

Météo-France Seasonal Forecast Bulletin

DECEMBER 2025 - JANUARY - FEBRUARY 2026

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General synthesis : DJF 2025

Météo France Forecast system has been upgraded to MF-S9, with a 1993-2024 climatology.

A) Oceanic forecast :

- ENSO : slight la nina conditions
- IOD : neutral phase
- PDO : persistence of negative phase
- Atlantic : negative anomaly at the north west

B) Low frequency and drivers :

- Low frequency :
 - analysis of atmospheric circulation over the last six months : downdrafts from est Pacific Ocean to Atlantic Ocean and updrafts over the Maritime Continent
 - circulation proposed by models last month for the next quarter: light NAO+ pattern over Atlantic Ocean and western Europe, and PNA- over USA.
- Drivers :
 - Pacific : negative phase of PDO favors negative PNA

C) Atmospheric circulation :

- Convergence between most models on atmospheric circulation in the intertropical zone (downdrafts from the Pacific to the Atlantic, and updrafts over the Maritime Continent, dipoles of stream function anomalies).
Models show an anticyclonic curvature over West Africa and a cyclonic curvature over Western Europe . In MSLP, positive anomaly over North Atlantic ocean. In Z500, models converge on a positive anomaly over western Europe, the position an intensity of the neutral to negative anomaly in Southern Europe is variable depending on model.
- MSLP modes : positive SCAN favored by both models.

D) Most likely conditions :

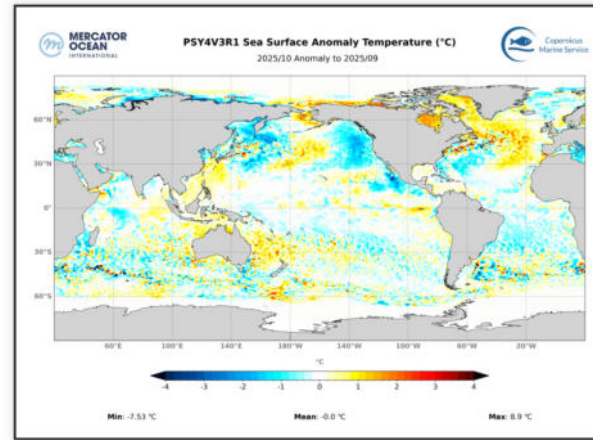
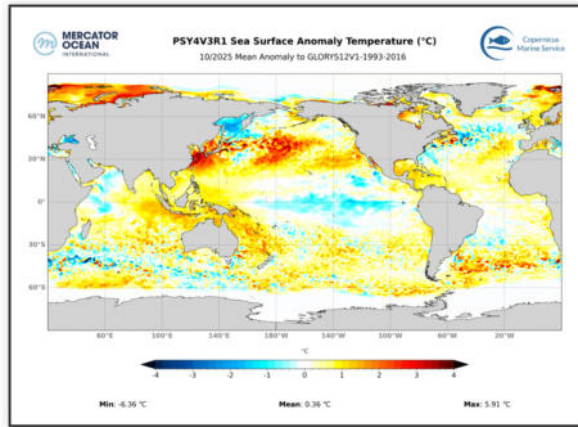
Temperatures : warmer-than-normal scenario across Europe.

Precipitations : A wetter-than-normal scenario is privileged around mediteranean sea, drier than normal scenario over Middle East.

NEXT BULLETIN : SCHEDULED ON DECEMBER 19ST

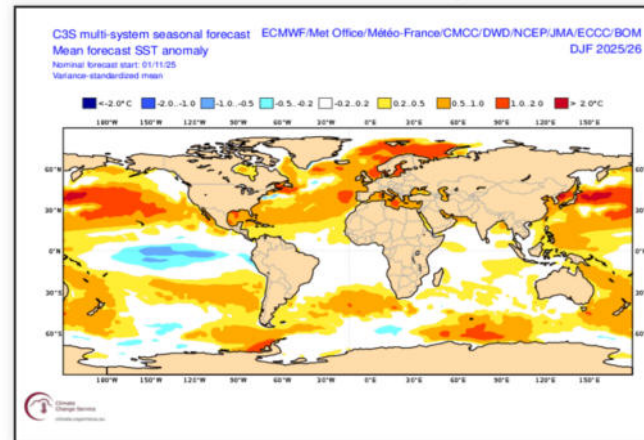
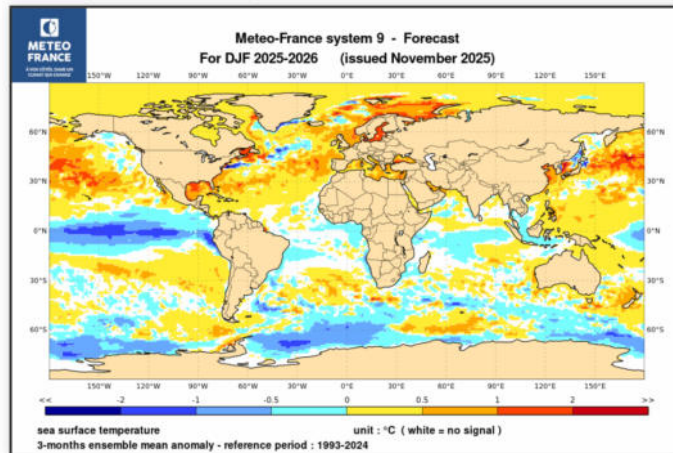
Oceanic analysis and evolution : October 2025 - DJF 2025

Current situation : Weak la nina conditions close to neutral, IOD in a negative phase, PDO negative phase decreasing, in the Northern Atlantic cold anomaly from the East American coasts to the British islands.



SST Anomalies (left figures) and trend with the previous month (right figure) (c) Mercator-Ocean

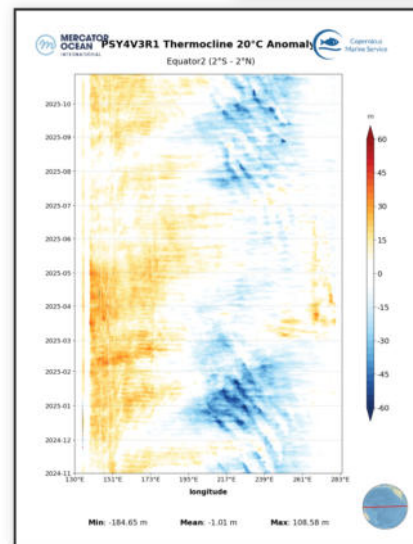
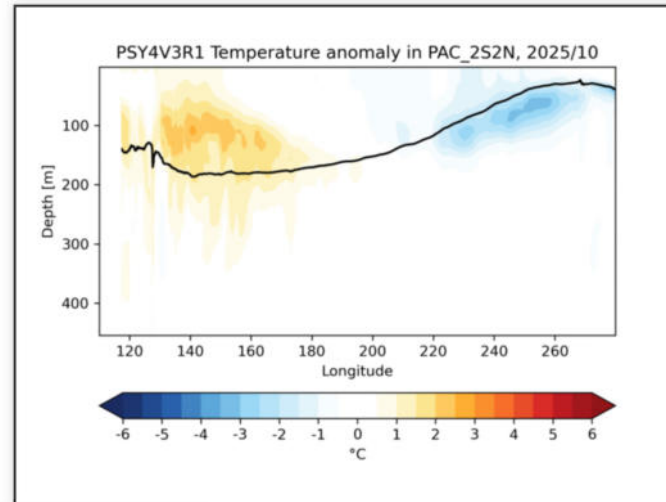
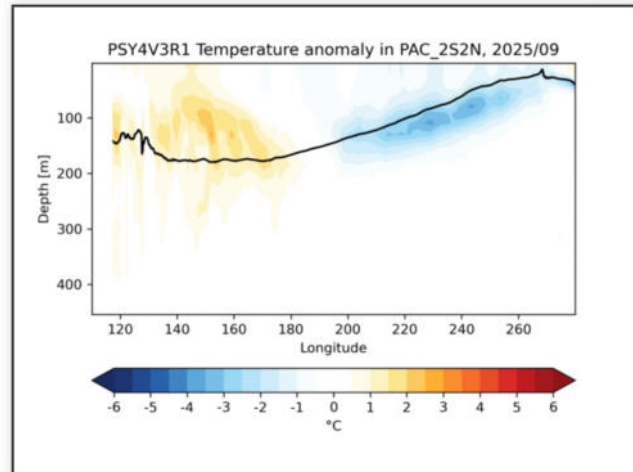
Forecast : Warming on the northern Atlantic Ocean. Cooling over equatorial Pacific. Dissipation of the IOD negative pattern.



SST anomalies forecasts for MF9 system and multi-system

Oceanic analysis and evolution : Pacific

Eastward displacement of the cold anomaly and warming to the west.

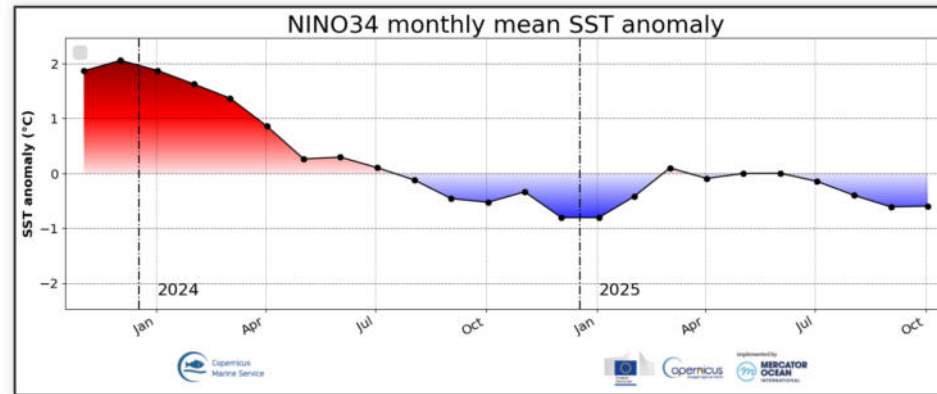


Ocean temperature anomalies in the first 500 meters of the equatorial Pacific basin, monthly average on the top figure -- Evolution of the anomalies of depth of the thermocline (m) (materialized by the 20 °C isotherm) on the bottom figure -- (c) Mercator-Ocean

Oceanic analysis and evolution : Pacific

----- ANALYSIS -----

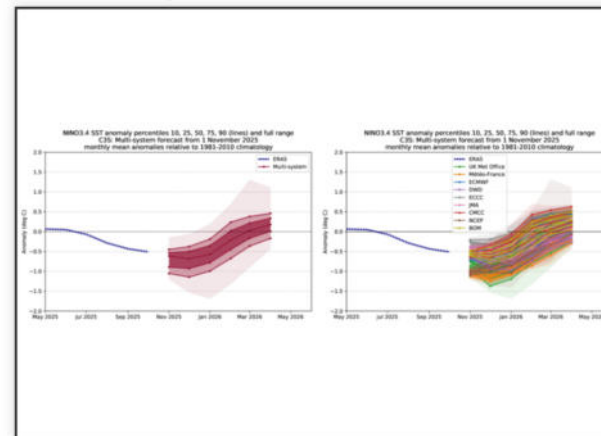
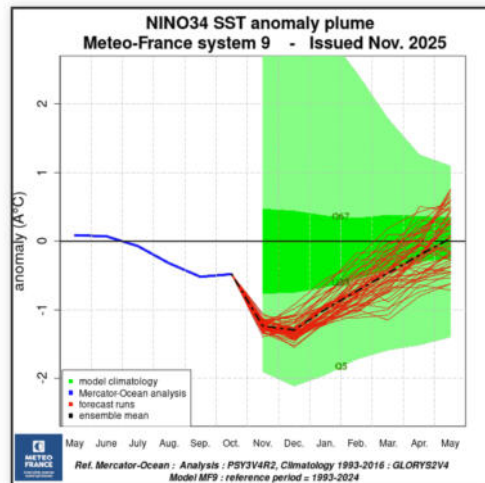
Weak La Niña conditions.



Nino34 observed (c) Mercator-Ocean

----- FORECAST -----

Weak la Niña signal during the quarter, with a light dispersion.

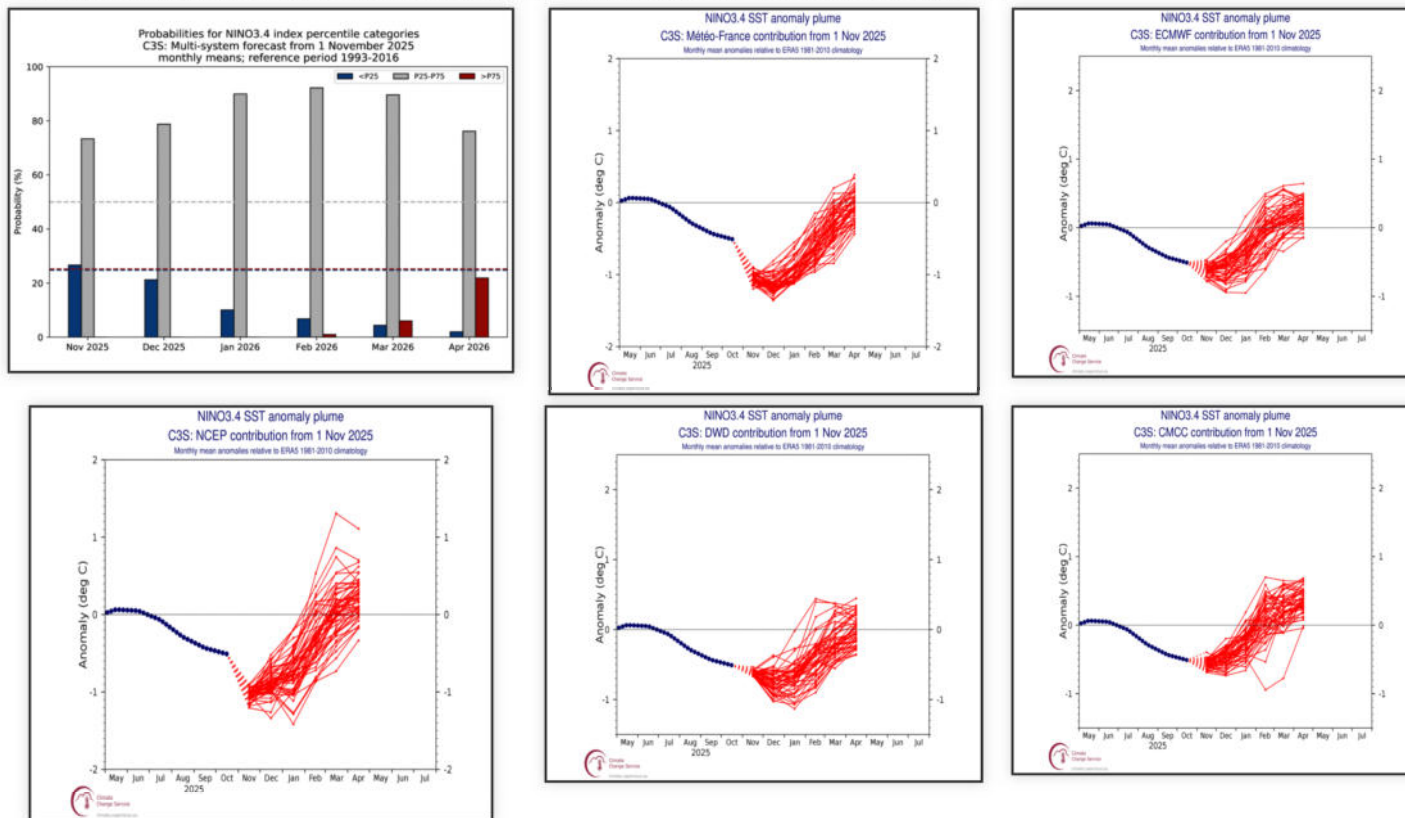


NINO3.4 index : analysis, forecasts and model climatology with MF-S9 on the left - forecasts with C3S multi-model on the right.

Oceanic analysis and evolution : C3S Nino3.4 re-scaled plume diagrams

All models forecast little change.

The most likely phase for the next three months : Neutral to weak la nina conditions

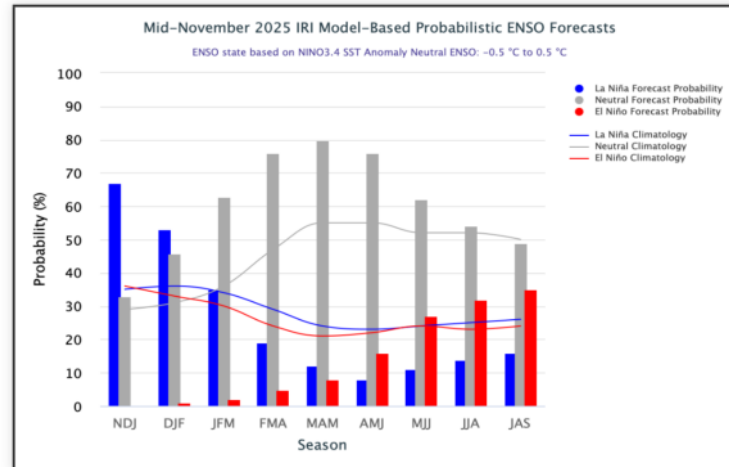
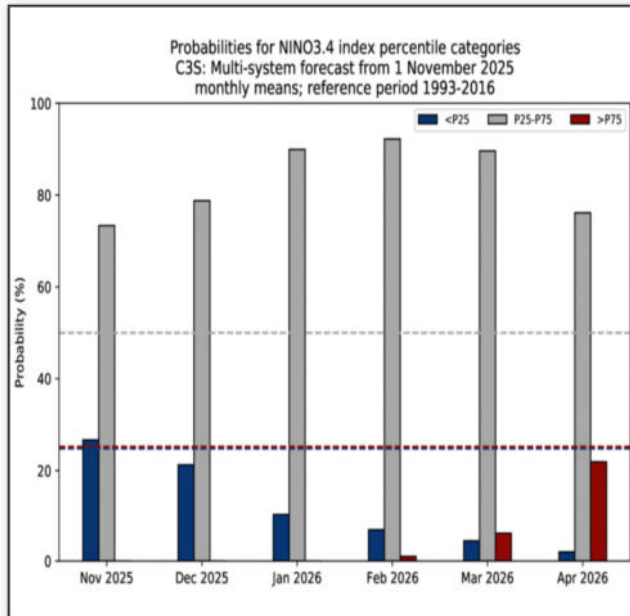


C3S multi-system probability forecast (top left figure) and C3S plume diagrams re-scaled from the variance of observations for the period 1981-2010.

Oceanic analysis and evolution : Synthesis from C3S and IRI

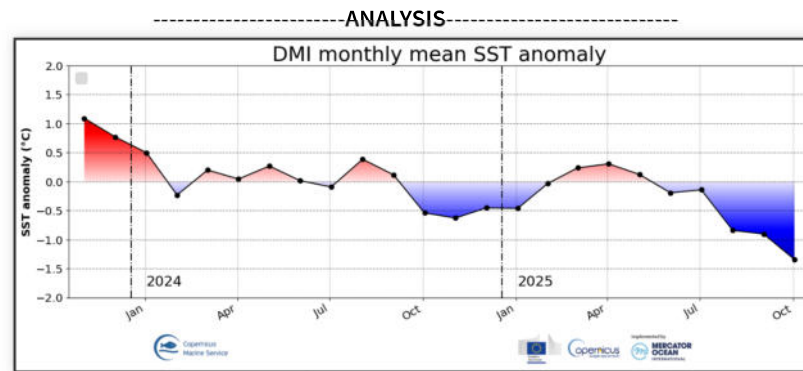
C3S forecast : more than 80% probability for neutral ENSO -- IRI forecast : more than 50% probability for La Niña conditions.

The most likely phase for the next three months : Neutral to weak la Niña conditions

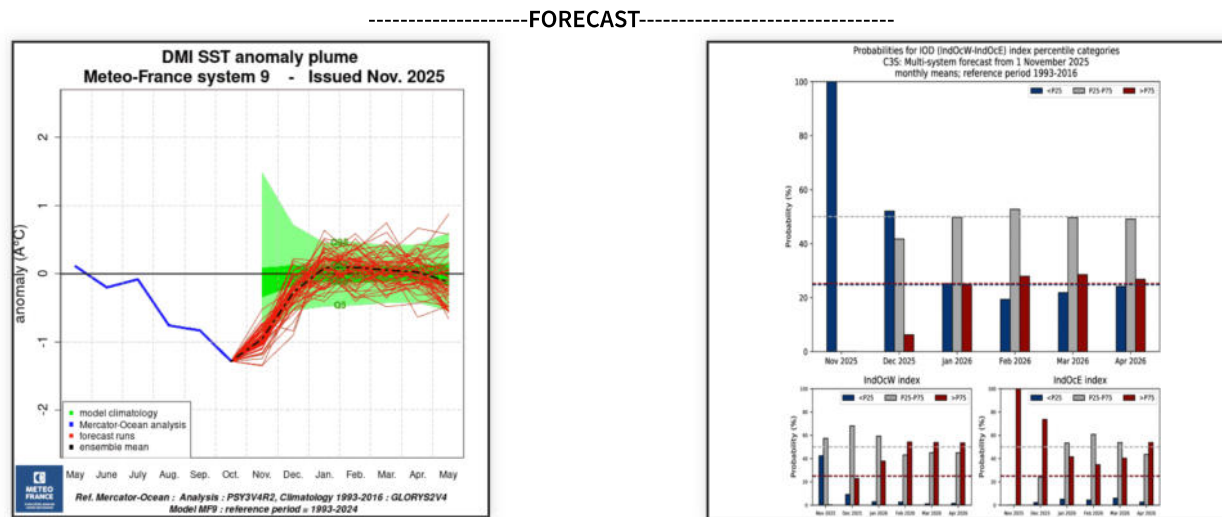


Probability of Niño, Niña, and neutral phases for the next month or quarters. C3S multi-system (left) and IRI system (<http://iri.columbia.edu/our-expertise/climate/forecasts/ens0/current/>)

Oceanic analysis and evolution : Indian Ocean - DMI index



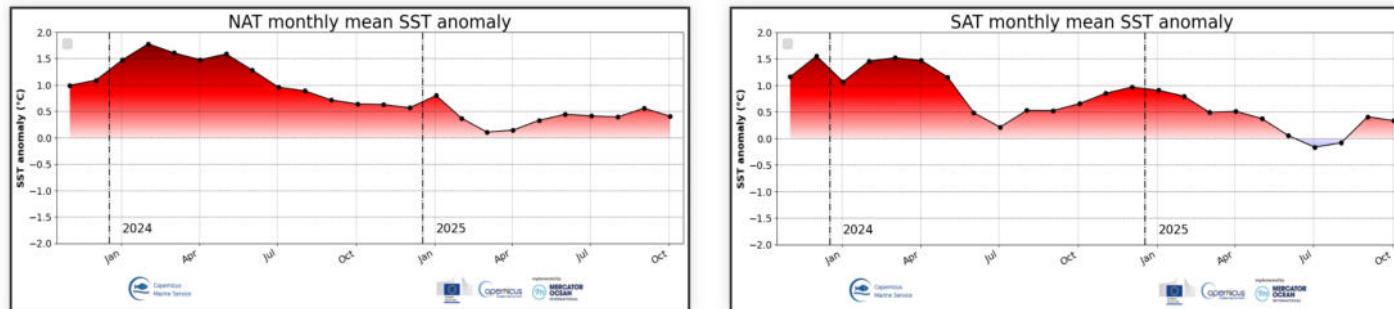
Negative phase at analysis. Rapid evolution towards neutral conditions



DMI index : analysis, forecasts and model climatology with MF-S9 on the left - probability for category of IOD with C3S multi-model on the right.

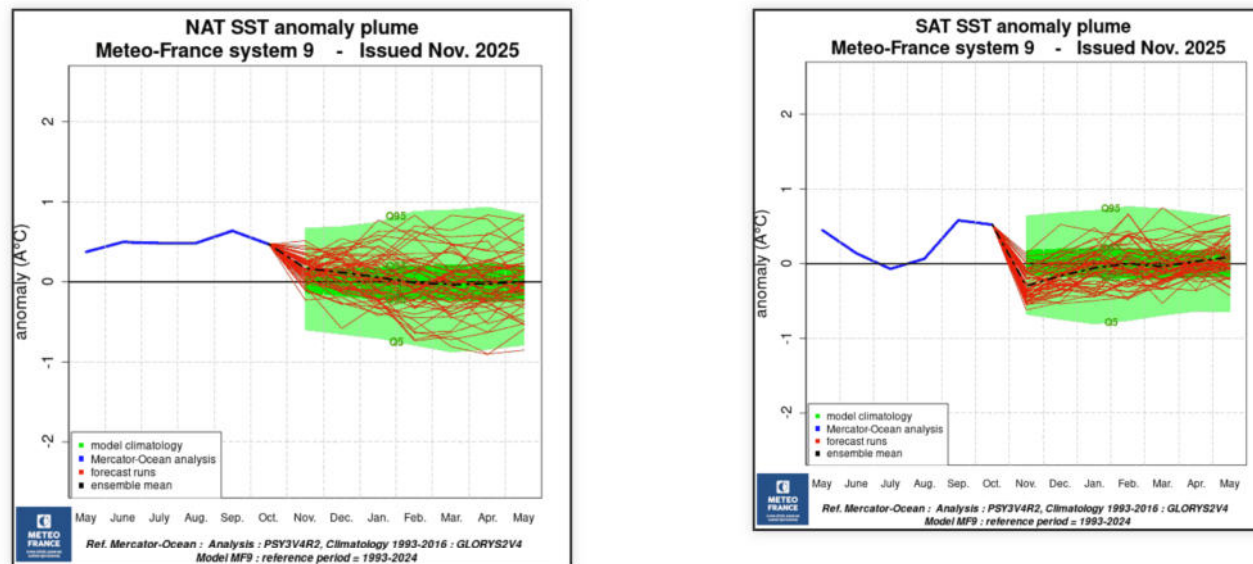
Oceanic analysis and evolution : Atlantic

-----ANALYSIS-----



Evolution of SST in the SAT and NAT box (c) Mercator-Ocean

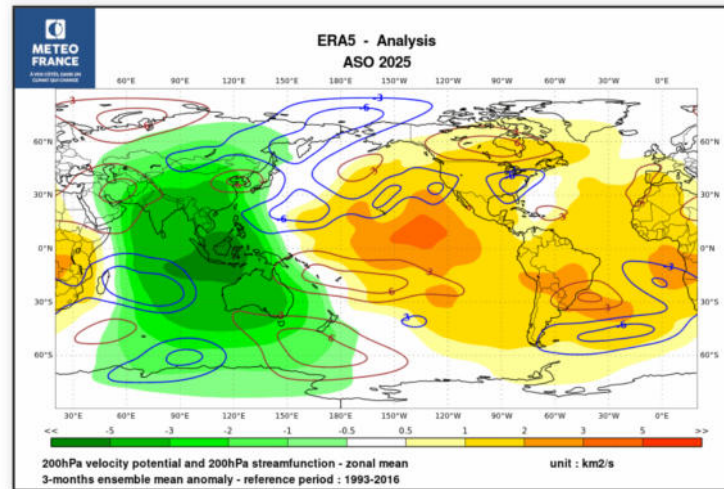
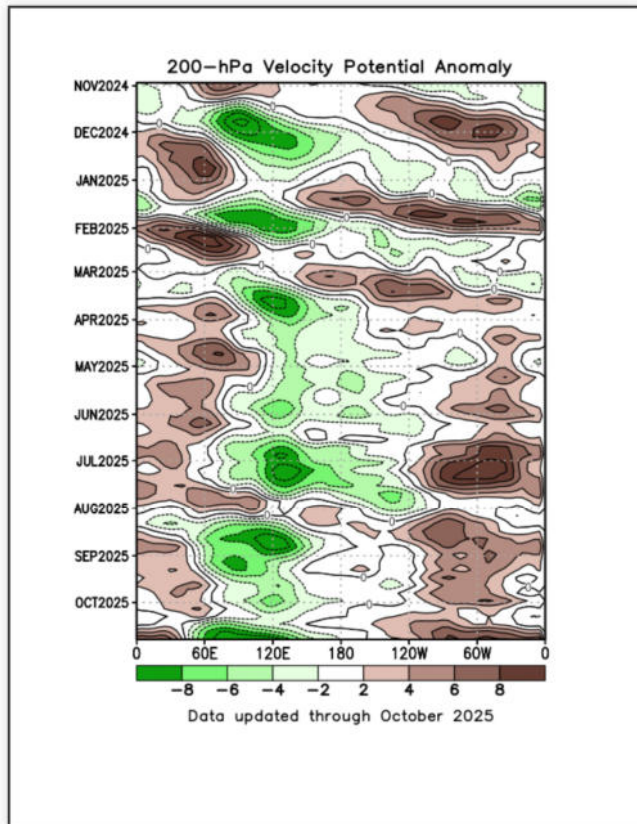
-----FORECAST-----



Anomaly on the SAT and NAT box : analysis, forecasts and model climatology with MF-S9

Low frequency and drivers : Global signal observed

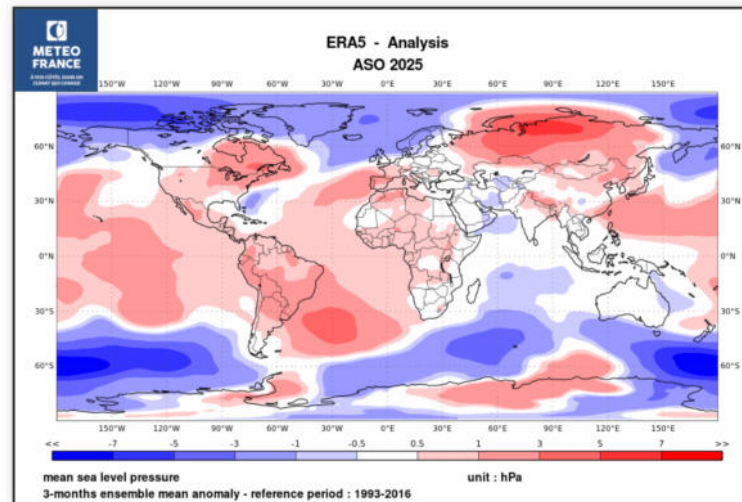
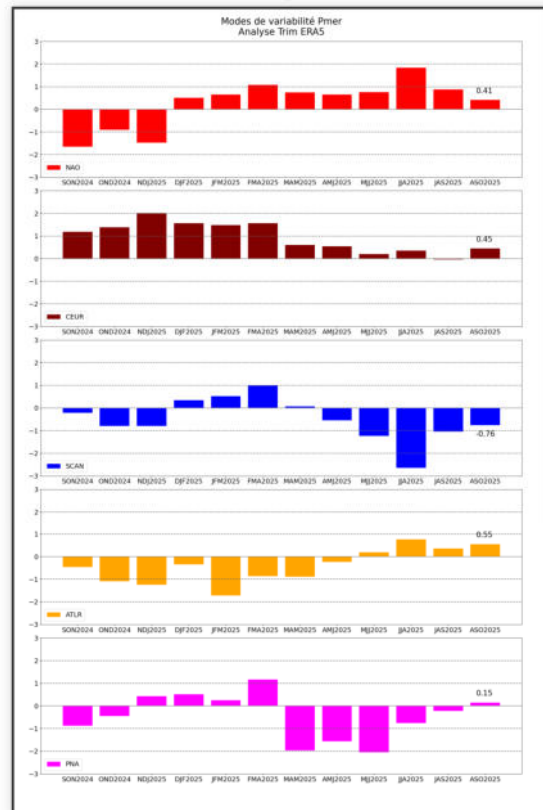
Updraft motions over Maritime Continent and the eastern Indian Ocean, downdraft over the eastern Pacific and Atlantic, are mostly observed last 6 months.



time-longitude section of anomalous 200Hpa velocity potential between 5N-5S (left) [link](#) --- 200Hpa anomalous of velocity potential and streamfunction last quarter (right)

Low frequency and drivers : MSLP Modes observed

Low frequency : The phases of main modes have remained unchanged for several months. The phase of the PNA modes changed signs in the last month, becoming positive

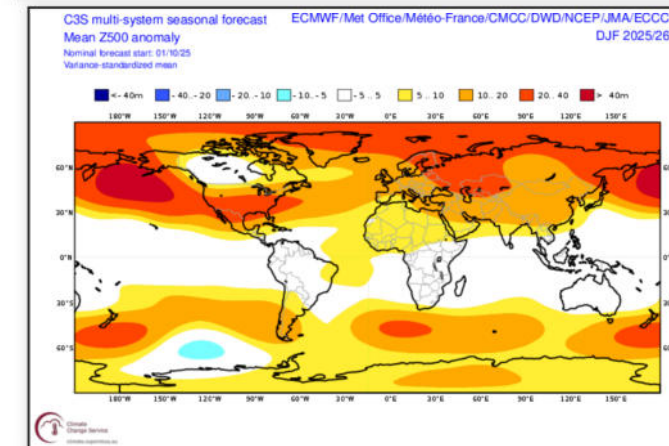
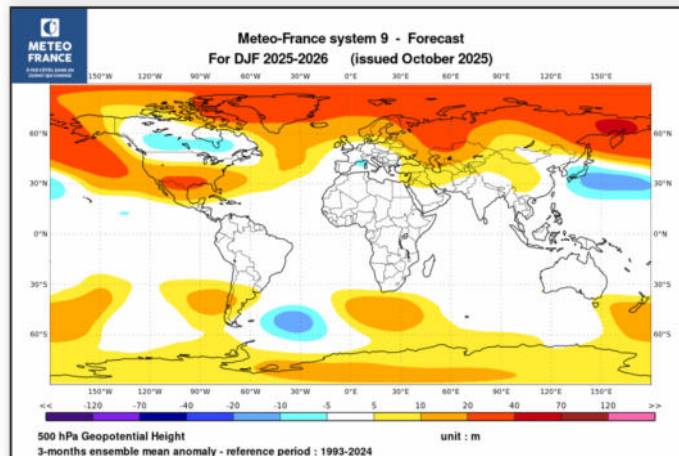
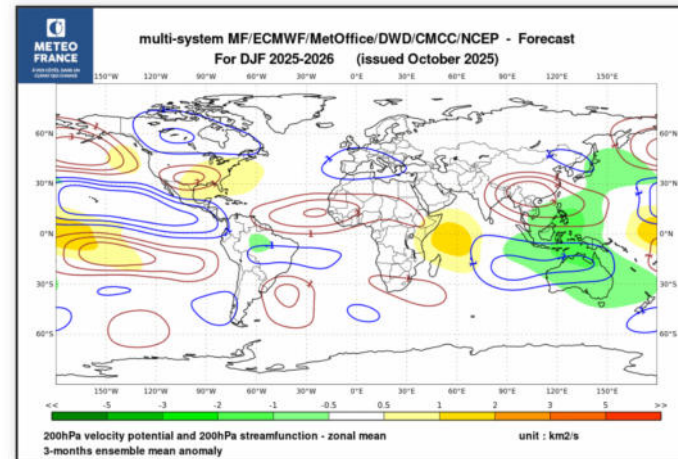
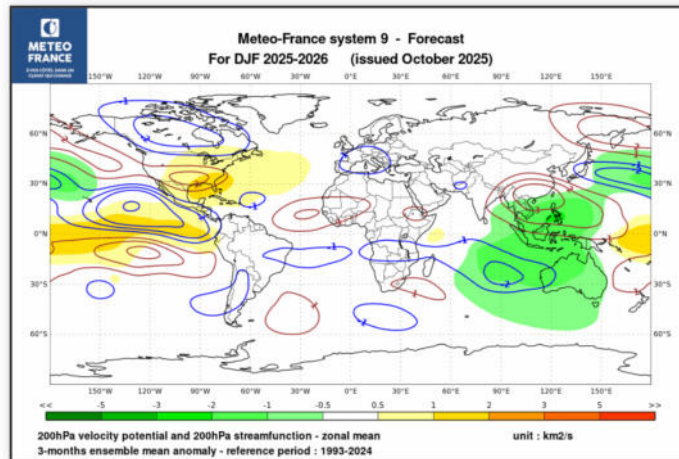


legende : legende : MSLP Modes last 12 months [all_pattern_view](#) (left) and mean mslp anomalies last quarter (right)

Low frequency and drivers : Signal forecasted last month

MF-S9 is fairly close to the multi-model looking at the velocity potential, but the downdraft signal over Western Indian ocean is fairly weak. Streamfunctions are similar between MF9 and multi-model particularly towards North America.

Geopotential anomalies are quite close.

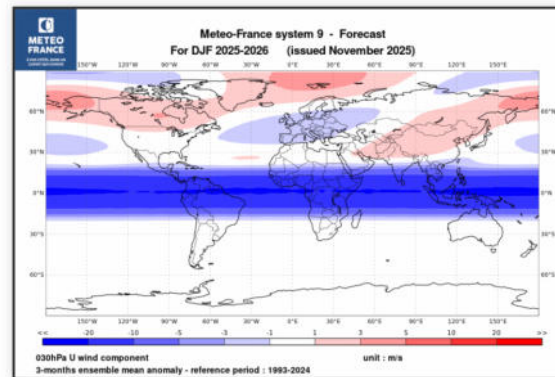
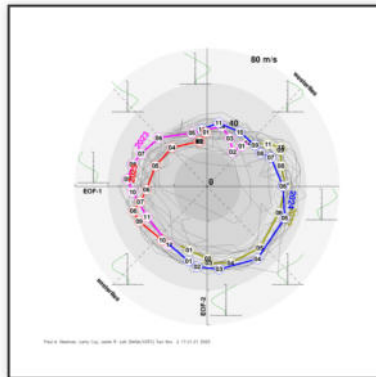


MF9 and multi-system 200hPa velocity potential and stream function anomalies (above) --- MF9 and multi-system 500hpa geopotential height (below)

Low frequency and drivers : QBO analysis

QBO is in an easterly wind phase, leading to a weakening of the polar vortex.

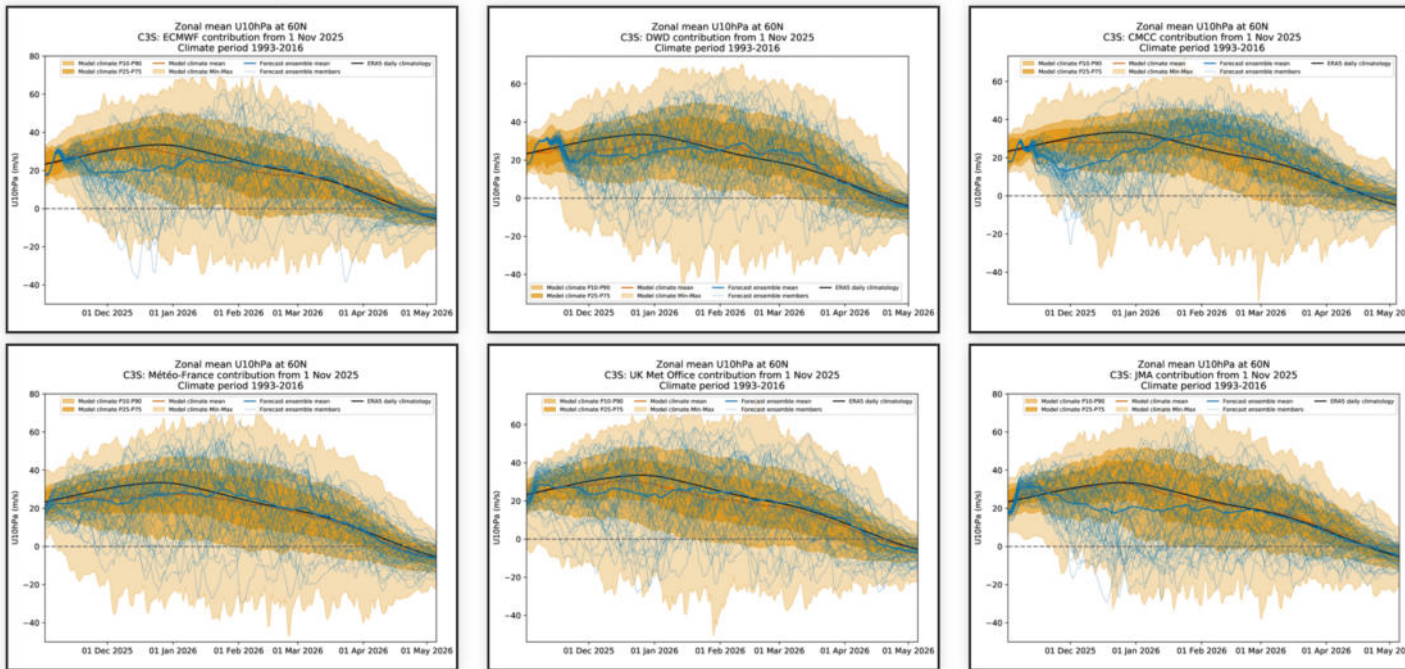
Ref : Marshall, A. G., & Scaife, A. A. (2009). Impact of the QBO on surface winter climate. *Journal of Geophysical Research: Atmospheres*, 114(D18).



The EOFs of the 1980-present QBO, NASA/ACD (left figure) and MF9 forecast of U30 (right figure)

Low frequency and drivers : polar vortex (U010 plumes)

All models offer a 10 hPa wind weakness, which is maintained until January. Models whose all members are initialised on the 1st of the month weaken the average wind more, with higher probability of SSW.

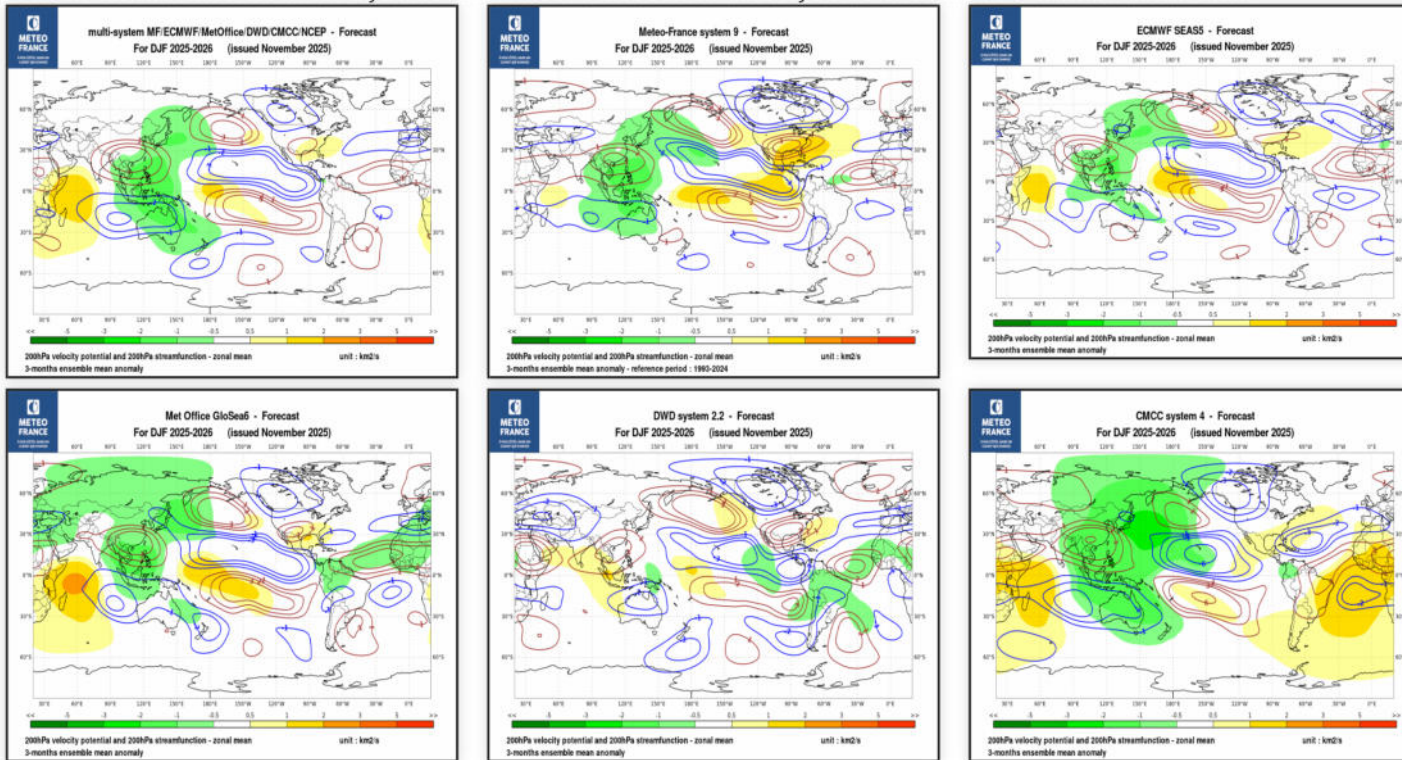


ECMWF-SEAS5, DWD, CMCC, MF-S8, UKMO, and JMA 010hPa zonal mean of u component of wind at 60°N.

Atmospheric circulation forecasts : velocity potentiel and stream function at 200hPa

Velocity Potential : All models predict downdrafts on central Pacific, and updrafts over the Maritime Continent. MF9 downdraft signal weaker over Africa and Western Indian Ocean. The atmospheric response is similar to that observed during la Nina and the IOD 's negative phase.

Stream functions : Two dipoles are suggested by the models, one on the Pacific Ocean and the other from the Indian Ocean to Africa. Most models show a teleconnexion from East Pacific towards North America and from maritime continent dipole towards north and south. Most models show an anticyclonic curvature over West Africa and a cyclonic curvature over mediterranean basin.



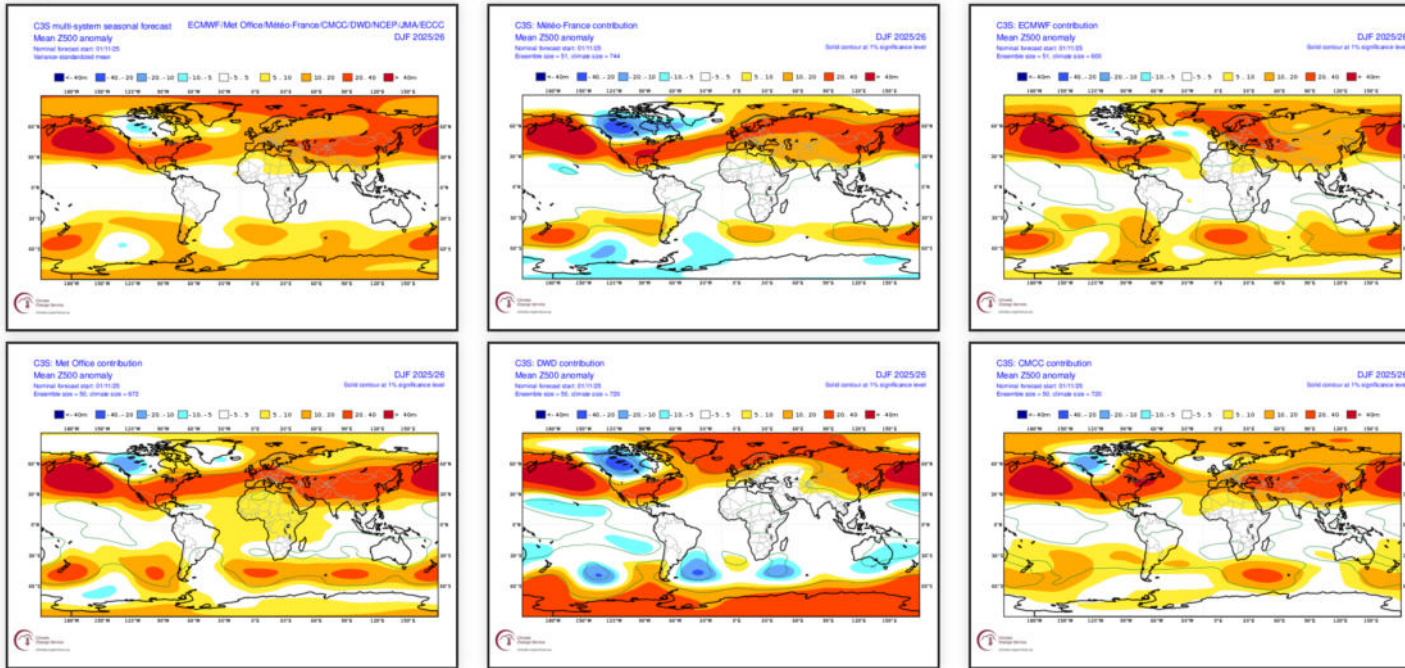
Multi-system, MF9, SEAS5, UKMO, DWD and CMCC 200hPa velocity potential anomalies (color range, green : ascending, orange: subsidence) and stream function anomalies (isolines, red: anticyclonic in the northern hemisphere, blue: cyclonic in the northern hemisphere).

Atmospheric circulation forecasts : Z500 anomalies in C3S models

In the Southern Hemisphere, all models agree on the main anomalies.

In the Northern hemisphere a large positive anomaly stripe extends from Eurasia to the North Pacific as far as the United States.

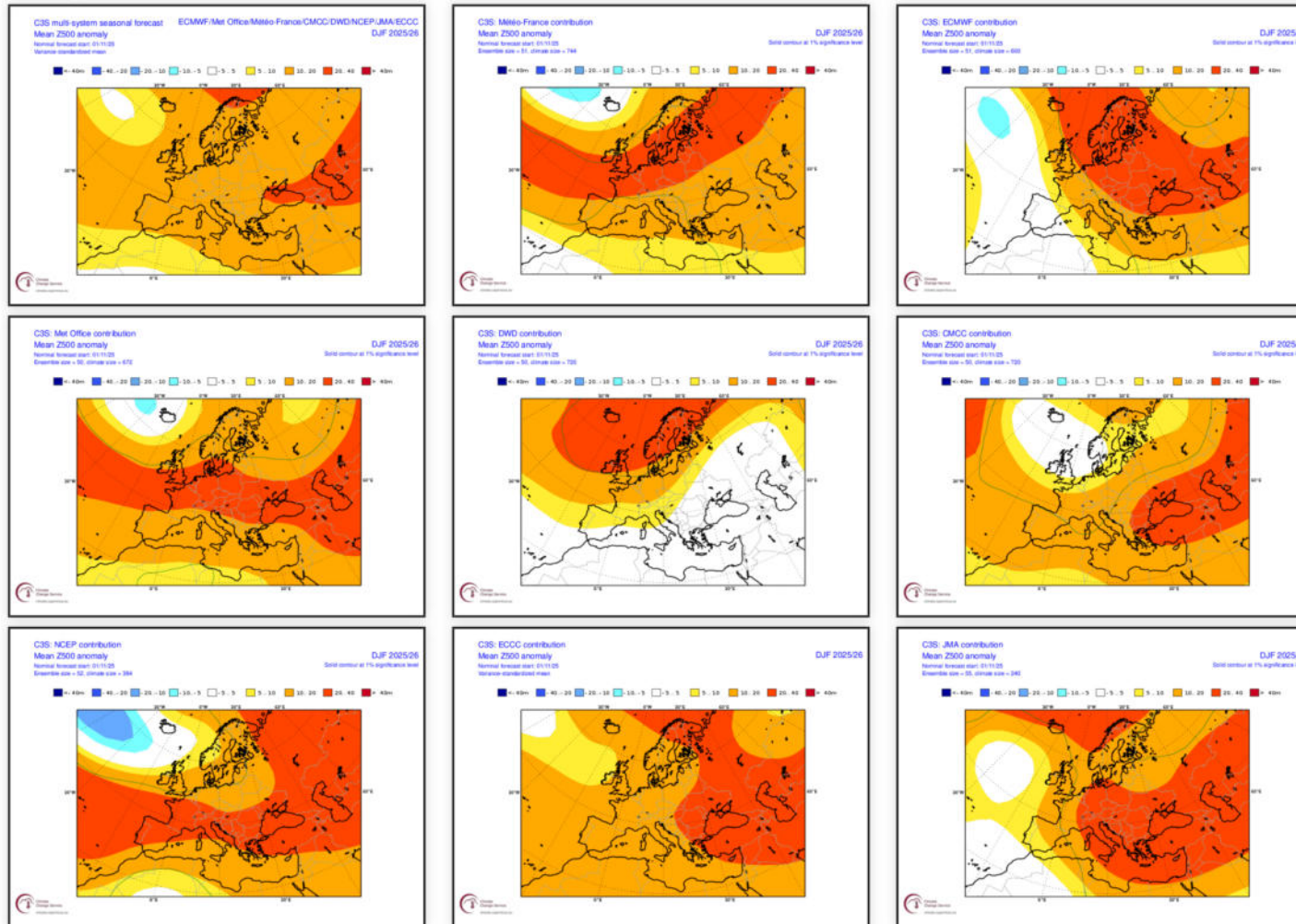
Marked divergence between models over the North Atlantic regarding the sign of the NAO (positive for Meteo-france and Met-Office, negative for ECMWF and DWD)



MF-S9, SEAS5, UKMO, DWD, CMCC and NCEP 500hPa geopotential height anomalies.

Atmospheric circulation forecasts : Z500 anomalies in C3S models

Strong dispersion. Multi-system shows a relative weakness near Iceland and over North Africa.

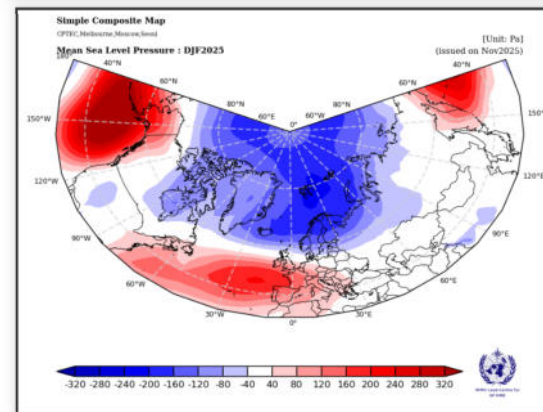
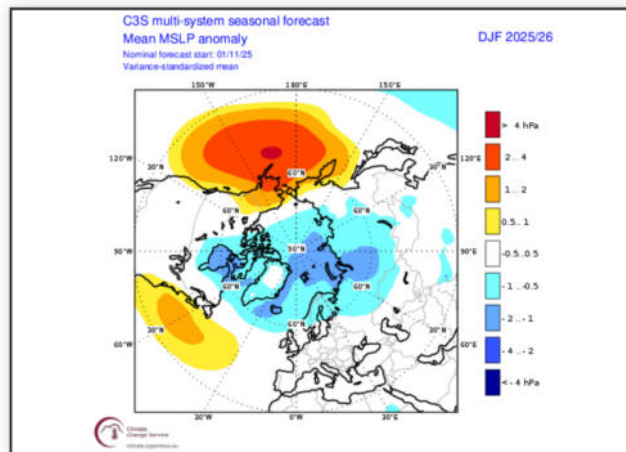
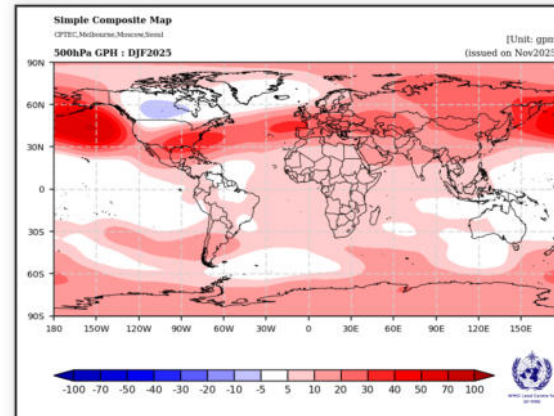
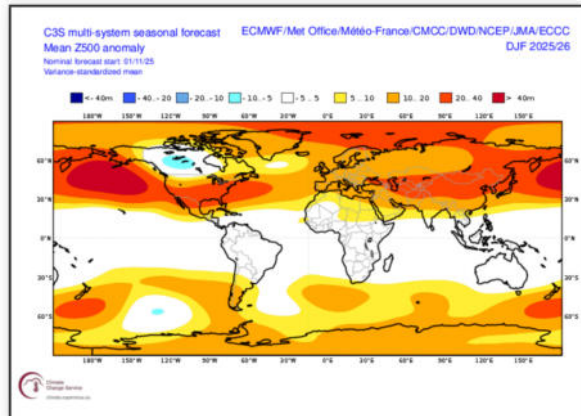


multi-models 500hPa geopotential height anomalies

Atmospheric circulation forecasts : Z500 and MSLP anomalies multi-systems

Z500 : The two multi-systems are quite similar (negative PNA, positive anomaly from Quebec to Europe).

MSLP : The MME models shows a positive anomaly on the near Atlantic unlike the C3S models.



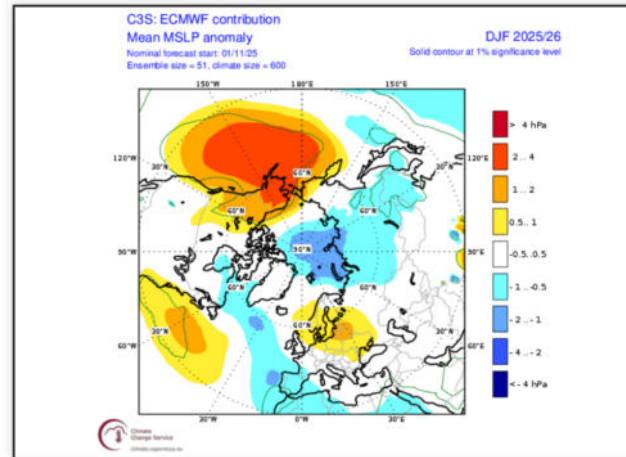
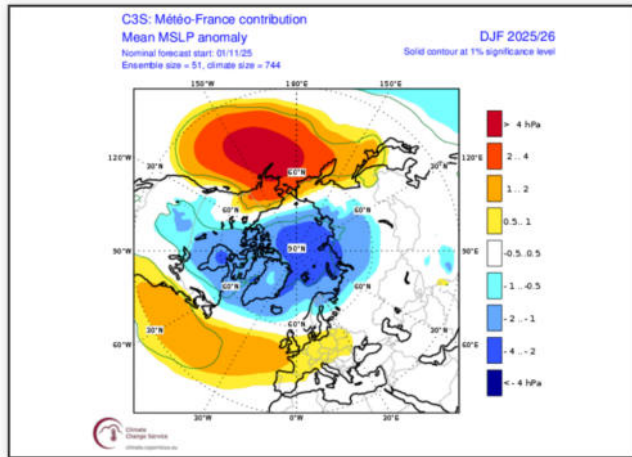
top figure : 500hPa geopotential height anomalies of C3S multi-models (left figure), and other models (right figure)

bottom figure : MSLP anomaly of C3S multi-models (left figure), and other models (right figure)

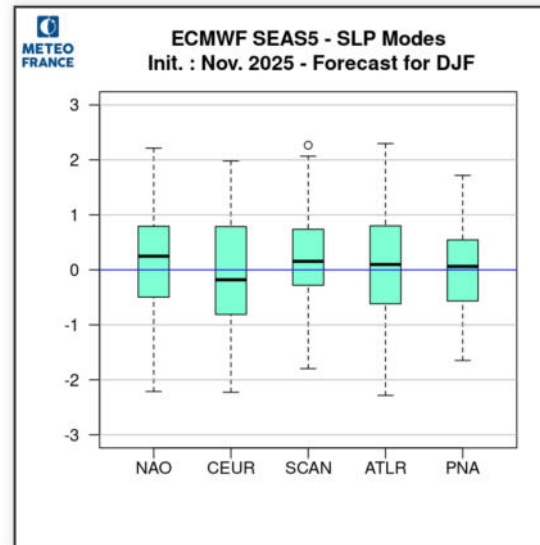
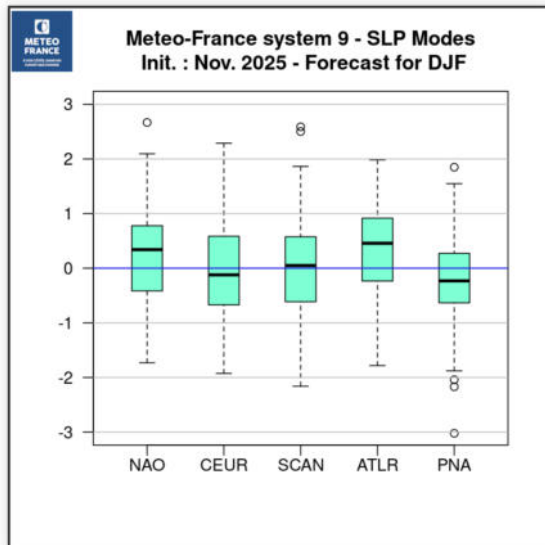
Modes of variability : SLP Modes forecast

On MSLP anomaly differences are visible concerning NAO patterns but PNA differences are less noticeable.

Both models disagree except on positive NAO (linked to PNA- at the east of the Atlantic basin) and negative CEUR (linked to negative anomaly of stream function).



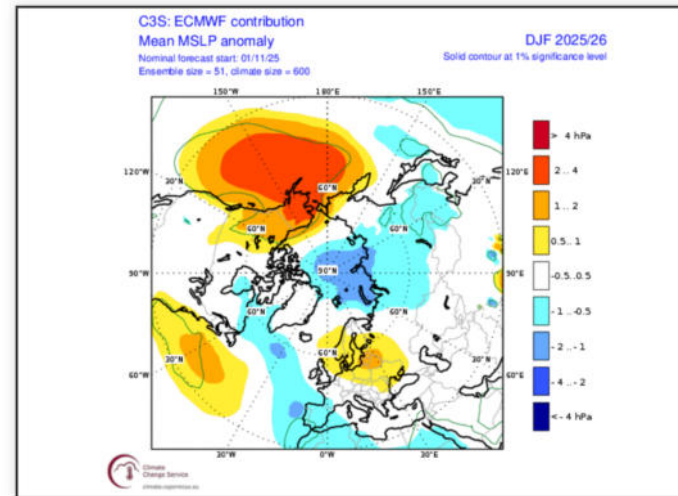
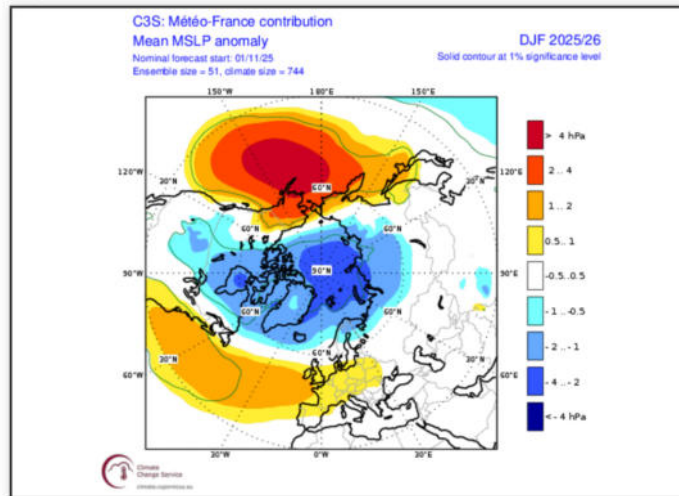
MF-S9 and ECMWF-SEAS5 MSLP anomalies



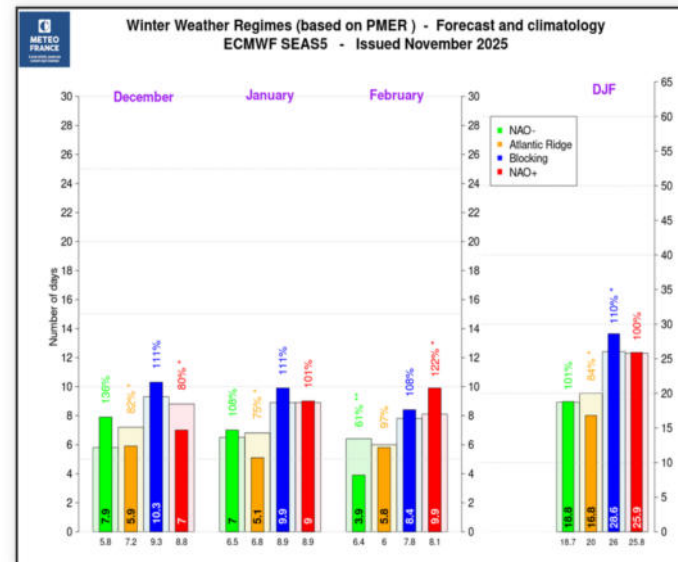
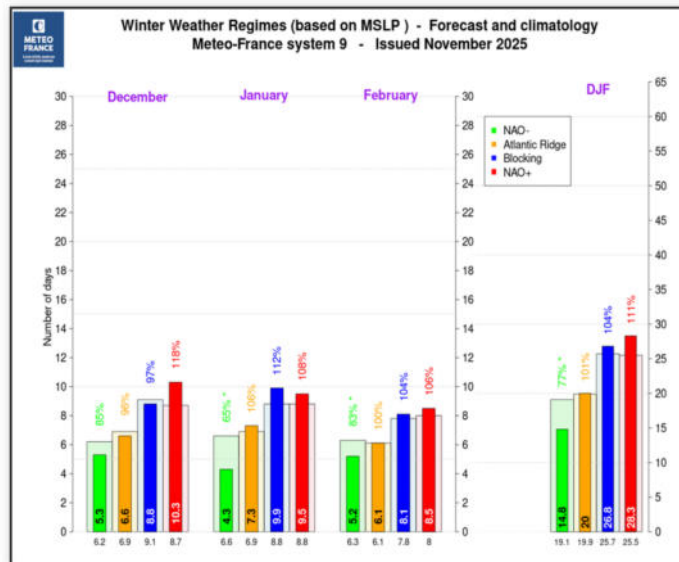
MF-S9 and ECMWF-SEAS5 boxplot of SLP modes of variability. [link to pattern](#) and [documentation](#)

Weather regimes : winter MSLP

Blocking regime is dominant on SEAS5 with significant anomaly and slightly dominant in MF9. NAO+ is dominant on MF9 but not significantly.



MF9 and SEAS5 MSLP anomalies

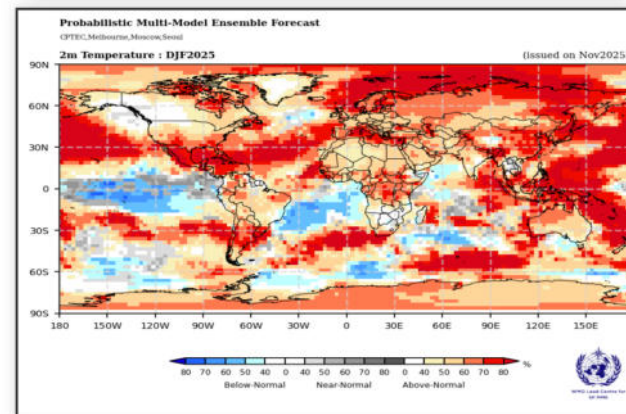
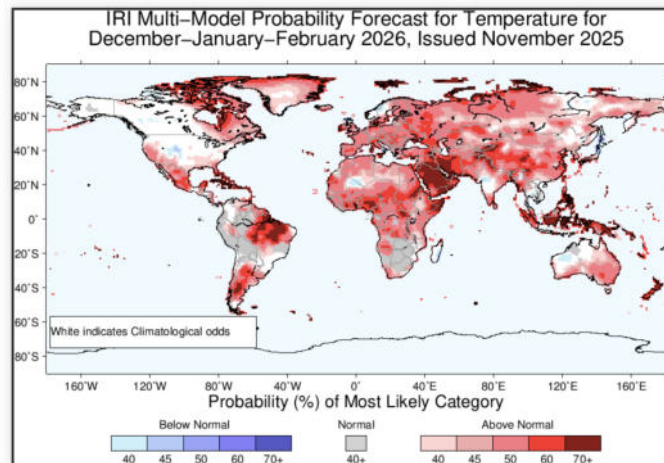
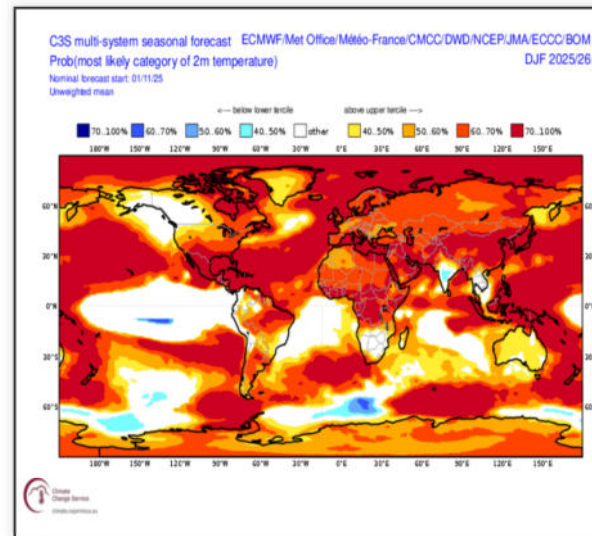
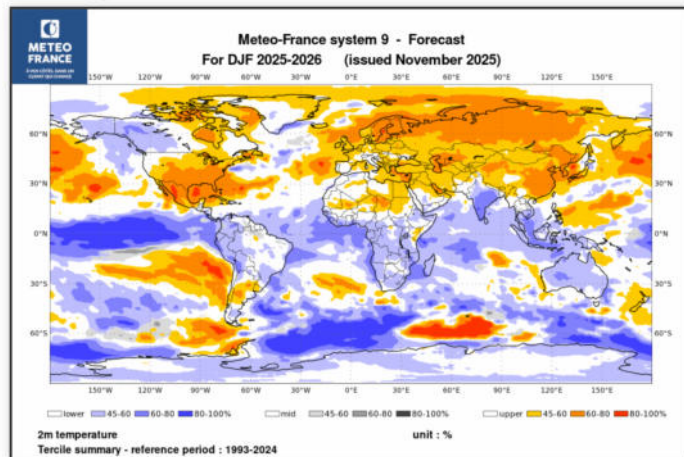


Frequency of SLP weather regimes, compared to model's own climatology, for the next three months and aggregation over the entire quarter, for MF-S9 (left) and SEAS5 (right).

The differences between models in the MSLP anomalies are reflected in the weather regimes (NAO + is forecasted to be more frequent than normal with MF9 whereas it is the blocking regime for ECMWF)

Forecast of climatic parameters : Temperature probabilities

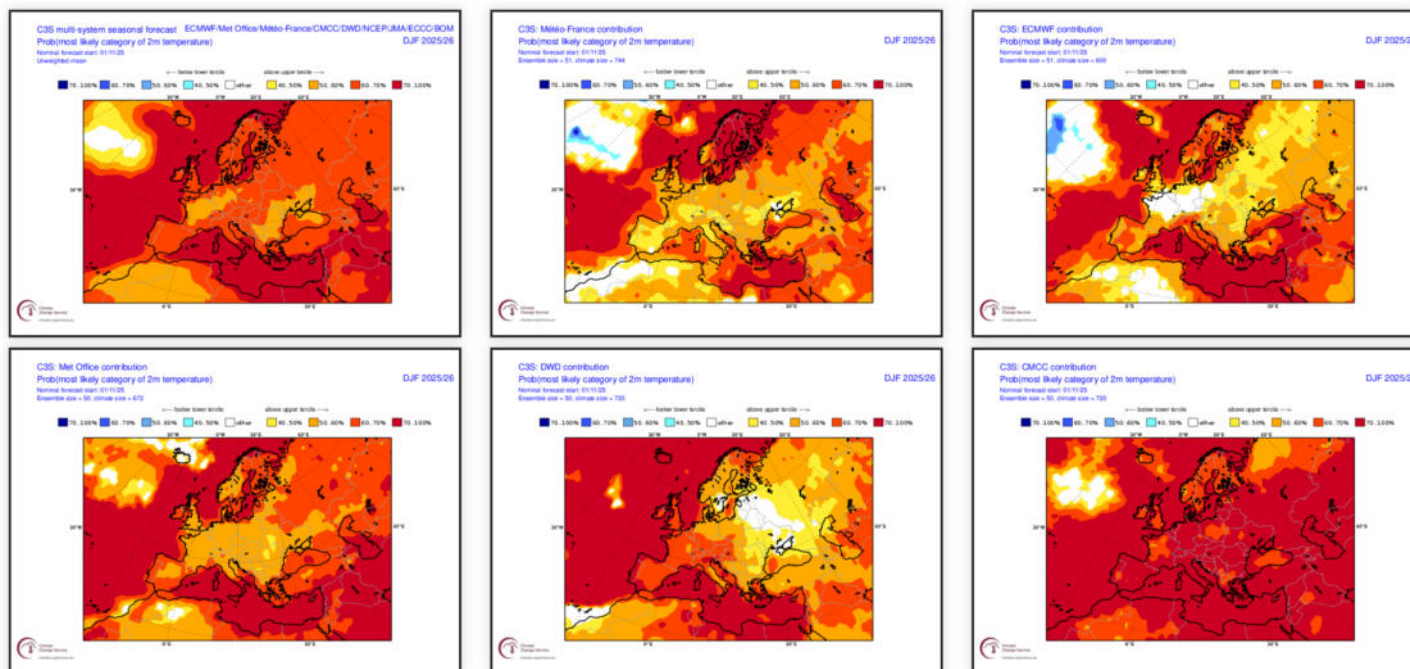
The warmer-than-normal scenario is the most likely over the northern hemisphere with the exception of North America. Over the Southern Hemisphere, the warm signal is much less widespread, linked to ocean temperature anomalies. Note MF9 has a warmer climatology since it extends over a more recent period.



2m temperature probability map from MF-S9 (top left), C3S multi-model(top right), IRI multi-model(bottom left) and others models of WMO multi-models (bottom right)

Forecast of climatic parameters : T2M probabilities over Europe in C3S models

A warmer-than-normal scenario is likely. Some models show poor signal or near normal conditions over France.

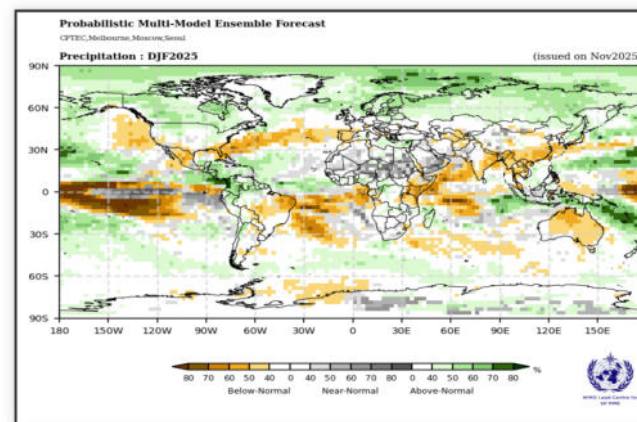
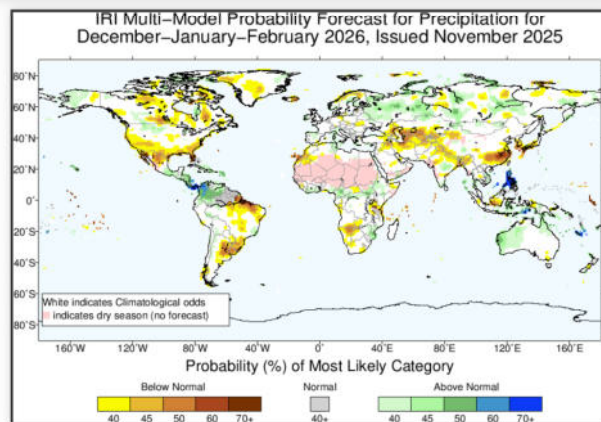
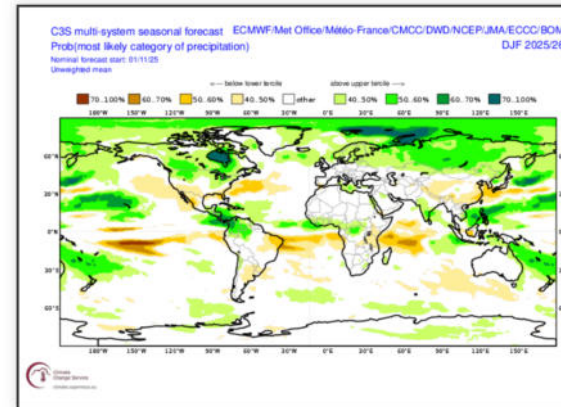
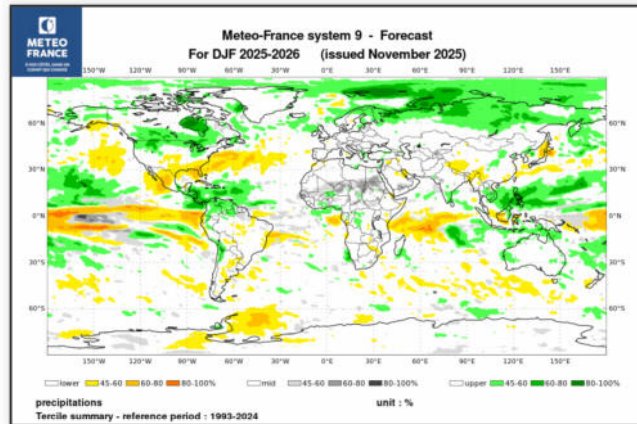


C3S multi-models probability map (top left) and MF-S9, ECMWF-SEAS5, UKMO, DWD, CMCC models.

Forecast of climatic parameters : Precipitation

In the equatorial zone, positive anomalies around the Maritime Continent, Caraibean sea are envisaged by most models.

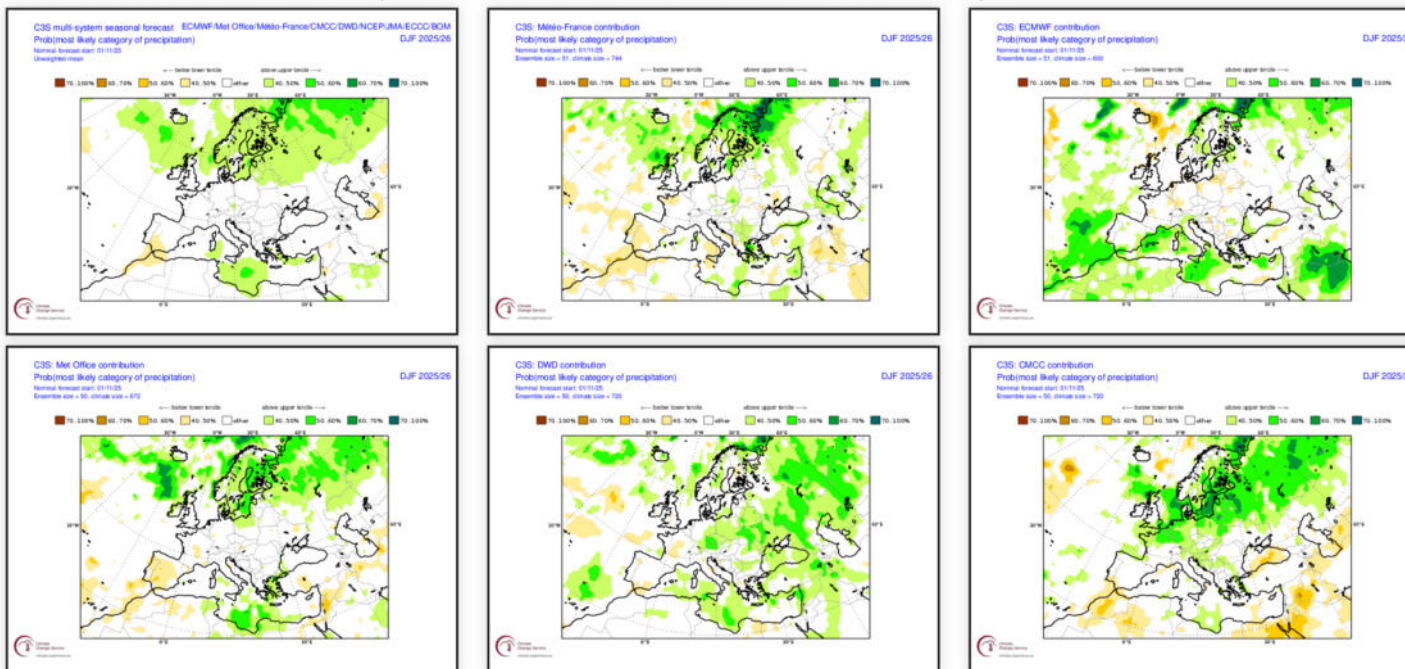
In the Northern Hemisphere, signals are weaker. Drier-than-normal conditions are likely around central Asia and USA, wet anomaly over Canada and Russia are shown by most models.



precipitation probability map from MF-S9 (top left), C3S multi-model (top right), IRI multi-model (bottom left) and others models of WMO multi-models (bottom right)

Forecast of climatic parameters : Precipitation probabilities over Europe in C3S models

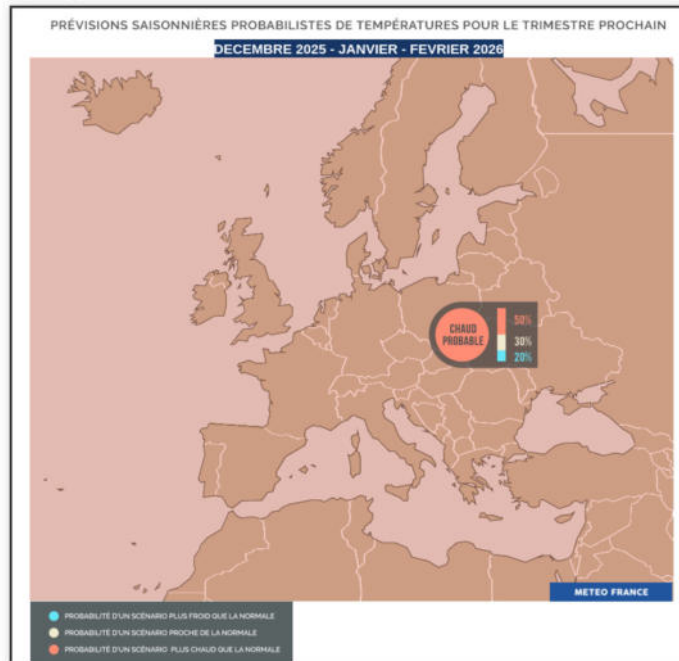
A wetter than normal scenario is expected over central Mediterranean Sea and Northern Europe.



Synthesis map for Europe : Temperature & precipitations

Temperature : The warmer-than-normal is likely across Europe

Precipitation : A wetter-than-normal scenario is privileged around central Mediterranean Sea and over Scandinavia. No scenario emerges elsewhere. .



Synthesis map of probabilistic forecast for Europe. (c) Météo-France/DCSC/ACS

