

VERIFICATION BULLETIN

SEPTEMBER - OCTOBER - NOVEMBER 2019

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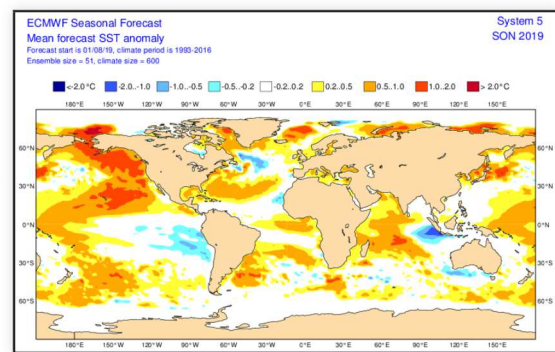
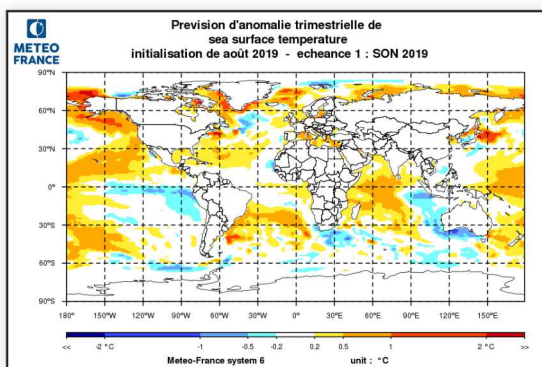
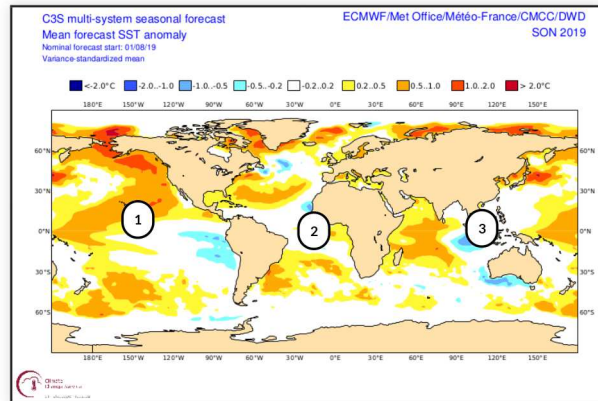
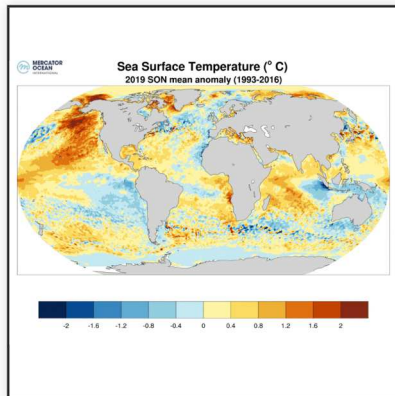
Introduction : Objective

- 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

SST patterns rather were well captured by the models in the Northern Hemisphere, both Pacific and Atlantic oceans.

In the tropics, the positive IOD was well predicted, as well as the positive anomaly in the equatorial Atlantic.



SST anomalies in the analysis from Mercator (top left), C3S multi-models (top right), MF6 (bottom left) and SEASS (bottom right)

1 - Good structure of anomalies on the pacific

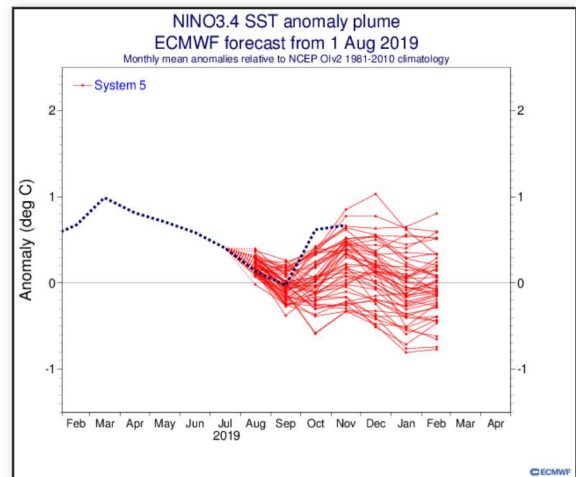
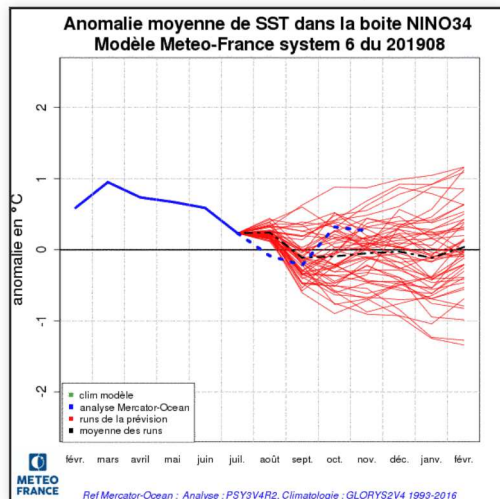
2 - Warm anomaly predicted

3 - Positive IOD very well captured

Oceans : ENSO

CAUTION : reference analysis differ between MF-S6 (Mercator-Ocean 1993-2016) and SEAS5 (NCEP 1981-2010).

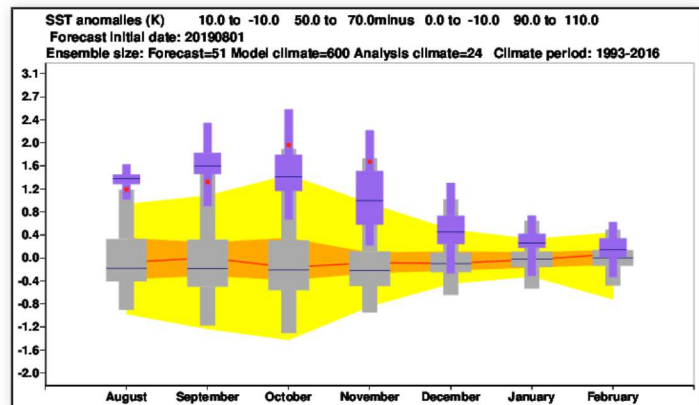
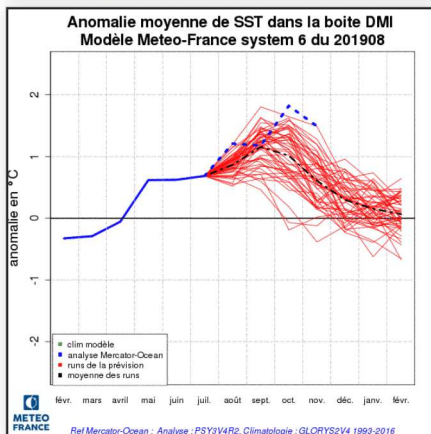
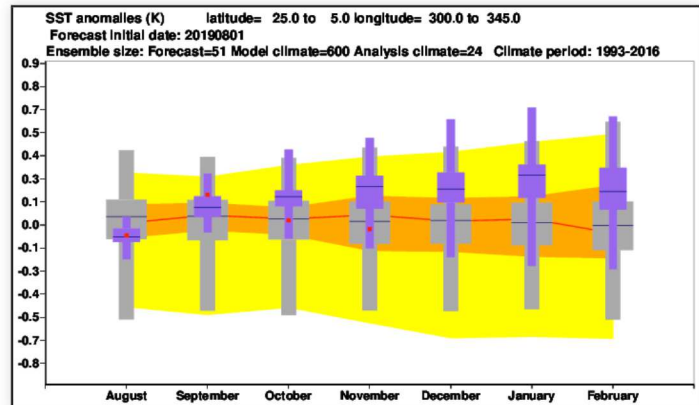
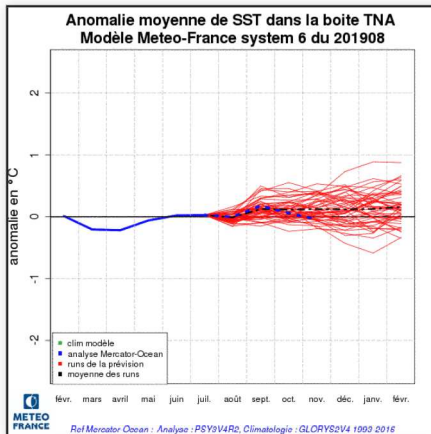
Index close to zero over the quarter as expected



Oceans : tropical Atlantic and Indian Ocean index

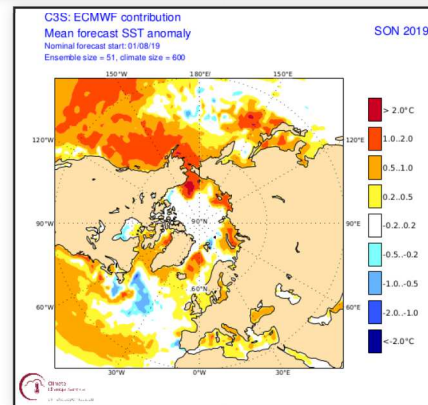
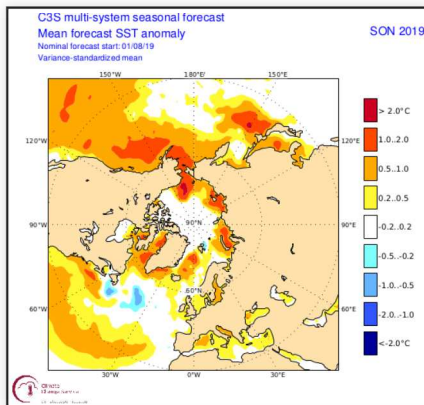
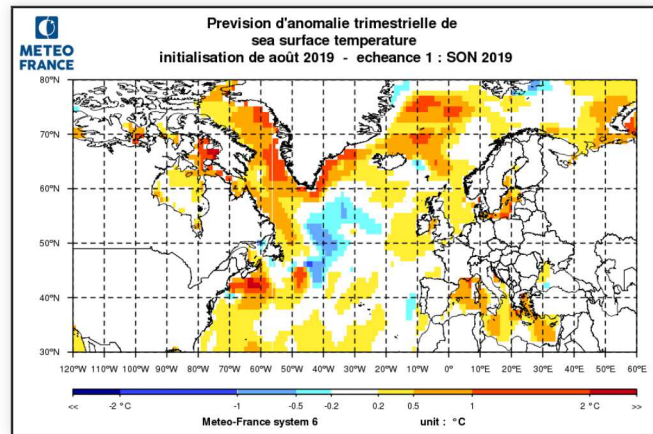
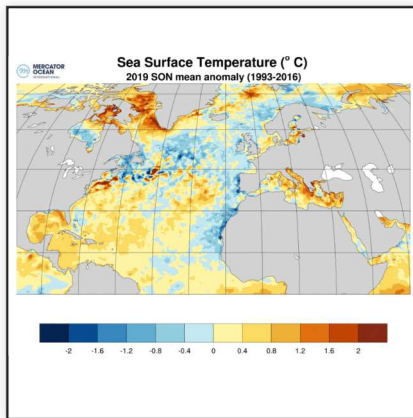
TNA : good prediction for MF-S6 and ECMWF-SEAS5

DMI : record values for the quarter slightly underestimated by the models



Oceans : North Atlantic SST

Underestimation of the cold anomaly from Canadian coast to the Iberian peninsula and along the african coast. The warm patterns (the one around Greenland, and the one from USA's coasts to Azores) were rather well predicted. In the Mediterranean, good prediction of the warm anomaly.

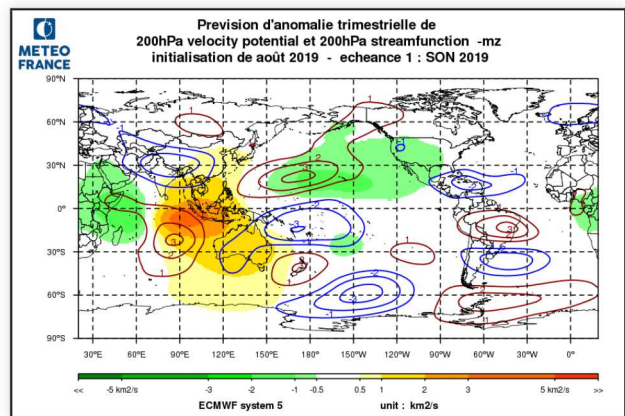
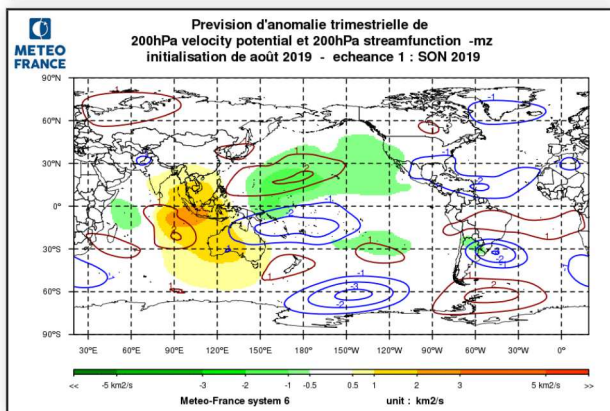
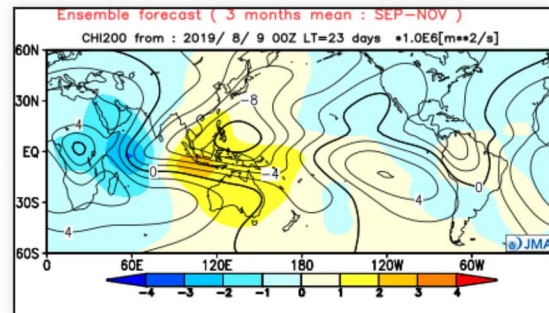
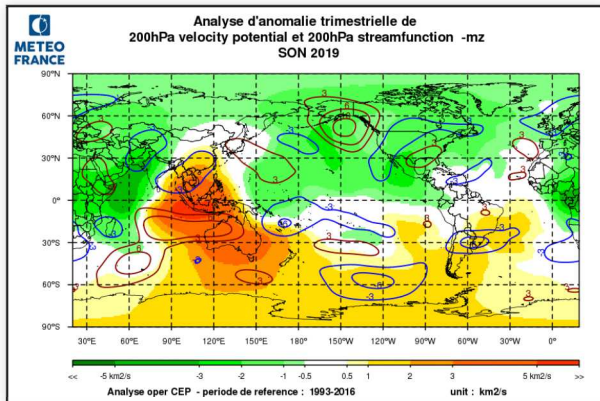


SST anomalies in the analysis from Mercator (top left), MF6 (top right), C3S multi-models (bottom left) and SEASS (bottom right)

Atmospheric circulation : Global teleconnection

VP 200hPa : subsidence anomaly was well forecast over Maritime Continent and Australia. Ascent anomalies were partly predicted over northern Pacific Ocean. Widespread subsidence across the whole Southern Hemisphere was not anticipated. The ascent anomaly from Africa to India was poorly by MF6 and better anticipated by JMA and SEAS5.

FC 200 hPa : Teleconnections over North Pacific were not forecasted. On the other hand the teleconnections were rather well planned in the southern hemisphere.

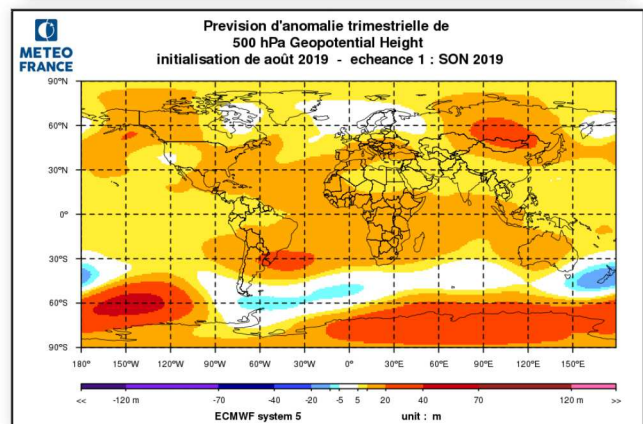
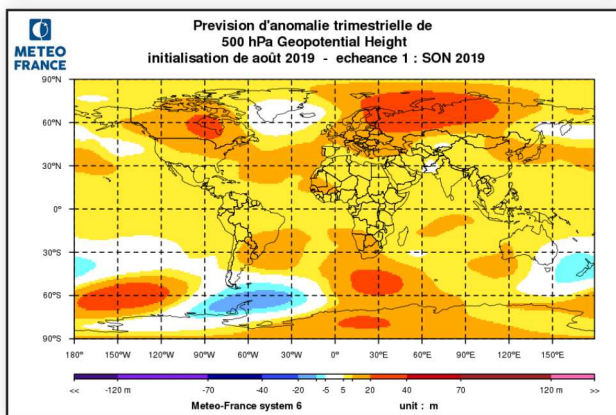
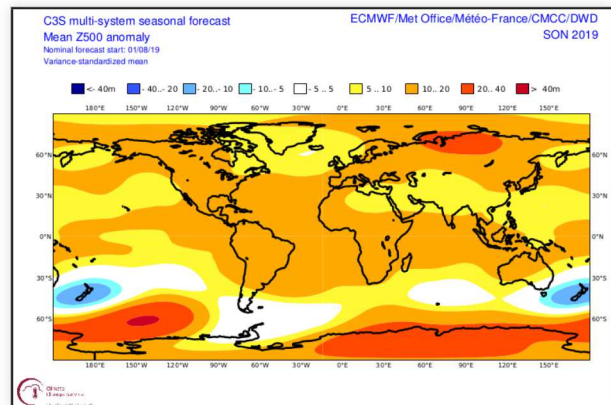
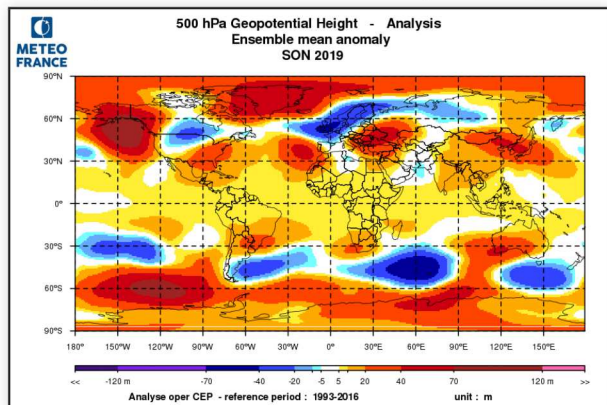


Atmospheric circulation : 500hPa Geopotential height

Poor forecasts for C3S consensus on the northern hemisphere while the large structures are quite well predicted on the southern hemisphere.

The predicted dipole by C3S (negative anomaly on the Atlantic/positive anomaly on Europe) is shifted eastward in the analysis.

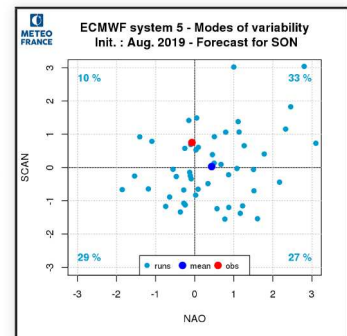
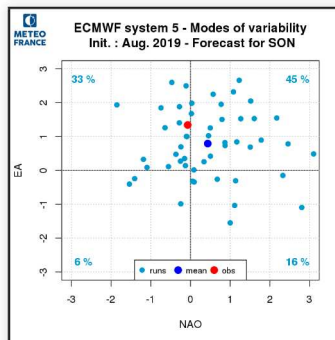
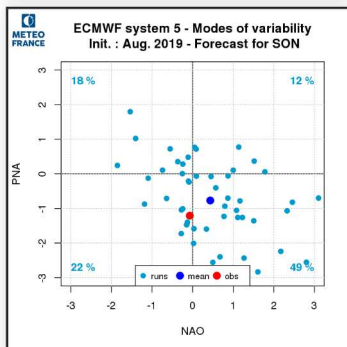
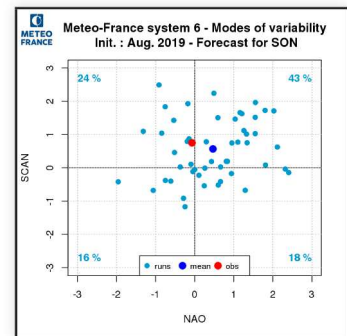
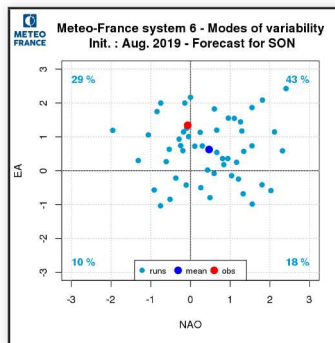
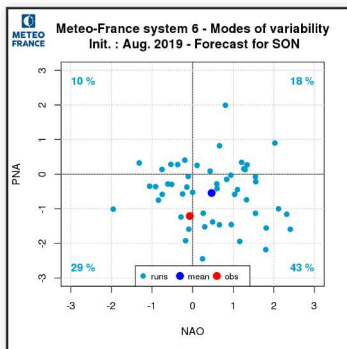
Over Europe SEAS5 has a better structure by forecasting a relative minimum from British Islands to Scandinavia.



Atmospheric circulation : Modes of variability

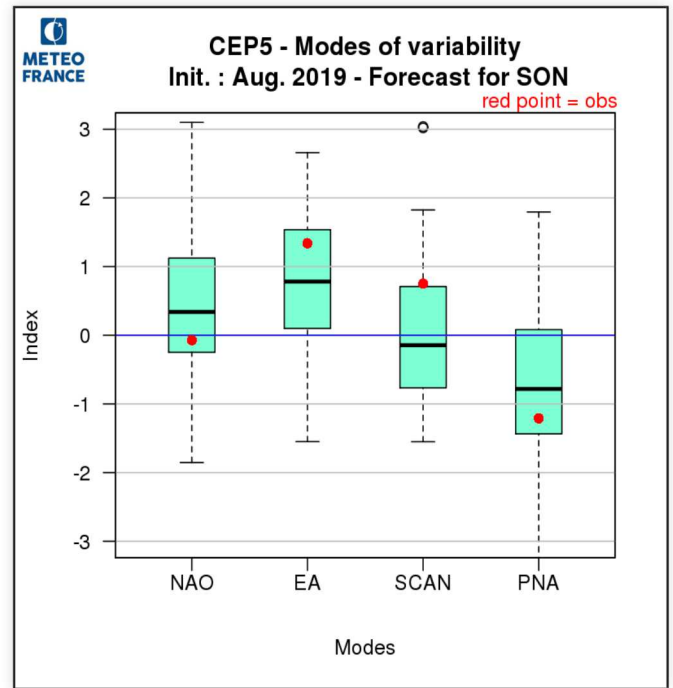
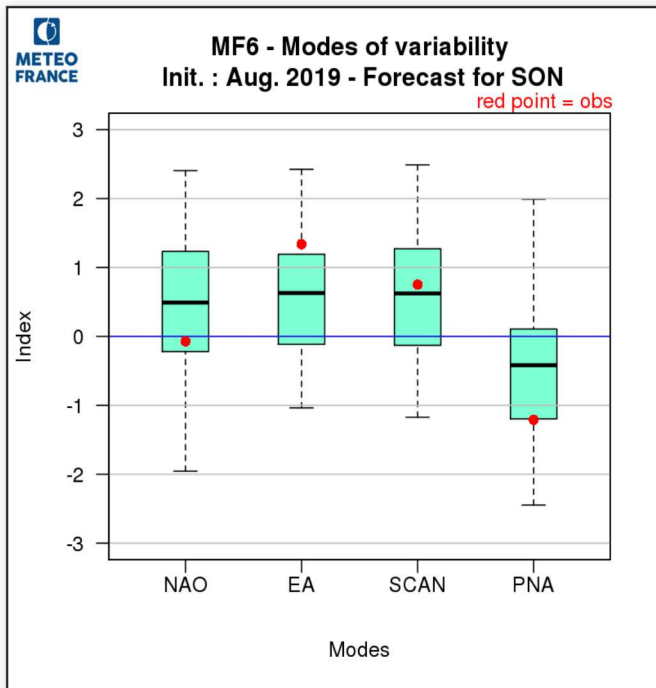
The strong negative PNA and the strong positive EA were foreseen. On the other hand models favours positive mode of NAO while the NAO index observed is close to zero.

positive SCAN is well forecasted by MF6 unlike ECMWF-SEAS5 which doesn't give a signal.



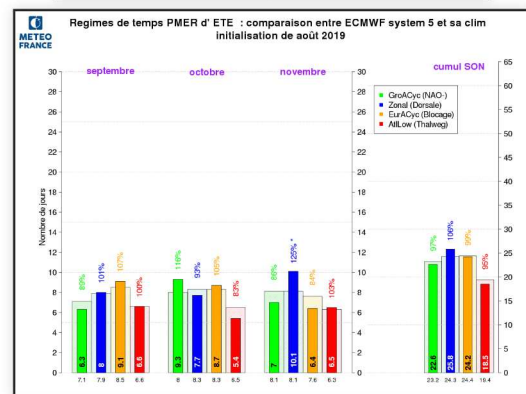
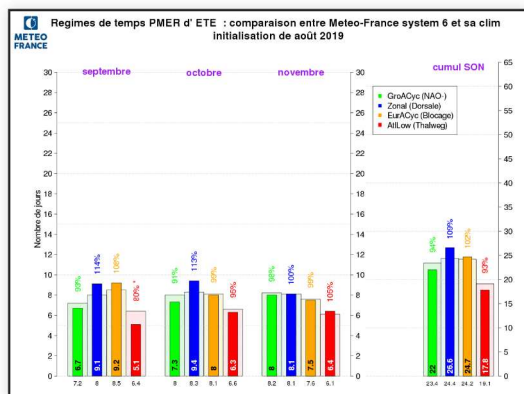
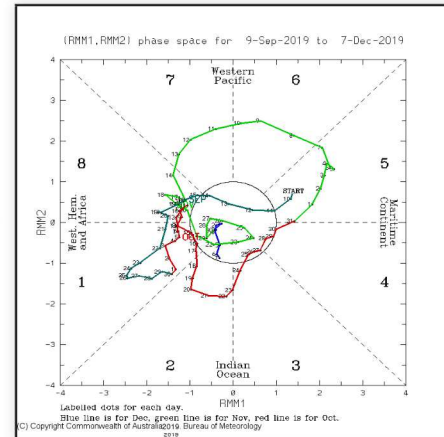
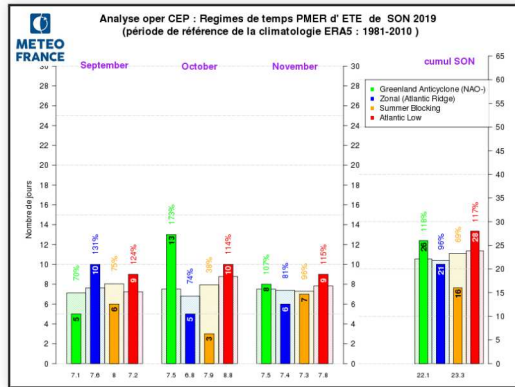
Atmospheric circulation : Modes verification

Same remarks as previous slide.



Atmospheric circulation : Summer SLP weather regimes

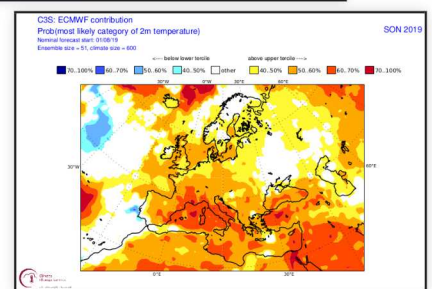
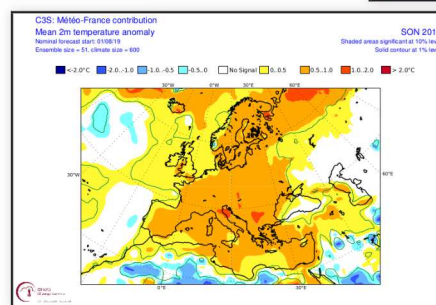
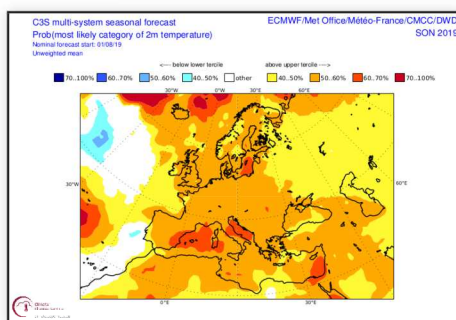
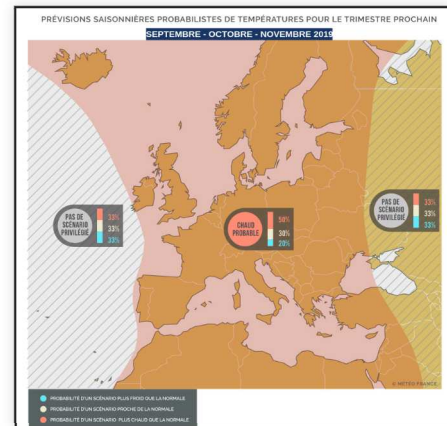
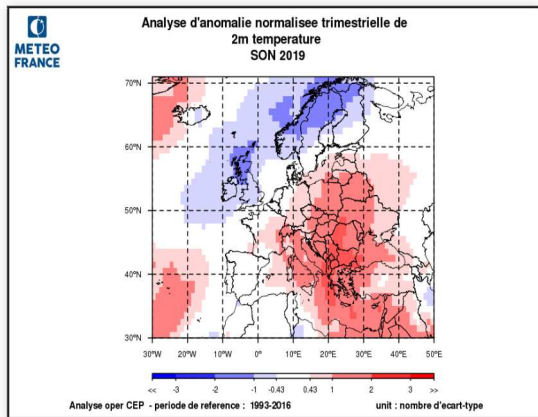
Poor performances of both models.



Climatic parameters over Europe : temperature

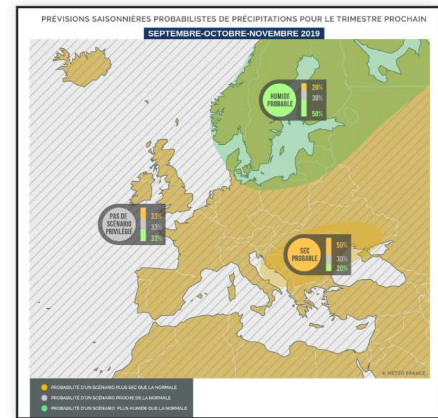
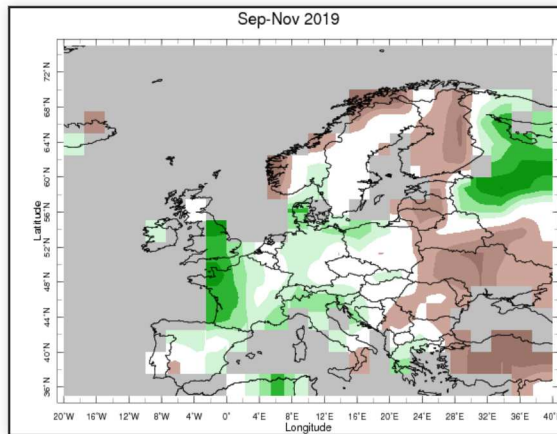
Rather good forecast for Europe, the warm pattern observed over most of the continent was well predicted by models and was present in the synthesis.

The cold anomaly in high latitudes was not foreseen.

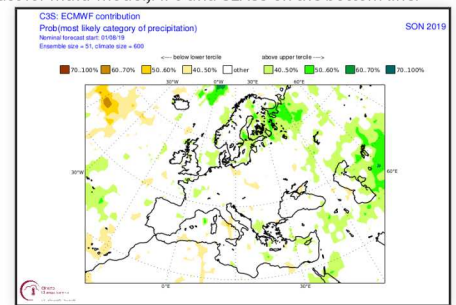
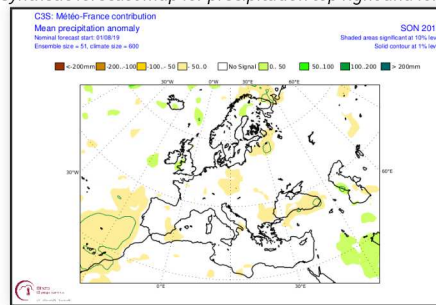
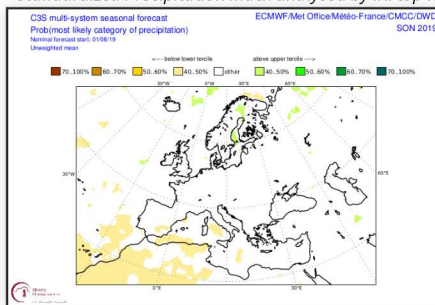


Climatic parameters over Europe : Precipitations

Dry conditions were well predicted from the Balkans north of the Black Sea. Over western Europe, wet conditions dominates while no signal was privileged by models and the synthesis. Around scandinavia we expected wet conditions while the observations were mixed.



Standardized Precipitation Index analysed by IRI top left, Synthetic forecast map for precipitation top right and forecast for multi-model, MF6 and SEAS5 on the bottom line.



General summary : for the period SON 2019

1) Oceans :

Good forecasts when looking at a global scale. The positive IOD was well captured but undervalued.

2) Large scale atmospheric circulation :

VP 200hPa : OK for Maritime Continent / Australia (subsidence) and northern Pacific basin (ascents). Poor forecasts for ascent anomalies over West-Central Africa with MF6, and widespread subsidence for the Southern Hemisphere.

FC 200 hPa : Teleconnections rather well forecasted in south hemisphere but not captured in north Pacific

Z500 : globally very poor forecasts, especially in mid-latitudes.

But the main modes (EA+ and PNA-) were very well captured by MF-S6 and ECMWF-SEAS5.

3) Climatic parameters over Europe :

Warm signal for Europe was well anticipated . Cool conditions were not anticipated for Great Britain and Scandinavia.

Bad forecast for precipitation expected dry signal for the Balkans north of Black Sea