

VERIFICATION BULLETIN

DECEMBER - JANUARY - FEBRUARY 2025/2026

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Introduction : Objective

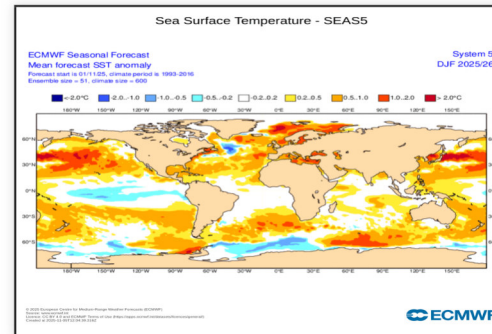
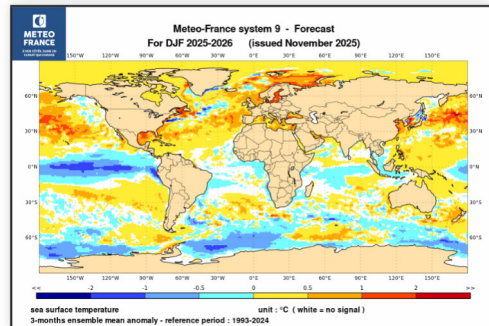
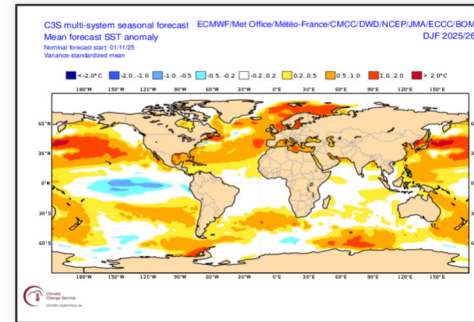
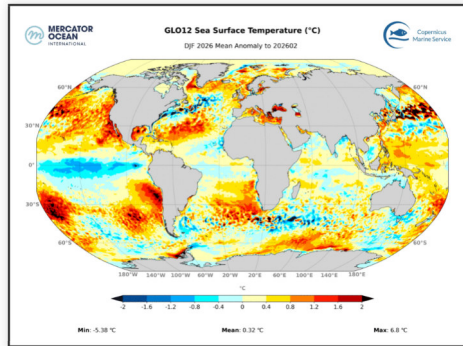
- The objective of the Seasonal Verification Bulletin is to present an evaluation of the main elements highlighted in the Seasonal Forecast Bulletin : oceanic forcings, large scale circulation patterns, and a focus on temperature and precipitation forecast over Northern Atlantic, Europe and the Mediterranean Basin.
- The aim is not to evaluate the mean skill of Seasonal Forecast models, for which scores are calculated over the whole hindcast period, but to enhance the knowledge of the behavior of models for advanced users (as National Meteorological Services), in parallel with an assessment of expertised forecast. This approach meets the need of many users, who want to know the recent real-time performances of forecasts, for specific events.
- Thanks to Mercator-Ocean and DWD (RCC-Climate Monitoring node for Europe) for providing products and analysis on the monitoring part.

Oceans : surface temperature anomalies

In the Pacific Ocean, the PDO- pattern was correctly predicted by the models as well as the cold equatorial anomaly. Warm anomalies close to coastlines underestimated.

In the Indian Ocean cold anomalies and close to normal conditions were well anticipated by models.

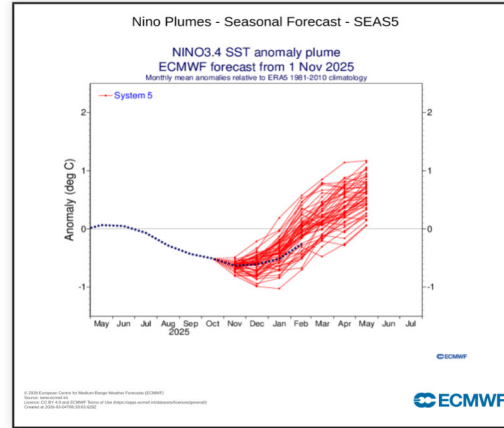
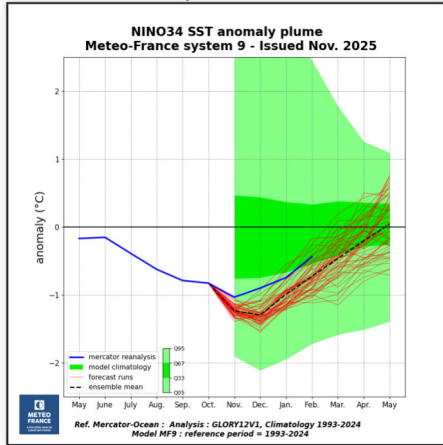
In the Atlantic Ocean, the close to normal conditions around equator was predicted by all models as well as the north and south Atlantic tropical warming and the cold anomaly in Labrador sea.



SST anomalies in the analysis from Mercator (top left), C3S multi-models (top right), MF-S9 (bottom left) and SEASS (bottom right)

Oceans : ENSO

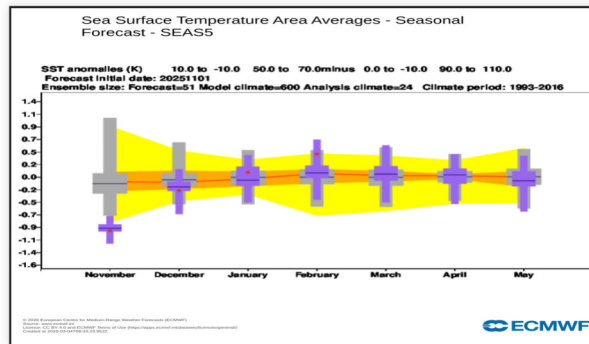
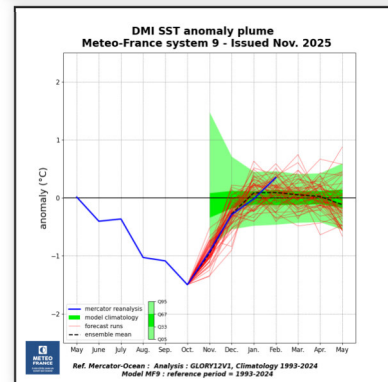
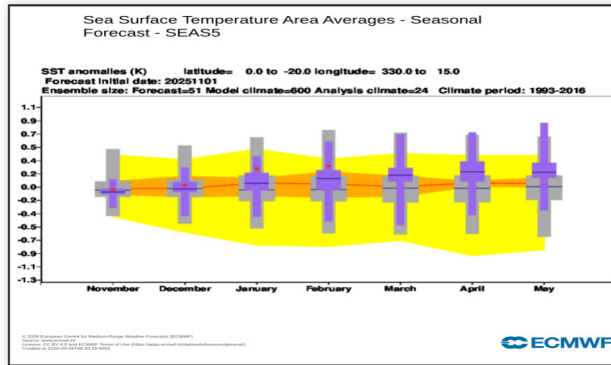
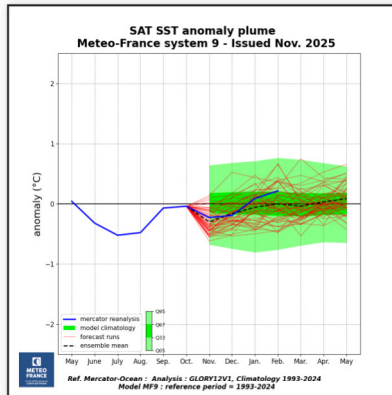
SEAS5 is close to the analysis while MF9 is too cold.



Oceans : tropical Atlantic and Indian Ocean index

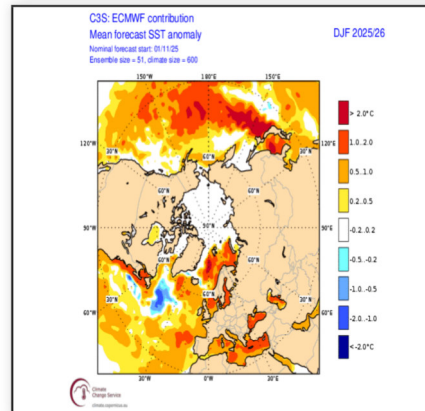
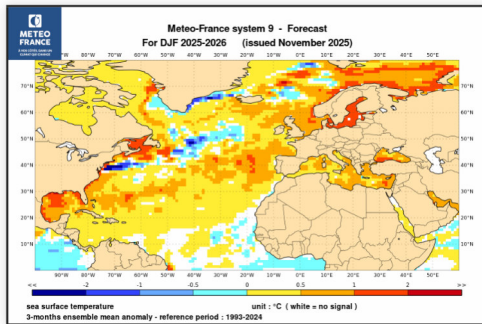
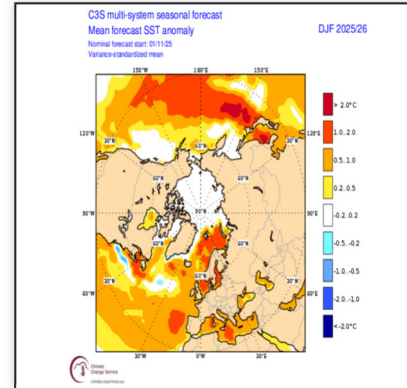
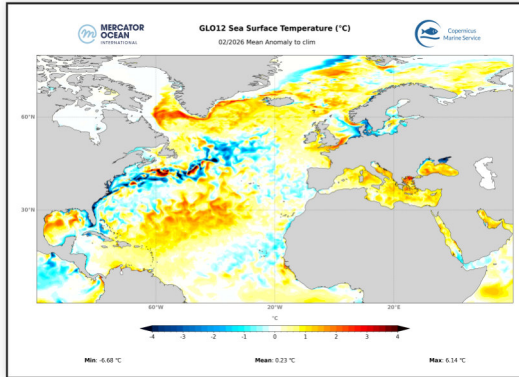
SAT : Forecasts are close to the analysis.

DMI : DMI neutral to warm conditions was well anticipated by MFS9 and SEAS5 warmest runs.



Oceans : North Atlantic SST

All warm anomalies in the vicinity of Europe were well predicted as well as the cold anomalies in the Labrador sea. Cold anomalies west of Iberian peninsula and in Baltic sea not anticipated by any model

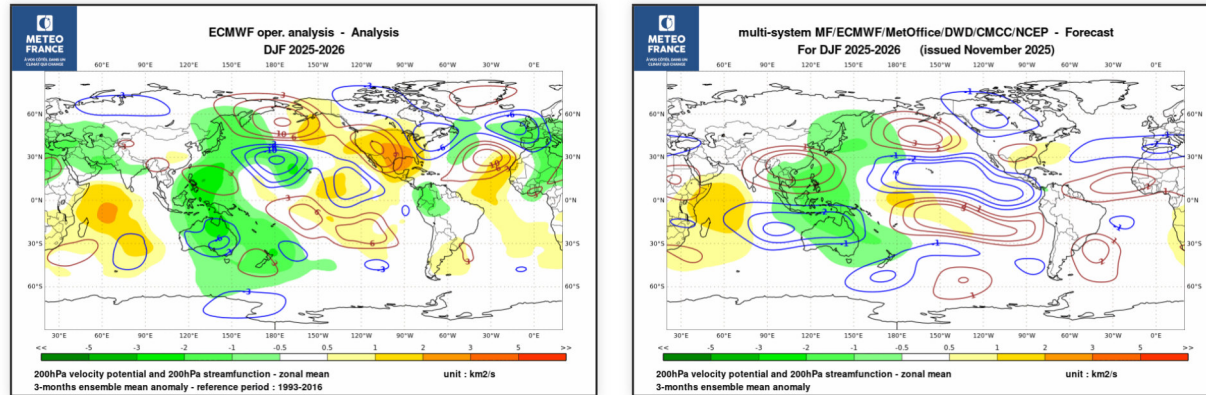


SST anomalies in the analysis from Mercator (top left), C3S multi-models (top right), MF-S9 (bottom left) and ECMWF SEAS5 (bottom right)

Atmospheric circulation : Global teleconnection

VP: The ascending anomaly over the Maritime Continent and the western Pacific, as well as the descending anomaly over the western Indian Ocean, were both well predicted. It has been suggested that there will be descending anomalies over the central Pacific and the USA. However, descending anomalies over the Atlantic Ocean and ascending anomalies close to the Mediterranean Sea were not anticipated.

SF: The Pacific Ocean dipole, teleconnections and maritime continent dipoles are visible in the analysis. The dipole close to North Africa is suggested.

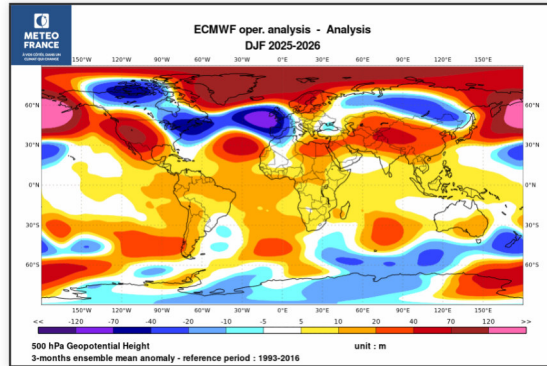


ECMWF analysis (left) and multi-model (right) for 200hPa velocity potential anomalies (color green : ascending, orange: subsidence) and stream function anomalies (isolines, red: anticyclonic in the northern hemisphere, blue: cyclonic in the northern hemisphere).

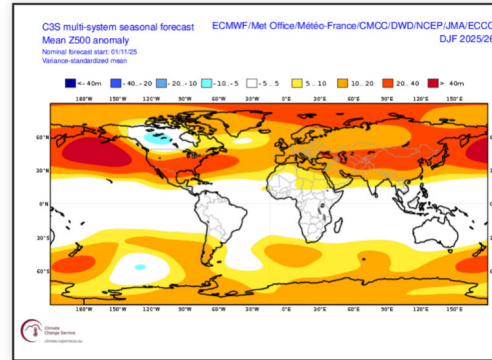
Atmospheric circulation : Atmospheric circulation

Southern Hemisphere : The positives anomalies were suggested

Northern Hemisphere : Signal over North Pacific and North America was well suggested. On the other hand the anomalies on Europe and Asia were not forecasted

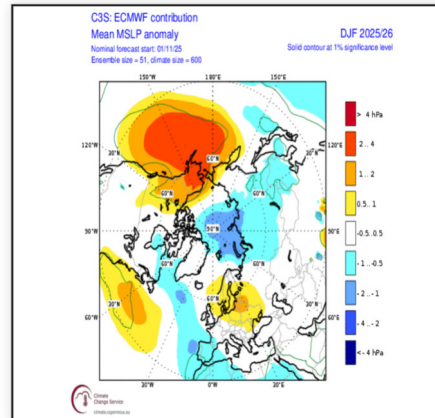
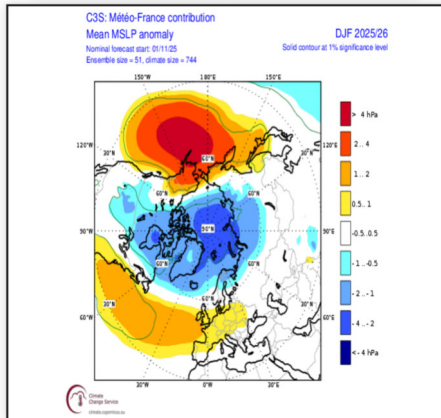
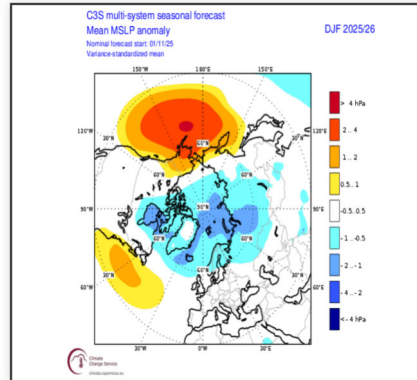
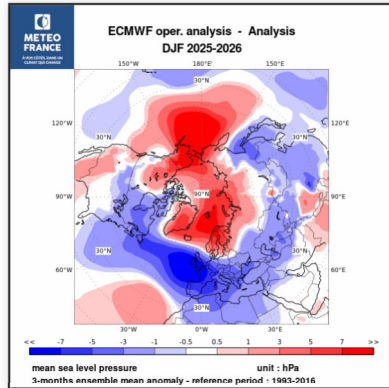


ECMWF analysis and C3S multi-system for 500hPa geopotential height anomalies.



Atmospheric circulation : MSLP

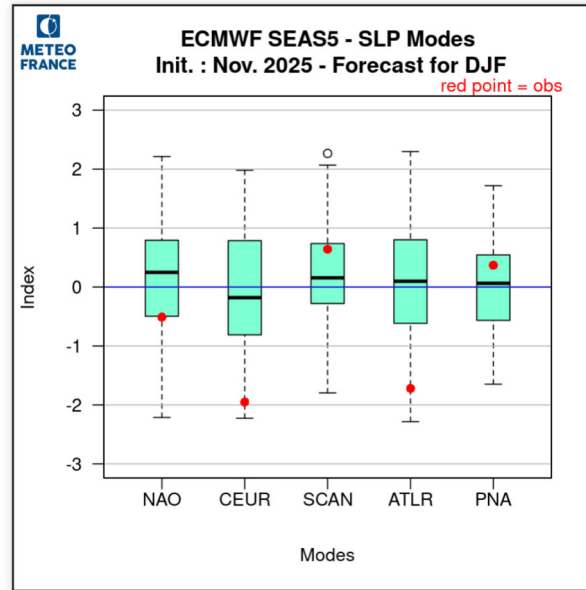
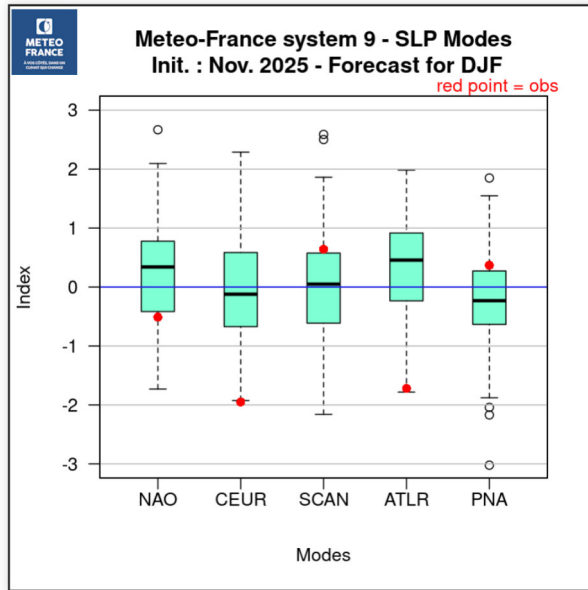
Negative anomaly from North Atlantic to Europe was not anticipated by multi-models but suggested by ECMWF. Positive anomaly around the North Pole have not been forecasted. Negative anomaly over Canada and positive anomaly from North Pacific to Alaska was well suggested by all models.



Analysis and multi-system C3S forecast MSLP anomalies (top), MF-S9 and ECMWF-SEAS5 MSLP anomalies (bottom)

Atmospheric circulation : Verification SLP Modes

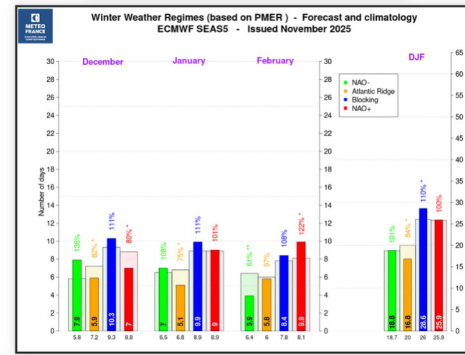
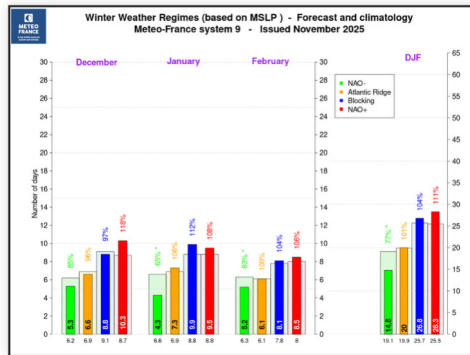
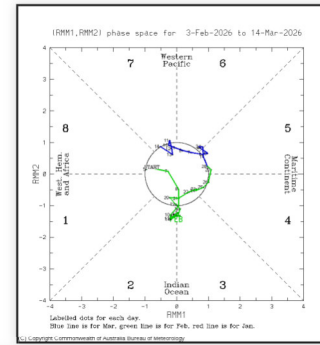
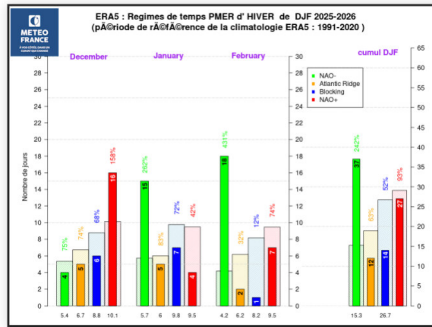
Only negative CEUR was slightly suggested.



SLP modes of variability : MF-S9 and ECMWF-S5 forecasts -- red point = ERA5 reanalysis

Atmospheric circulation : Winter SLP weather regimes

The NAO+ and NAO- regimes dominates for the quarter. SEAS5 favored blocking, MFS9 displayed lack of NAO-

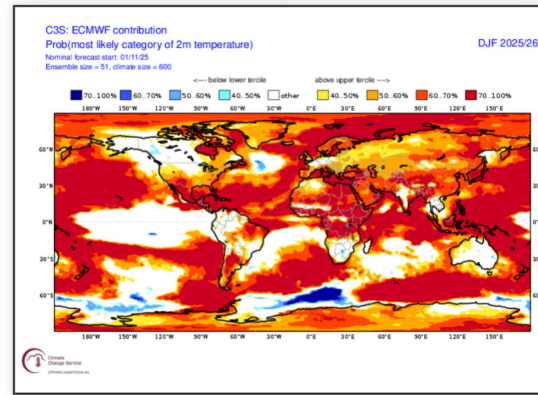
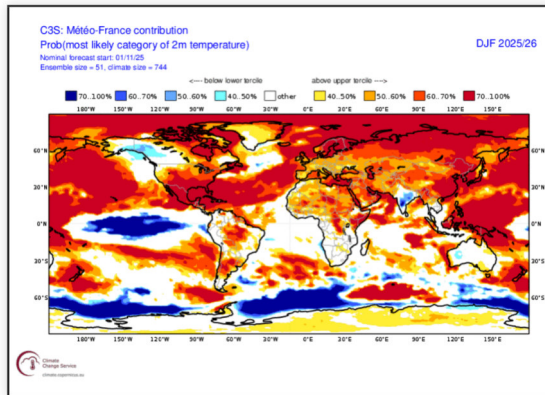
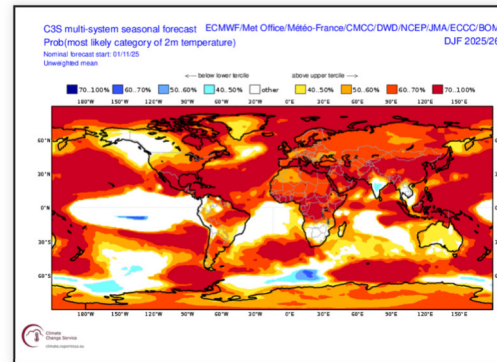
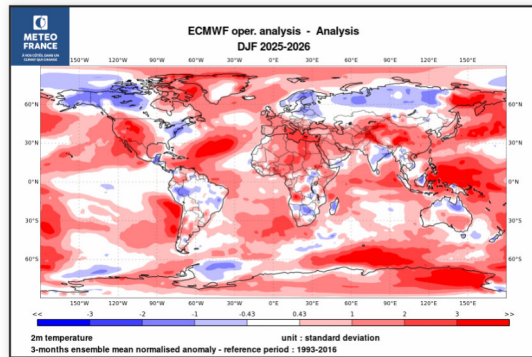


weather regime : ECMWF analysis top left, MFS and ECMWF forecasts at the bottom. MJO phase top right

Climatic parameters : temperature on the globe

Warm anomalies dominate. Cold anomalies over India, South East Asia, and Southern Hemisphere landmasses were suggested by models.

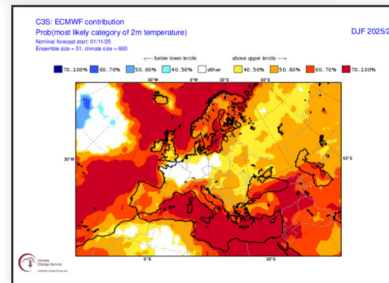
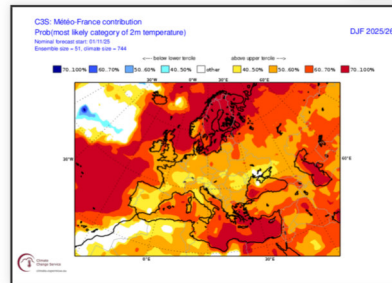
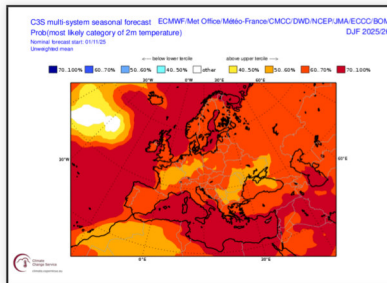
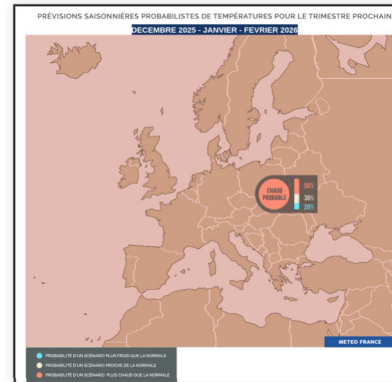
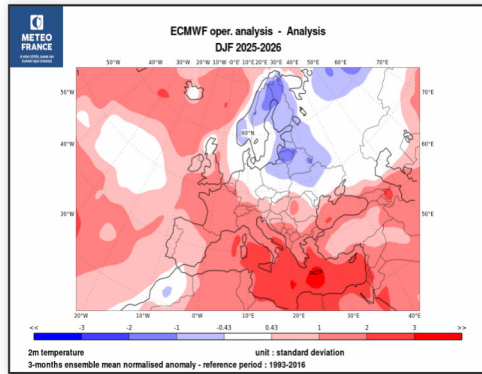
Cold anomalies from Scandinavia to Siberia was not forecasted.



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Climatic parameters : temperature over Europe

Warm anomalies on western and southern Europe were well forecasted. The cold anomalies over northern Europe and around the Baltic sea not anticipated

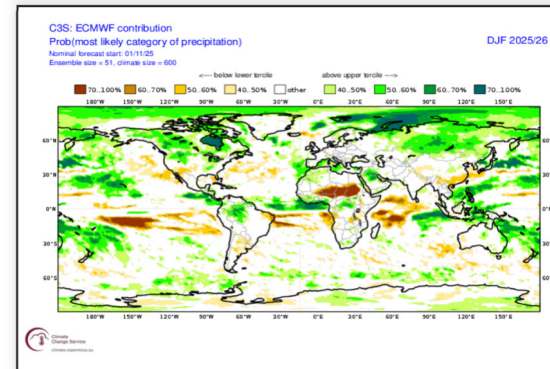
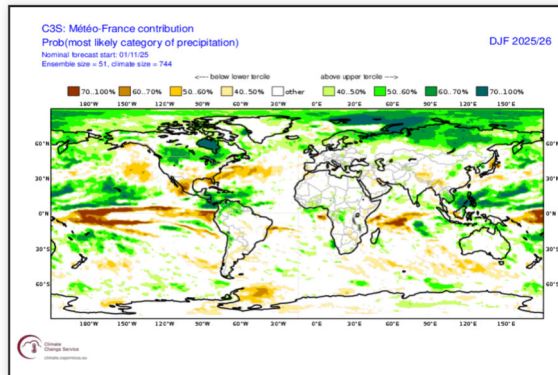
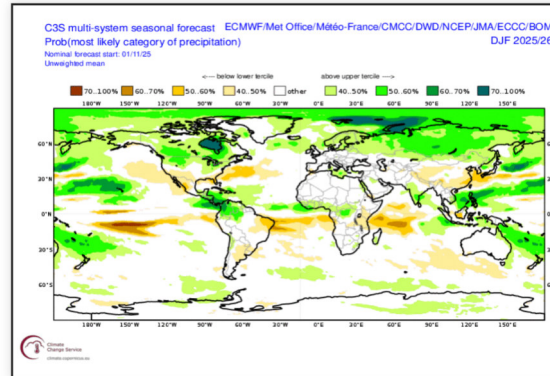
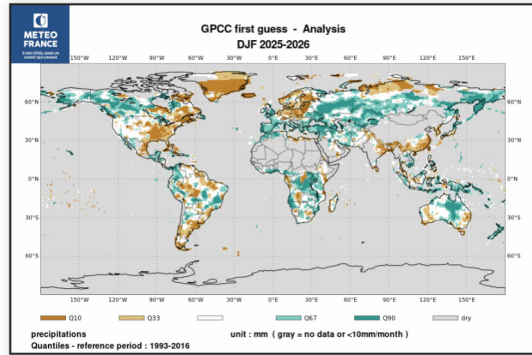


ECMWF analysis top left, synthetic forecast map top right. Forecast for multi-system , MF-S9 and SEAS5 on the bottom line.

Climatic parameters : Precipitations over the globe

In the inter-tropical zones, the wet signal forecast by the models over central america is confirmed by analysis. The wet signal over south Africa was not predicted.

In the Northern Hemisphere, the signals over North West America and South USA was well anticipated. Siberia, eastern Canada and greenland dry signal was not anticipated.

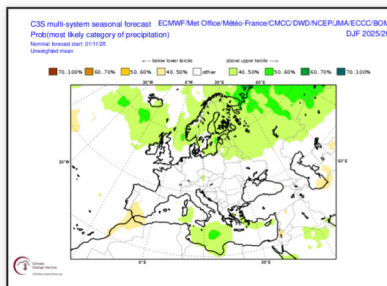
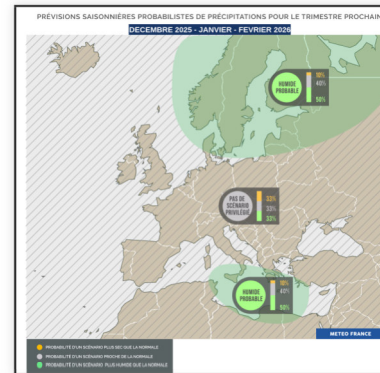
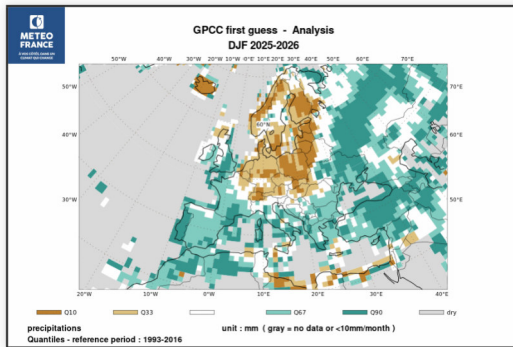


Standardized Precipitation Index analysed by IRI top left, forecast for multi-model top right and MF-S8 and SEAS5 on the bottom line.

Climatic parameters : Precipitations over Europe

Wet signal around mediterranean sea was well anticipated.

Dry signal over Nothern Europe and wet signal on west Europe was not anticipated by any model.



General summary : for the period DJF 2025-2026

1) Oceans :

The main SST anomalies predicted by the models are validated by analysis. Colder condition around Europe not anticipated.

2) Large scale atmospheric circulation :

VP 200 hPa : The ascending anomaly over the Maritime Continent and the western Pacific, as well as the descending anomaly over the western Indian Ocean, were both well predicted. It has been suggested that there will be descending anomalies over the central Pacific and the USA. However, descending anomalies over the Atlantic Ocean and ascending anomalies close to the Mediterranean Sea were not anticipated.

SF 200 hPa : The Pacific Ocean dipole, teleconnections and maritime continent dipoles are visible in the analysis. The dipole close to North Africa is suggested.

Z500 : SH - On the southern hemisphere the main positive anomalies have been forecasted by models. Negative anomalies from Canada to Europe were not forecasted by most models, just suggested by ECMWF.

3) Climatic parameters over Europe :

Temperatures : Warm anomalies on western and southern Europe were well forecasted. The cold anomalies over northern Europe and around the Baltic sea not anticipated

Precipitations : Wet signal around mediterranean sea was well anticipated. Dry signal over Northern Europe and wet signal on west Europe was not anticipated by any model.