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METEOROLOGISKA INSTITUTET
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Update about the work of Subgroup to Review User Relevant Sub Seasonal Verification

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ECMWF UEF 2026 – 3th June 2026



Background and goals

Subgroup was formed to help the general public and decision-makers to understand better the performance and accuracy of sub-seasonal and seasonal forecasts. The active period for the subgroup is set to 2025–2026.

Key objectives from the group's ToR

- Share best practices & user interaction
- Review verification & identify gaps
- Improve verification methods
- Assess and refine product portfolios
- Strengthen user support & training

Subgroup members

Participants:

- Anssi Vähämäki (Finland)
- Fabien Stoop (France)
- Andreas Paxian (Germany)
- Barry Coonan (Ireland)
- Adel Imamovic (Switzerland)
- Brent Walker (United Kingdom)
- Ilian Gospodinov (Bulgaria)
- Nato Kutaladze (Georgia)
- Dominik Büeler (Switzerland)

Participants from ECMWF:

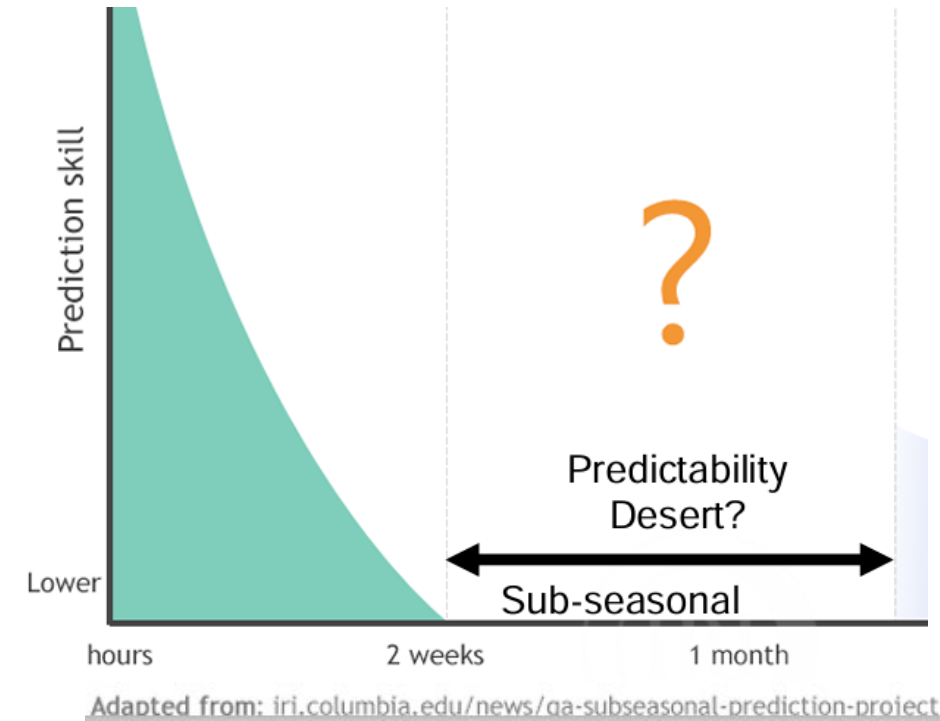
- Matthieu Chevallier (Head of Evaluation)
- Anca Brookshaw (Team Leader, Meteorological and Climate Products)
- Thomas Haiden (Team Leader, Forecast Verification and Observation Monitoring)
- Timothy Hewson (Principal Scientist, Forecast Performance Monitoring and Products)
- Frederic Vitart (Team Leader, Sub-seasonal Forecast)
- Deepa Visavadia (Senior Executive Coordinator)
- Llorenç Lledó (Scientist (Evaluation and Uncertainty Quantification))

Meetings

- ECMWF sharing recent updates and progress on Sub-seasonal predictability, Sub-seasonal forecast products, WMO Lead Centre for Sub-seasonal Prediction Multi-model Ensembles, AI for sub-seasonal forecasting and Sub-Seasonal Scores
- Group participants sharing experience in use of and users' feedback on sub-seasonal forecast products – groups discussions concentrated on communication of forecast quality, user needs and existing services on sub-seasonal scale to fulfill the needs.

About scope of the work

- Users in the scope of subgroup are **end-users of the national meteorological services**
- To provide met services in MS/CS with the right tools (products and verification) to address users' needs.
- In the beginning members of the subgroup raised needs for the outcome of the group. Among others:
 - Better verification tools
 - Predictability guidance
 - User guidance on product usage
 - More variables and sector-relevant indicators
 - Tutorials, documentation, and user guides



Pre-UEF2025 Survey about use, evaluation and experience of ECMWF sub-seasonal forecasts

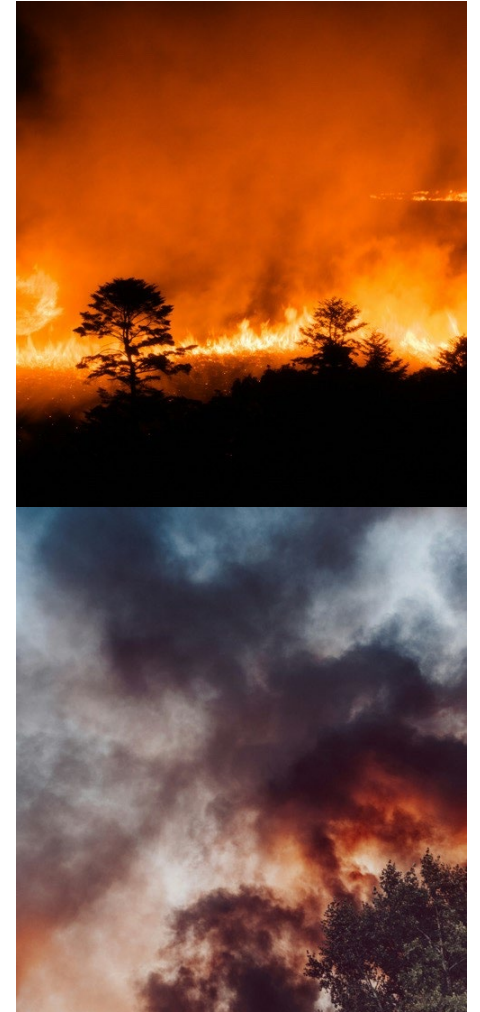
- 48 responders
- Overall impressions of the quality and use of sub-seasonal forecasts ranged from positive to negative
- **Predictability of precipitation is indicated particularly important for users at these lead times**
- Some comments on
 - Post-processing and bias correction
 - Need for hindcast-adjusted daily forecasts provided by ECMWF
 - Users' expectations for new AI models for subseasonal forecasting
 - Regional Tropical Cyclone activity verification

Known customer/user needs concerning sub-seasonal forecasts

- **Sector-specific demand** for tailored sub-seasonal products
- **Responder and emergency services** communities for planning and preparedness
- Consistent interest from the **energy sector**
- **Media** interest year-round, peaking around holidays and seasonal outlooks
- Increased demand during:
 - slow-onset events (e.g. drought)
 - highly volatile events (e.g. flooding)
 - extreme weather situations
- Regular seasonal demand:
 - summer (heat, drought)
 - winter (heavy rainfall, snowfall, winter conditions/road maintenance)

Key communication needs

- Clear explanation how sub-seasonal forecasts differ from deterministic forecasts
- Guidance on interpreting weekly anomalies and uncertainty
- Impact-relevant information (e.g. number of dry/wet days rather than near-zero anomalies)



Existing and emerging sub-seasonal products and services for user needs

- Forecasts are communicated with explicit uncertainty and skill information, supported by weekly and monthly summary newsletters
- Graphical products with uncertainty indicators (e.g. traffic lights based on hindcast skill,...)
- Some institutes rely on tercile plots, but those have proven difficult even for forecasters to interpret
- Pilots for road maintenance and tyre companies
- Monthly outlooks for the Baltic sea-ice conditions
- Expert products for forecasters
- Access to forecast skill and verification data
- “Windows of opportunity” indicators and impact-oriented indices to support storytelling and decision-making.
- Many are still at an early stage of deploying sub-seasonal products



TENDANCE POUR LES JOURS SUIVANTS

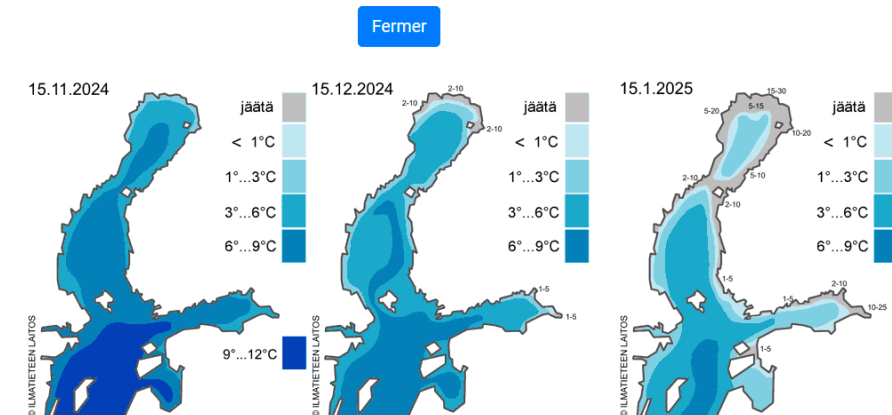
Pour la semaine du lundi 11/05/2026 au dimanche 17/05/2026 :

La période devrait être assez pluvieuse. Les températures sont en baisse et passeront en-dessous des normales de saison en milieu de semaine.

Tendance des températures pour la période du lundi 18/05/2026 au dimanche 31/05/2026 :

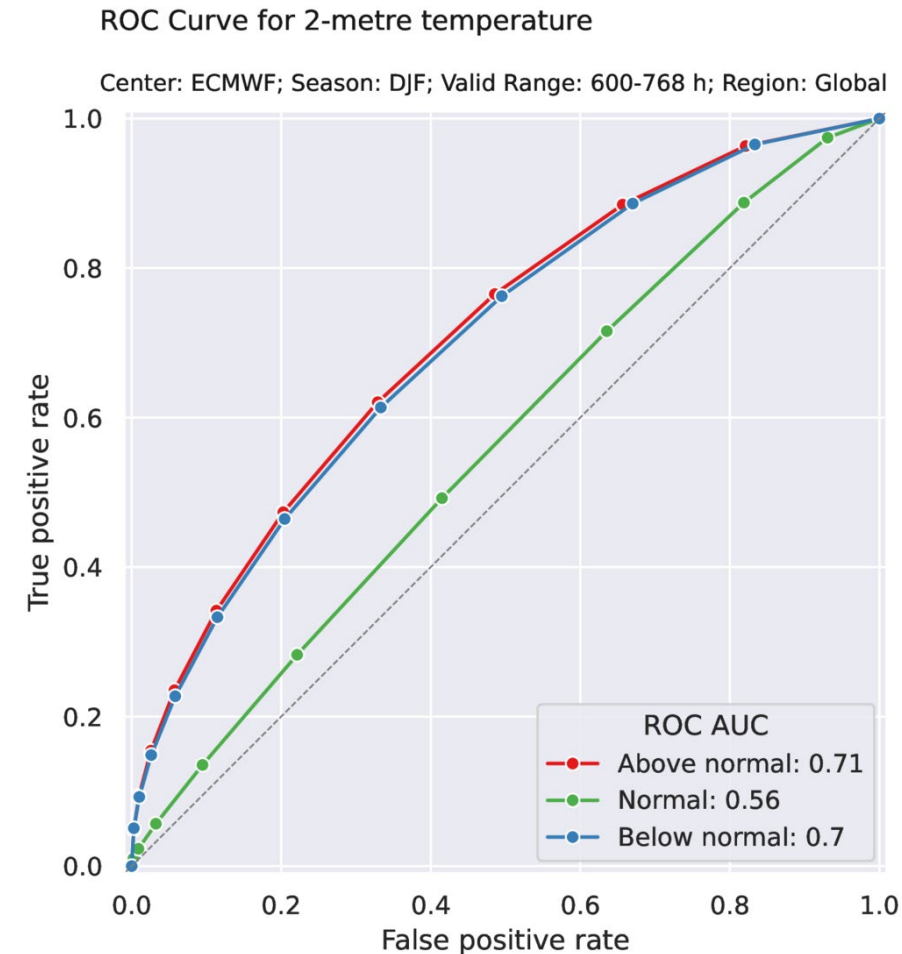
Pour ces deux semaines, aucun scénario dominant ne se dégage actuellement.

Dernière mise à jour le 06/05/2026, prochain bulletin prévu le 07/05/2026.



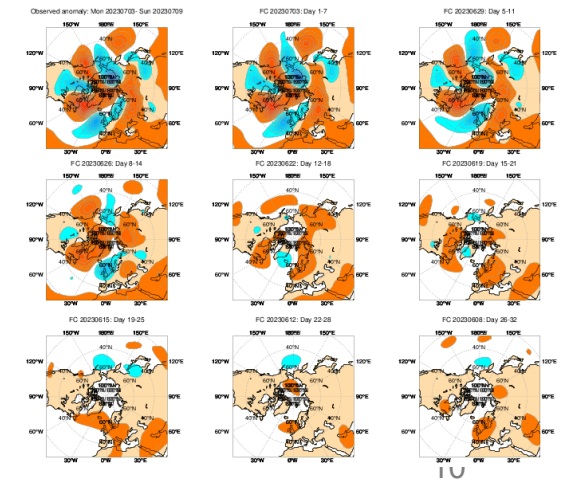
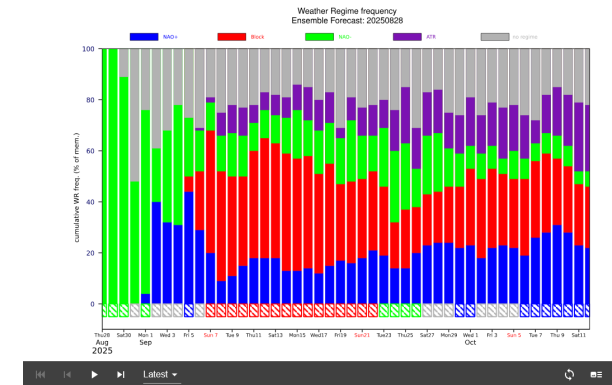
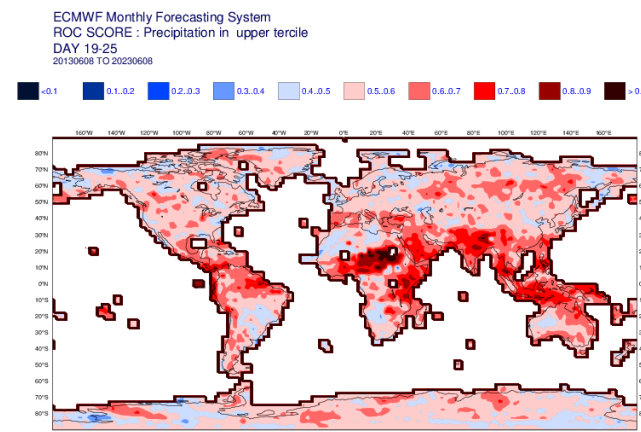
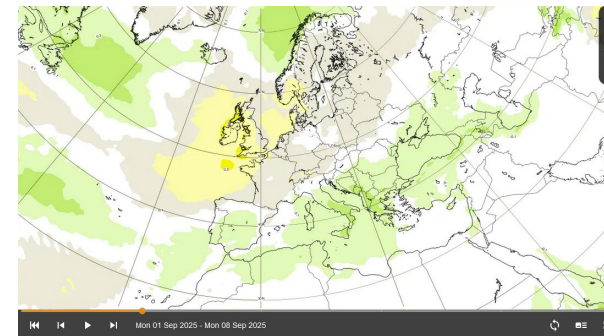
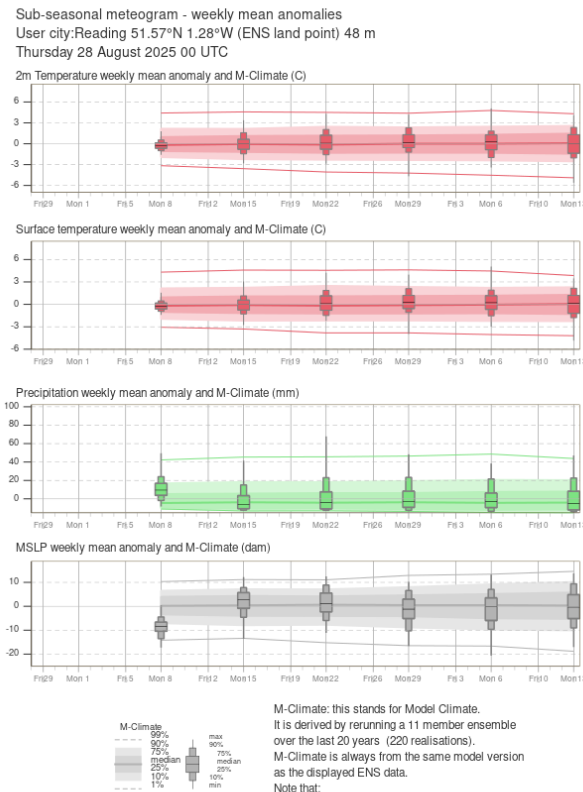
Recognized common challenges

- **Marginal predictive skill** especially in the weeks 3-4
- **Communicating forecast uncertainty** to users in understandable way: weekly anomalies are generally difficult to interpret
- Need to **manage expectations** and **educate** users/customers
- **The need for products more relevant to users** with associated verification (like number of dry/wet days over a week or a longer cumulative period, winds,...)
- **Forecast quality** encompassed two aspects: forecast **skill computed from reforecasts** and information derived from the **ensemble spread** of a particular forecast.



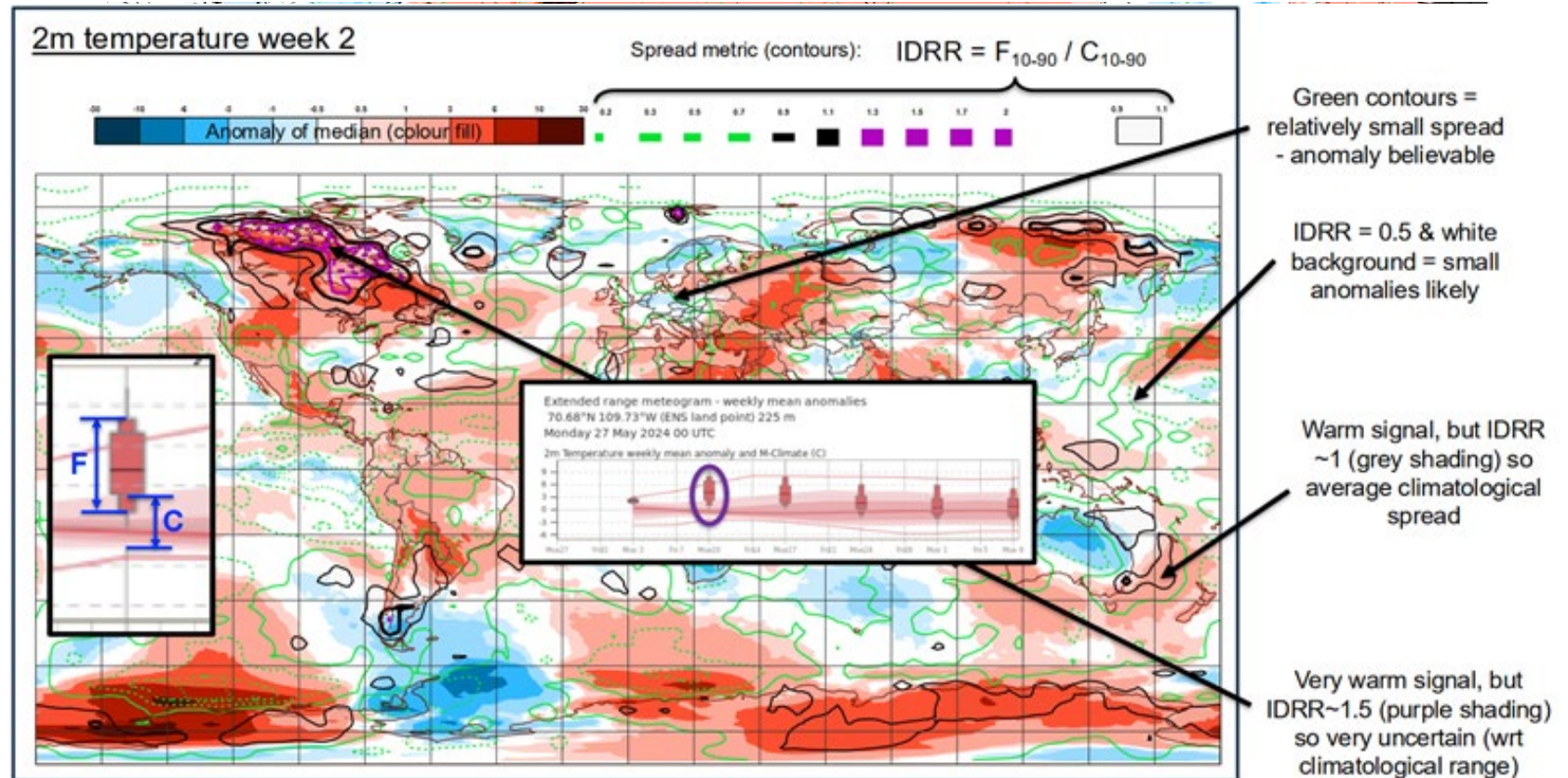
ECMWF Sub-seasonal forecast and verification products

- A lot of graphical products already available on ecCharts/Open Charts



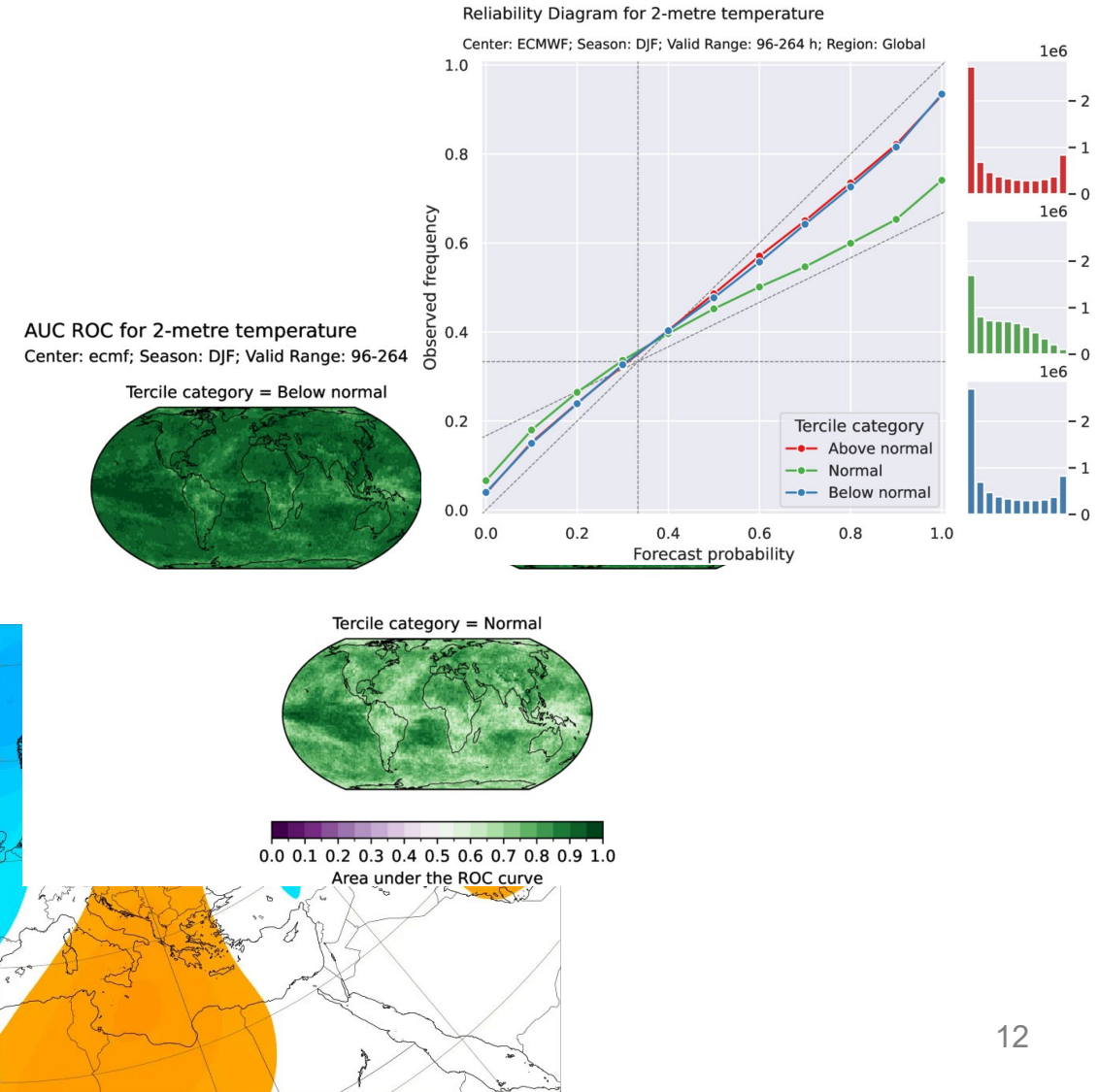
Experimental Sub-seasonal forecast product

- New experimental “Quantile-based weekly guidance map” - product merges information accessible in meteograms (forecast distribution vs model climate) with anomaly maps
- Subgroup gave positive feedback that this could support both interpretation (by forecasters) and communication (to users).



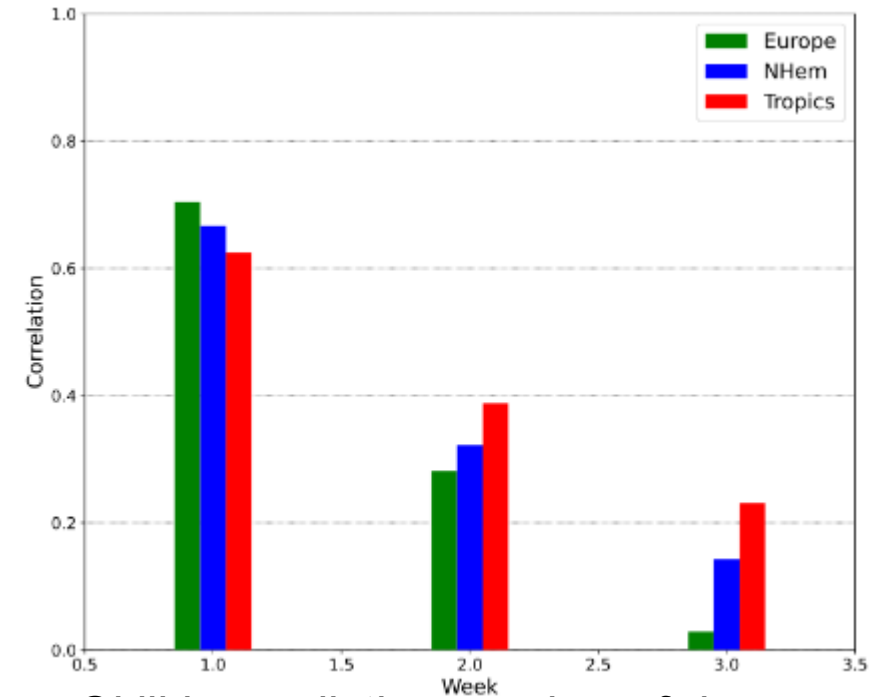
Work on multi-model products from the WMO Lead Centre for Sub-seasonal Prediction Multi-Model Ensemble

- As part of the newly established WMO LC-SSPMME, ECMWF generates weekly charts (week 1 to 4) for a set of parameters based on sub-seasonal forecasts from ten contributing centres
- Forecast charts (weekly) and verification statistics calculated from reforecasts are available at the website
- <https://charts.ecmwf.int/wmo/>



Investigation to verify number of dry/wet days

- **Motivation: drought, dry spells, and agriculture.** The importance of forecasting performance on these topics emerged in group discussions and in the survey.
- Until now investigated only with a small sample
- Using a threshold of 1 mm for defining a 'dry' day gives higher skill than a threshold of 0.1 mm and may also be more relevant for users
- Next step: verification over a longer period of time
- Need to find clearer use case and conduct these investigations for more regional scale



Skill in predicting number of dry days. Threshold 1mm/24h
Thomas Haiden

Suggestions for next steps – Feedback and ideas are welcome!

- Dry/wet day verification over a longer period of time
- Verification of soil moisture
- Verification of wind-related products
- Verification of snow cover
- What should drive product development - user needs vs. forecast skill?
- What do users need - general skill vs. targeted verification?
- **Ideas from UEF2026 audience for relevant use cases to investigate?**

Thank you!

Feedback for subgroup is warmly welcomed!

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