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Mediterranean Climate Outlook Forum

Contribution of GPC Toulouse

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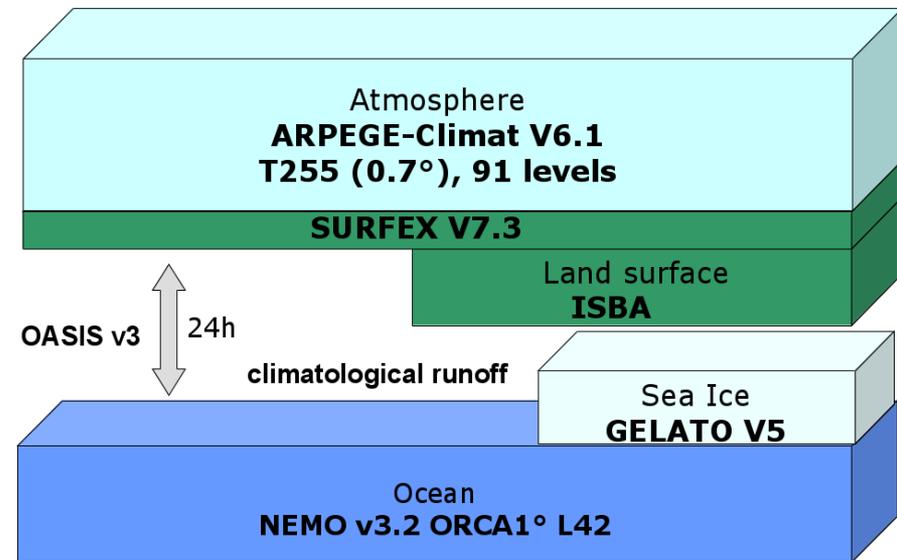
<http://seasonal.meteo.fr/>

Zagreb, 21-23, November 2017

Current version : MF System 5

Météo-France System 5

- Run in real time since 2015
- Included in EUROSIP since 2016
- C3S “Proof of concept” system since March 2016

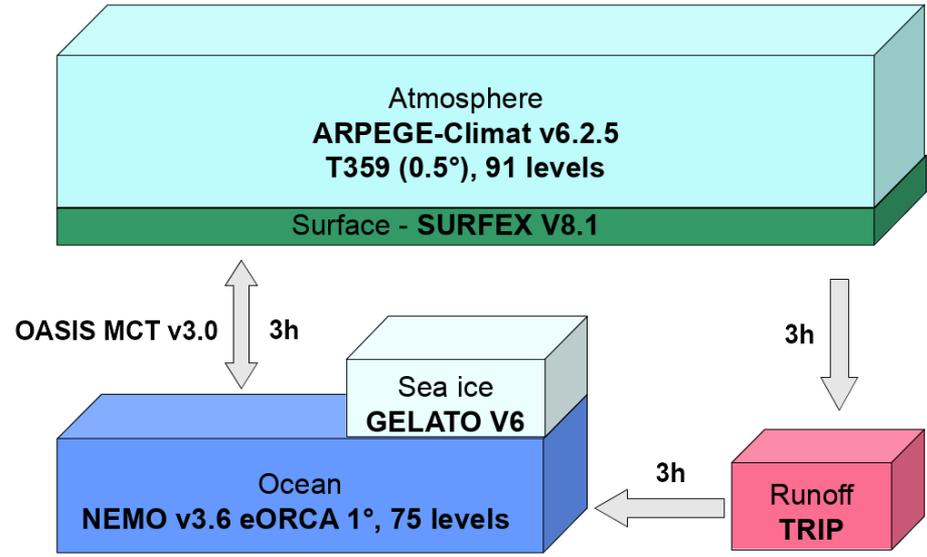


| | Re-forecasts | Real-time forecasts |
|---------------------------|---|---|
| Frequency | Each month 1991-2014 | Each month since May 2015 |
| Lead time | 7 months | 7 months |
| Ensemble size | 15 members (in-run perturb.) | 51 members (in-run perturb.) |
| Initial conditions | Atm./surf: ERA-Interim Oc./sea-ice: Mercator-Ocean PSY2G2V3 | Atm./surf: IFS analysis Oc./sea-ice: Mercator-Ocean upscaled analysis |

New version : MF System 6

Météo-France System 6

- New atmospheric physics and ocean model version
- Run in real time since March 2017
- Included in Copernicus C3S seasonal forecast data by end 2017



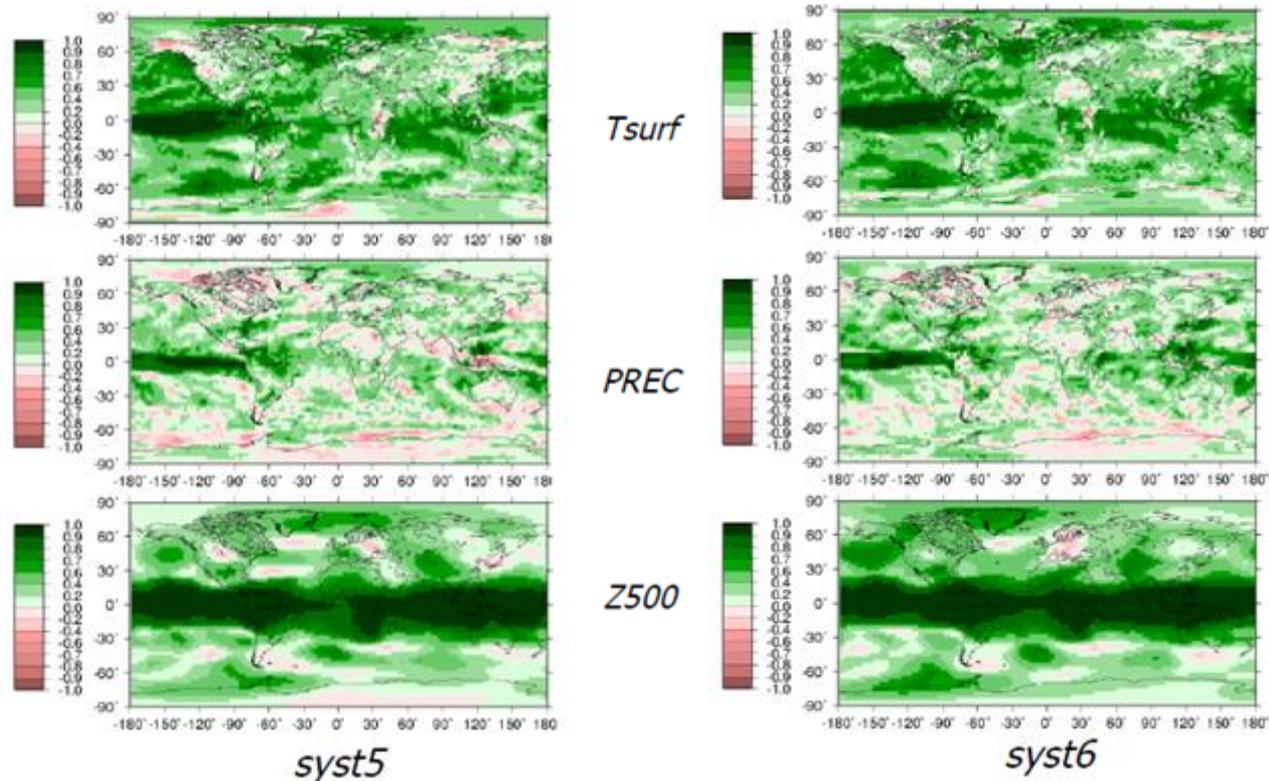
| | Re-forecasts | Real-time forecasts |
|--------------------|---|--|
| Frequency | Each month 1993-2016 | Each month from March 2017 |
| Lead time | 7 months | 7 months |
| Ensemble size | 25 members (in-run perturb.) | 51 members (in-run perturb.) |
| Initial conditions | Atm./surf: ERA-Interim Oc./sea-ice: Mercator-Ocean new product (on e-ORCA grid) | Atm./surf: IFS analysis Oc./sea-ice: Mercator-Ocean upscaled analysis |



Sensitivity of seasonal predictability to atmospheric and oceanic model evolution

- In winter, improvements concern mainly IT area for T, P and Z500 and also NH even the predictability stays quite weak (over Europe unfortunately)

Winter (DJF) : Temporal correlations over the globe

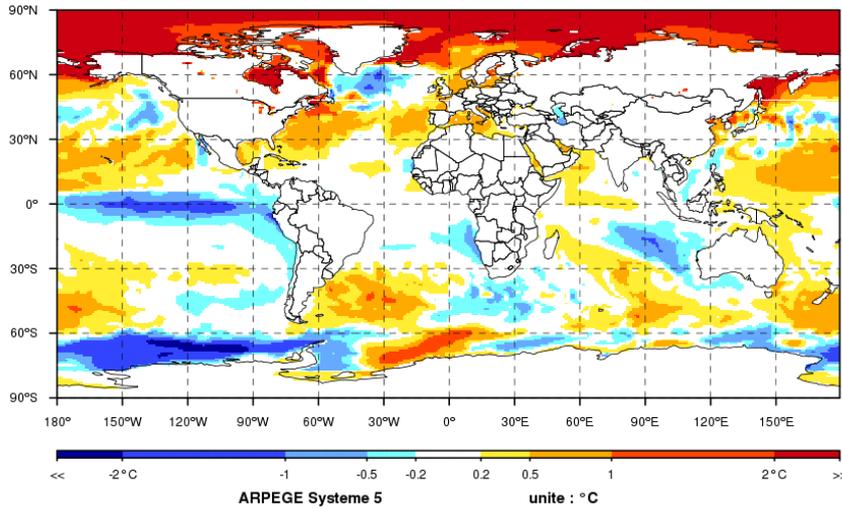


Gueremy et al, 2017

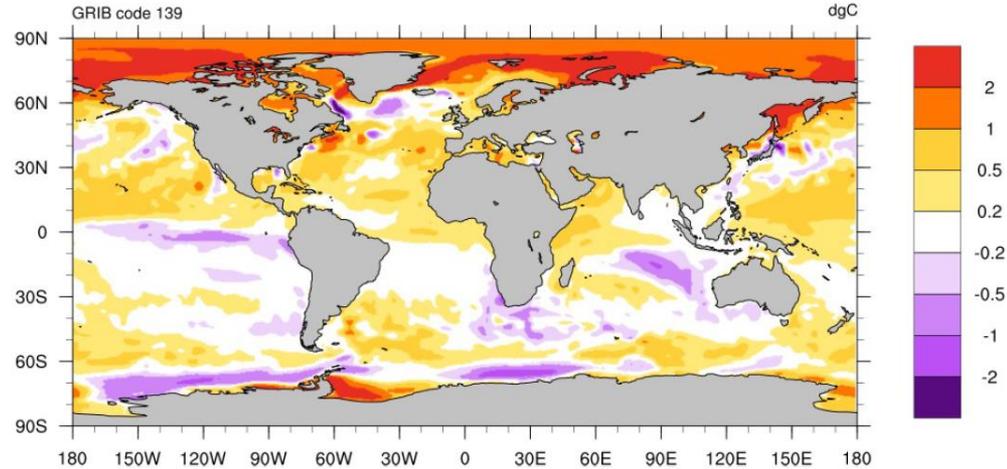
SST Forecast and Niño 3.4 evolution



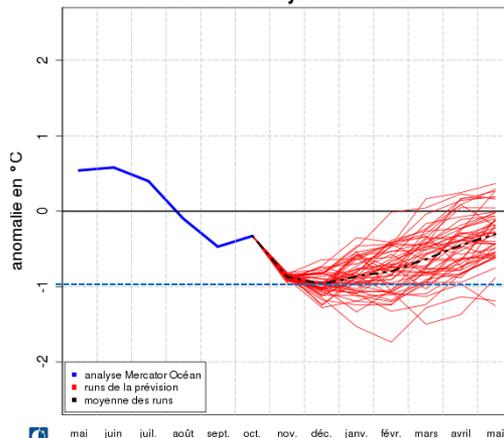
Prevision d'anomalie trimestrielle de
 Temperature de surface de l'océan
 initialisation de novembre 2017 - echeance 1 : DJF 2017-2018



sys6 : forecast anomaly : ts / DJF / init novembre 2017

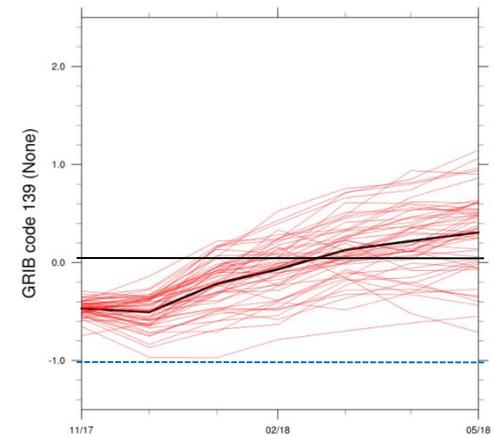


Anomalie moyenne de SST dans la boîte NINO34
 Modèle ARPEGE system 5 du 201711



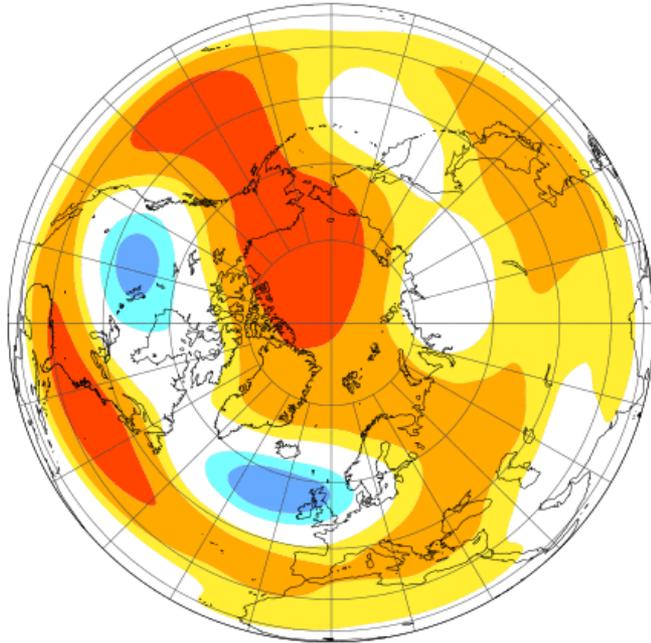
- Same patterns with some differences in term of intensity
- Moderate Niña event with Syst 5 , weak Niña to neutral situation in Spring for Syst 6

Previsions 201711 : anomalies sst boîte nino 3.4 201711-201805



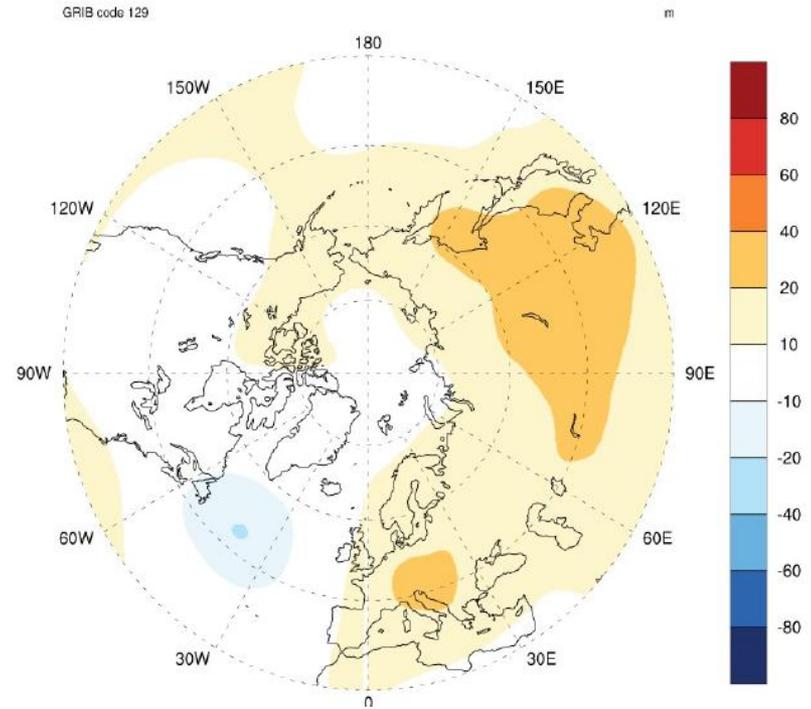
Z500 Height Geopotential

3 months anomaly forecast
500 hPa Geopotential Height in m



ARPEGE system 5 initialization 20171101 leadtime 1

sys6 : forecast anomaly : zg / DJF / init novembre 2017

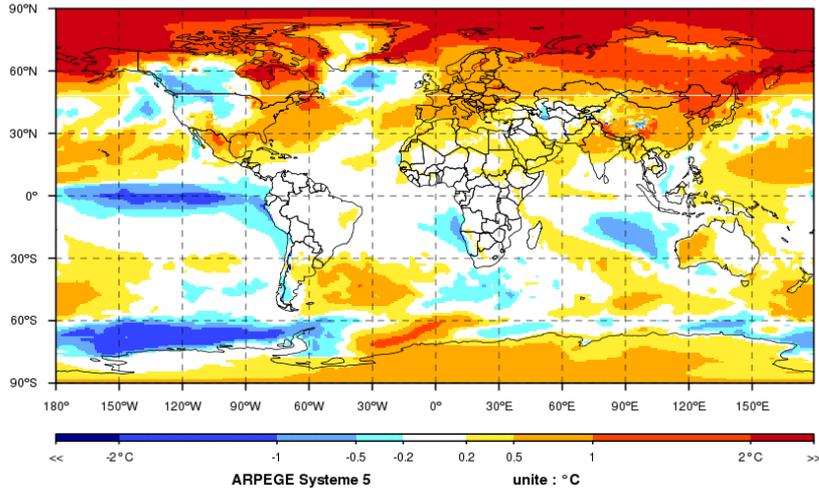


- For Syst 5, a very classical PNA pattern in North America and NAO+ signal in Atlantic
- For Syst 6, PNA pattern weaker and classical EA+ mode over Western Europe

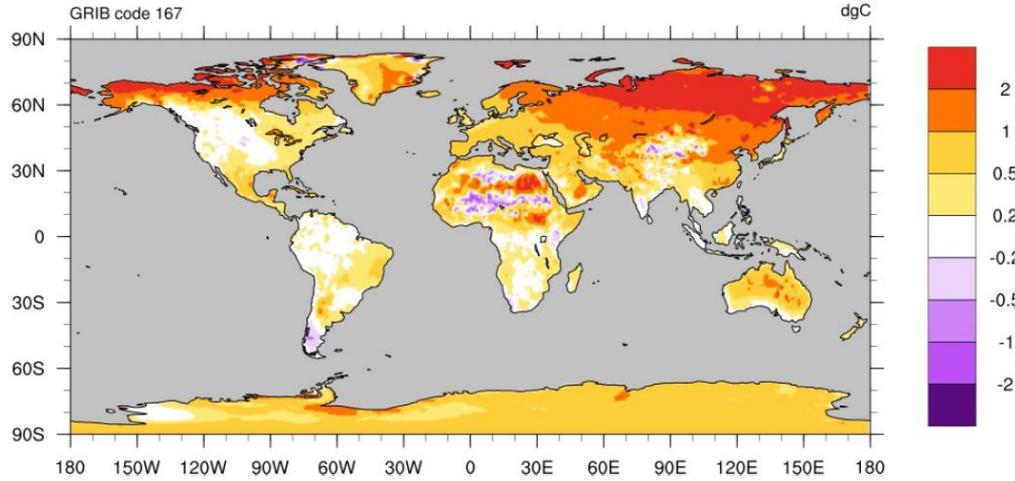
Temperature and precipitations



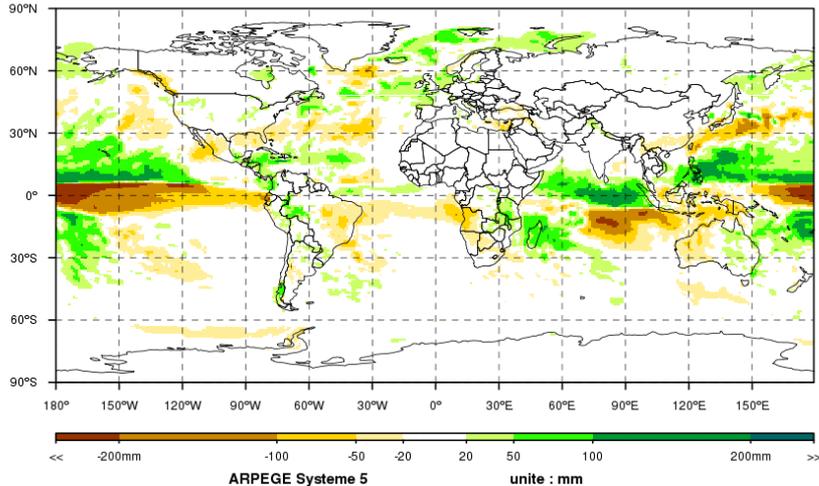
Prevision d'anomalie trimestrielle de
Temperature a 2 metres
initialisation de novembre 2017 - echeance 1 : DJF 2017-2018



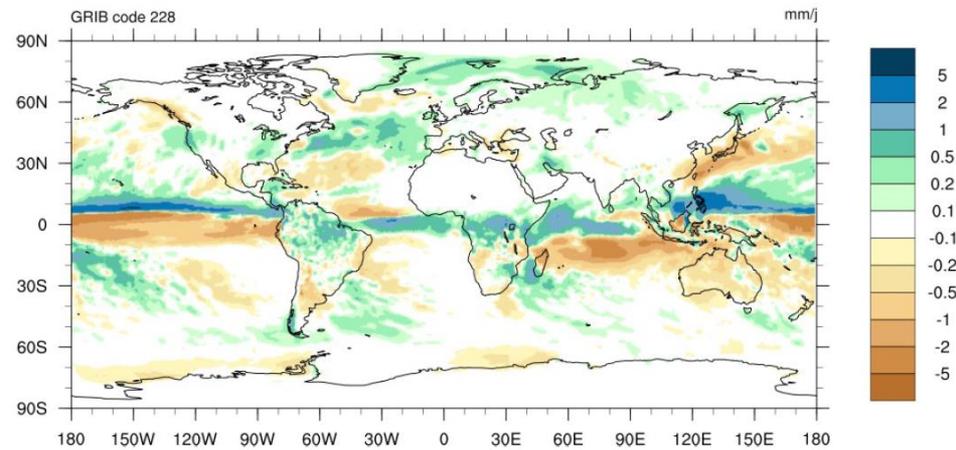
sys6 : forecast anomaly : tas / DJF / init novembre 2017



Prevision d'anomalie trimestrielle de
Precipitation totale
initialisation de novembre 2017 - echeance 1 : DJF 2017-2018



sys6 : forecast anomaly : pr / DJF / init novembre 2017



Synthesis for MedCOF

| | System 5 | System 6 |
|---------------------|--|---|
| Oceanic drivers : | Moderate Niña | Weak Niña to Neutral |
| Atmospheric drivers | NAO+ pattern | EA+ pattern |
| Temperature | Warm signal, stronger in SW Europe, weaker in N Africa | Warm signal, weaker in NE Africa |
| Precipitation | Normal signal on Europe, drier in N Africa | Normal (or wet near Oceanic coasts), drier in the East Medit area |

Thank you for your attention

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