

VERIFICATION BULLETIN

MARCH - APRIL - MAY 2019

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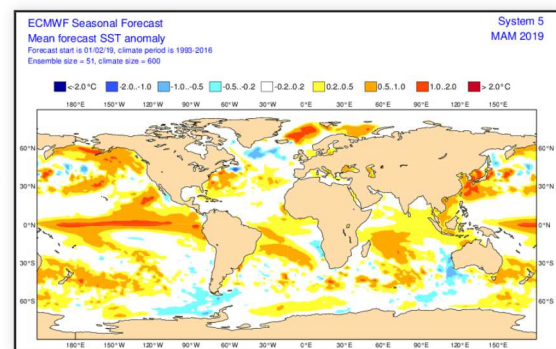
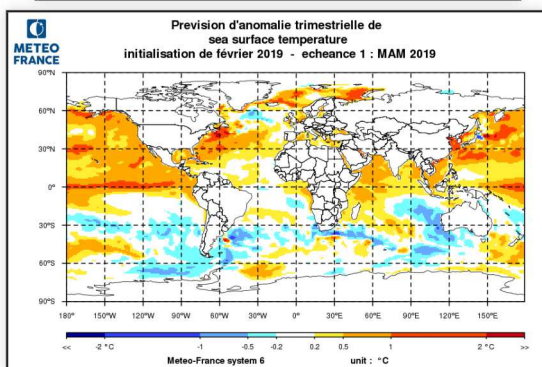
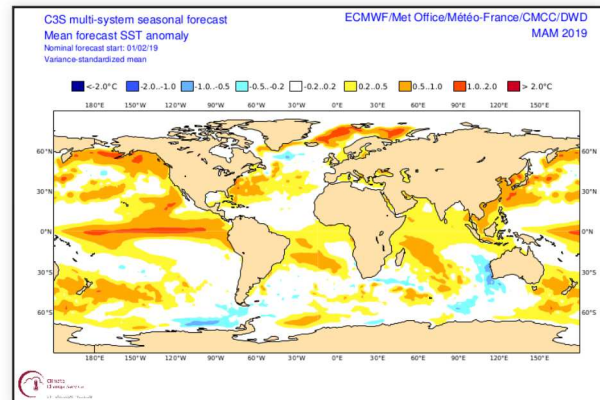
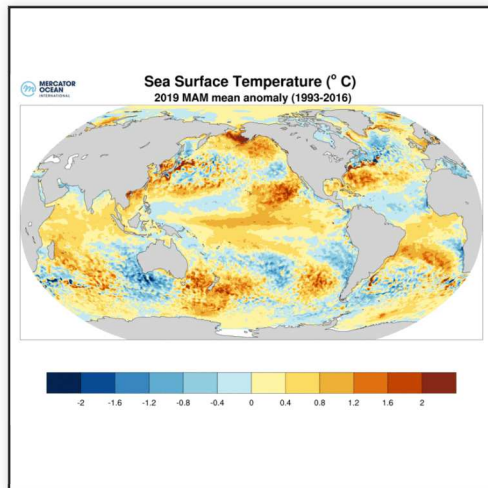
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Introduction : Objective

- 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

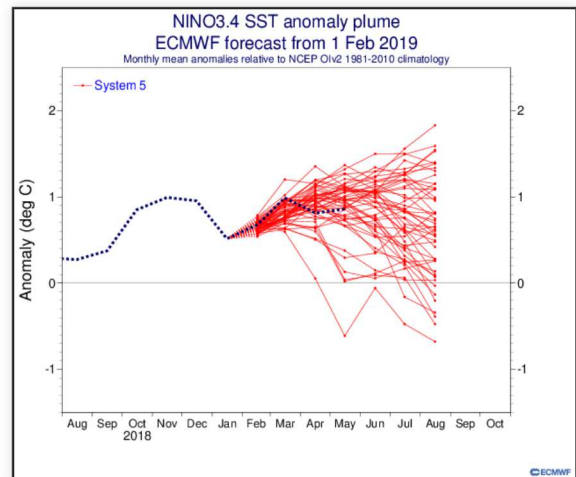
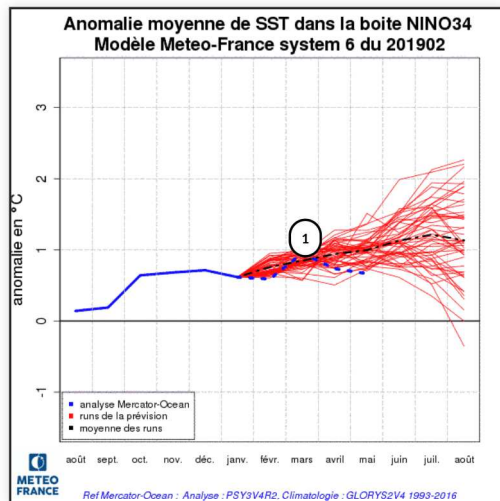
Rather good forecasts globally, except cold anomalies off the western coasts of South America. In areas where models were different (North-Eastern Pacific, Southern Atlantic, northern hemisphere part of Indian Ocean), SEAS5 forecast are better than MF-S6 (and even C3S).



Oceans : ENSO

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

Plumes rather well captured the Nino3.4 evolution

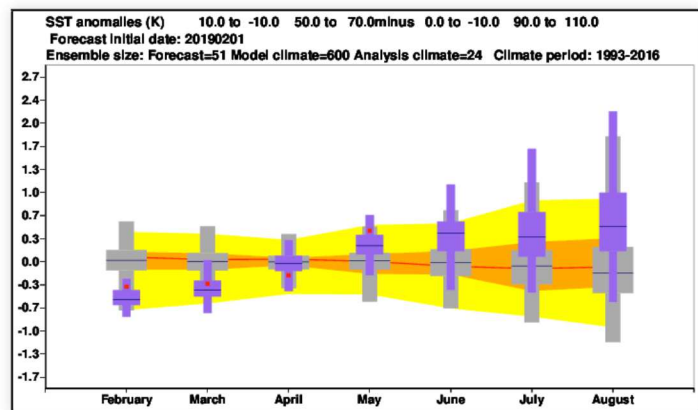
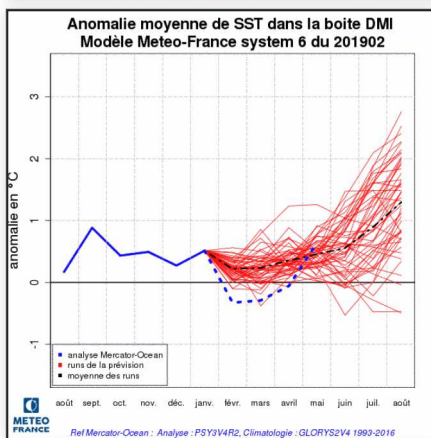
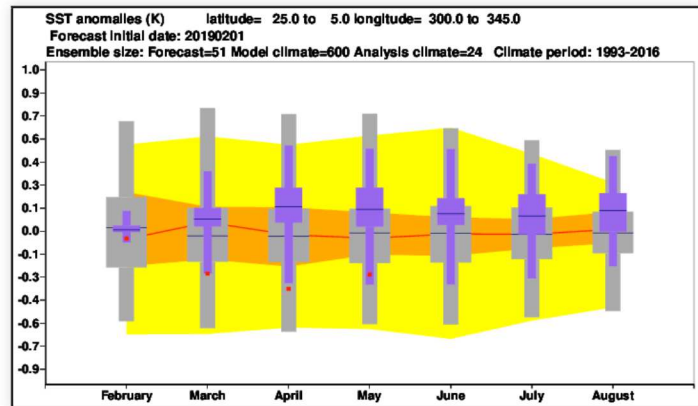
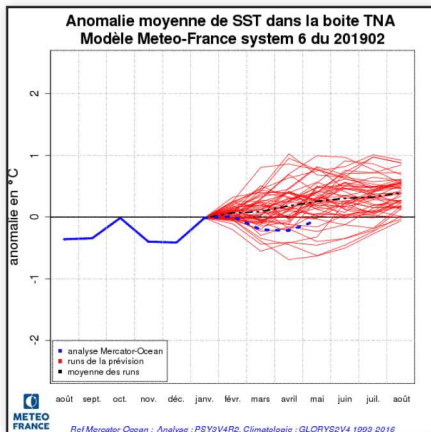


1 - overestimation at the end

Oceans : tropical Atlantic and Indian Ocean index

TNA : Negative index observed while models forecast positive index on average

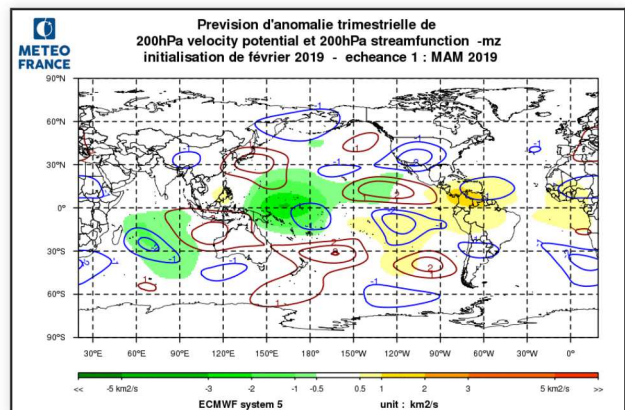
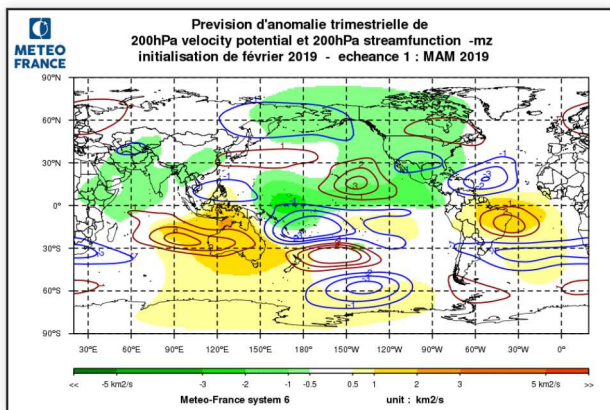
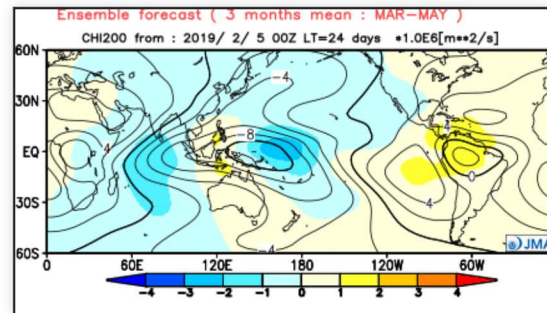
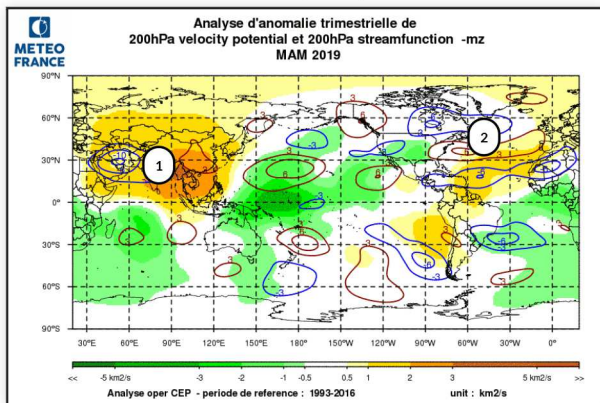
DMI : better mean forecast from SEAS5 than MF-S6



Atmospheric circulation : Global teleconnection

VP 200hPa : rather good forecasts for Pacific and north of South America. Over southeast Asia, the downward motion anomaly was not forecasted; it's just suggested by SEAS5. Globally, SEAS5 did a better forecast than MF-S6.

FC 200 hPa : very few patterns were correctly foreseen by models. The teleconnection over western Atlantic was not correctly located neither by MF-S6 nor SEAS5, despite a good positive VP200 anomaly (north of South America). All models were globally misleading over North America and Atlantic/Europe areas.



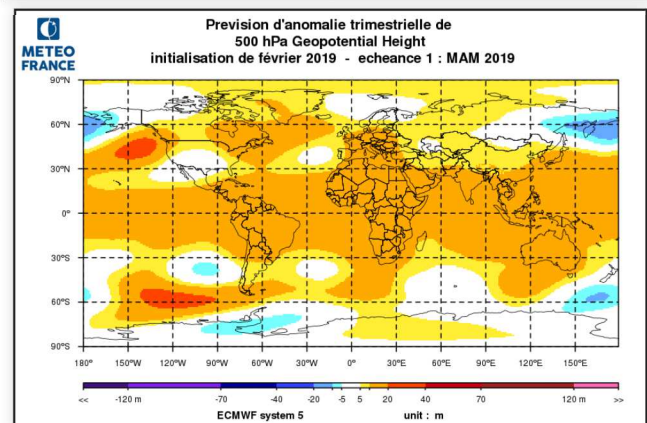
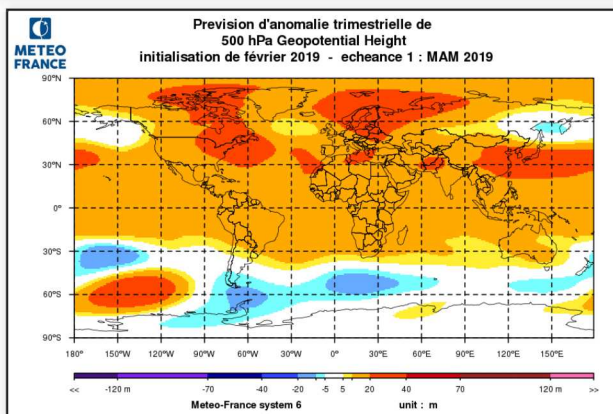
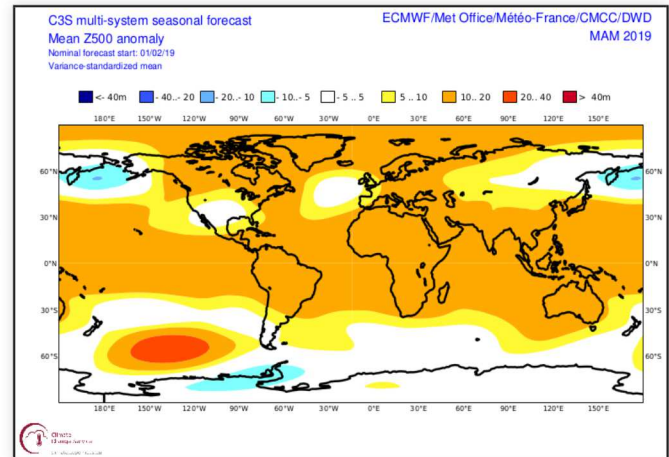
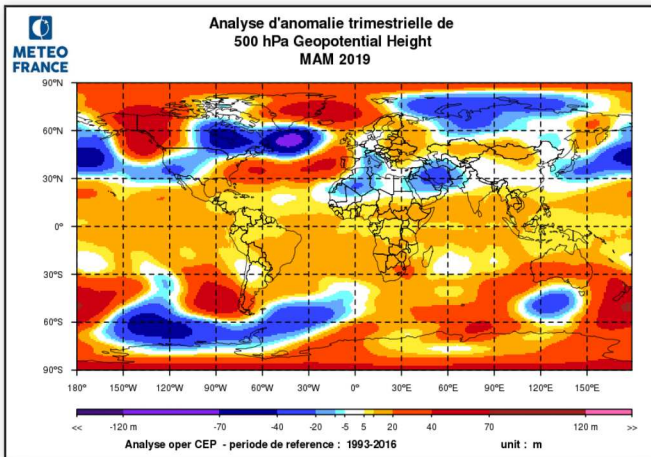
1 - Subsidence anomalies not forecasted

2 - teleconnection (cf FC) from north of South America up to North Atlantic. Unfortunately not really foreseen by models.

Atmospheric circulation : 500hPa Geopotential height

Important mismatch of the main anomaly poles all over northern hemisphere. Over Europe no resemblance in general between forecasts and analysis.

On the North Atlantic MF6 locates fairly well the minimum to the south of Island and the positive anomalies from Greenland to Scandinavia, unlike SEAS5 which has an opposite dipole.

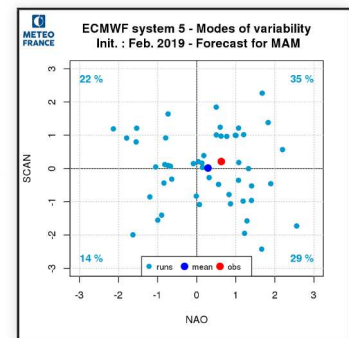
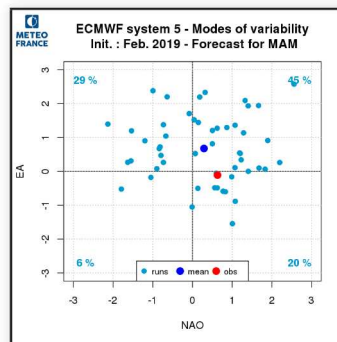
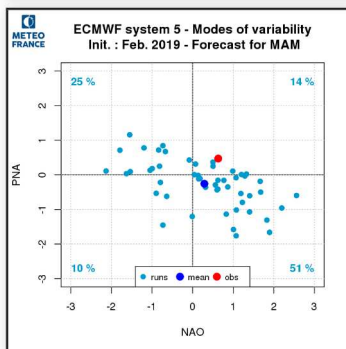
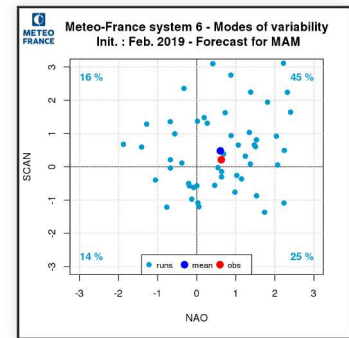
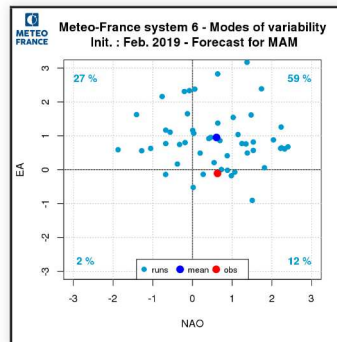
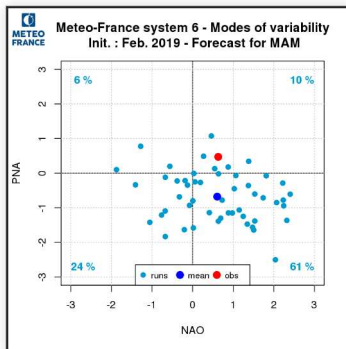


Atmospheric circulation : Modes of variability

PNA/NAO : Negative PNA is favored by models while observation is positive.

NAO/EA : In MF-S6 and SEAS5, The NAO+/EA+ was privileged while the analysis gives NAO+/EA neutral.

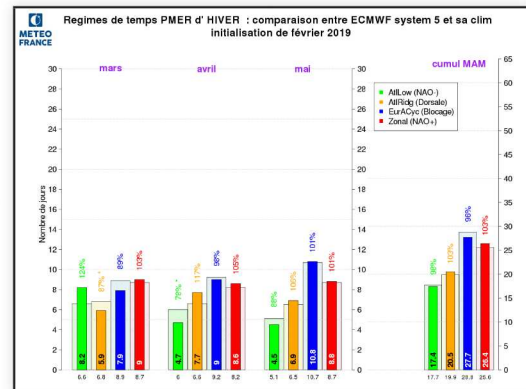
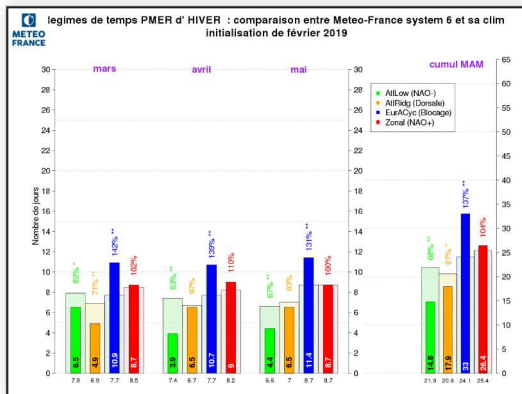
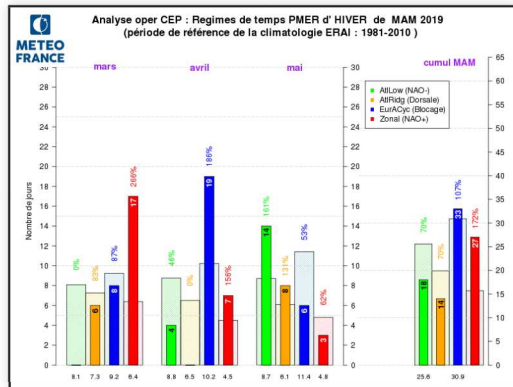
SCA : neutral scandinavian blocking observed as models.



Atmospheric circulation : Forecasted winter SLP weather regimes

MF-S6 : good forecast of dominant regimes, consistent with forecast of Z500 over the North Atlantic

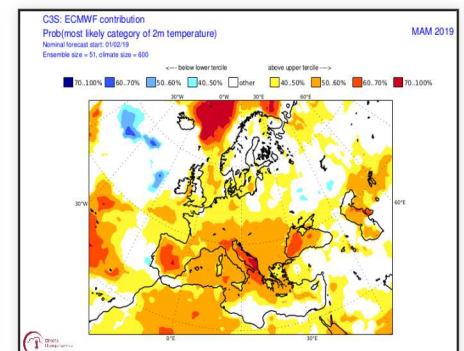
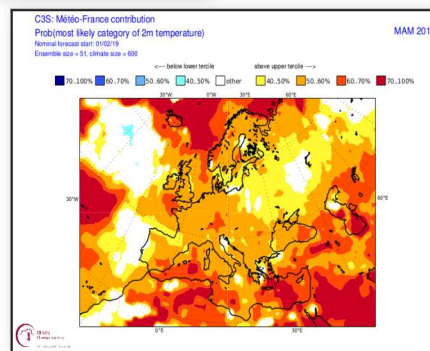
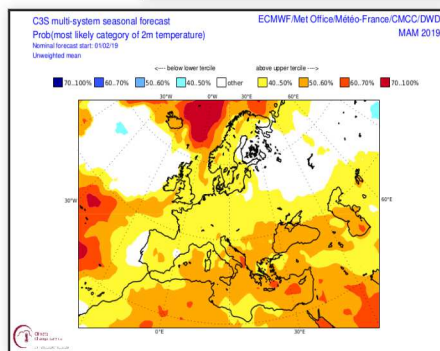
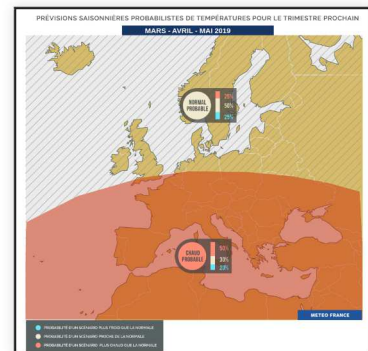
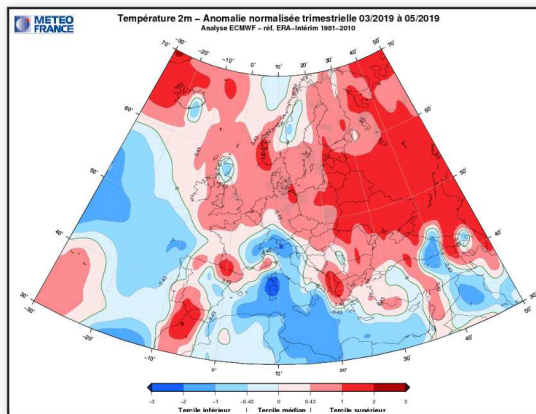
SEAS5 : no signal in the model



Climatic parameters on Europe : temperature

Analysis : Warm anomalies on the north and east of Europe. Cold or neutral anomalies on the southwestern Europe.

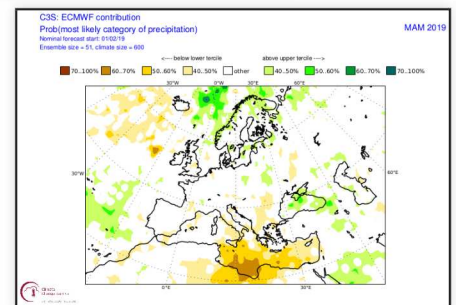
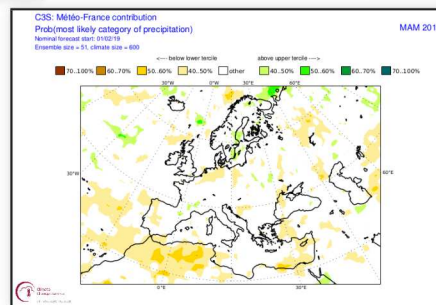
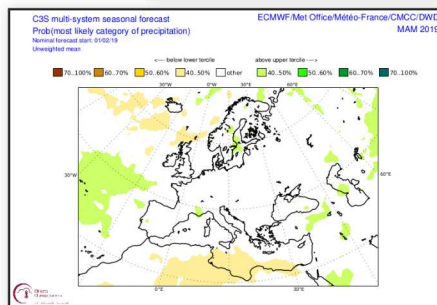
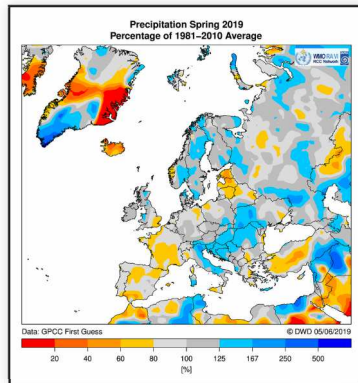
This large scale pattern was not foreseen by C3S models, in link with their poor large scale circulation forecast.



Climatic parameters on Europe : Precipitations

Analysis : signal not very marked on a large scale. rather wet on Scandinavia and South East Europe. Rather dry on France and Spain.

Dry signal given by models on the east of Mediterranean is not really observed.



General summary : for the period MAM 2019

1) Oceans :

Rather good forecast globally. Regional differences were better foreseen with SEAS5

2) Large scale atmospheric circulation :

Over tropics, some significant errors (see VP 200hPa) in Asia.

Teleconnections toward north hemisphere were not correctly foreseen (see FC 200 hPa and Z500), and globally Z500 anomaly poles were poorly positioned all over north hemisphere.

Over North Atlantic and Europe, large scale circulation was poorly forecasted except with MF6 somewhat similar the North Atlantic analysis.

3) Climatic parameters on Europe :

Poor large scale circulation forecast => poor forecasts of temperature.

For precipitation there was no large-scale signal as well at the analysis as at the forecast.