



MEDCOF 11

RA VI RCC-LRF input

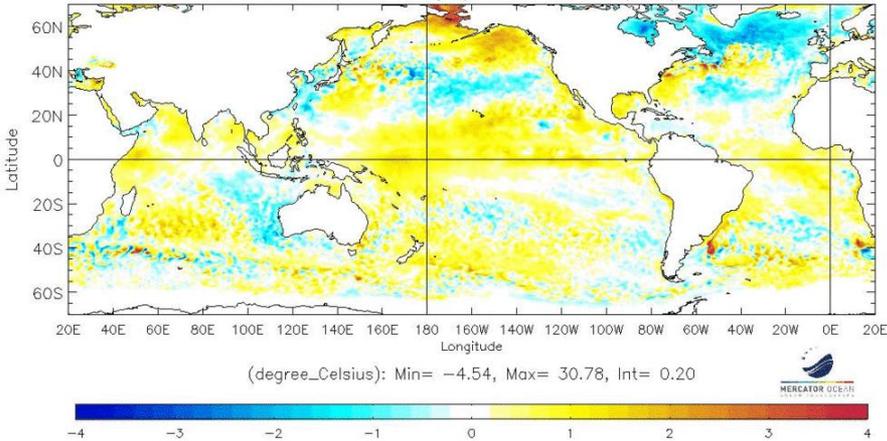
Christophe La Pierre
Météo-France

Outline

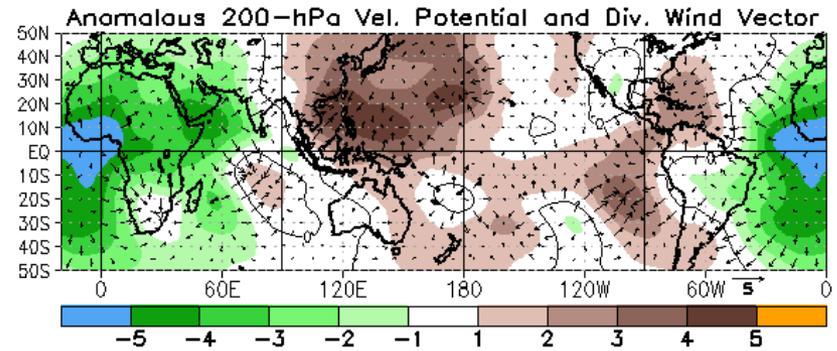
- October 2018
- Ocean states : analysis and forecast
- Large scale circulation for DJF : looking for teleconnexions...
- Atlantic and Europe circulation for DJF : what do GPC models tell us ?
- Weather regimes for DJF : model forecasts and climate drivers
- Most probable scenario and expected impacts

October 2018

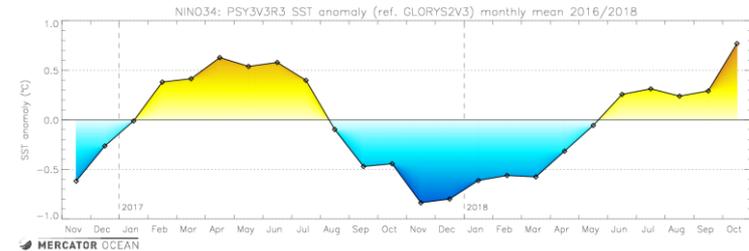
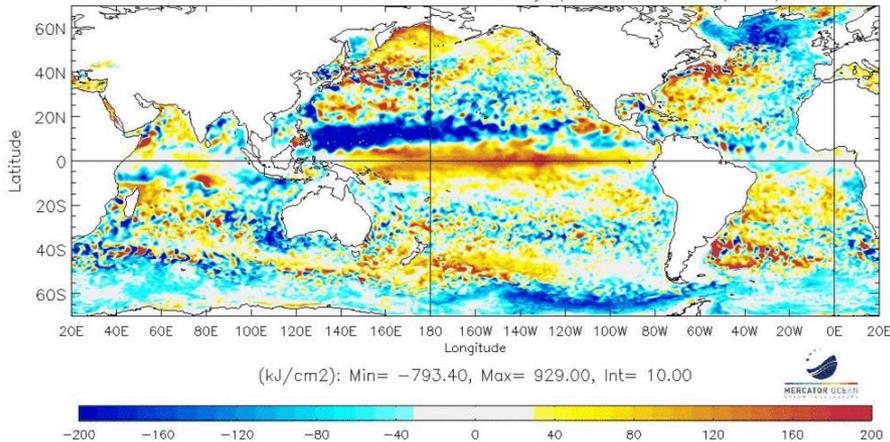
PSY3V3R3 SST Anomaly (ref: GLORYS2V3) 10/2018



October 2018



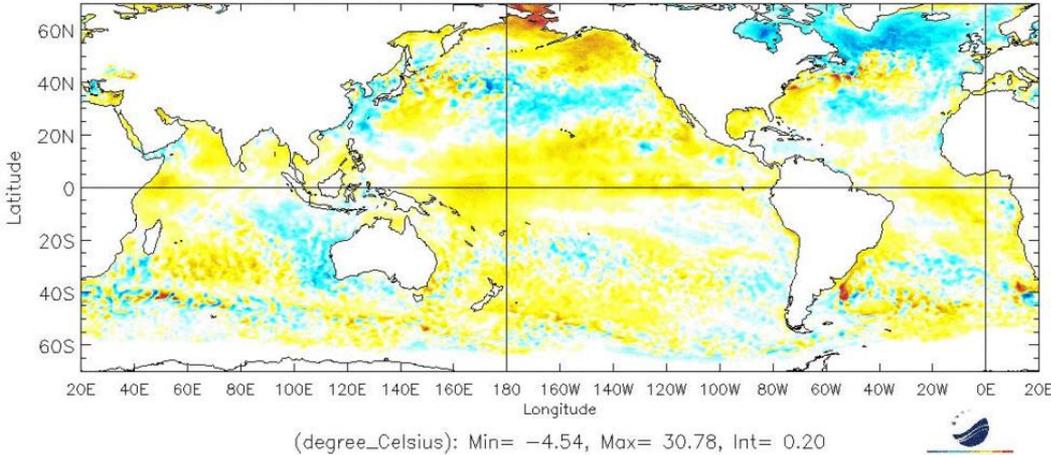
PSY3V3R3 Heat content 0–300m Anomaly (ref: GLORYS2V3): 10/2018



- “El Niño” (ocean & atmosphere)
- Atl. Cold blob
- ~neutral N.Atl. Tropics

SST (analysis and forecast)

PSY3V3R3 SST Anomaly (ref: GLORYS2V3) 10/2018



October 2018

C3S multi-system seasonal forecast

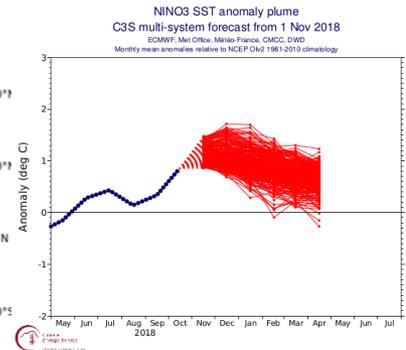
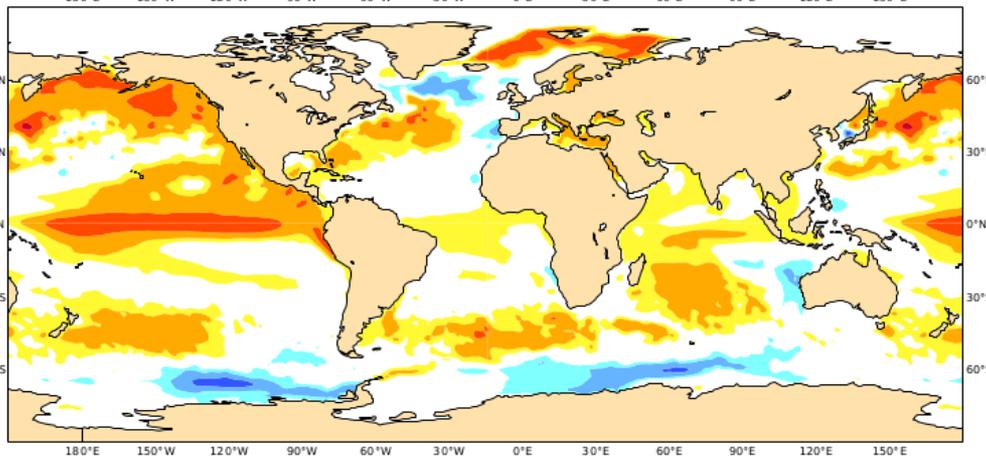
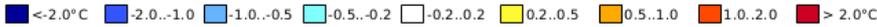
Mean forecast SST anomaly

Nominal forecast start: 01/11/18

Variance-standardized mean

ECMWF/Met Office/Météo-France/CMCC/DWD

DJF 2018/19



DJF 2018 – 2019

- “El Niño” moderate
- Atl. Cold blob
- neutral N.Atl. Tropics

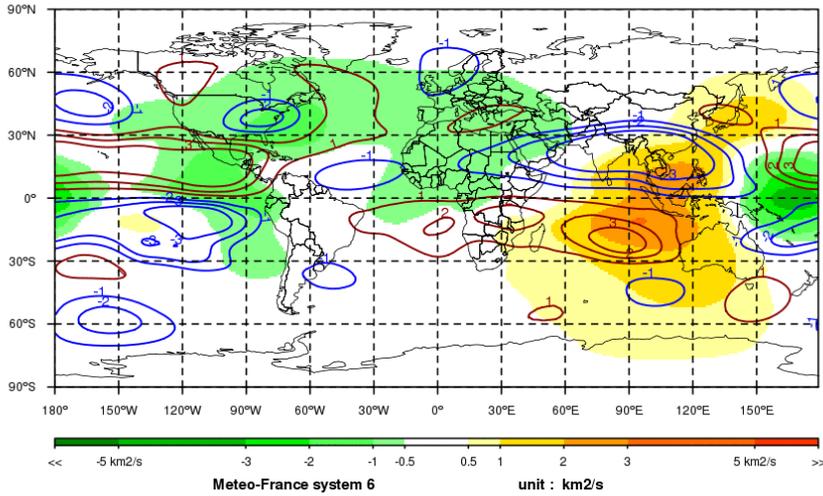
airo 11/2018



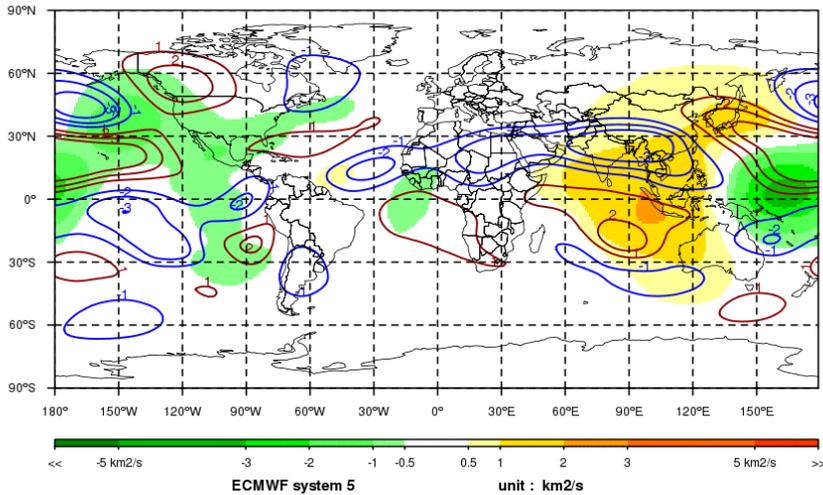
Large scale circulation – DJF 2018-2019



Prevision d'anomalie trimestrielle de
200hPa velocity potential et 200hPa streamfunction -mz
initialisation de novembre 2018 - echeance 1 : DJF 2018-2019

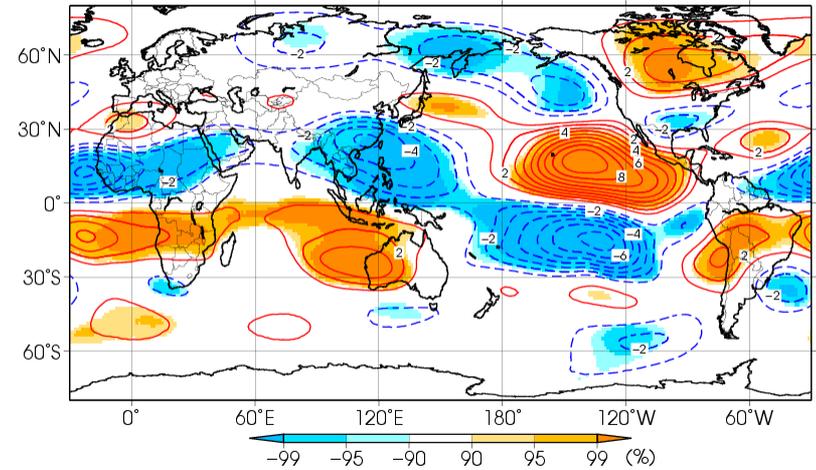


Prevision d'anomalie trimestrielle de
200hPa velocity potential et 200hPa streamfunction -mz
initialisation de novembre 2018 - echeance 1 : DJF 2018-2019



200hPa streamfunction anomaly :
classical response to “La Niña”

Element:p200e Index:NINO.3(Warm) Period:Dec-Feb



<http://ds.data.jma.go.jp>

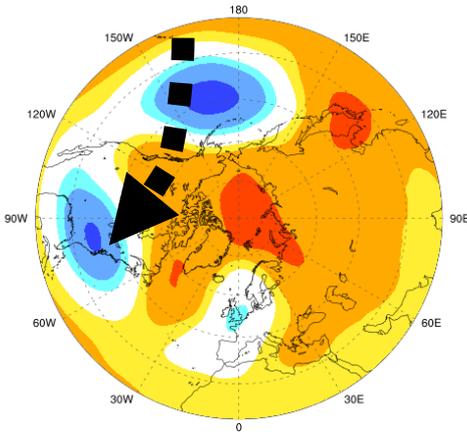
DJF 2018 – 2019

- “El Niño” response (up to North America)
- N. Atl. & Europe : weak signal, but some consistency between models (MF, ECMWF, JMA)



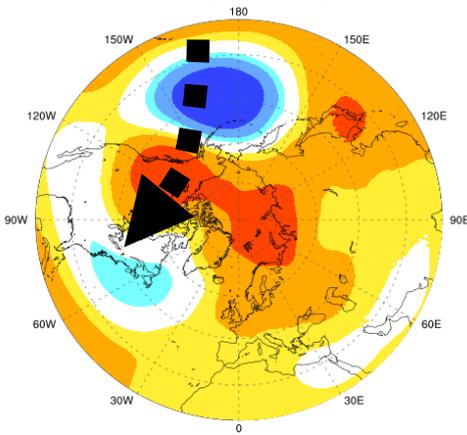
Z500 mean circulation – DJF 2018-2019

3 months anomaly forecast
500 hPa Geopotential Height



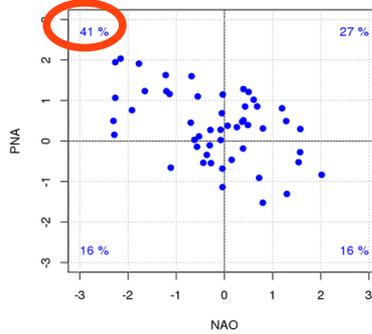
METEO FRANCE
-120 -70 -40 -20 -10 -5 5 10 20 40 70 120
Meteo-France system 6 init 20181101 leadtime 1

3 months anomaly forecast
500 hPa Geopotential Height

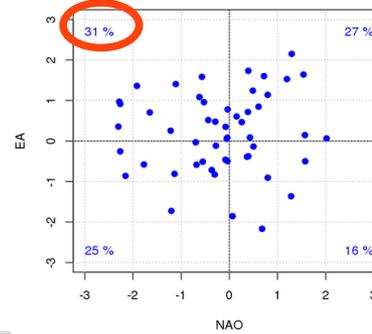


METEO FRANCE
-120 -70 -40 -20 -10 -5 5 10 20 40 70 120
ECMWF system 5 init 20181101 leadtime 1

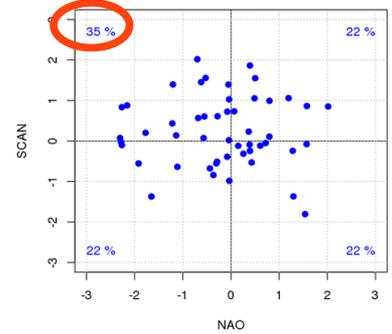
METEO FRANCE
Meteo-France system 6 - Modes of variability
Init. : Nov. 2018 - Forecast for DJF



METEO FRANCE
Meteo-France system 6 - Modes of variability
Init. : Nov. 2018 - Forecast for DJF

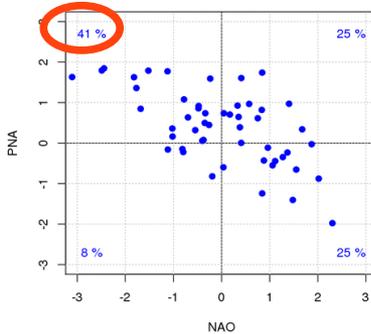


METEO FRANCE
Meteo-France system 6 - Modes of variability
Init. : Nov. 2018 - Forecast for DJF

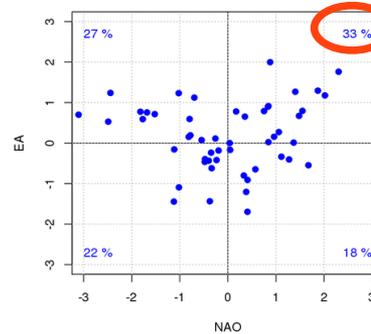


PNA > 0 NAO < 0 EA > 0 SCAN > 0

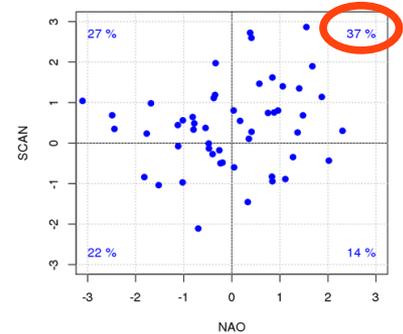
METEO FRANCE
ECMWF system 5 - Modes of variability
Init. : Nov. 2018 - Forecast for DJF



METEO FRANCE
ECMWF system 5 - Modes of variability
Init. : Nov. 2018 - Forecast for DJF



METEO FRANCE
ECMWF system 5 - Modes of variability
Init. : Nov. 2018 - Forecast for DJF



PNA > 0 NAO > 0 EA > 0 SCAN > 0



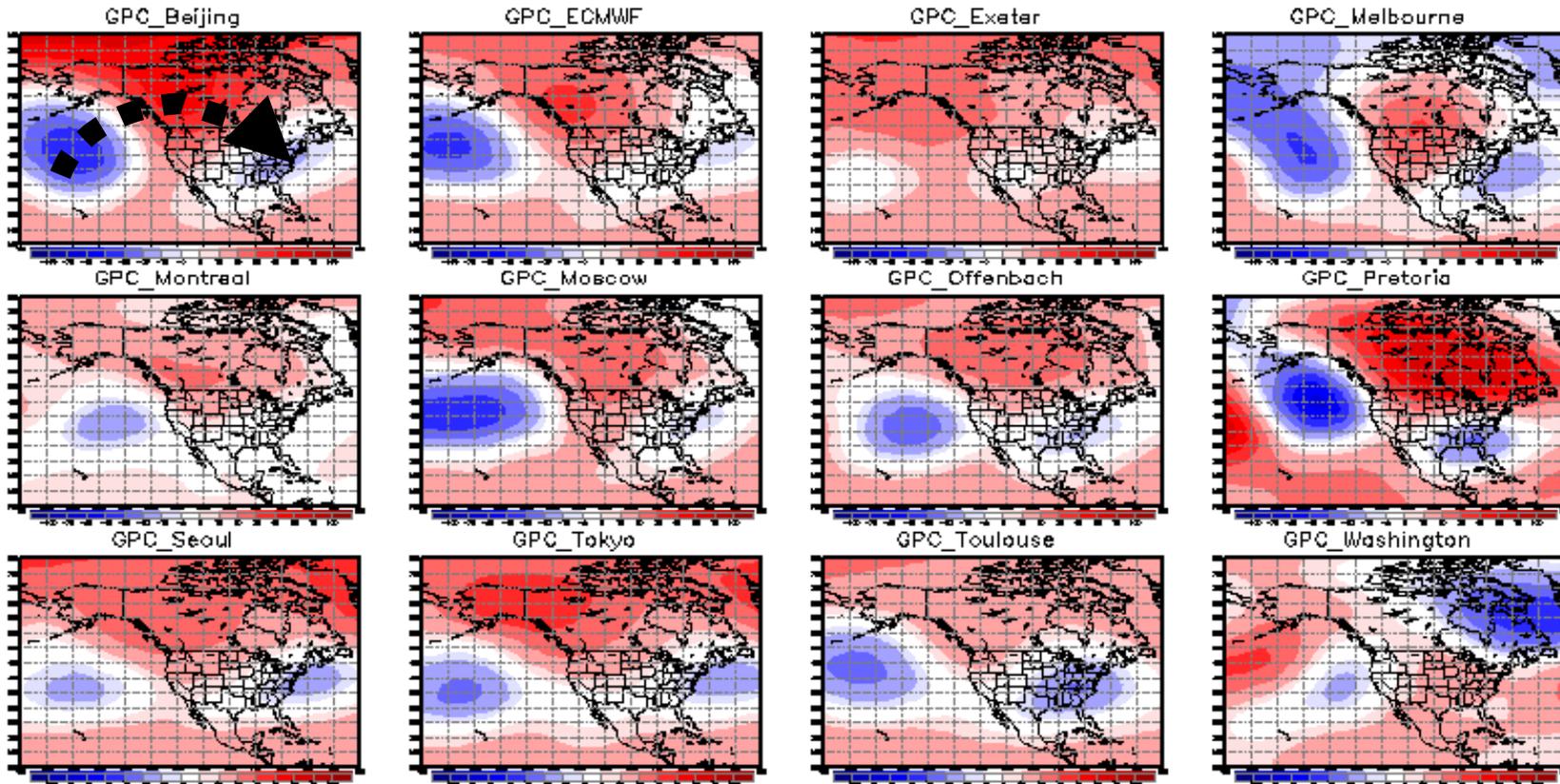
Z500 mean circulation – DJF 2018-2019

lat=10 80
lon=-180 -50

500hPa GPH : DJF2018

(issued on Nov2018)

[Unit: m]



Main mode :
PNA+

Z500 mean circulation – DJF 2018-2019

lat=20 75
lon=-80 80

500hPa GPH : DJF2018

(issued on Nov2018)

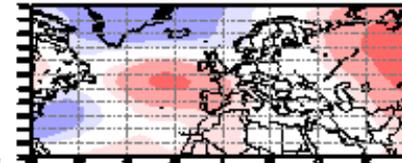
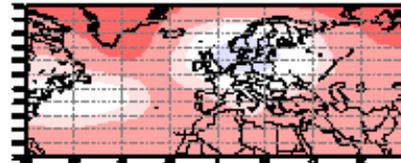
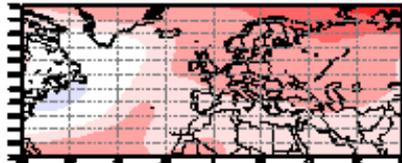
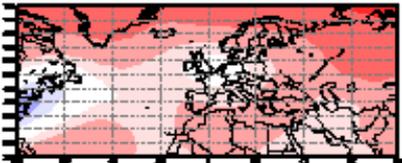
[Unit: m]

GPC_Beijing

GPC_ECMWF

GPC_Exeter

GPC_Melbourne

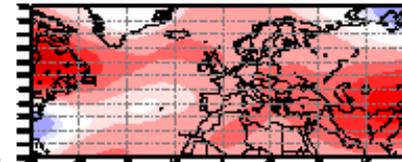
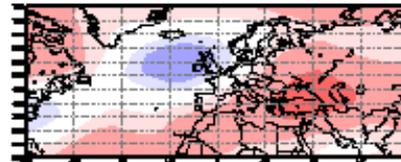
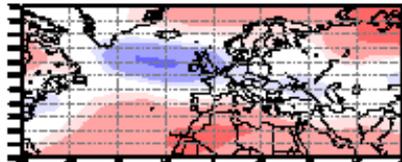
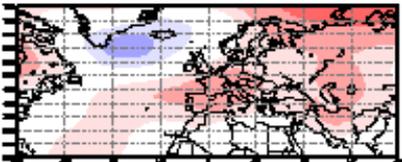


GPC_Montreal

GPC_Moscow

GPC_Offenbach

GPC_Pretoria

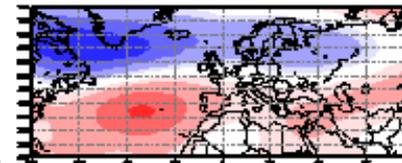
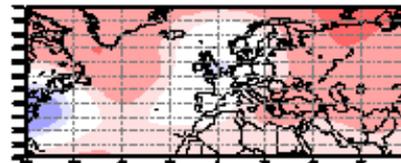
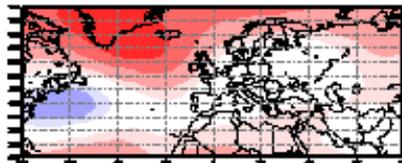
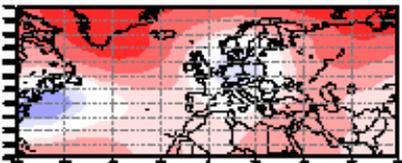


GPC_Seoul

GPC_Tokyo

GPC_Toulouse

GPC_Washington



Main mode :
??

Z500 mean circulation – DJF 2018-2019

C3S multi-system seasonal forecast

Mean Z500 anomaly

Nominal forecast start: 01/11/18

Variance-standardized mean

ECMWF/Met Office/Météo-France/CMCC/DWD

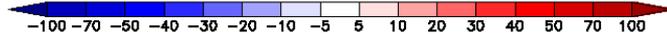
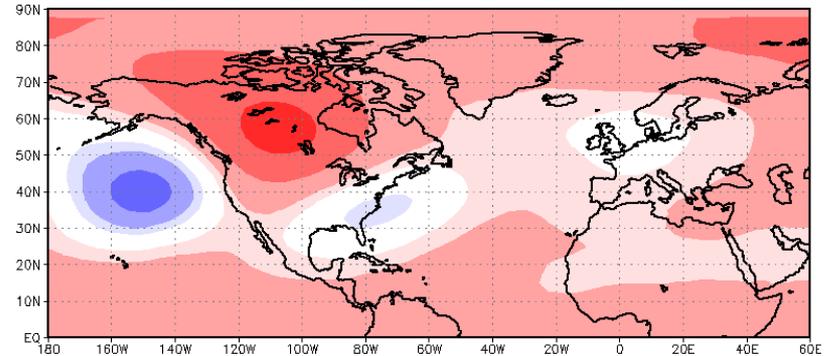
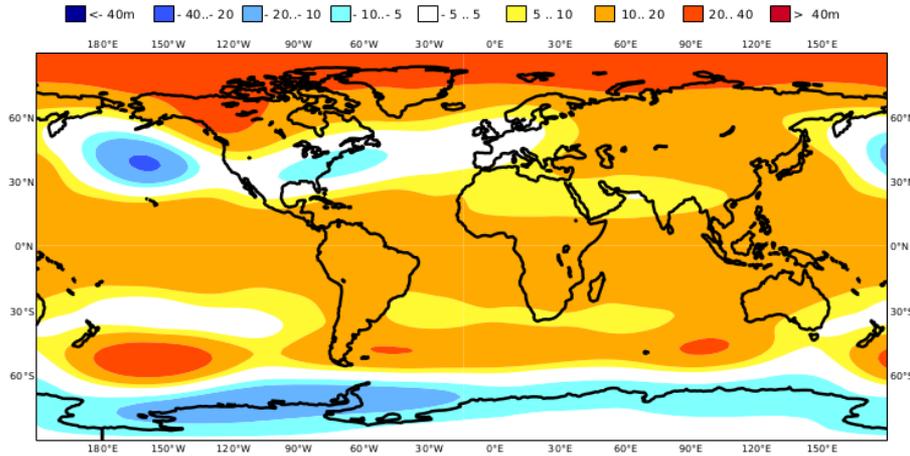
DJF 2018/19

Simple Composite Map

GPC_Seoul/GPC_Washington/GPC_Tokyo/GPC_Montreal/GPC_Melbourne/GPC_Beijing/GPC_Moscow/GPC_Pretoria
GPC_CPTEC

500hPa GPH : DJF2018

[Unit: gpm]
(issued on Nov2018)

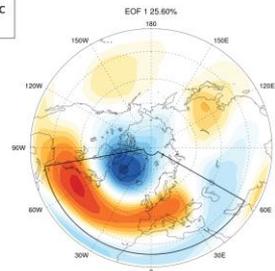


Main modes :

- PNA+
- NAO-
- EA+ ?
- Relative minimum over N. Africa and Arabian Peninsula?

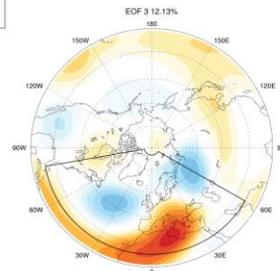
NAO
North Atlantic
Oscillation

Z500 D,J,F,M 1981-2010 - NAEE domain



EA
East Atlantic

Z500 D,J,F,M 1981-2010 - NAEE domain



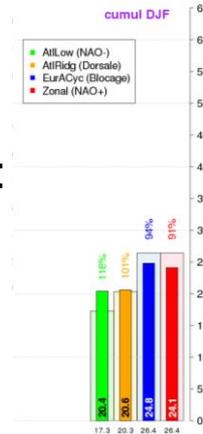
http://seasonal.meteo.fr/sites/data/Documentation/doc_generale/Mode_de_Variabilite.png

MEDCOF 11 – Cairo 11/2018

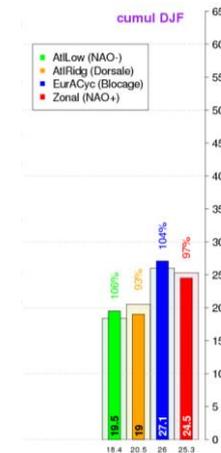


Weather regimes frequencies and drivers

METEO legimes de temps PMER d' HIVER : comparaison entre Meteo-France system 6 et sa clim initialisation de novembre 2018

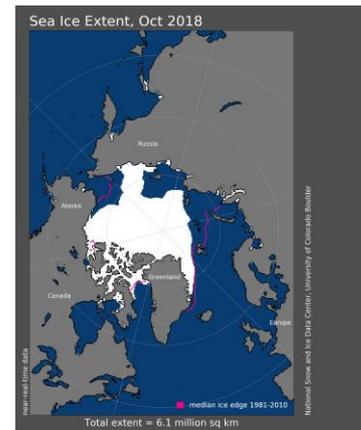


METEO Regimes de temps PMER d' HIVER : comparaison entre ECMWF system 5 et sa clim initialisation de novembre 2018

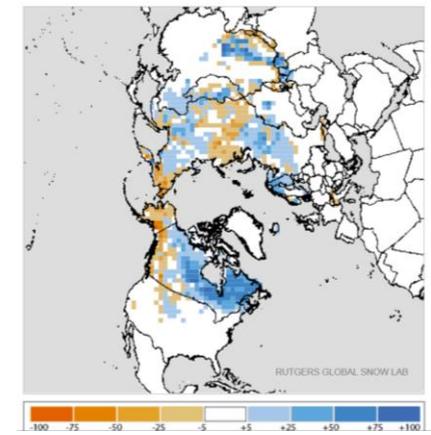


- From MF-S6 and SEAS5 : no significant signal

- From climate drivers :
 - Neutral Tropical Atl. : /
 - Deficit of Arctic sea ice : NAO-
 - snow cover over Siberia : /
 - ENSO : NAO-
 - QBO>0 : NAO+



Departure from Normal - October 2018



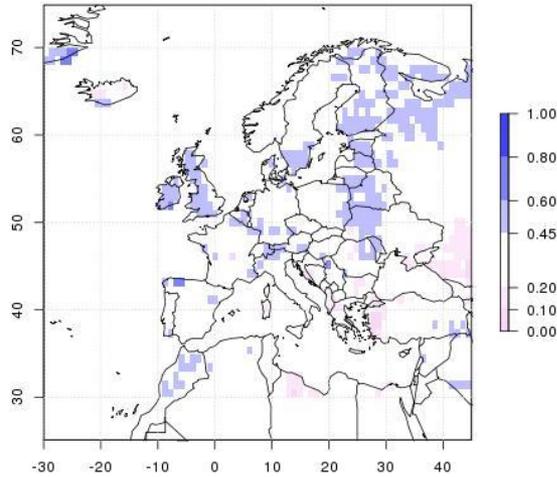
http://nsidc.org/data/seaice_index/
<http://climate.rutgers.edu/snowcover/>



Weather regime frequencies : predictors for T2m probabilities

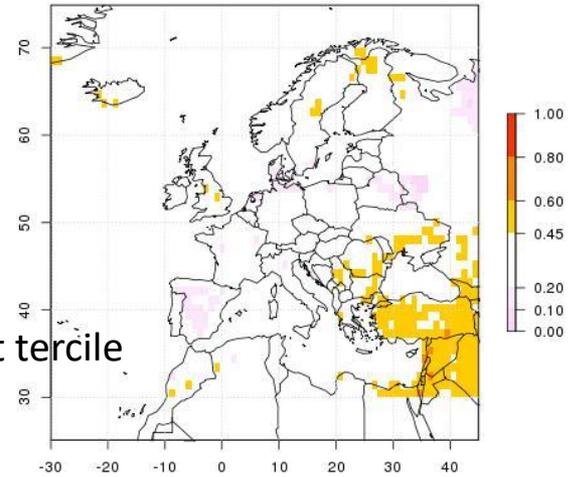
NB : forecasts available on land (no data on sea)

FcstProbLowterc_T2M_DJF_MF6_2018-2019



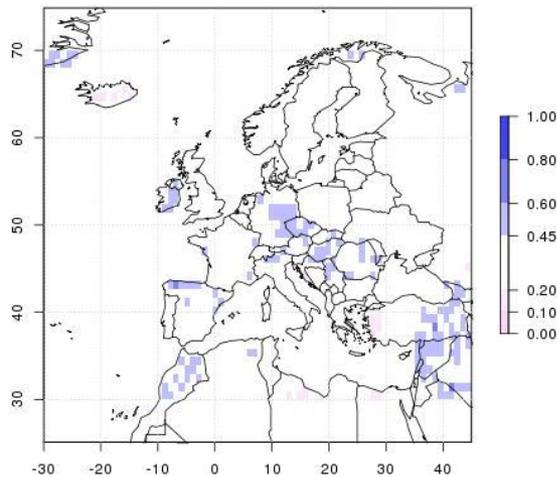
MF-S6
Lowest tercile

FcstProbUppterc_T2M_DJF_MF6_2018-2019



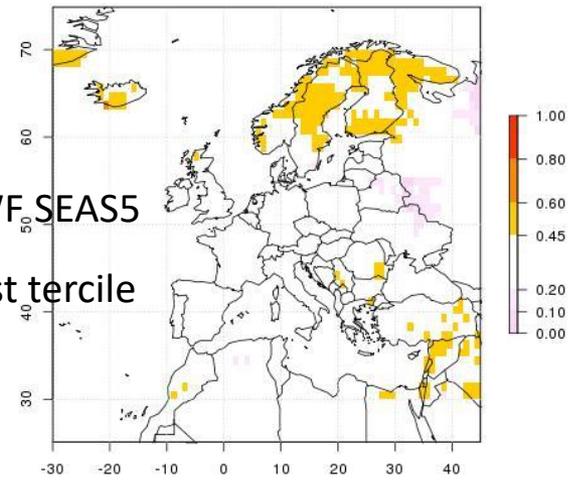
MF-S6
Highest tercile

FcstProbLowterc_T2M_DJF_CEP5_2018-2019



ECMWF SEAS5
Lowest tercile

FcstProbUppterc_T2M_DJF_CEP5_2018-2019



ECMWF SEAS5
Highest tercile

Which circulation for DJF 2018-2019 ?

Summary :

- Influence of El Niño on general circulation at mid-latitude (cf PNA>0 signal) + potential teleconnexion up to the Atlantic
==> Main modes (Z500 from a majority of GPCs) : PNA+ NAO-
- Climate drivers on weather regimes : no clear signal...

Over Europe, contradictory signals...

Over the Mediterranean basin :

→ NAO- influence

Impacts

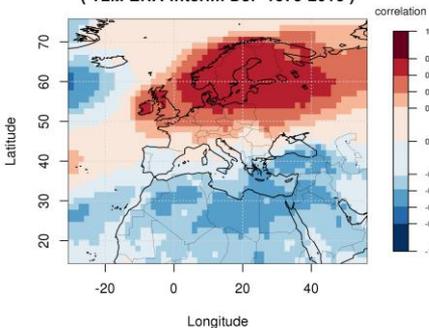
Over Europe :

- Temperature : warm signal is the less probable.

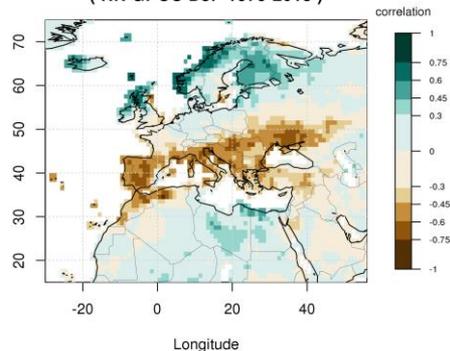
Over the Mediterranean basin :

- temperature : warmer than normal
- Precipitation : wetter than normal

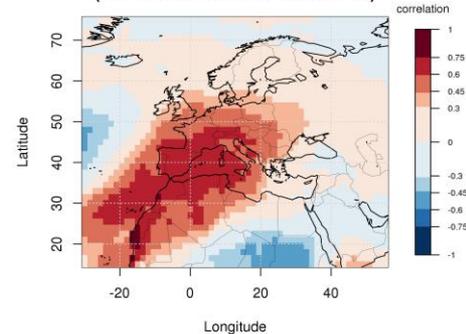
Correlation NAO - 2m temperature
(T2M ERA-Interim DJF 1979-2016)



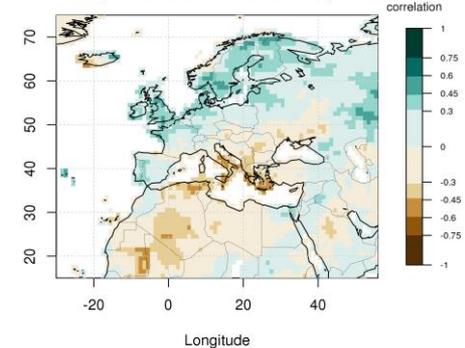
Correlation NAO - Precipitation
(RR GPCC DJF 1979-2013)



Correlation EA - 2m temperature
(T2M ERA-Interim DJF 1979-2016)



Correlation EA - Precipitation
(RR GPCC DJF 1979-2013)

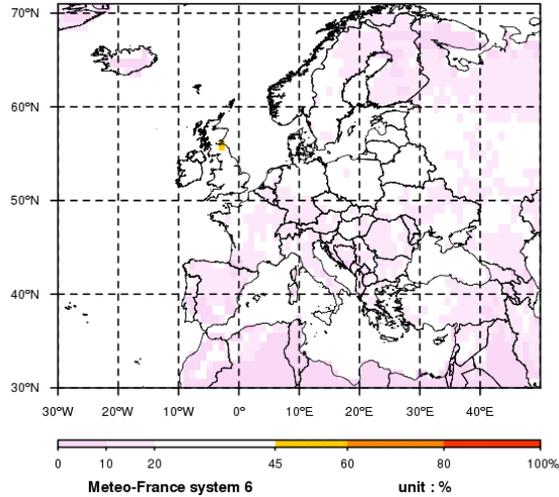


<http://seasonal.meteo.fr/en/content/suivi-clim-modes-impacts>

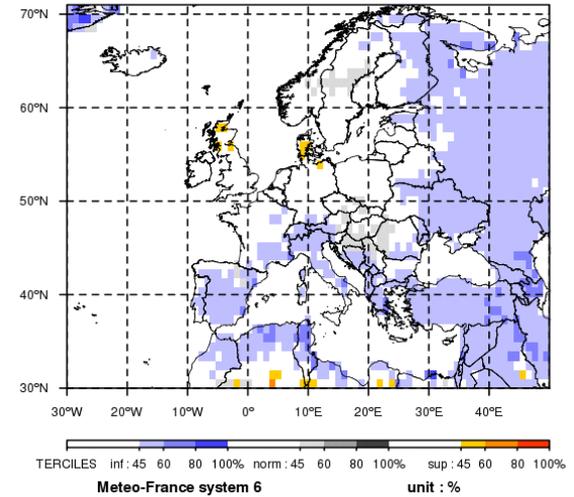
Cold Spells and Heating Degree-days



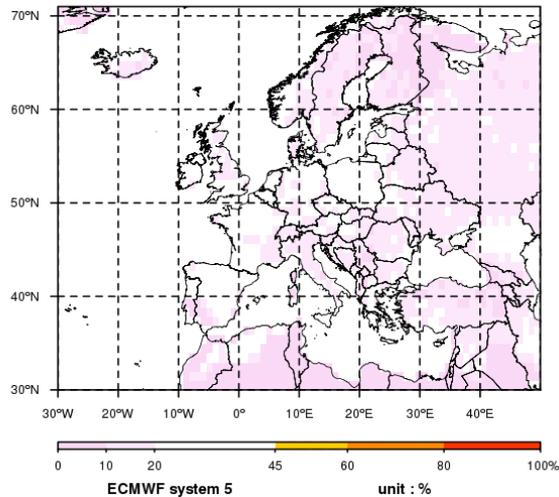
Probabilite du tercile superieur
jours en vague de froid
initialisation de novembre 2018 - echeance 1 : DJF 2018-2019



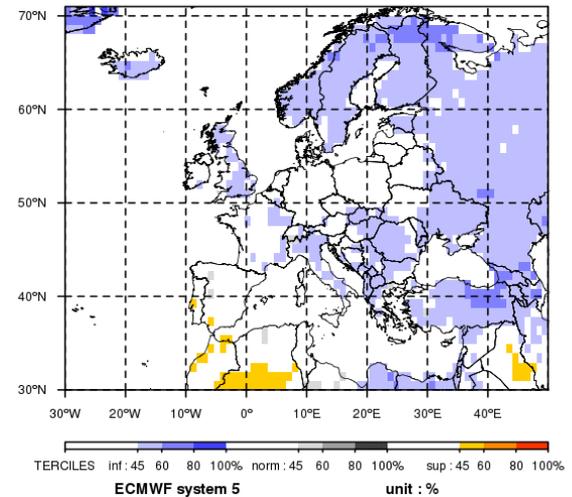
Synthese des probabilites des terciles inf, normal et sup
Degrés-jour chauffage 15°C
initialisation de novembre 2018 - echeance 1 : DJF 2018-2019



Probabilite du tercile superieur
jours en vague de froid
initialisation de novembre 2018 - echeance 1 : DJF 2018-2019



Synthese des probabilites des terciles inf, normal et sup
Degrés-jour chauffage 15°C
initialisation de novembre 2018 - echeance 1 : DJF 2018-2019



RCC-LRF MF synthesis

PRÉVISIONS SAISONNIÈRES PROBABILISTES DE TEMPÉRATURES POUR LE TRIMESTRE PROCHAIN

DECEMBRE-JANVIER-FEVRIER 2018-2019



- PROBABILITÉ D'UN SCÉNARIO PLUS FROID QUE LA NORMALE
- PROBABILITÉ D'UN SCÉNARIO PROCHE DE LA NORMALE
- PROBABILITÉ D'UN SCÉNARIO PLUS CHAUD QUE LA NORMALE

METEO FRANCE

PRÉVISIONS SAISONNIÈRES PROBABILISTES DE PRÉCIPITATIONS POUR LE TRIMESTRE PROCHAIN

DECEMBRE-JANVIER-FEVRIER 2018-2019



- PROBABILITÉ D'UN SCÉNARIO PLUS SEC QUE LA NORMALE
- PROBABILITÉ D'UN SCÉNARIO PROCHE DE LA NORMALE
- PROBABILITÉ D'UN SCÉNARIO PLUS HUMIDE QUE LA NORMALE

METEO FRANCE

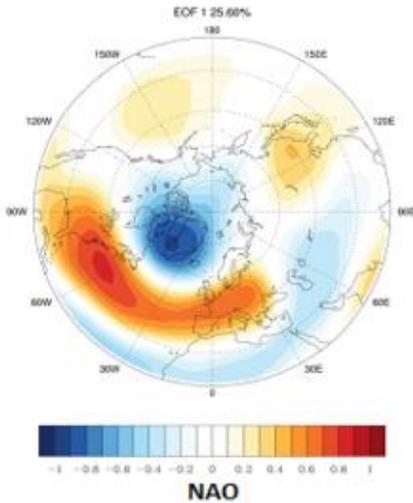


Thank you for your attention!

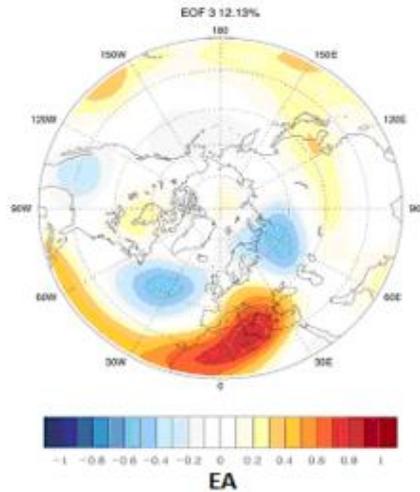
<http://elaboration.seasonal.meteo.fr>

Variability modes : definition

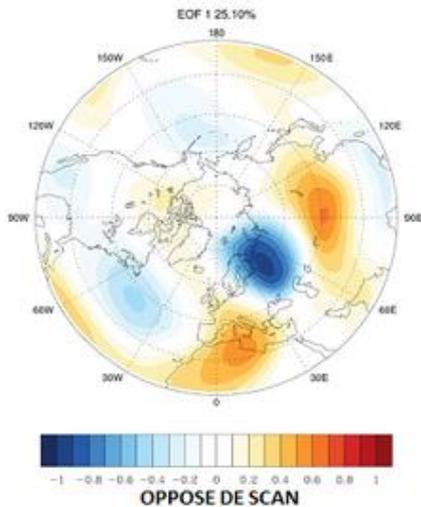
Z500 D,J,F,M 1981-2010 - NAOE domain



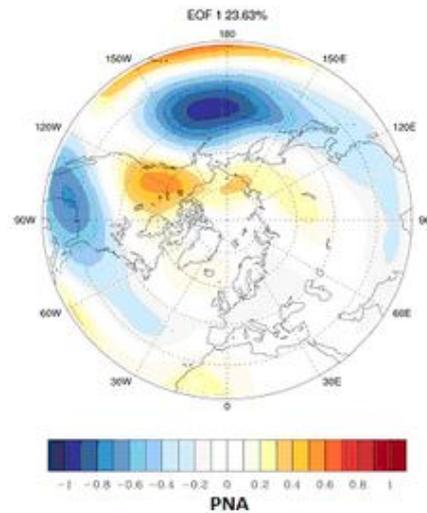
Z500 D,J,F,M 1981-2010 - NAOE domain



Z500 D,J,F,M 1981-2010 - SCAN domain



Z500 D,J,F,M 1981-2010 - PNA domain



ERA-Interim 1981-2010

Z500 res. 2.5 dg

PCA analysis on monthly standardized fields (D,J,F,M)