VERIFICATION BULLETIN

APRIL - MAY - JUNE 2019

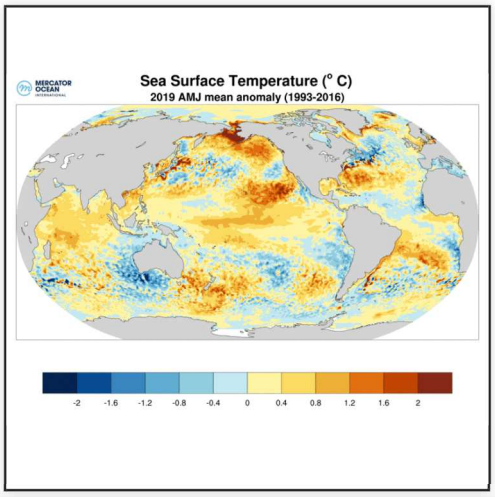
Table of Content

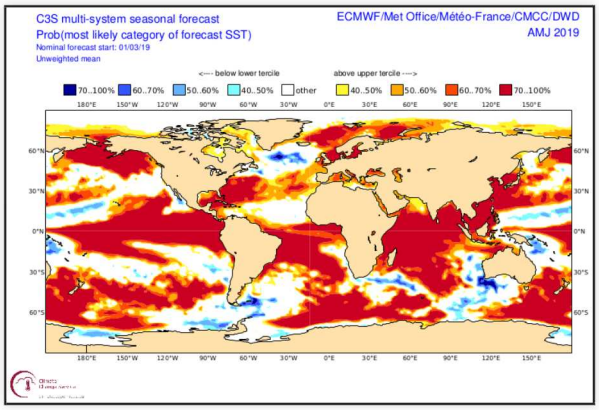
Introduction : Objective

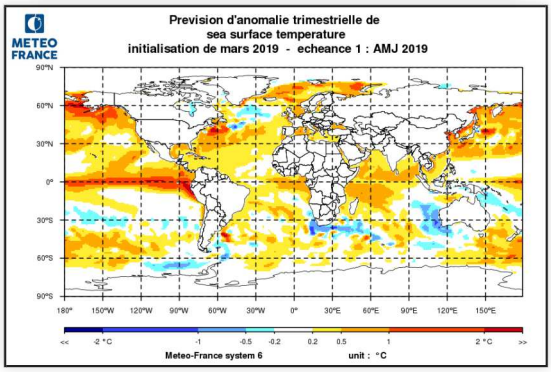
- **The objective of the Seasonal Verification Bulletin is to present an evaluation of the main elements highlighted in the Seasonal Forecast Bulletin : oceanic forcings, large scale circulation patterns, and a focus on temperature and precipitation forecast over Northern Atlantic, Europe and the Mediterranean 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.**

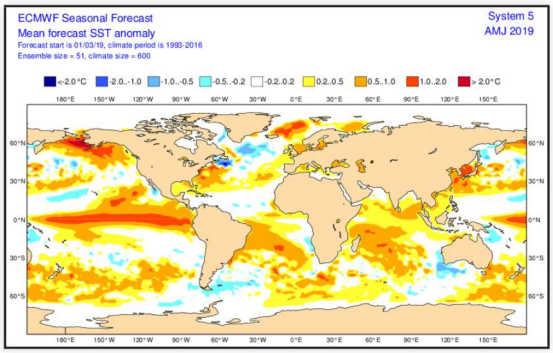
Oceans : surface temperature anomalies

C3S consensus doing pretty well, except for Equatorial Pacific where SSTs have been overestimated, especially in the Niño 3.4 box.
ECMWF globally more realistic than MF S6, except for the eastern Indian Ocean.



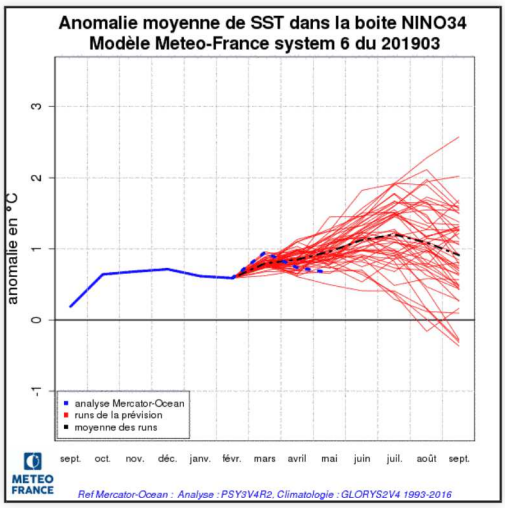


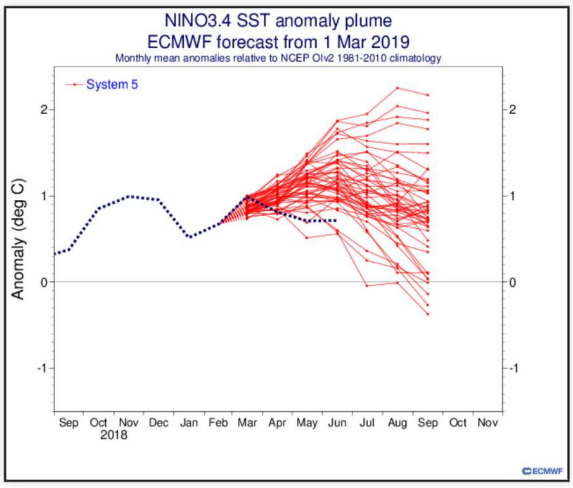




Oceans : ENSO

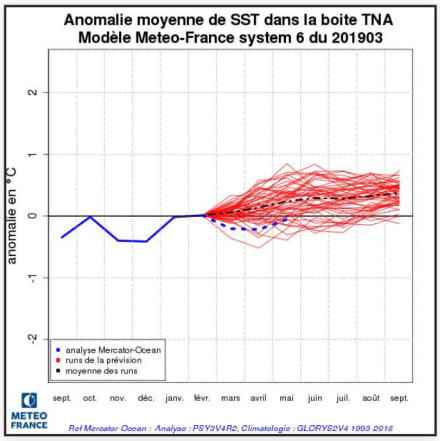
CAUTION : reference analysis differ between MF-S6 (Mercator-Ocean 1993-2016) and SEAS5 (NCEP 1981-2010).
Intensity of El Niño overestimated by both models.

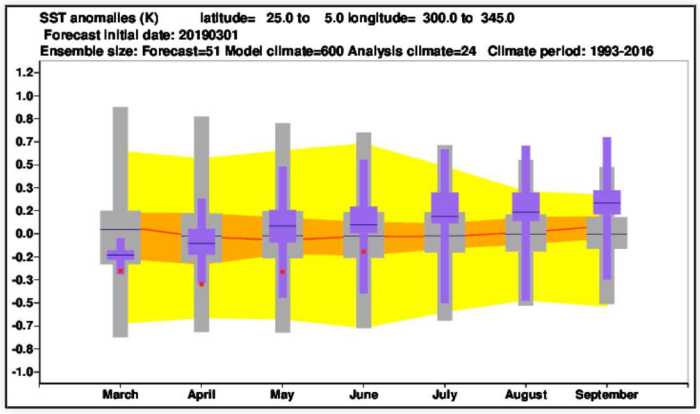


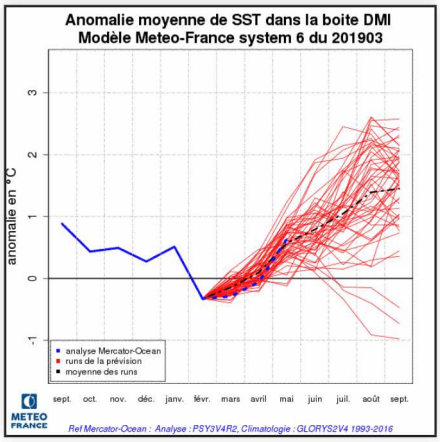


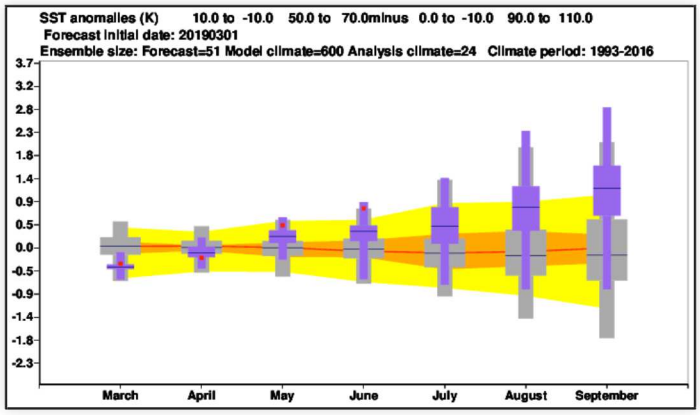
Oceans : tropical Atlantic and Indian Ocean index

TNA : Negative index observed while models forecast positive index on average : the gulf of Guinea remained warmer than expected.
DMI : underestimated, especially by SEAS5





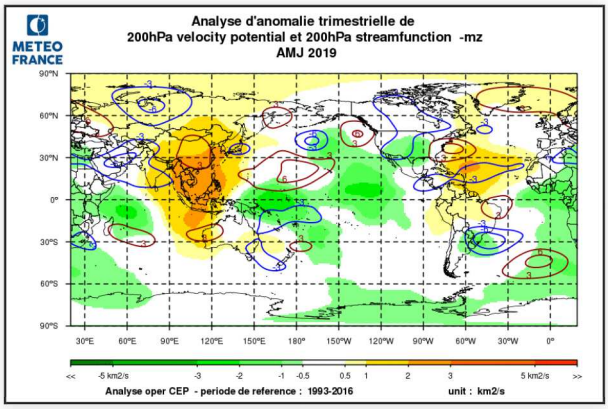


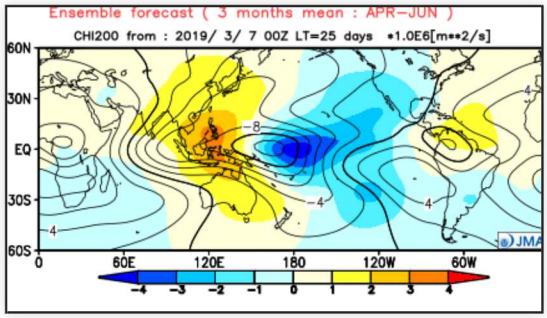


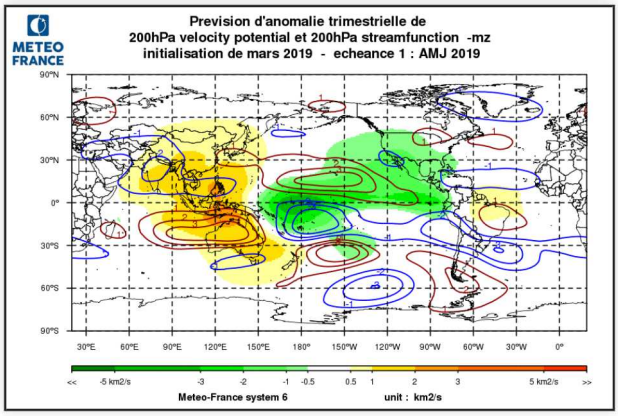
Atmospheric circulation : Global teleconnection

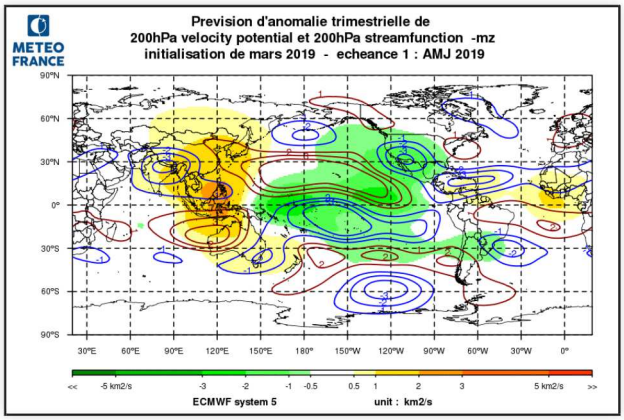
VP 200hPa : rather good forecasts globally. Over Africa, the JMA model was the only one to catch the divergence anomaly. Subsidence anomalies over the Carribean were underestimated by both models.

FC 200 hPa : teleconnections were much weaker than predicted (and not as widespread).



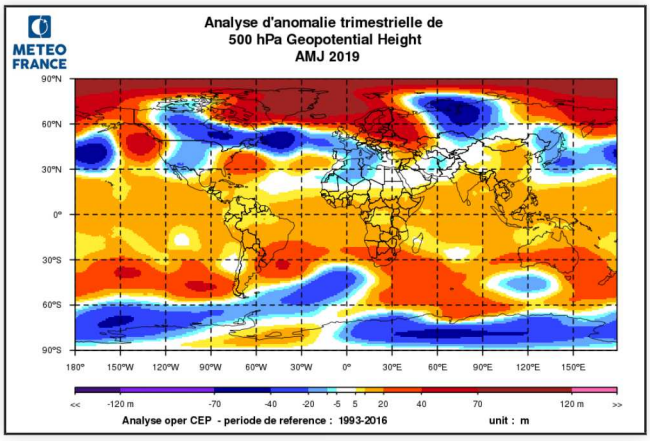


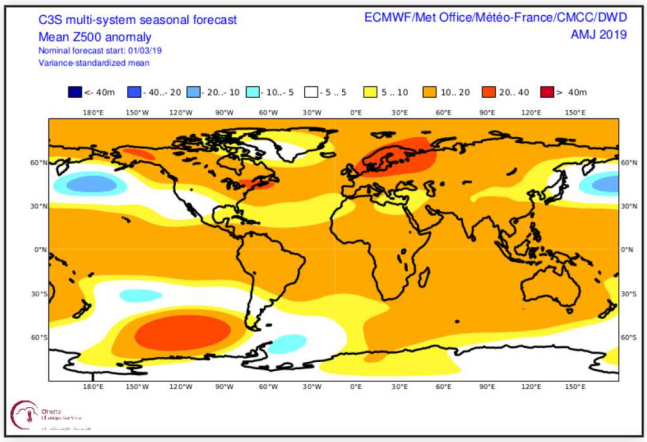


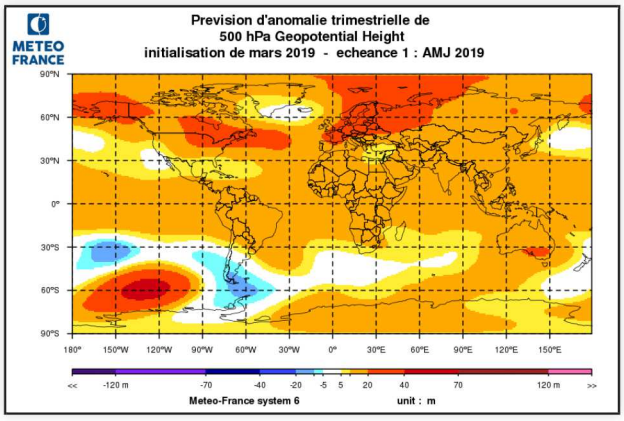


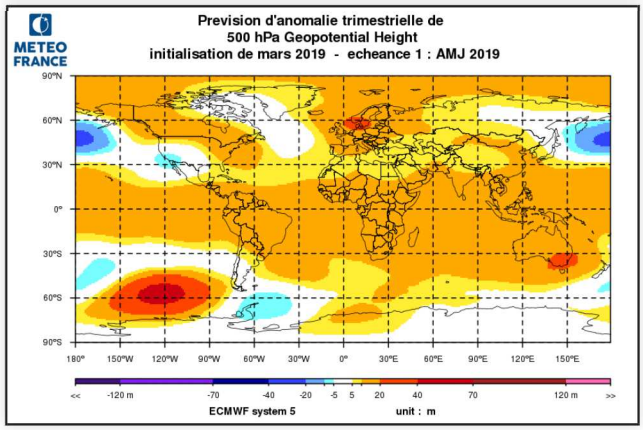
Atmospheric circulation : 500hPa Geopotential height

The NAO-/Scandinavian blocking-like pattern for AMJ was not well captured by the models, especially regarding negative NAO. The blocking mode did somehow appear in the forecasts (see C3S ensemble mean).









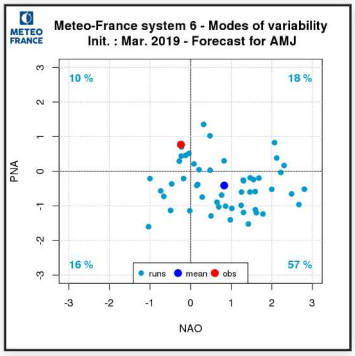
Atmospheric circulation : Modes of variability

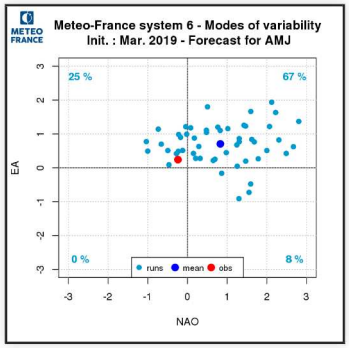
NAO : Negative phase was neither forecast by MF nor by SEAS5

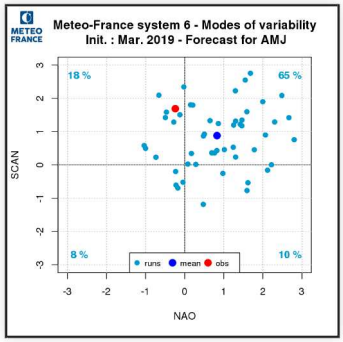
SCA : Positive phase underestimated, especially by SEAS5

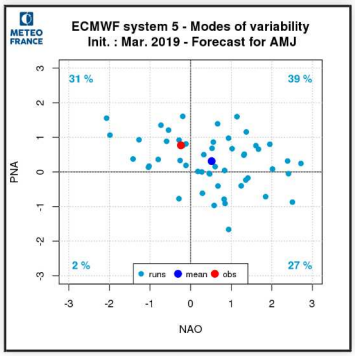
EA : no contribution for the period whereas both models suggested a positive phase

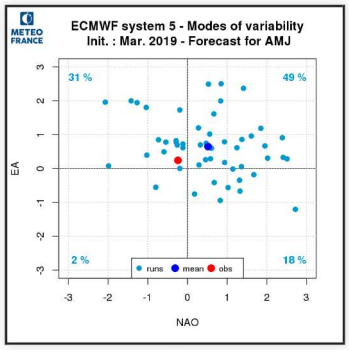
PNA : positive. Bad forecast for MF6 and underestimated by SEAS5.

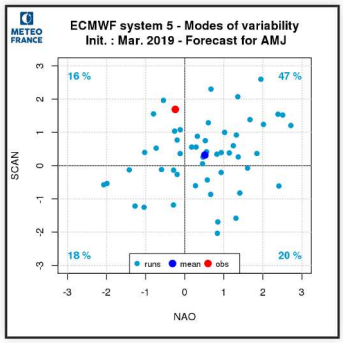








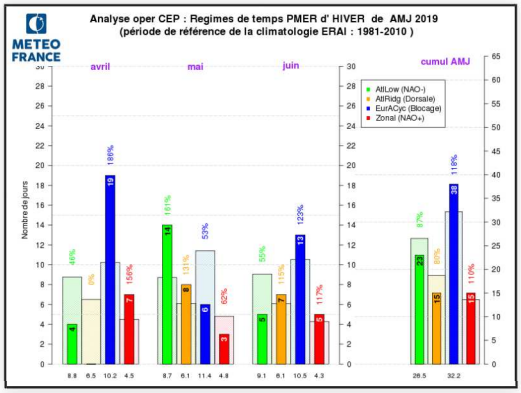


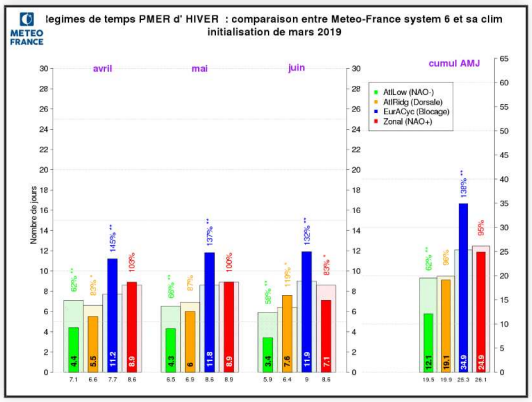


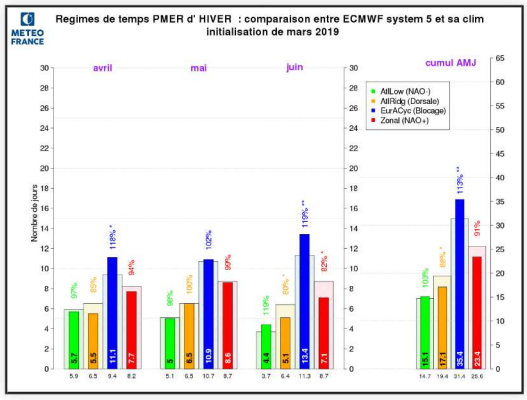
Atmospheric circulation : Forecasted winter SLP weather regimes

Rather good forecast of dominant blocking regime over the period. Poor forecast of the three other regimes.

Bad *regime forecasts for the month of May.*

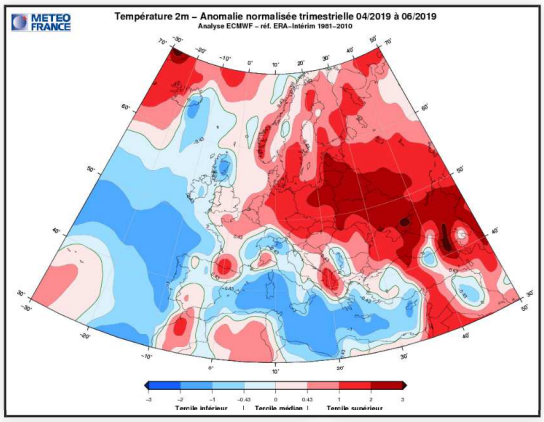


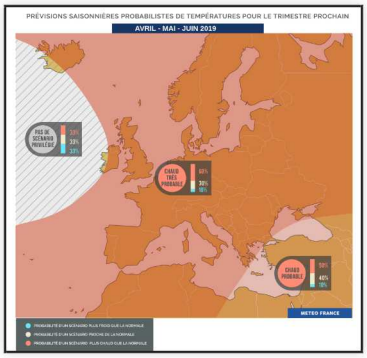


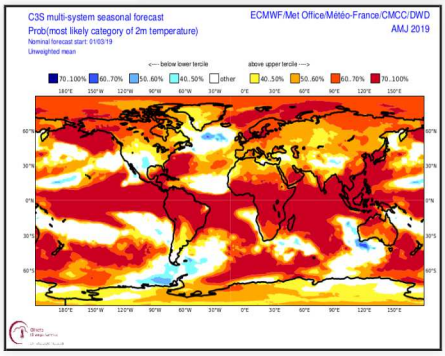


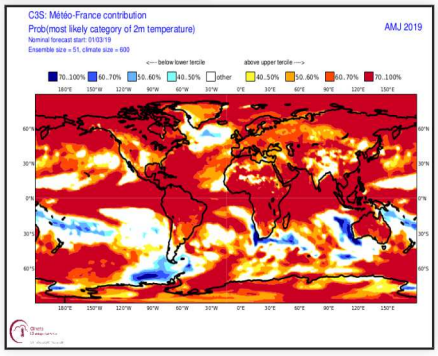
Climatic parameters over Europe : temperature

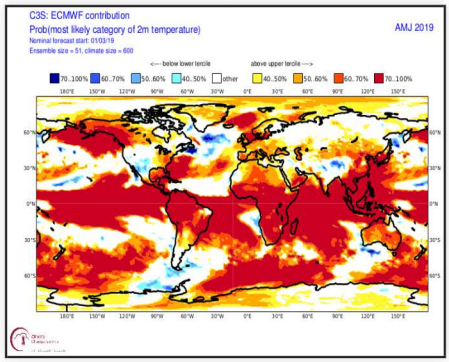
Cold anomalies over the Mediterranean not captured by the models. This is certainly due to the underestimation of the blocking mode magnitude and also to the poor forecast of NAO (predicted positive, observed negative).







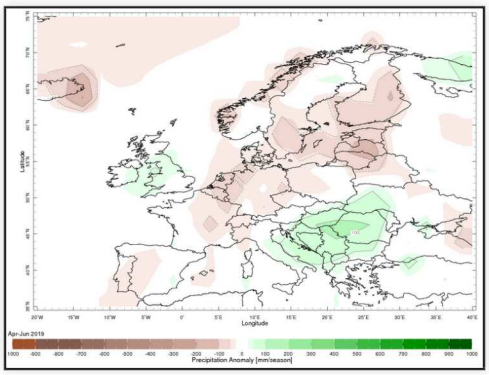


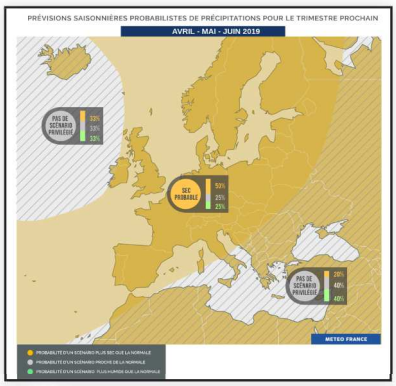


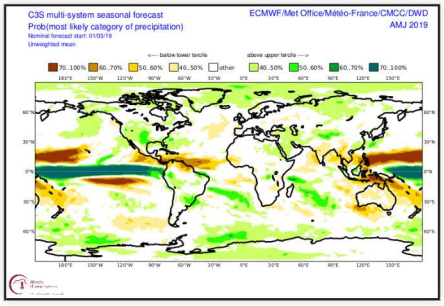
Climatic parameters over Europe : Precipitations

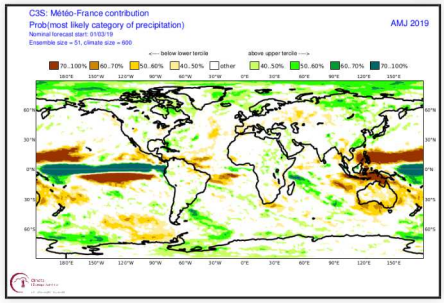
Analysis : Wet over the UK and the Balkans, dry from Iberia to Germany and Scandinavia / Baltic States.

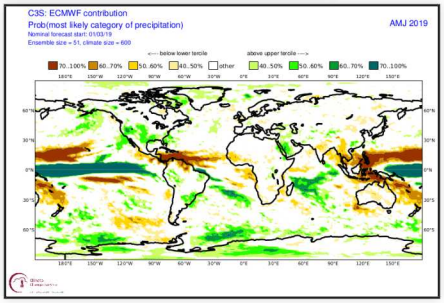
Forecasts : ECMWF did not catch the rainfall pattern at all. MF S6 slighly better (especially for the dry area, but too wet in Scandinavia); C3S ensemble mean rather poor (no significant signal, or wrong signal). the Synthesis map did better by catching the dry area (though a little too large : UK experienced wet conditions).











General summary : for the period AMJ 2019

1) **Oceans :**
Rather good forecast globally. El Niño intensity overestimated.

2) **Large scale atmospheric circulation :**
VP 200 mostly OK (except over Africa for MF6 and SEAS5)

Teleconnections were too strong and widespread compared to analysis.

Negative NAO not forecast in the Atlantic. Scandinavian blocking better catched (especially by MFS6) but underestimated.

3) **Climatic parameters over Europe :**

Cool conditions over the Mediterranean not forecast (wrong NAO phase forecast)

MFS6 better than ECMWF for precipitation. The Synthesis map did even better, except for the UK.