-resolution and seamless climate information, and more direct support for climate risk assessment and decision-making. NMHS climate services are developed in response to identified user needs, although approaches to user engagement vary according to institutional mandates, capacities and resources.

Participants identified clear opportunities to improve coherence, interoperability and comparability of climate services through greater coordination and cooperation between NMHSs.

Delivering fit-for-purpose climate services

Participants agreed that fit-for-purpose NMHS climate services should be transparent, scientifically robust and user-oriented, supported by clear process and product documentation, and designed to meet defined user needs.

Quality management processes, together with the availability and application of formal standards supporting scientific robustness, are significantly more widespread than those addressing communication, usability and service delivery. The current landscape of frameworks, guidelines and standards is fragmented and inconsistent, presenting a barrier to their implementation by NMHSs.

Further key challenges for implementation of standards relate to limited institutional capacity, including funding, personnel and skills constraints. It was highlighted that these factors also often limit in-depth user engagement.

Recommendations for new climate services standards

Participants highlighted that there is currently a clear gap in governance of publicly-provided climate services in Europe, and that coherent standards are a promising tool for improving consistency, usability, interoperability, uptake and trust in climate services. Participants also emphasised that future standards should reflect the diversity of NMHS mandates, capacities and user and geographical contexts across Europe.

The following recommendations emerged from the workshop discussions:

- Standards should encompass requirements for documentation and communication of methods, data sources, assumptions, limitations and uncertainty. Scientific practices should not be prescribed, but must be transparent.
- User interaction, co-production, service evaluation and stakeholder engagement are best supported through recommendations, guidance and best practice examples, allowing NMHSs flexibility to respond to different service contexts.
- Standards must avoid rigidity in order to support innovation, allow NMHSs to tailor services to national or sub-national contexts and priorities, and be inclusive and accessible to providers with varying capacities.
- New standards must be compatible with existing standards, guidelines and frameworks, and accompanied by implementation support to ensure their uptake.
- International cooperation on climate services should build on the collaborative relationships established through this workshop, by strengthening networks between NMHSs and relevant partners.
- Ongoing dialogue between standards developers, NMHSs and users is essential.

Representatives from the following NMHSs participated in the workshop:

Administrația Națională de Meteorologie (National Meteorological Administration of Romania)
Agencia Estatal de Meteorología (State Meteorological Agency of Spain)
Agencija Republike Slovenije za okolje (Slovenian Environment Agency)
Armhydromet (Hydrometeorology and Monitoring Center of Armenia)
Danmarks Meteorologiske Institut (Danish Meteorological Institute)
Department of Meteorology of Cyprus
Deutscher Wetterdienst (German Weather Service)
GeoSphere Austria
HungaroMet (Meteorological Service of Hungary)
Institute of Meteorology and Water Management - National Research Institute of Poland
ItaliaMeteo (Meteorological Service of Italy)
Keskkonnaagentuur (Environment Agency of Estonia)
Latvian Environment, Geology and Meteorology Centre
Met Éireann (Irish Meteorological Service)
Météo-France
Meteorological and Hydrological Service of Croatia
Meteorologisk institutt (Norwegian Meteorological Institute)
MeteoSwiss (Federal Office of Meteorology and Climatology of Switzerland)
National Environmental Agency of Georgia
National Meteorological Service of Belize
NiMet (Meteorological Agency of Nigeria)
Republic Hydrometeorological Institute of Republika Srpska, Bosnia and Herzegovina
Royal Netherlands Meteorological Institute
Slovak Hydrometeorological Institute
Swedish Meteorological and Hydrological Institute
Turkish State Meteorological Service
United Kingdom Met Office

Plus from the following non-NMHS organisations:

European Centre for Medium-Range Weather Forecasts (ECMWF)
European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
World Meteorological Organization (WMO)