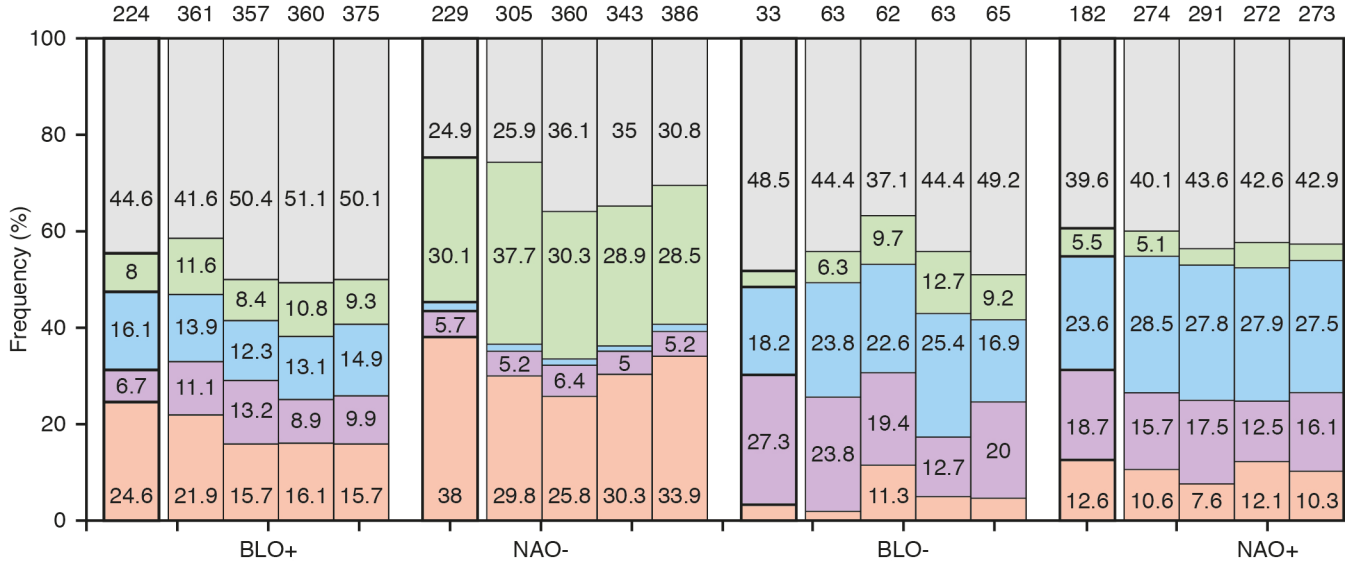
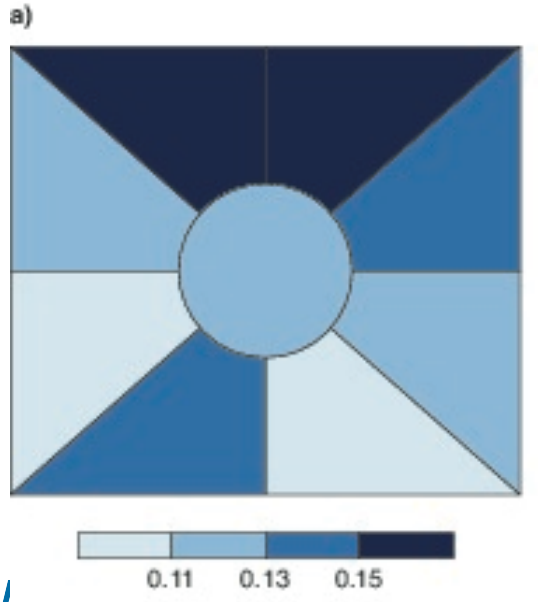
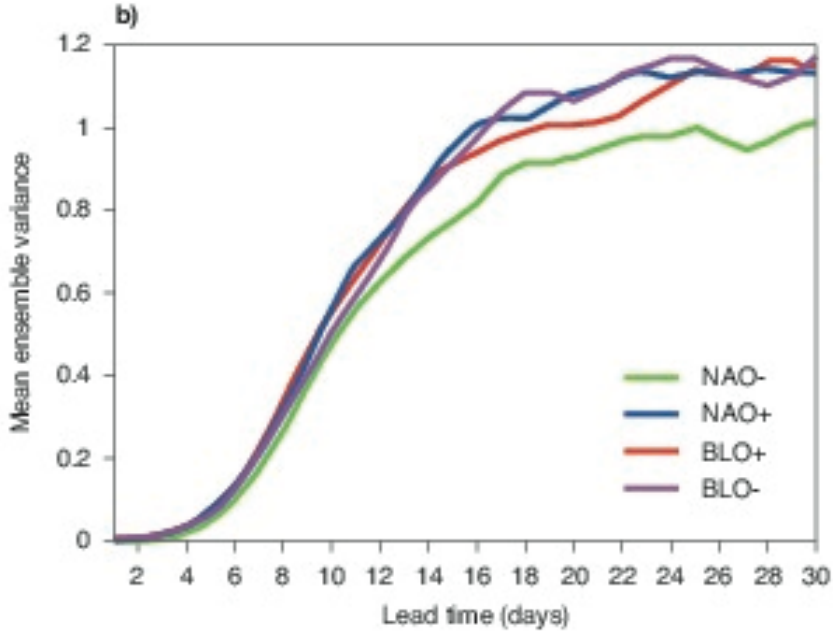
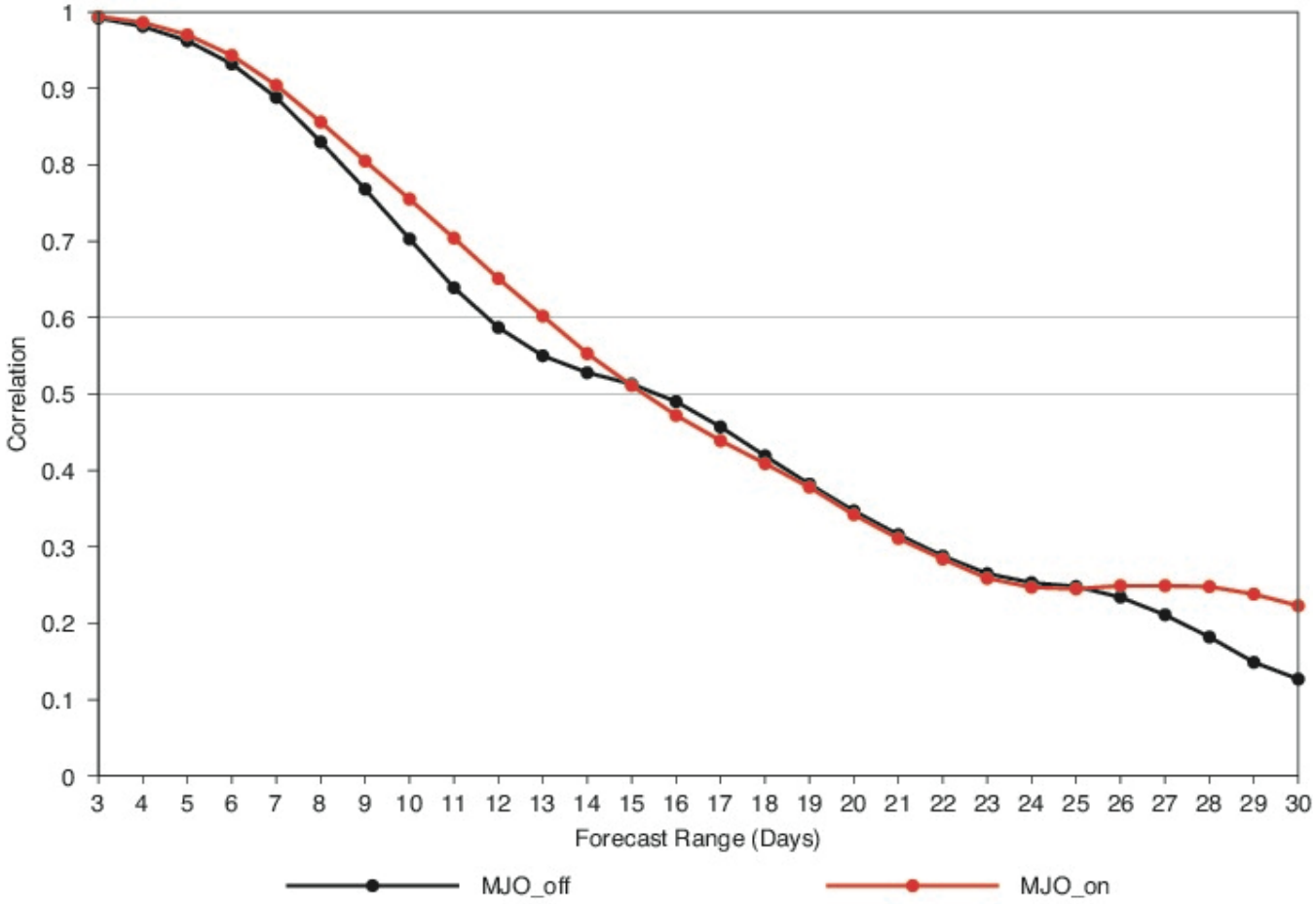
Preferred transitions - biases - predictability







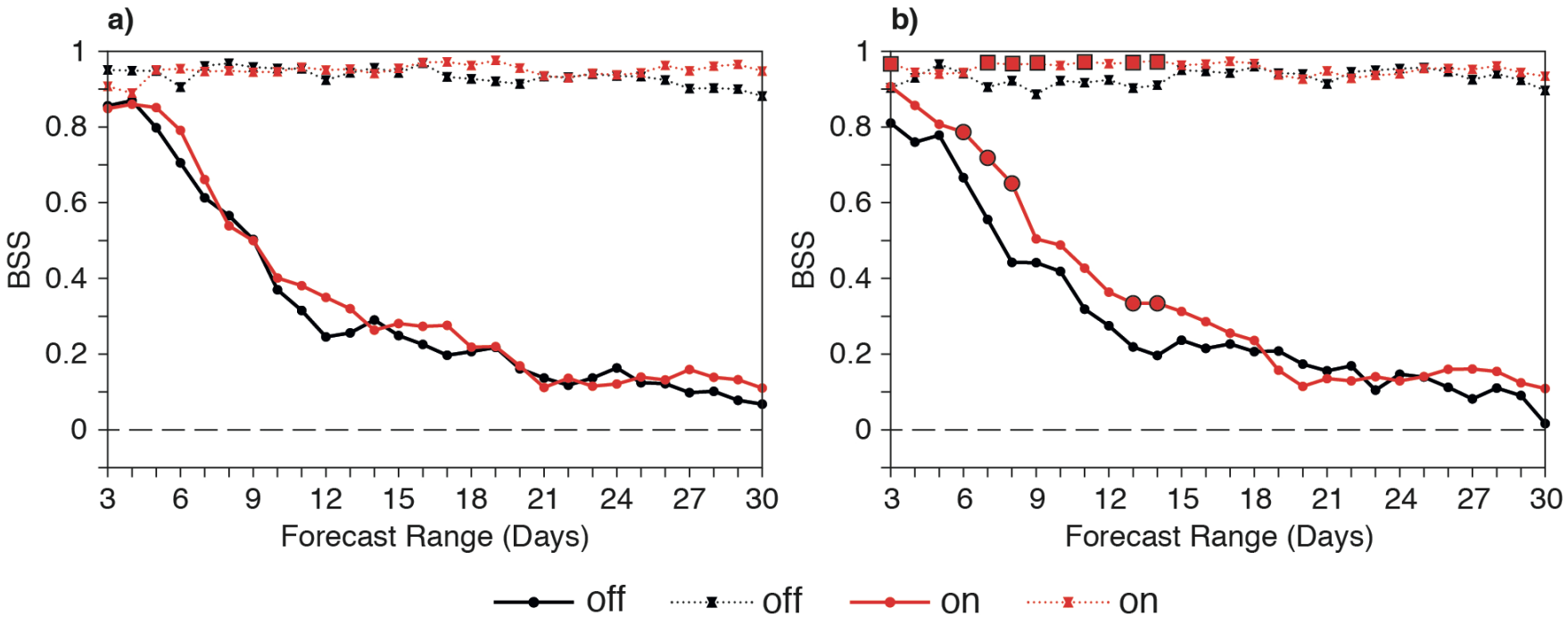
Conditional skill:



MJO impact on probabilistic scores:

NAO+

NAO-



Small impact for NAO+ predictions
Significantly higher skill for NAO- forecasts with and MJO in the i.c.

Summary:

Reliable forecasts of NAO and blocking are instrumental for the extended range predictions of severe cold events over Europe.

S2S systems exhibit useful skill well beyond 10 days for NAO and Blocking predictions – strong potential for early warnings.

ECMWF forecasts, beyond 15 days, can provide reliable probabilities of cold temperatures associated with the NAO-.

Such skill can be enhanced by MJO activity (teleconnections).

Forecasting probabilities of cold spell associated with a blocking is a bigger challenge.

Questions?

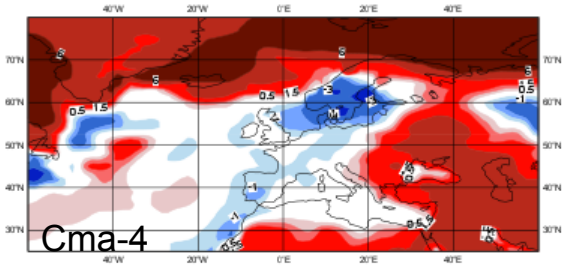
Predictability of Euro-Atlantic circulation regimes at extended range and its association to extreme events:

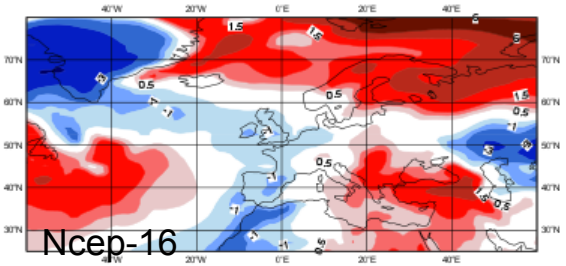
We are evaluating the predictive skill of the EA regimes using the S2S data base (Sub-seasonal to seasonal predictions WWRP/WCRP joint research project)

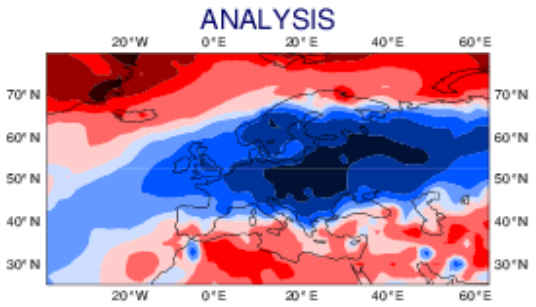
In particular we are interested in assessing the regime transitions (climatological frequencies, loss of skill, physical processes associated with it)

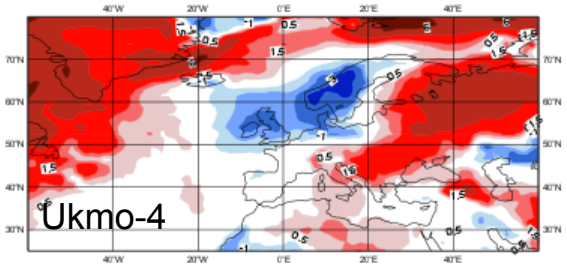
NAO- and BL are the flow patterns strongly associated with high impact temperature anomalies (heat waves in summer and cold spell in winter).

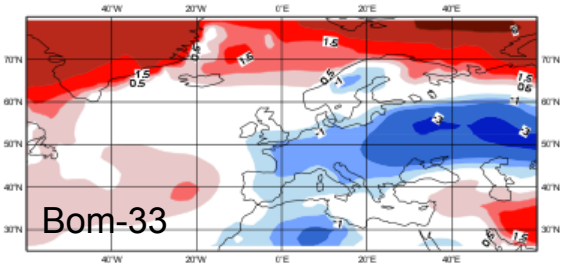
S2S Forecasts 20180208 verifying 02/26-03/04 fc-range 1

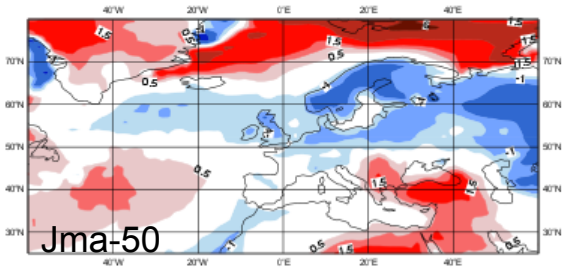


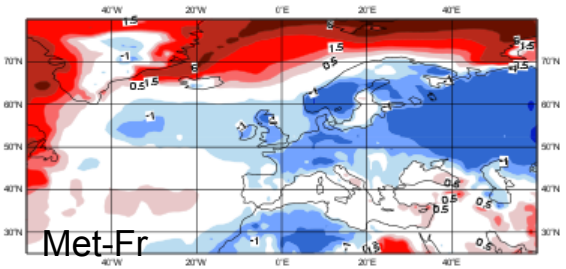


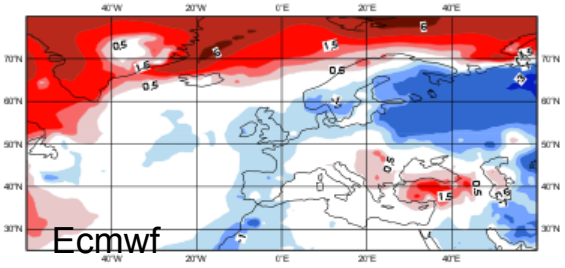


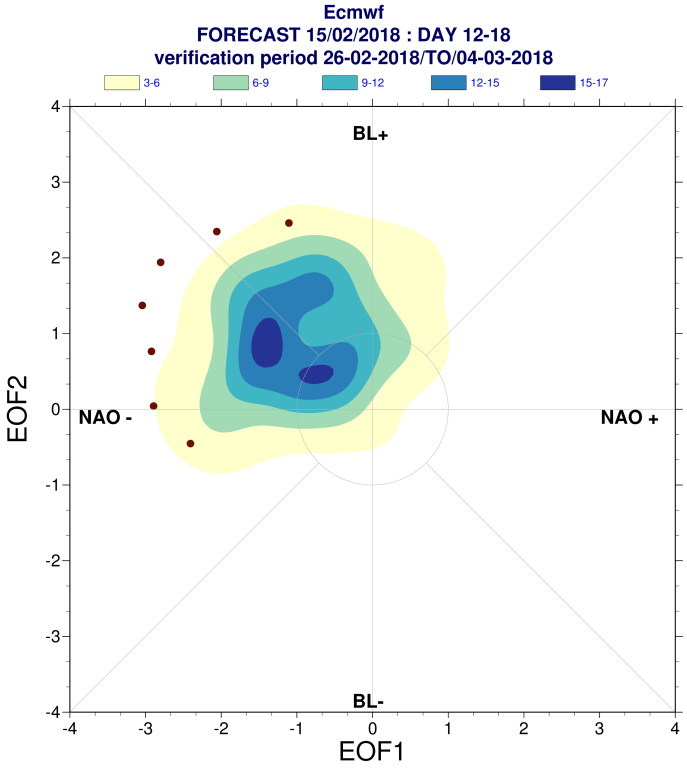


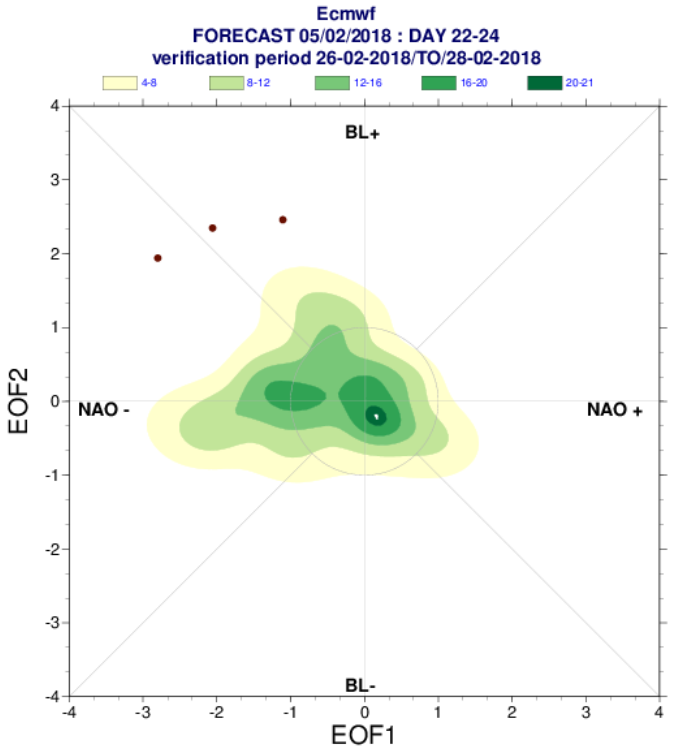






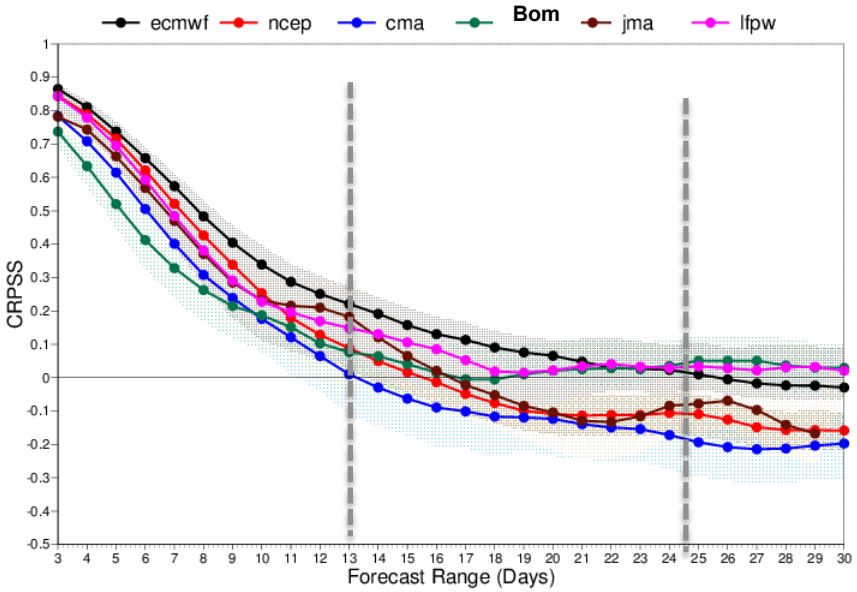



Ecmwf
FORECAST 15/02/2018 : DAY 12-18
verification period 26-02-2018/TO/04-03-2018
3-6
6-9
9-12
12-15
15-17
BL+
NAO -
NAO +
BL-
EOF1
EOF2

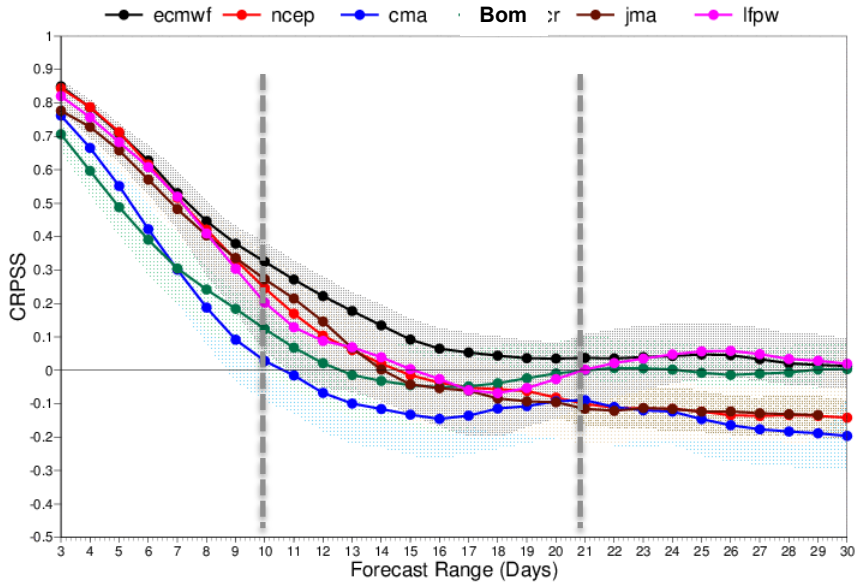

Ecmwf
FORECAST 05/02/2018 : DAY 22-24
verification period 26-02-2018/TO/28-02-2018
4-8
8-12
12-16
16-20
20-21
BL+
NAO -
NAO +
BL-
EOF1
EOF2

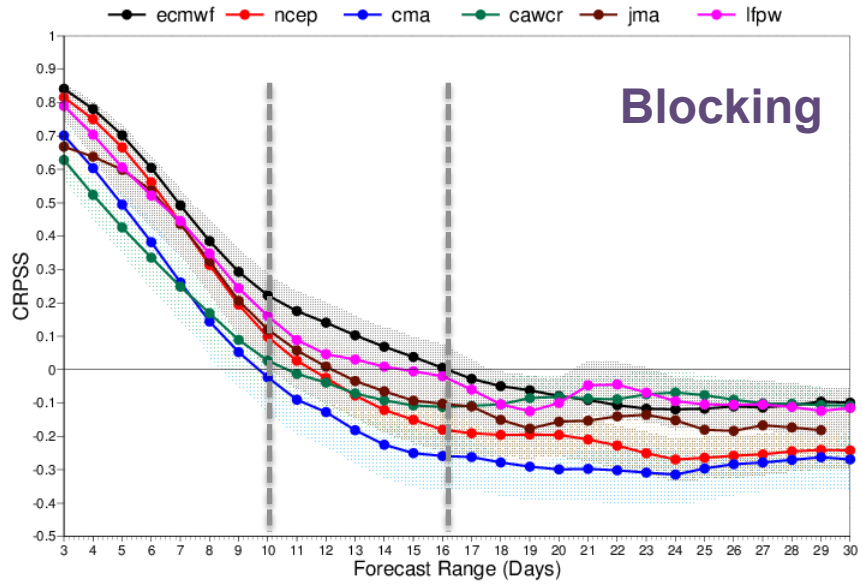
Predicting skill associated with the Euro-Atlantic Regimes:

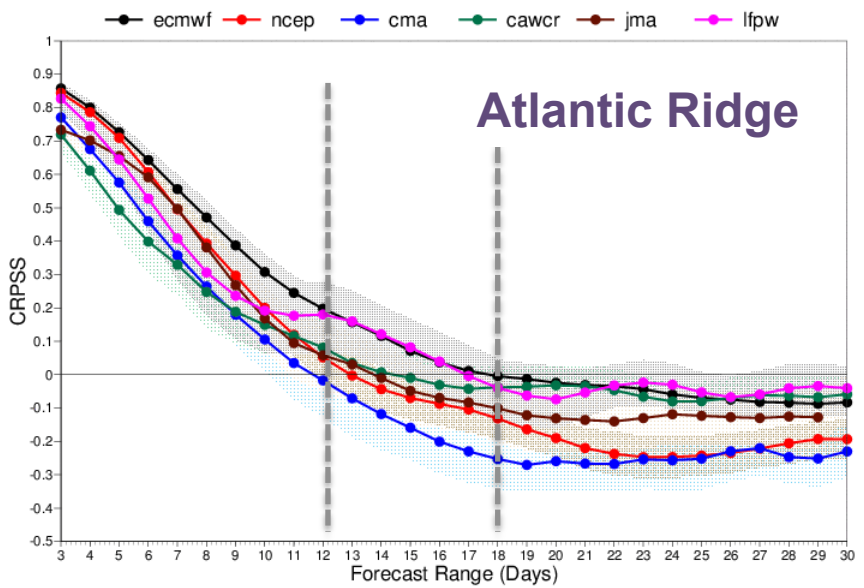
NAO +



NAO -

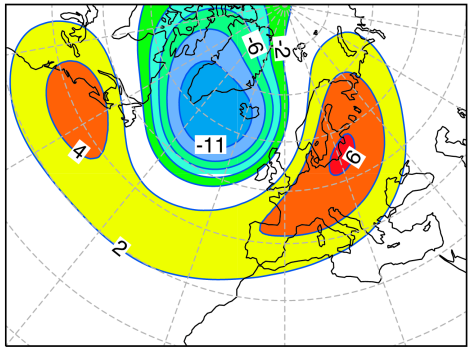






NAO-BL diagrams

The ensemble evolution in the NAO-Blocking diagram :



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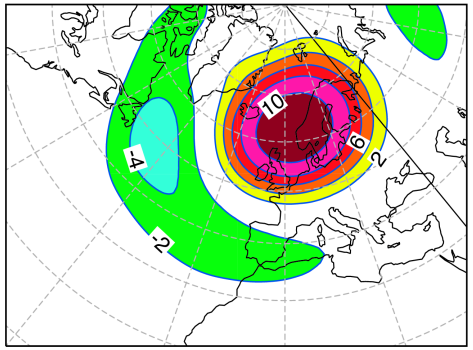

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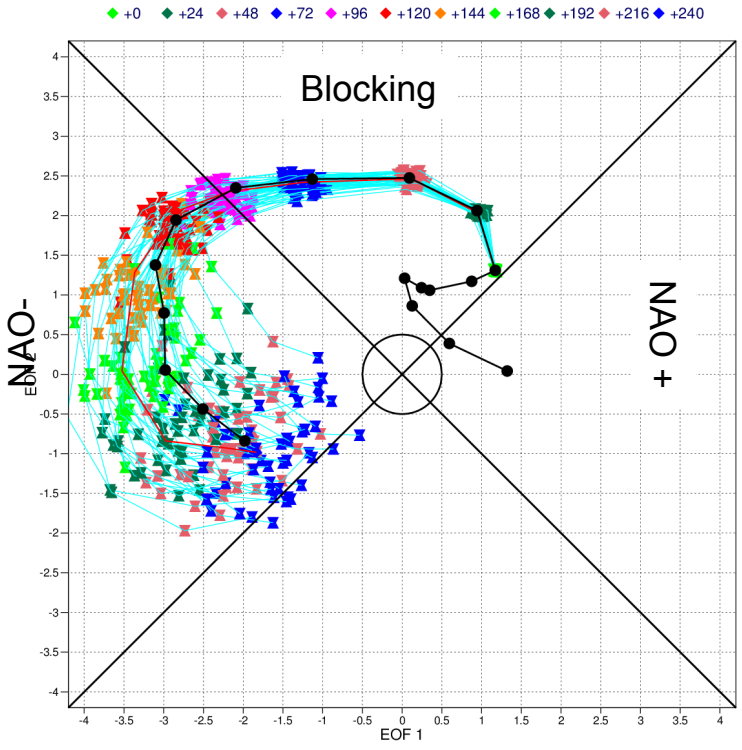
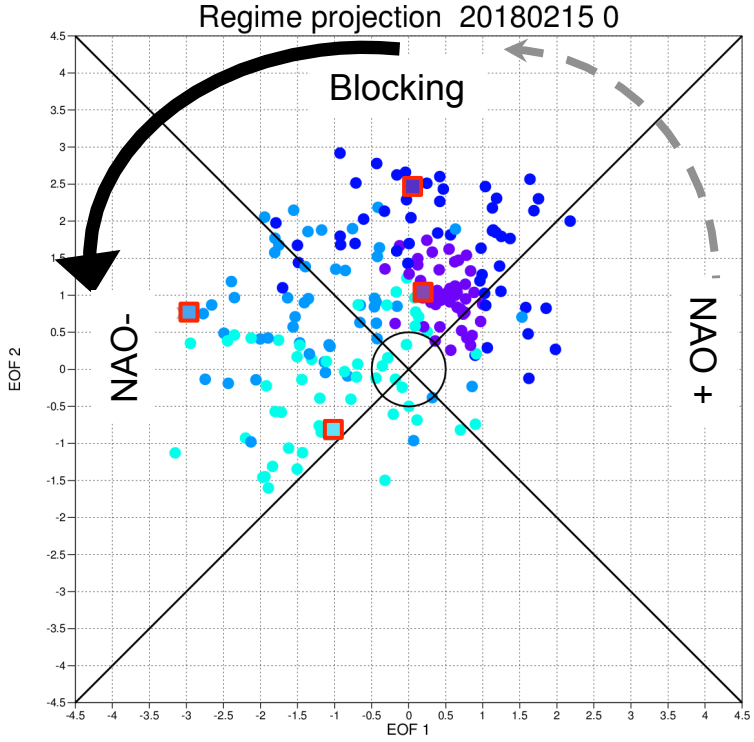
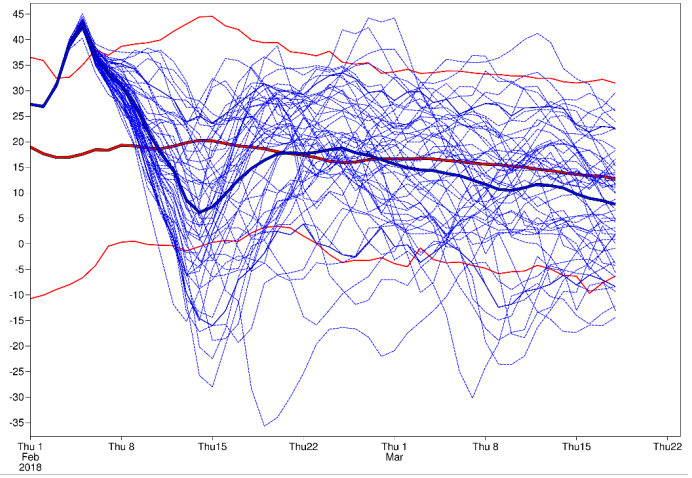
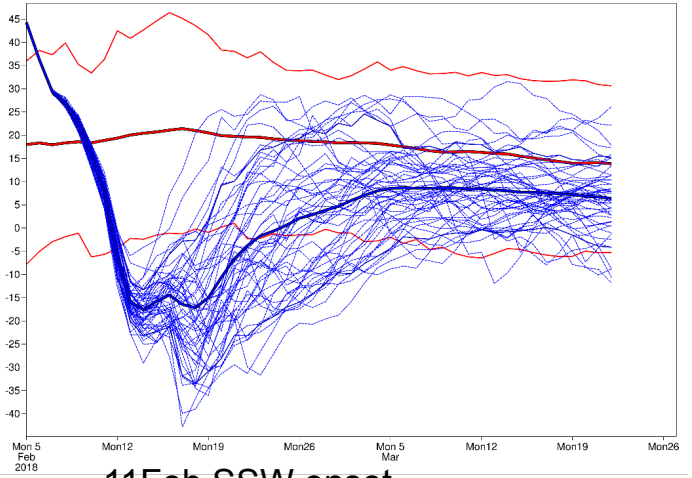
20170223
Forecast





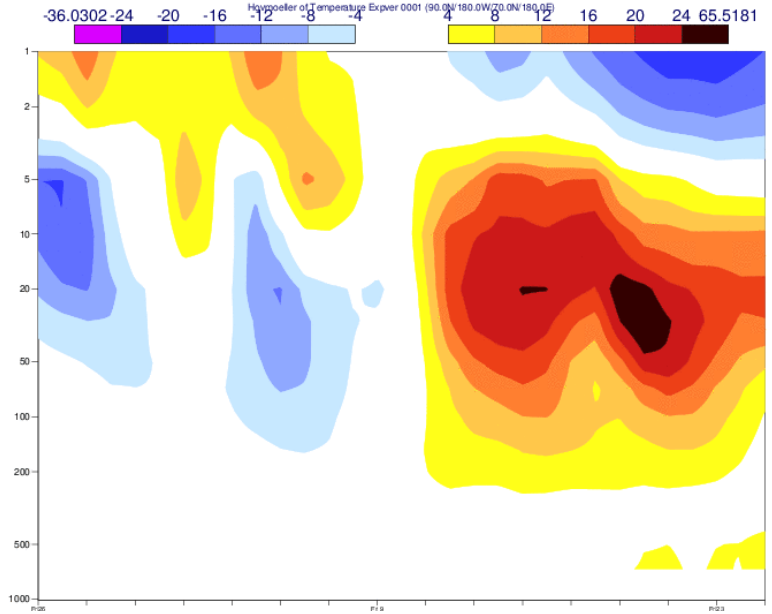
60N zonal mean zonal wind at 10hPa





11Feb SSW onset

SSW:



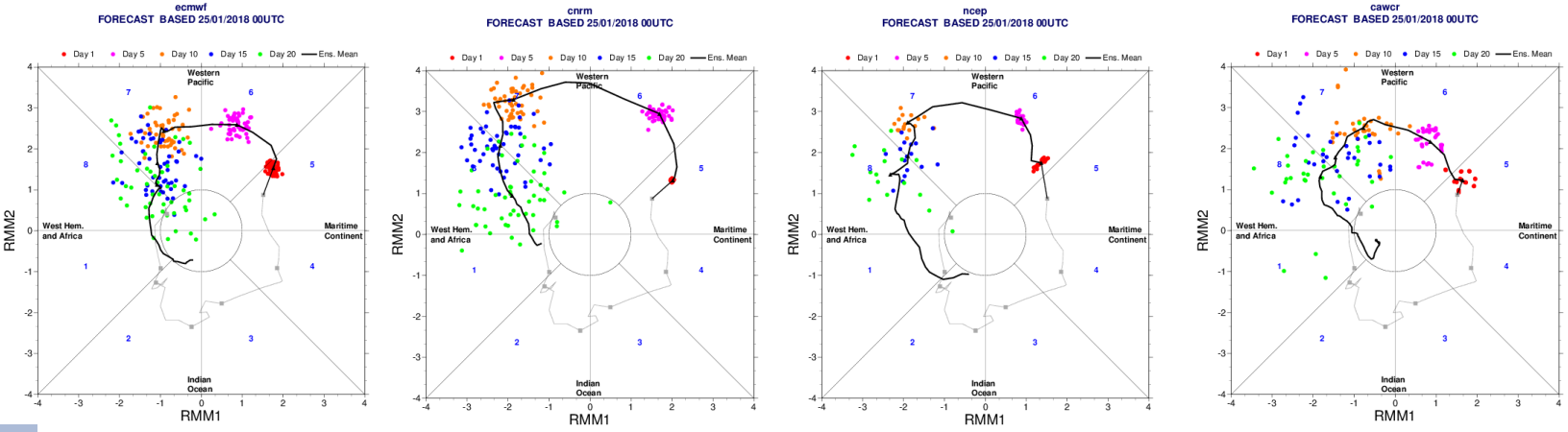
Jan26

Feb23

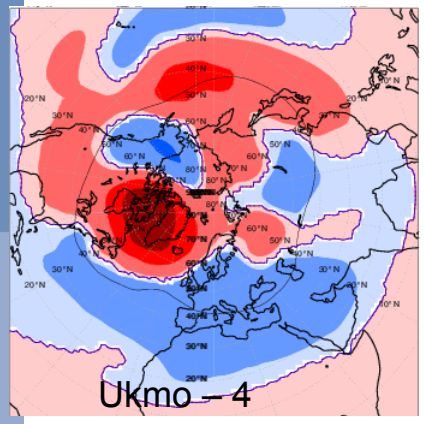
Feb 9

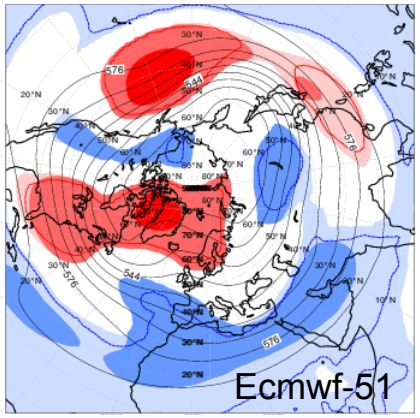
From Linus

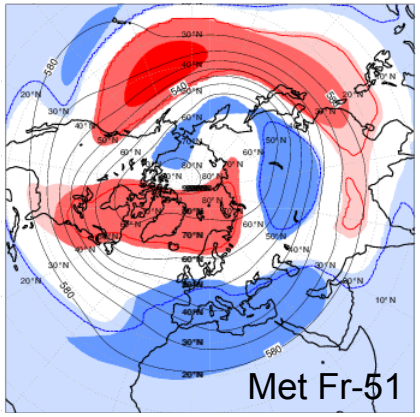
MJO predictions from the S2S:

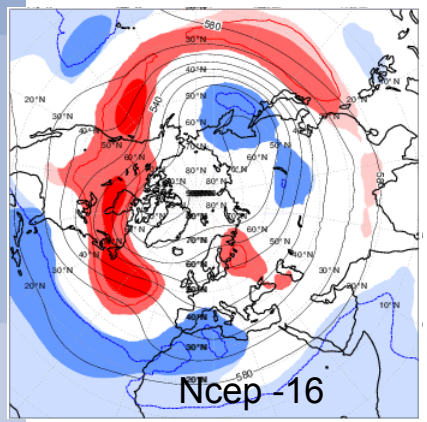


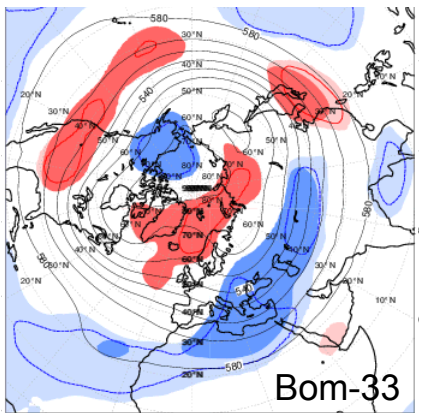
S2S Forecasts 20180208
verifying 26Feb-4March fc-range 19-25

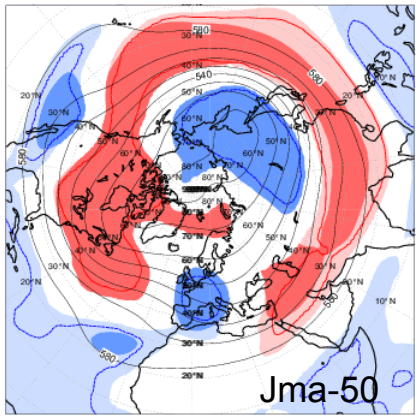


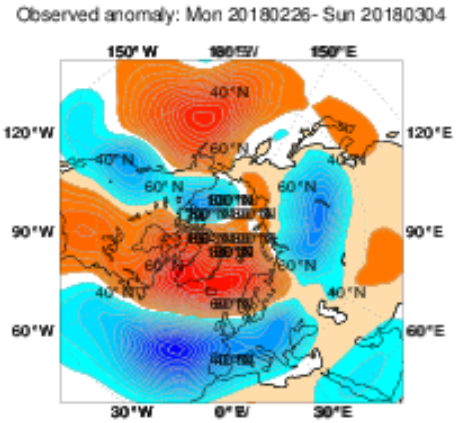




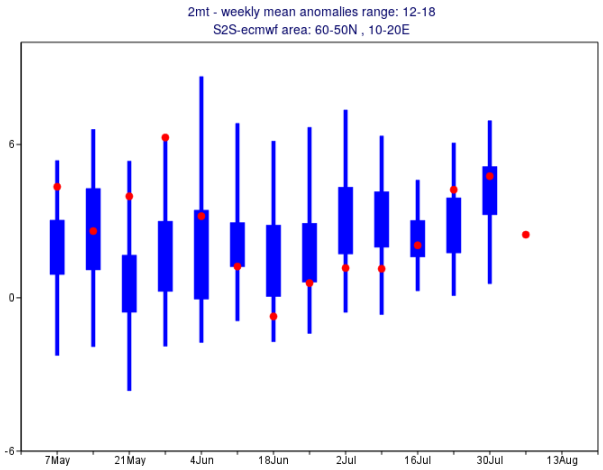


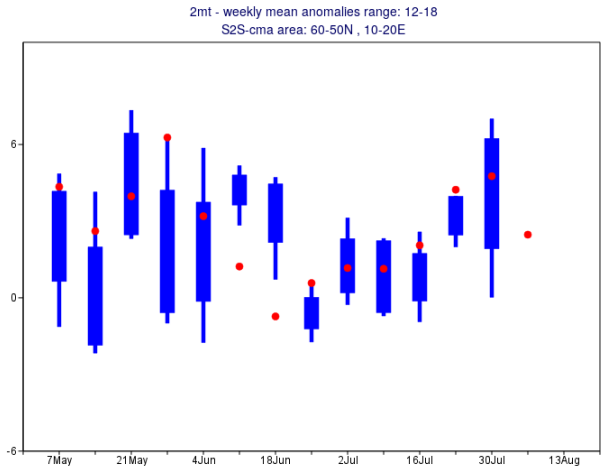


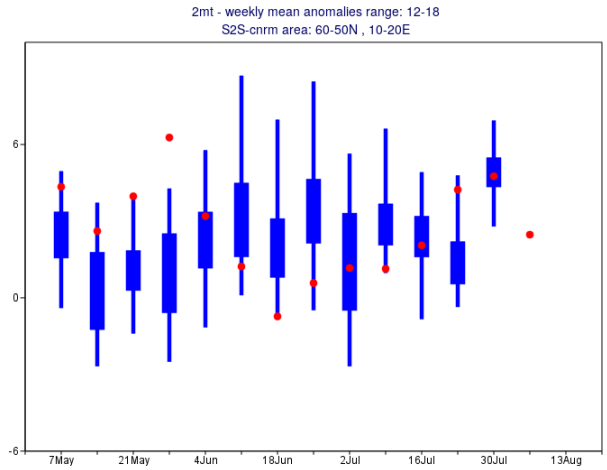


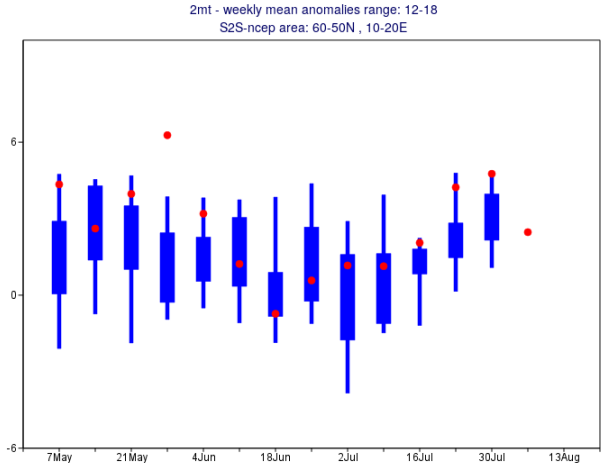


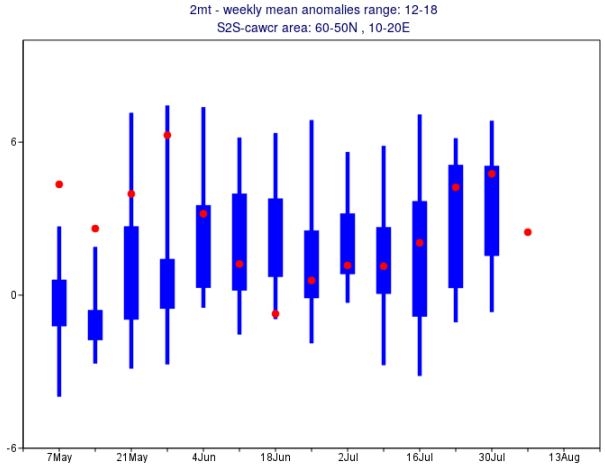
S2S 2m timeseries

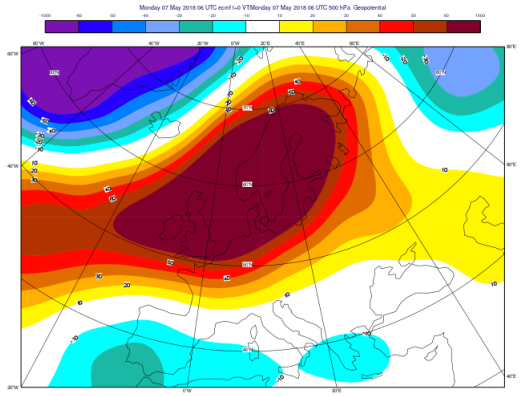












Difficult to explain in terms of regimes: (see Gram)