GLOBAL CLIMATE BULLETIN
n°195 – September 2015

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I. DESCRIPTION OF THE CLIMATE SYSTEM (JULY 2015)

I.1.OCEANIC ANALYSIS

I.1.a Global analysis

In the Pacific ocean :

All along the equatorial waveguide :

- Surface (fig.I.1.1, I.1.2 and I.1.3): the positive SST anomalies in the central and eastern basin strengthen during July.The Nino3.4 index value monthly mean reaches +1.6°C thus exceeding the high intensity threshold for a El Nino event. The anomaly values are particularly high near the South American coast. The Nino1+2 index value monthly mean reaches +2.9°C. SST in Western basin are near or slightly below normal with a decreasing local tendancy during last month.

- Sub-surface : little change on anomalie structures, strong contrast remains between East (warm anomalies arround +4°C) and West (cold anomalies arround -2°C) but it is rather mitigated in July due to no Kelvin wave arrival.

Niño monitoring: Niño 3.4 index up to 1.6 °C in July in monthly mean, corresponding to a strong El Niño event.

Elsewhere:

In the northern hemisphere: the positive PDO structure strengthen, with strong positive anomalies along the North American coast and strong cold anomalies northwest of the basin and along Asian coast.

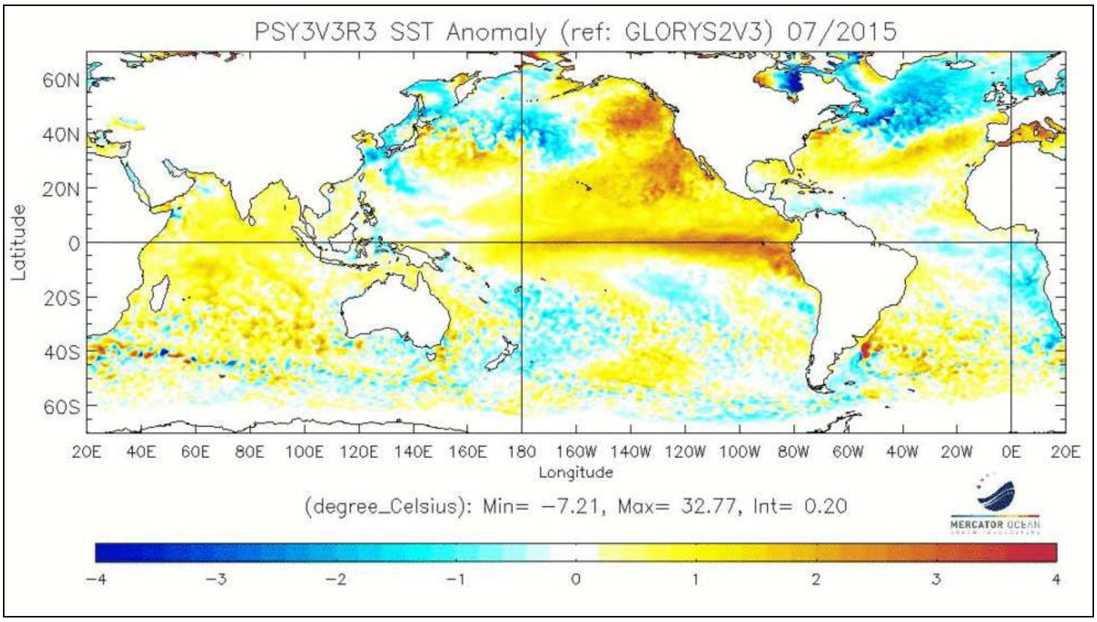
In the southern hemisphere: a strong cold anomaly remains focused on the International Date Line..

In the Indian Ocean :

Fairly uniform and persistant warm anomaly. The DMI index is slightly positive.

In the Atlantic:

Cold anomaly south of the equator near the coast of Africa, extends along the equator across the basin to South America, the Caribbean and Central America. In the North Atlantic, strong cold anomaly from Canada to Scandinavia. In connection with the general atmospheric circulation for July, it won significantly southward during the month. Weak warm anomaly, from Bermuda to southern Europe and Morocco.



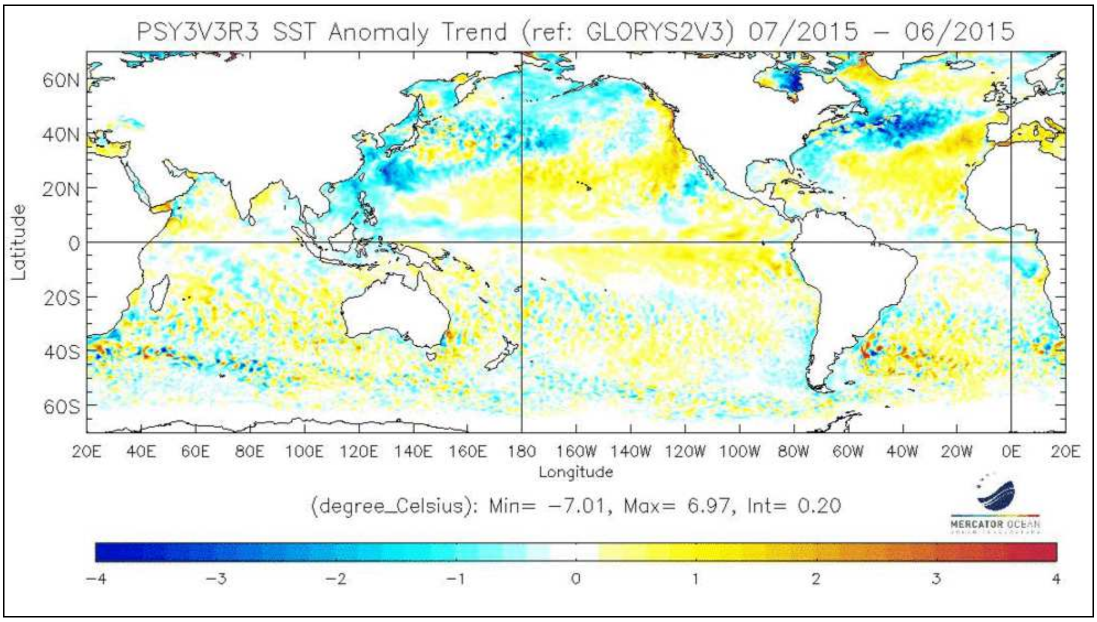


fig.I.1.1: top : SSTs Anomalies (°C) . Bottom : SST tendency (current – previous month), (reference Glorys 1992-2009). http://bcg.mercator-ocean.fr/

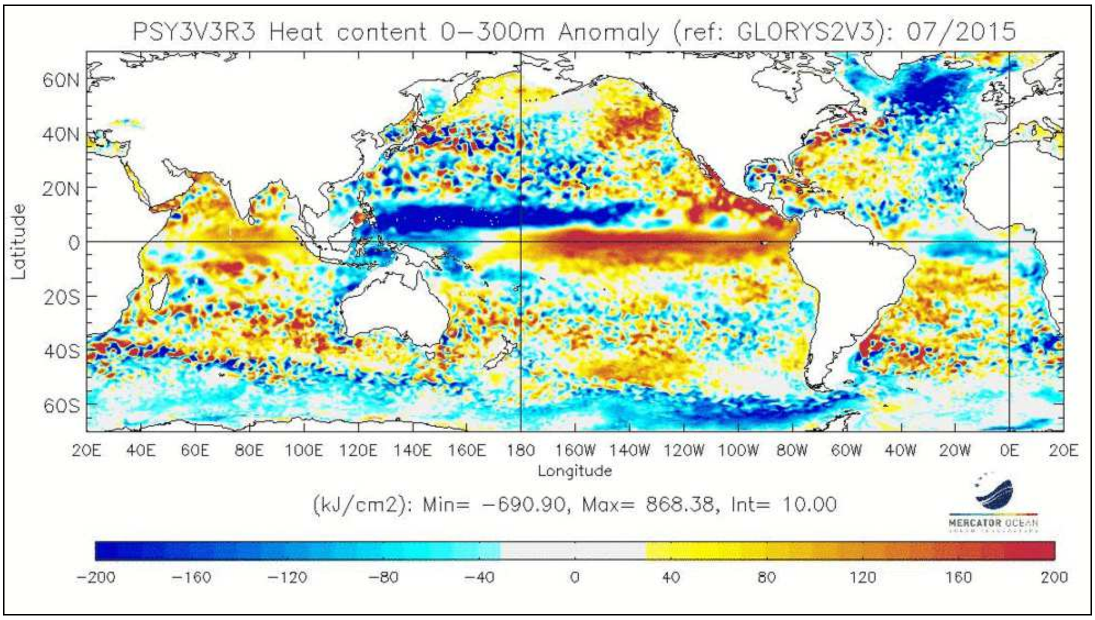


fig.I.1.2: map of Heat Content Anomalies (first 300m, kJ/cm2, reference Glorys 1992-2009)

http://bcg.mercator-ocean.fr/

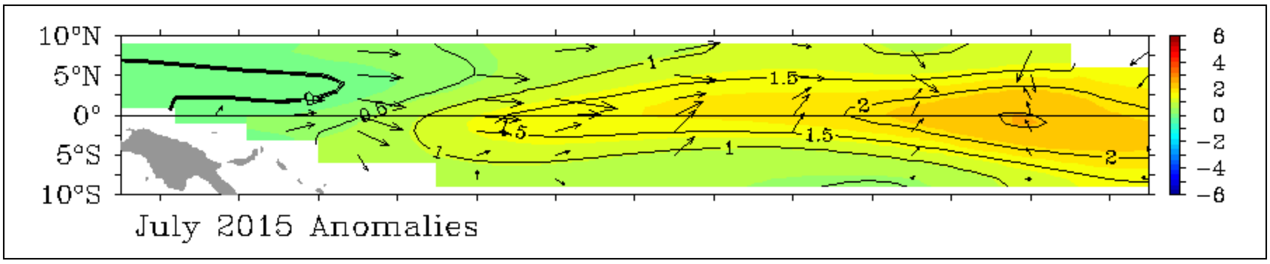


fig.I.1.3: SST Anomalies and Wind anomalies over the Equatorial Pacific from TAO/TRITON.

http://www.pmel.noaa.gov/tao/jsdisplay/monthly-summary/monthly-summary.html

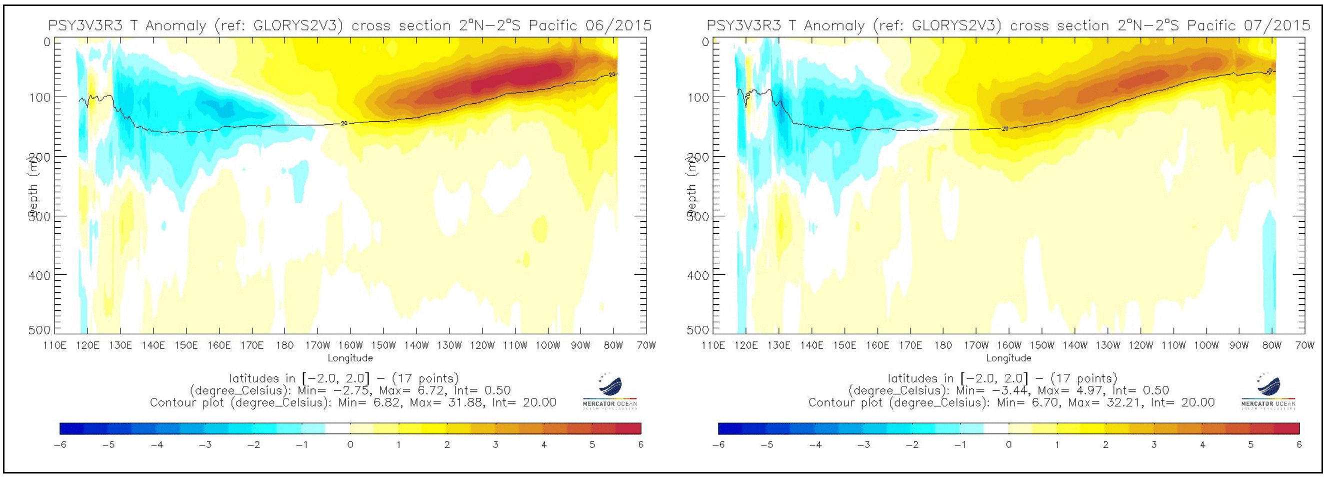


fig.I.1.4: Oceanic temperature anomaly in the first 500 meters in the Equatorial Pacific (previous and current month), http://bcg.mercator-ocean.fr

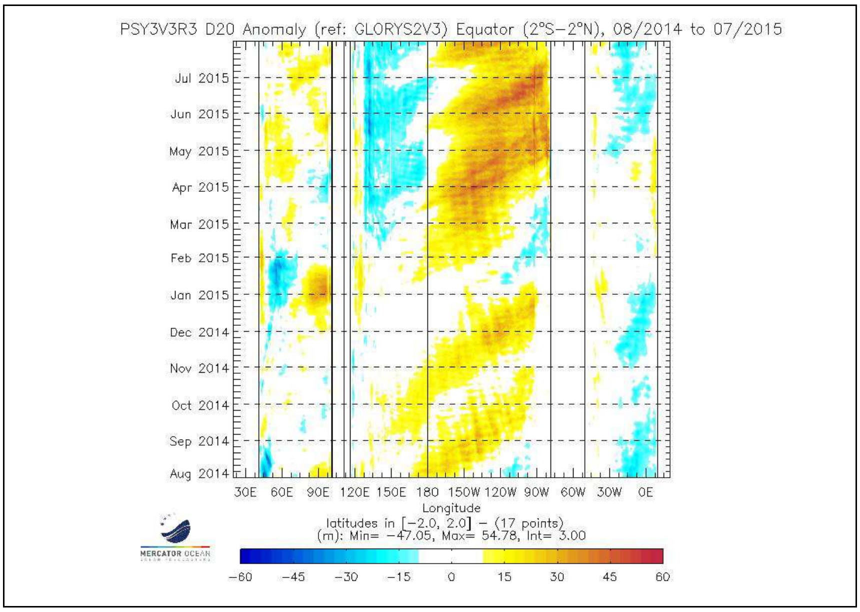


fig.I.1.5: Hovmüller diagram of Thermocline Depth Anomalies (m) (depth of the 20°C isotherm) along the equator for all oceanic basins over a 6 month period http://bcg.mercator-ocean.fr/

I.1.b Sea surface temperature near Europe

Arctic Sea still warmer than normal, except around Svalbard, which is due to sea ice.

Negative anomalies along Scandinavia, north of Iceland, in the North Sea and the Baltic Sea, due to atmospheric cooling (advection of cold polar air).

Still a large area of negative anomalies in the North Atlantic south of Iceland/Greenland. Anomalies became smaller (less negative) between Iceland and around 50°N, but the area extended further south to the Central North Atlantic. Strong SST gradient between 40 and 50°N.

In contrast, positive anomalies in the subtropical North Atlantic (up to the Biscay) and in the Mediterranean increased further. They were particularly high in the western and central Mediterranean, exceeding locally 30°C near Italy. Eastern Mediterranean and Black Sea were also quite warm, but anomalies were smaller than in the west, in the Aegean Sea and the northern Black Sea even negative. High Mediterranean temperatures give a high potential for heavy rain events in the following weeks and months.

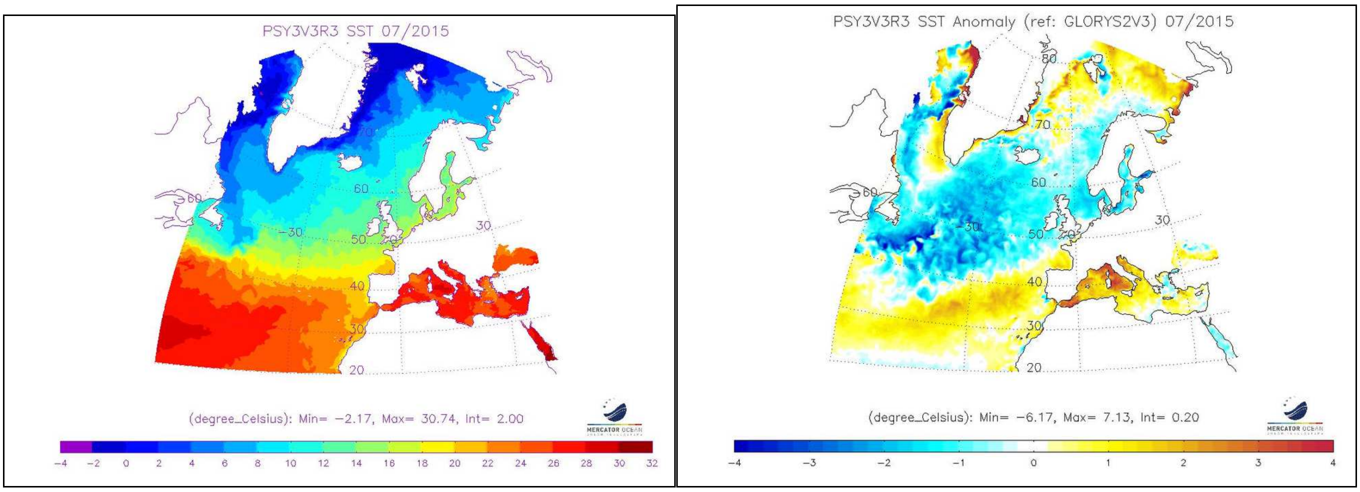


fig.I.1.6 : Mean sea surface temperature in the RA VI Region (Europe) and anomaly (reference Glorys 1992-2009). http://bcg.mercator-ocean.fr/

I.2.ATMOSPHÈRE

I.2.a General Circulation

Velocity Potential Anomaly field in the high troposphere (fig. 1.2.1 – insight into Hadley-Walker circulation anomalies) : Strong bipolar structure. The ocean-atmosphere coupling is well developed due to El Nino event. Vast upward motion anomaly area over half East Pacific linked to warm SST anomalies, extending south to Argentina and north to Canada. Vast downward motion anomaly area over Maritime Continent linked with cold SST anomalies, extending over Indian Ocean to Australia in the South and China in the north.

The SOI is negative in July (-1.1), which abounds in the direction of ocean-atmosphere coupling (consistent with El Niño).

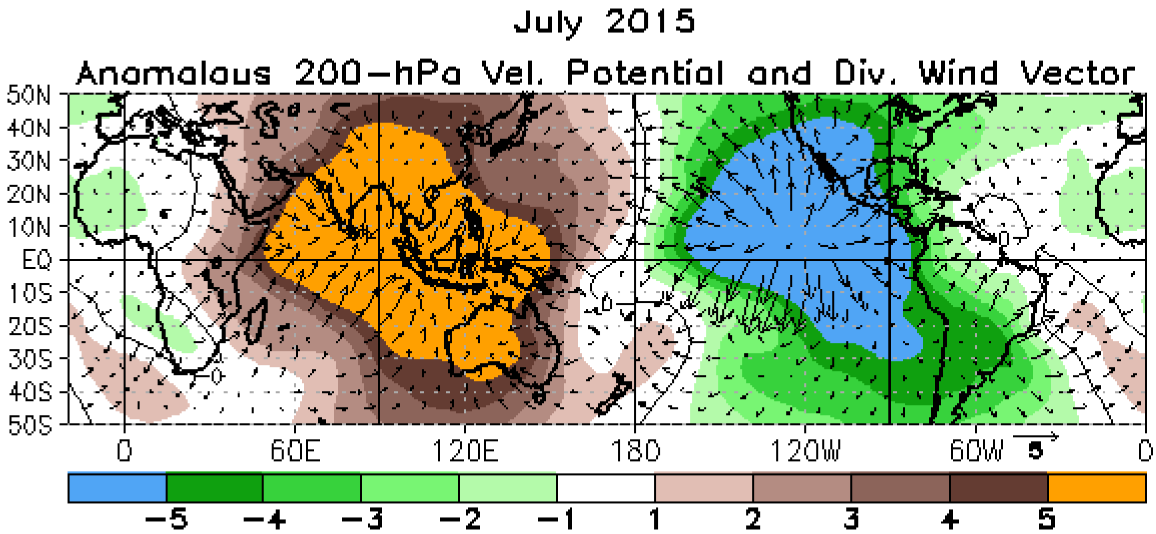


fig.I.2.1: Velocity Potential Anomalies at 200 hPa and associated divergent circulation anomaly. Green (brown) indicates a divergence-upward anomaly (convergence-downward anomaly). http://www.cpc.ncep.noaa.gov/products/CDB/Tropics/figt24.shtml

MJO (fig. I.2.b):

The MJO has been very active in July, mainly at the beginning of the month. It helped to the strengthen ocean-atmosphere coupling and Trade Win anomalies which sift west in the western half equatorial Pacific ..

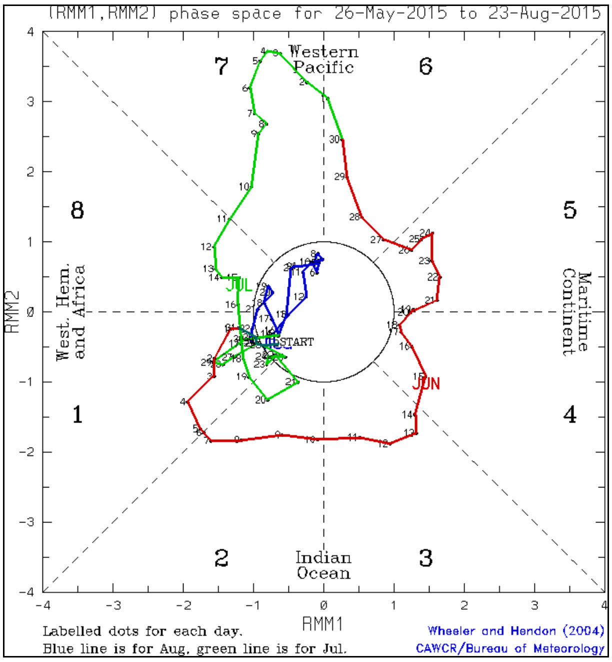


fig.I.2.b: indices MJO http://cawcr.gov.au/staff/mwheeler/maproom/RMM/phase.Last90days.gif

Stream Function anomalies in the high troposphere (fig. 1.2.2 – insight into teleconnection patterns tropically forced) : Due to the strong signal of the MJO, few detectable monthly mean structures in the Pacific. In south Asia and Indian Ocean area, the atmosphere remains more stable with strong cyclonic response. Over America, Atlantic and Africa, the very strong cyclonic anomalies of the first half month have strongly influenced the month average.

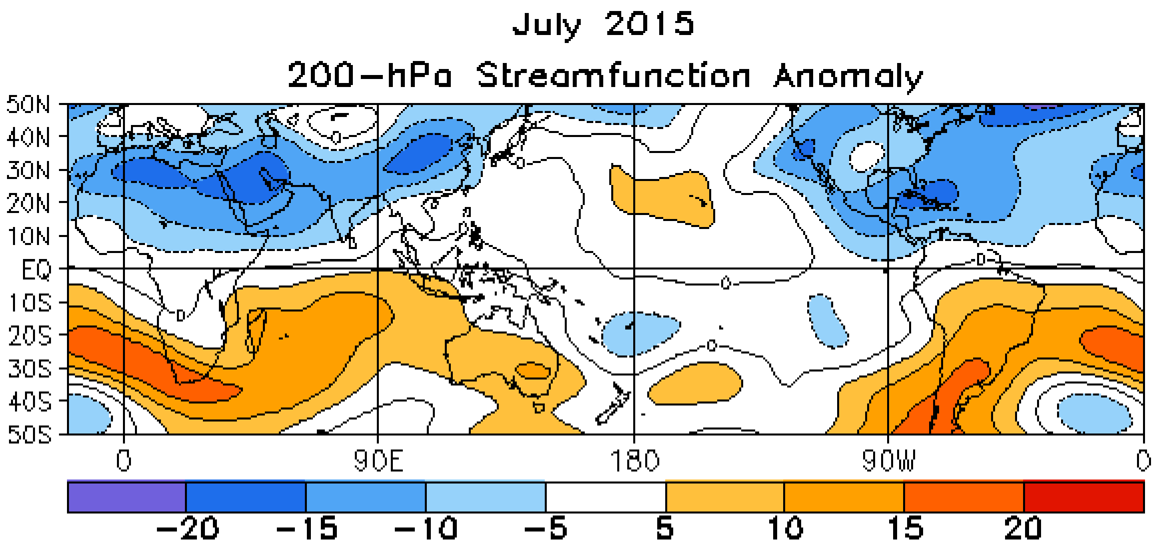


fig.I.2.2: Stream Function Anomalies at 200 hPa.

http://www.cpc.ncep.noaa.gov/products/CDB/Tropics/figt22.shtml

Geopotential height at 500 hPa (fig. 8 – insight into mid-latitude general circulation) :

On North hemisphere, negative anomaly over North Atlantic and positive anomaly on the north Mediterranean basin. This has created an excess of NAO- regime at the expense of Atlantic ridge regime.

There is an other strong negative anomaly area over Eastern Russia, extended to Scandinavia.

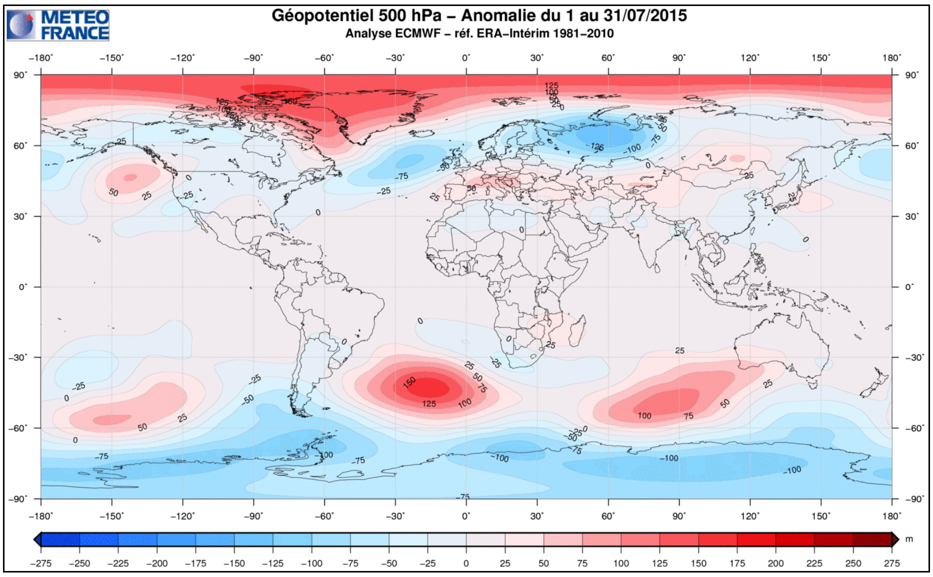


fig.I.2.3: Anomalies of Geopotential height at 500hPa (Meteo-France)

MONTH	NAO	EA	WP	EP-NP	PNA	TNH	EATL/WRUS	SCAND	POLEUR
JUL 15	-3.1	0.2	0.8	0.2	0.3	---	2.0	-1.1	0.4
JUN 15	0.2	1.1	-0.0	1.7	-0.1	---	-0.8	-1.5	-0.2
MAY 15	0.2	0.7	2.1	0.5	-0.1	---	-1.5	-2.1	0.5
APR 15	0.6	0.9	1.2	-0.4	-0.4	---	1.1	-1.5	-0.9
MAR 15	1.1	1.2	0.4	1.1	-0.5	---	0.3	0.4	0.7
FEB 15	1.1	0.0	-1.4	1.2	0.5	0.7	-0.9	-0.4	2.1
JAN 15	1.6	1.1	-0.2	1.3	0.1	0.4	-0.2	-0.2	0.0
DEC 14	1.6	-0.6	-0.1	---	0.4	-0.2	-0.4	-0.4	-0.9

Evolution of the main atmospheric indices for the Northern Hemisphere for the last 6 months :
http://www.cpc.ncep.noaa.gov/products/CDB/Extratropics/table3.shtml

Sea level pressure and circulation types over Europe : Still low pressure over Scandinavia and extension of the Azores High to southern Central Europe and the Balkan region. This is the result of a very persistent negative SCAND pattern since April 2015, but it has a weakening tendency since its peak in May 2015. Low pressure extended also to northern Russia, which can be explained by a strong positive EATL/WRUS phase.

A very high NAO- index (-3.1) caused a very large high pressure anomaly over Greenland and thus a cold polar airflow east of it.

The occurrence of such strong phases of NAO-, SCAND- and EATL/WRUS+ at the same time is quite rare and caused a strong contrast of air masses between northern and southern Europe.

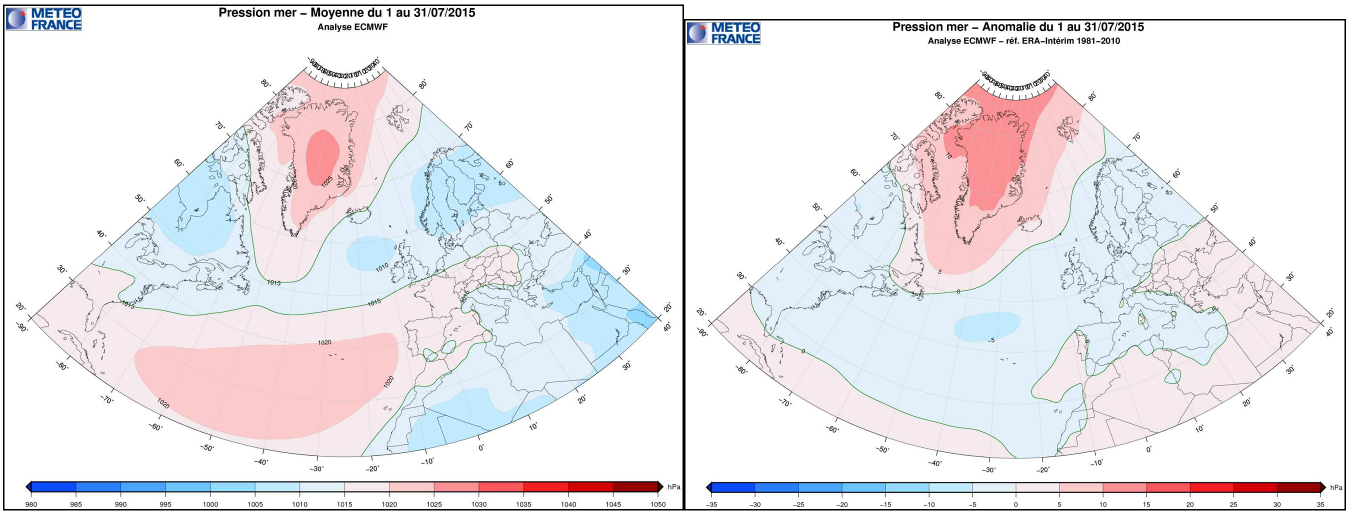


fig.I.2.4: Mean sea level pressure in the RA VI Region (Europe) (top) and 1981-2010 anomalies (bottom).

Circulation indices: NAO and AO :

Both NAO and AO had a significant negative phase throughout the month. Typical NAO- patterns with high pressure over Greenland and low pressure over northern or north-western Europe were dominating and occurred twice as frequently than usual. Over Europe, there was mostly a west anticyclonic circulation pattern, which is quite rare. Only at the beginning of July, there was a blocking high over Europe.

Due to negative AO, an enhanced cold polar airflow to northern Europe took place, whereas the southern half of Europe was influenced by subtropical airflow and high pressure.

The negative NAO/AO phase has ended after the first week auf August, but a new short intense negative phase is forecasted for the end of August.

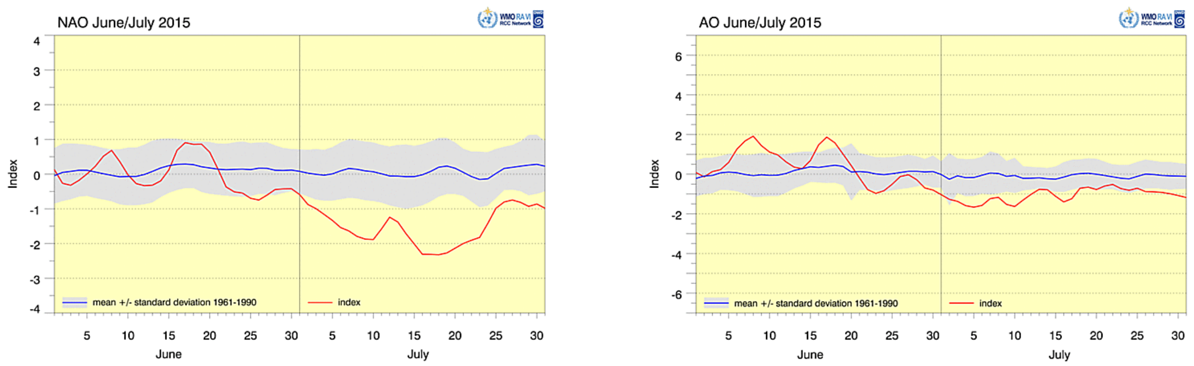


fig.I.2.5: North Atlantic Oscillation (NAO, left) and Arctic Oscillation (AO, right) indices with 1961-1990 mean standard deviation (shading). http://www.dwd.de/rcc-cm , data from NOAA CPC: http://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily_ao_index/teleconnections.shtml

I.2.b Precipitation

The strongest anomalies are linked with the El Niño event with an excess of precipitation on eastern tropical Pacific Ocean and a deficit on maritime continent southeastern Asia and Southern India as well as Central America and northern South America, and coastal regions of the Gulf of Guinea.

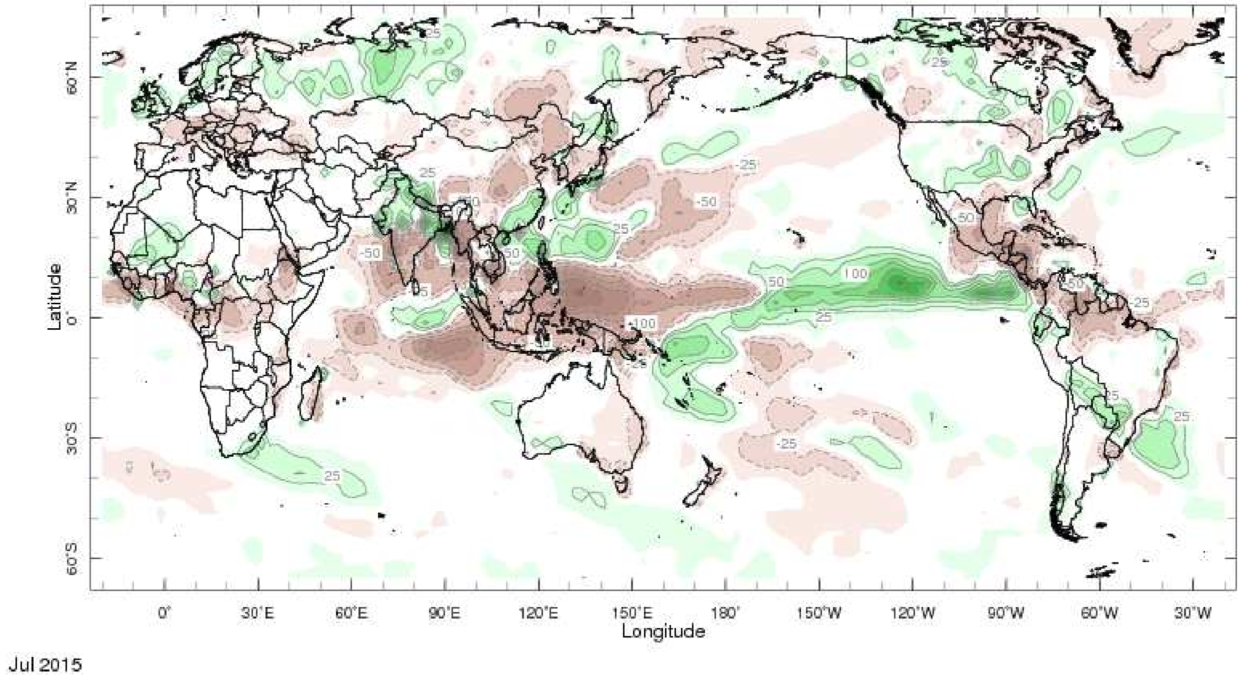


fig.I.2.4: Rainfall Anomalies (mm) (departure to the 1979-2000 normal) – Green corresponds to above normal rainfall while brown indicates below normal rainfall.

http://iridl.ldeo.columbia.edu/maproom/.Global/.Precipitation/Anomaly.html

Precipitation anomalies in Europe:

Very dry in Greenland and surroundings due to ongoing high pressure situation.

Over Europe a notable contrast of mostly very wet conditions in the northern half of Europe and very dry conditions in the southern half, with totals partly exceeding the 80th/90th percentile or below the 10th/20th percentile. This distribution reflects very well the SLP distribution caused by the SCAND- pattern, enhanced by NAO- and EATL/WRUS+ patterns.

Parts of the southern half of Europe / RA VI had severe or extreme drought, e.g. Portugal/SW Spain, southern central Europe / eastern France, parts of the Balkan Peninsula, western Ukraine, Turkey, South Caucasus.

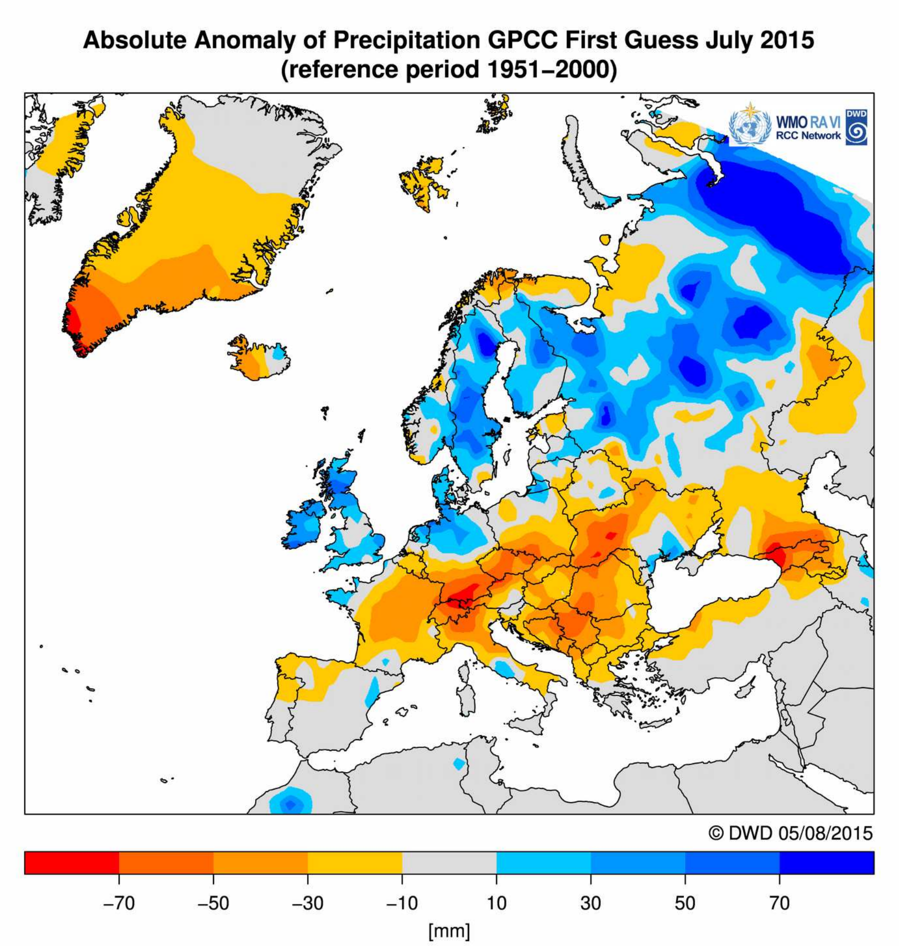


fig.I.2.5: Left: Absolute anomaly (1951-2000 reference) of precipitation in the RA VI Region (Europe), data from GPCC (Global Precipitation Climatology Centre), http://www.dwd.de/rcc-cm. Right: Percentiles of precipitation, 1981-2010 reference. Data from NOAA Climate Prediction Center, http://iridl.ldeo.columbia.edu/maproom/Global/Precipitation/Percentiles.html

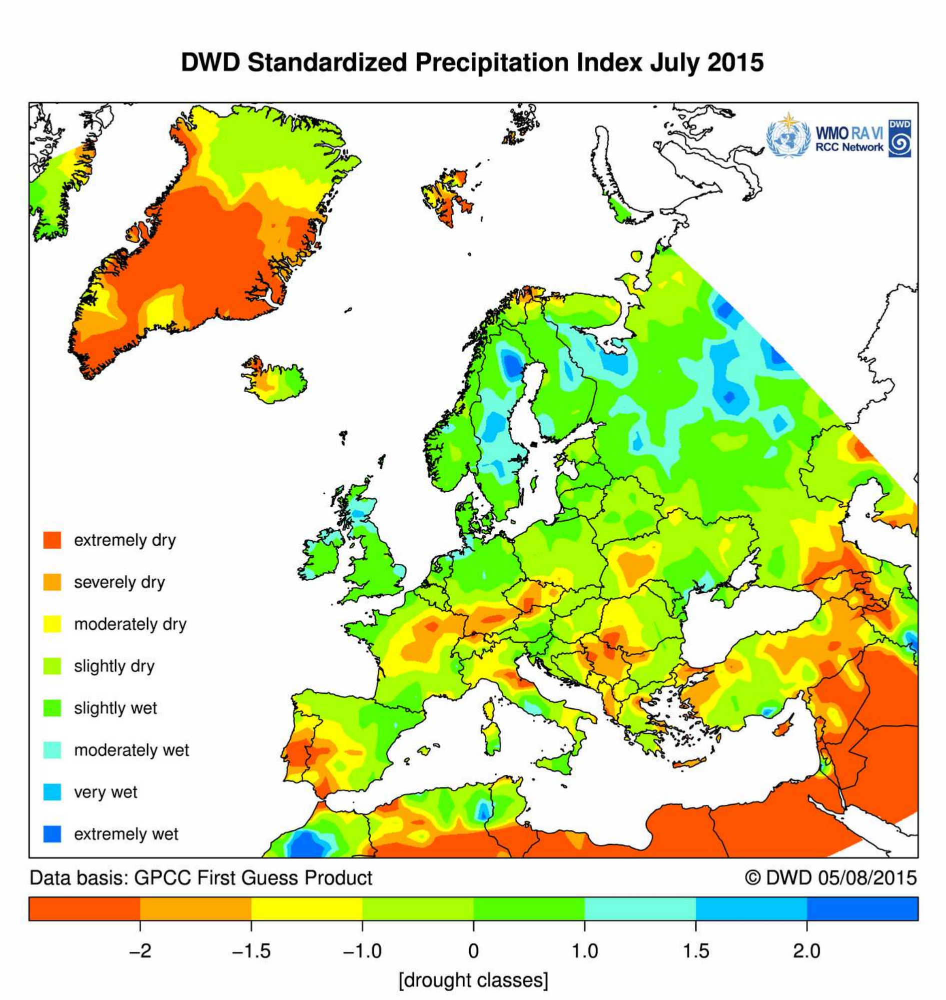


fig. I.2.5a: Standardized Precipitation Index with DWD modification (DWD-SPI), http://www.dwd.de/rcc-cm .

Monthly mean precipitation anomalies in European subregions. Subregions refer to ECMWF land boxes defined in Annex III.3. Anomalies are based on gridded data from GPCC First Guess Product, ftp://ftp-anon.dwd.de/pub/data/gpcc/PDF/GPCC_intro_products_2008.pdf, 1951-2000 reference.

Subregion	Absolute anomaly	SPI DWD Drought Index
Northern Europe	+11.9 mm	+0.385
Southern Europe	- 17.6 mm	- 0.909

I.2.c Temperature

Warm anomaly over de 2/3 southern Europe, cold anomaly further north from the British Isles to Russia. Warm anomaly on Africa south of the Sahara, in South America, and India, and extreme western China. Cold anomalies over western United States, the North Atlantic and eastern China.

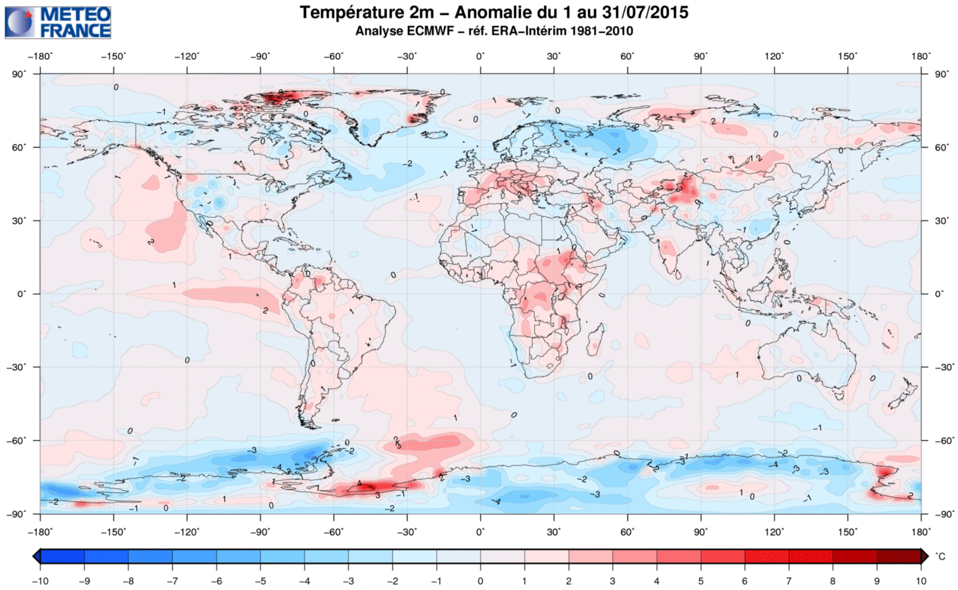
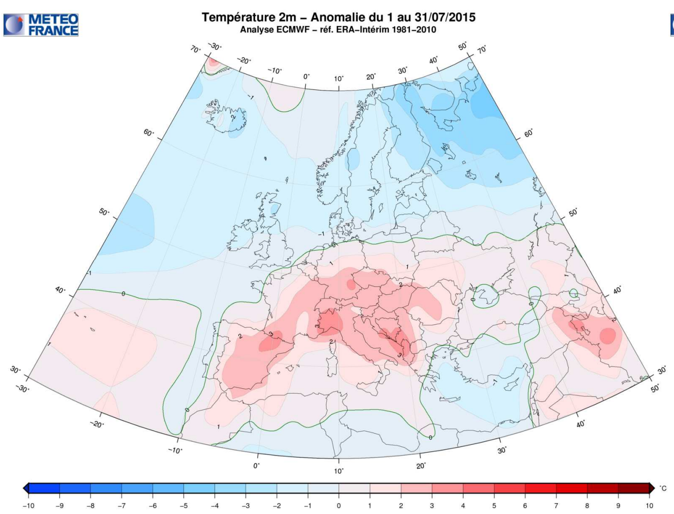


fig.I.2.8: Temperature Anomalies (°C) (Meteo-France)

<u>Temperature anomalies in Europe:</u>

Again a sharp contrast between a colder north and a warmer south over Europe and the North Atlantic, reflecting the SLP distribution. Over the North Atlantic very similar to SST. Negative anomaly also over the eastern Mediterranean (some low pressure situations).



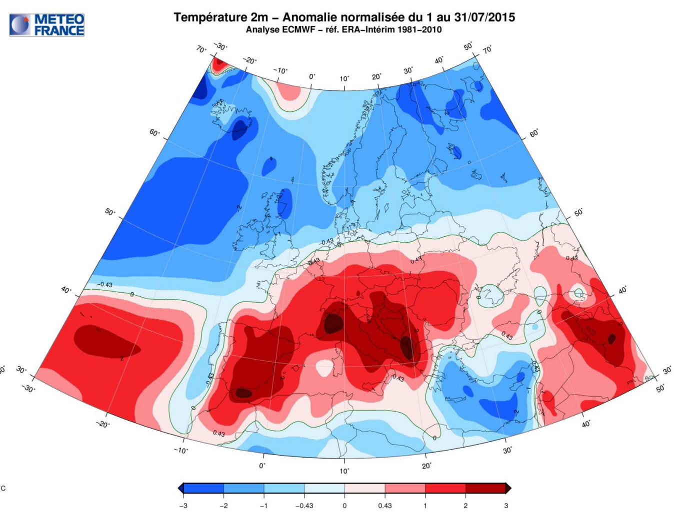


fig.I.2.9: Left graph: Absolute anomaly of temperature in the RA VI Region (Europe). Right graph: Standardized temperature anomalies

Monthly mean temperature anomalies in European subregions: Subregions refer to ECMWF land boxes defined in Annex III.3. Anomalies are based on gridded CLIMAT data from DWD, http://www.dwd.de/rcc-cm, 1961-1990 reference.

Subregion	Anomaly
Northern Europe	+0.1°C
Southern Europe	+2.5°C

I.2.d Sea ice

In Arctic (fig. 1.2.6 and 1.2.7 - left) : persistent significant deficit (~ -2 std), mainly in the Pacific and in the Barents Sea..

In Antarctic (fig. 1.2.6 and 1.2.7 - right) : the surplus has clearly resorbed during July with a return to near normal values

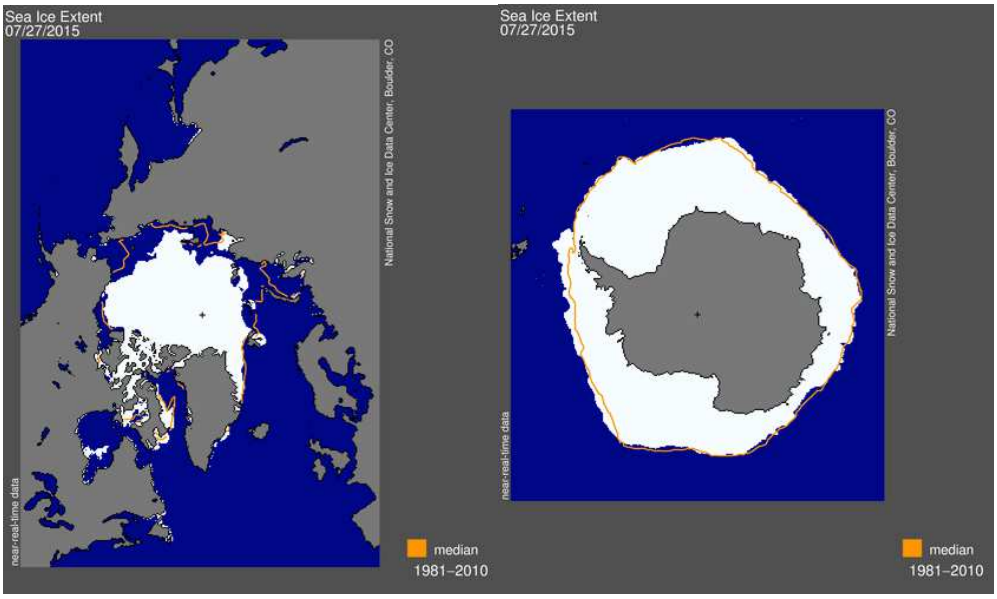


fig.I.2.15: Sea-Ice extension in Arctic (left), and in Antarctic (right). The pink line indicates the averaged extension (for the 1979-2000 period). http:/ /nsidc.org/data/seaice_index/

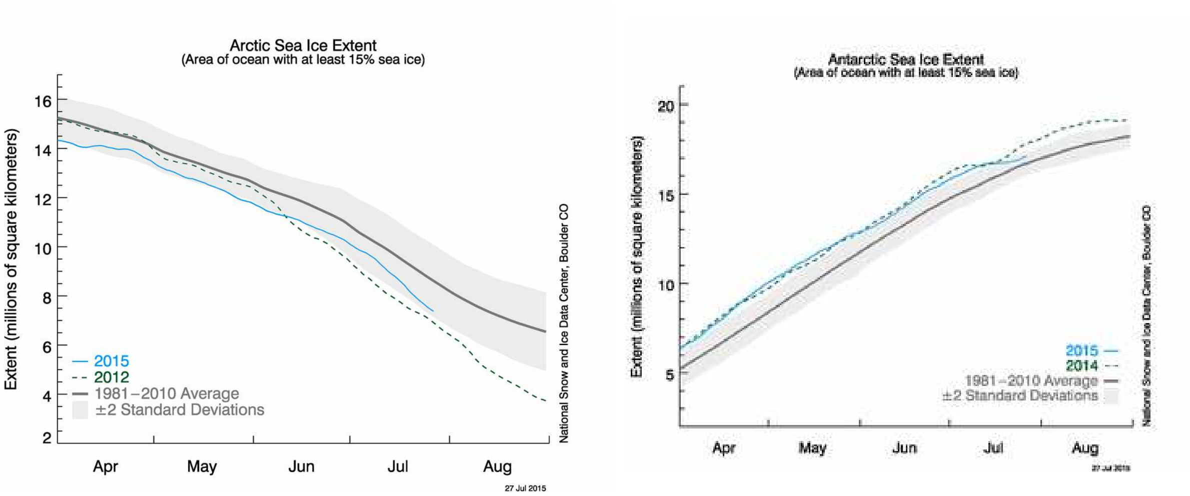


fig. I.2.16 : Sea-Ice extension evolution from NSIDC.

http://nsidc.org/data/seaice_index/images/daily_images/N_stddev_timeseries.png

II. SEASONAL FORECAST FROM DYNAMICAL MODELS

The global climate system is strongly influenced by the current El Nino event. In that condition, the previsibility is significantly strengthened. All seasonal forecast models are very close, particularly EUROSIP models. The anomaly patterns are very consistent both for the ocean and for the atmosphere. The notable exception is the Atlantic.

II.1.OCEANIC FORECASTS

II.1.a Sea surface temperature (SST)

Pacific Ocean: the warm anomaly will continue to strengthen in central and eastern Equatorial Waveguide. The large area of warm anomaly will also persist along the western coast of North America to Alaska, due to the positive PDO phase. persistance of the cold anomaly on western waveguide with extension south to New Zealand on the one hand and towards the center of the South Pacific on the other hand.

Indian Ocean: Remaining of the generalized warm anomaly it can localy strengthen in the south.

Atlantic Ocean: Fairly clear differences between models along the equator. Warm anomalies are forecasted by ARP, it seems neutral in ECMWF and cold anomalies forecasted in NCEP. The EUROSIP mean is thus unreliable in this area. Differences along the coasts of Europe and Africa to but with reversed behavior of models : cold anomalies with ARP, neutral in CEP and warm nomalies in NCEP. Models are consistent in the north Altantic where they remain a cold SST anomaly and in western basin dans Mexico Gulf where they remain a warm anomaly.

Mediterranean Sea : ARP and ECMWF models keep a warm anomaly that is balanced, in EUROSIP mean, by the Cold NCEP forecast .

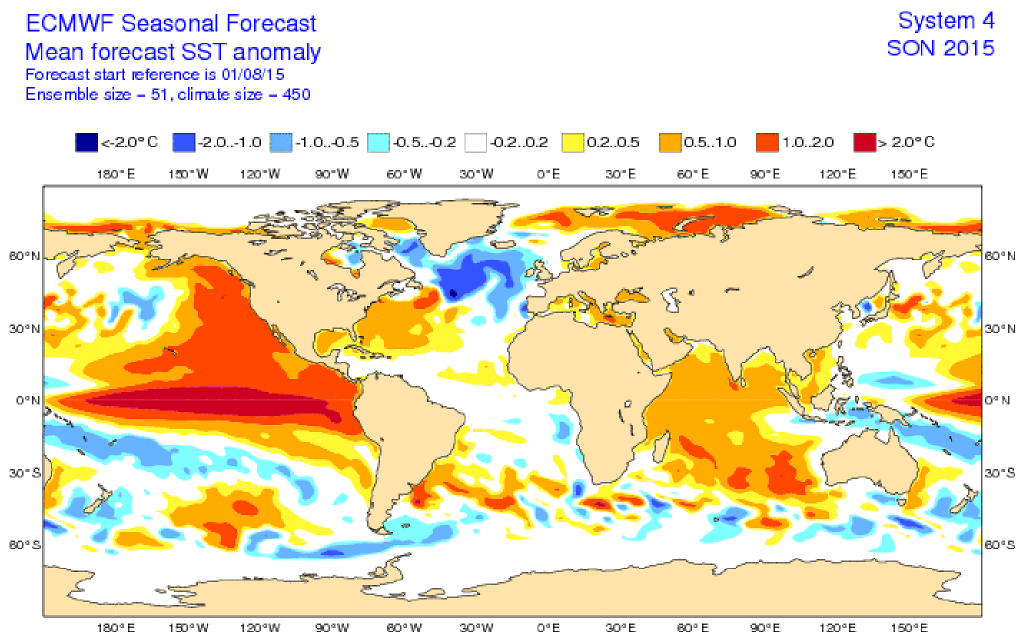


fig.II.1.1: SST anomaly forecast from ECMWF

http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/seasonal_range_forecast/group/

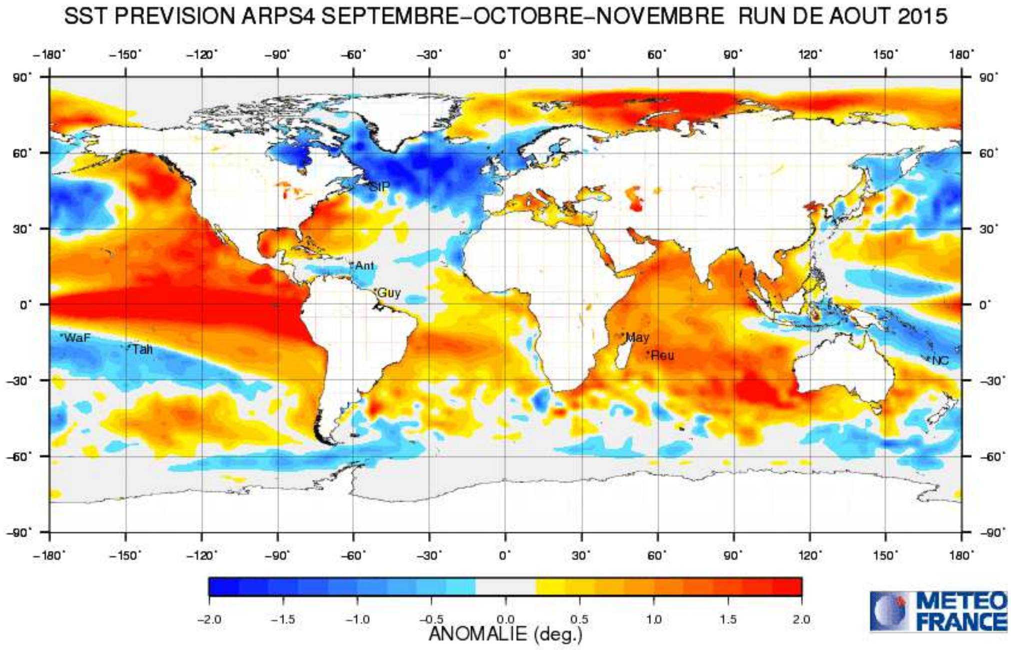


fig.II.1.2: SST Anomaly forecast from Meteo-France (recalibrated with respect of observation).

http://elaboration.seasonal.meteo.fr

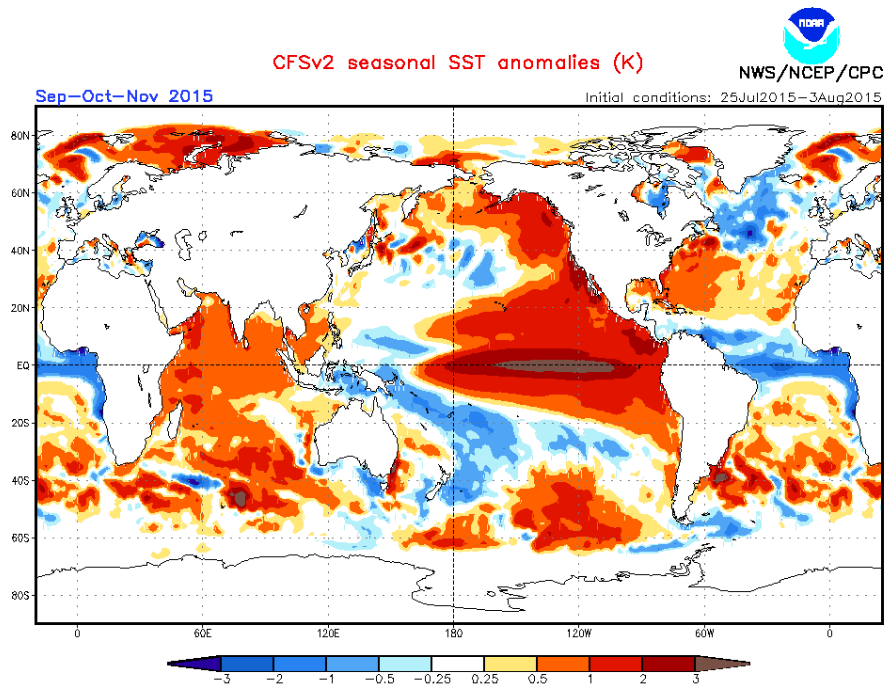


fig.II.1.3: SST anomaly forecast from NCEP.

http://www.cpc.ncep.noaa.gov/products/people/wwang/cfsv2fcst/imagesInd1/glbSSTSeaInd1.gif

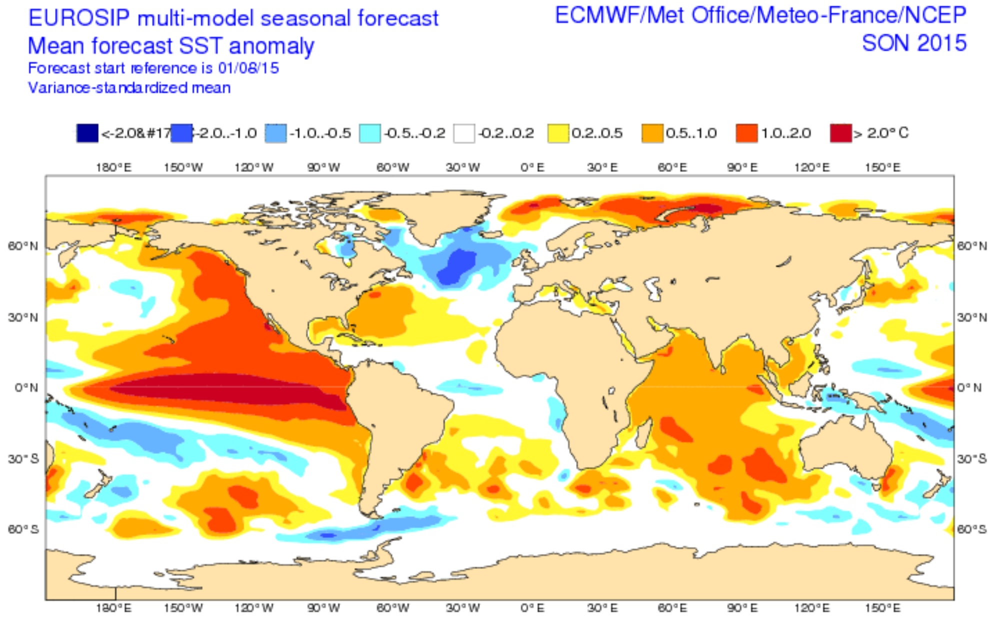


fig.II.1.4: SST Forecasted anomaly from Euro-SIP

II.1.b ENSO forecast :

Forecast Phase: Strong El Niño level

For the next 3 months, all the analyzed models announce the strengthening of the phenomenon El Niño this autumn with a continuous increase until November at least in ECMWF and a stabilization in October with ARP. All models forecast that Niño 3.4 index will reach a very strong level intensity (> 2°C) over the period SON, and for some, the median approach 3 ° C of SST anomaly. The plume diagrams of ARP and ECMWF continue to show an impressive forecast increase rate during SON.

The decrease seems not start before the beginning of 2016.

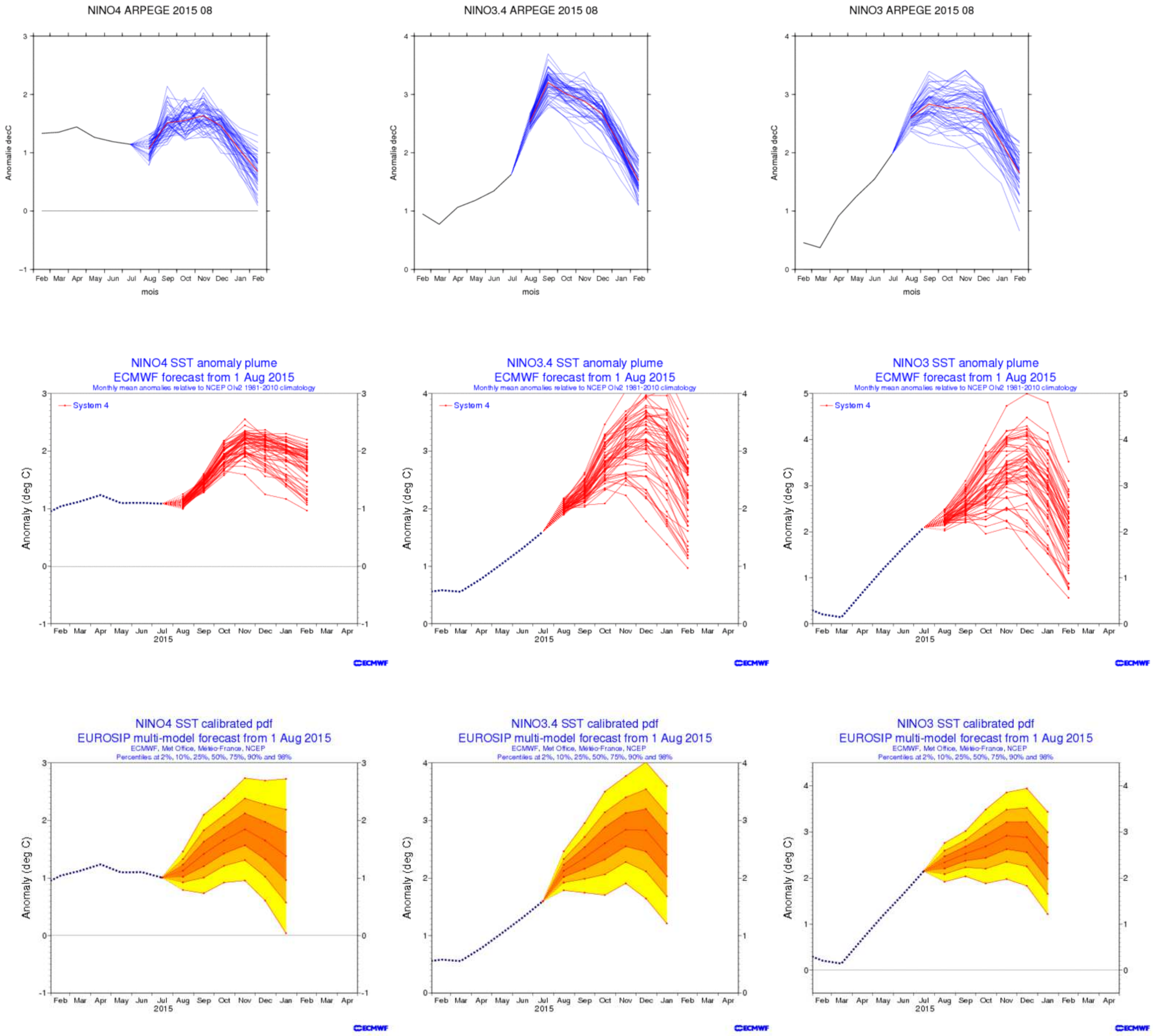


fig.II.1.5: SST anomaly forecasts in the Niño boxes from Météo-France (top) and ECMWF (middle) - monthly mean for individual members - and EuroSIP (bottom) – recalibrated distributions - (http://elaboration.seasonal.meteo.fr , http://www.ecmwf.int/)

II.1.c Atlantic ocean forecasts

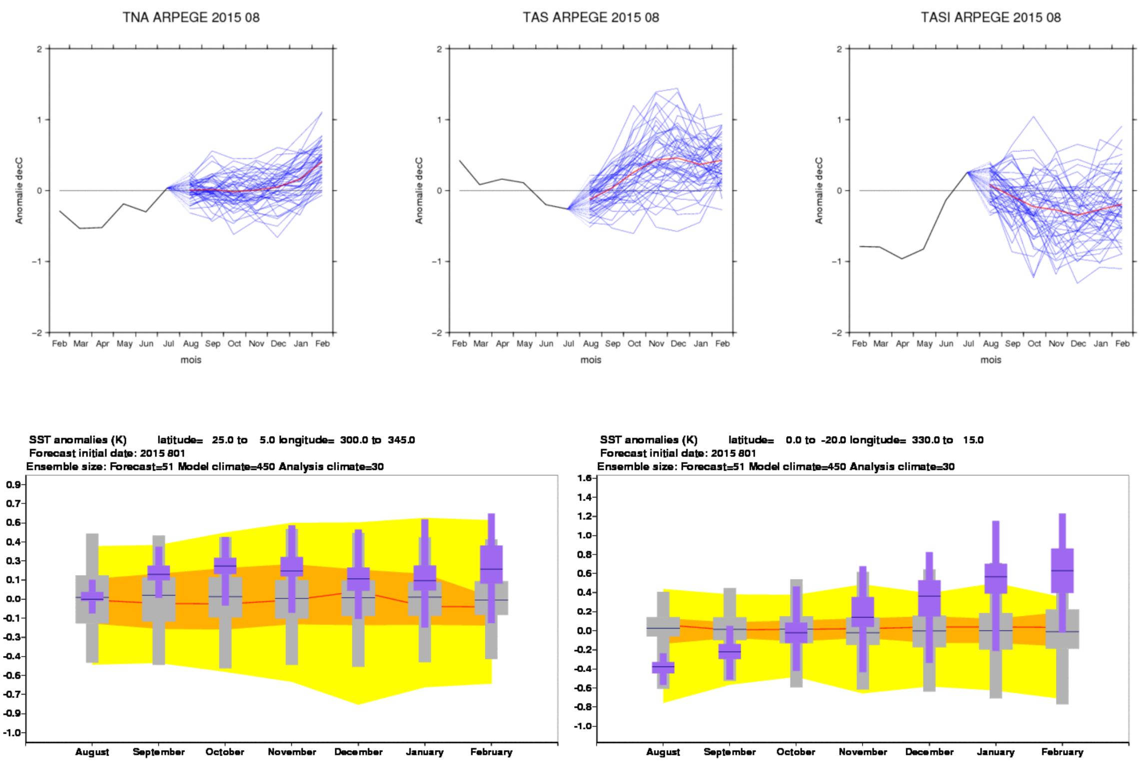


fig.II.1.6: SSTs anomaly forecasts in the Atlantic Ocean boxes from Météo-France and ECMWF, plumes / climagrams correspond to ensemble members and monthly means.

II.1.d Indian ocean forecasts

Not much evolution expected from the oceanic indices on the other basin during SON.

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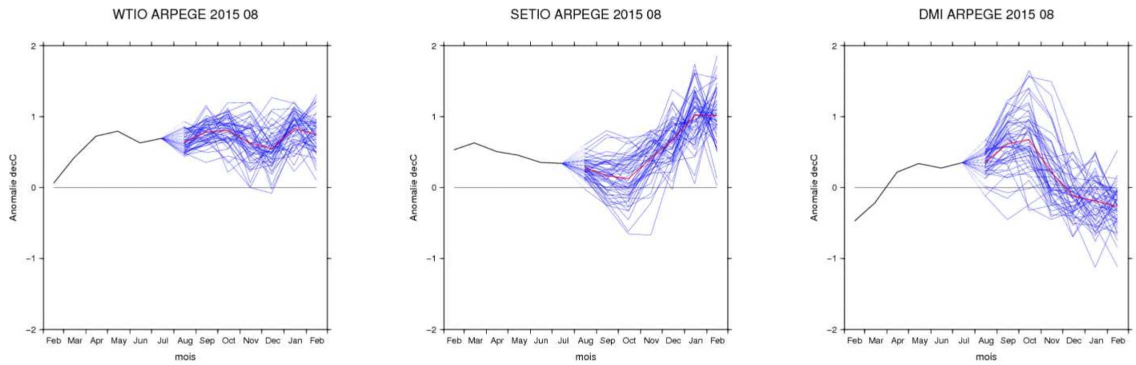


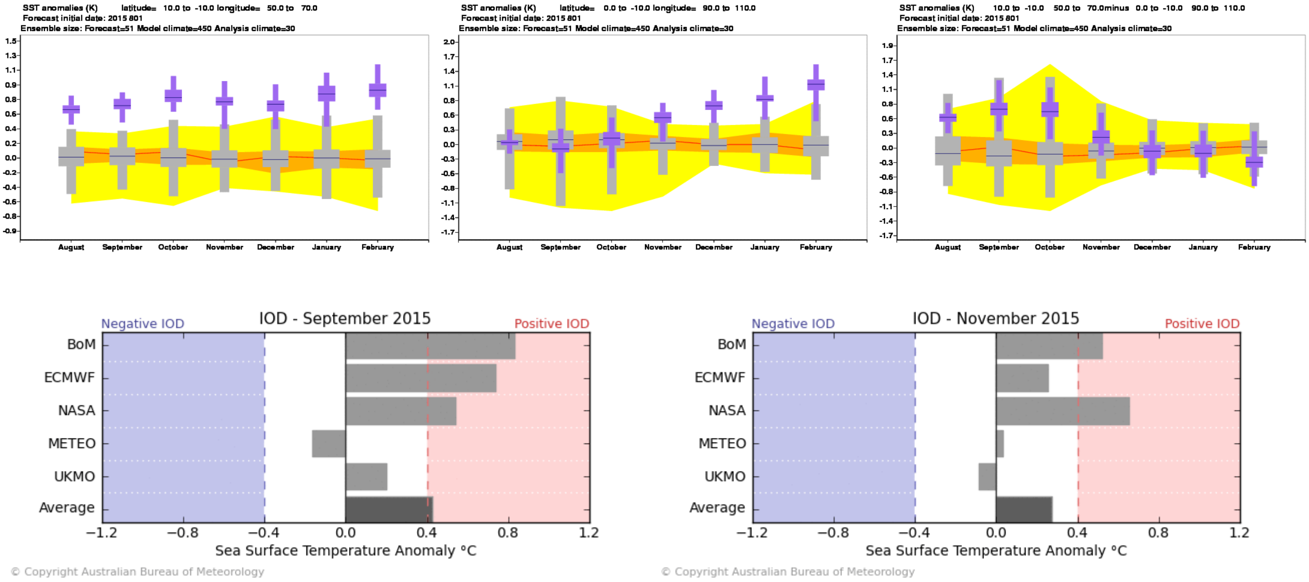


fig.II.1.7: SSTs anomaly forecasts in the Indian Ocean boxes from Météo-France and ECMWF, plumes / climagrams correspond to ensemble members and monthly means.

II.2. GENERAL CIRCULATION FORECAST

II.2.a Global forecast

Velocity potential anomaly field (cf. fig. II.2.1 – insight into Hadley-Walker circulation anomalies): structure of wave 1, with a very strong dipole of anomalies. Upward motion on a large eastward part of Pacific Ocean extended northward up to Canada and southward to Argentina; Downward motion from Australia to Asia across Indian Ocean and Maritime Continent.

Stream Function anomaly field (cf. fig. II.2.1 – insight into teleconnection patterns tropically forced): Very good consistency between ARPEGE, ECMWF and JMA in the intertropical latitudes with a pair of anticyclonic anomaly cores in the high troposphere, over the Pacific upward motion area and on both sides cyclonic anomaly cores in high troposphere over Indian and Atlantic oceans. The mid-latitudes teleconnexions are more difficult to discern however the cyclonic anomaly southward of Greenland could be a consequence.

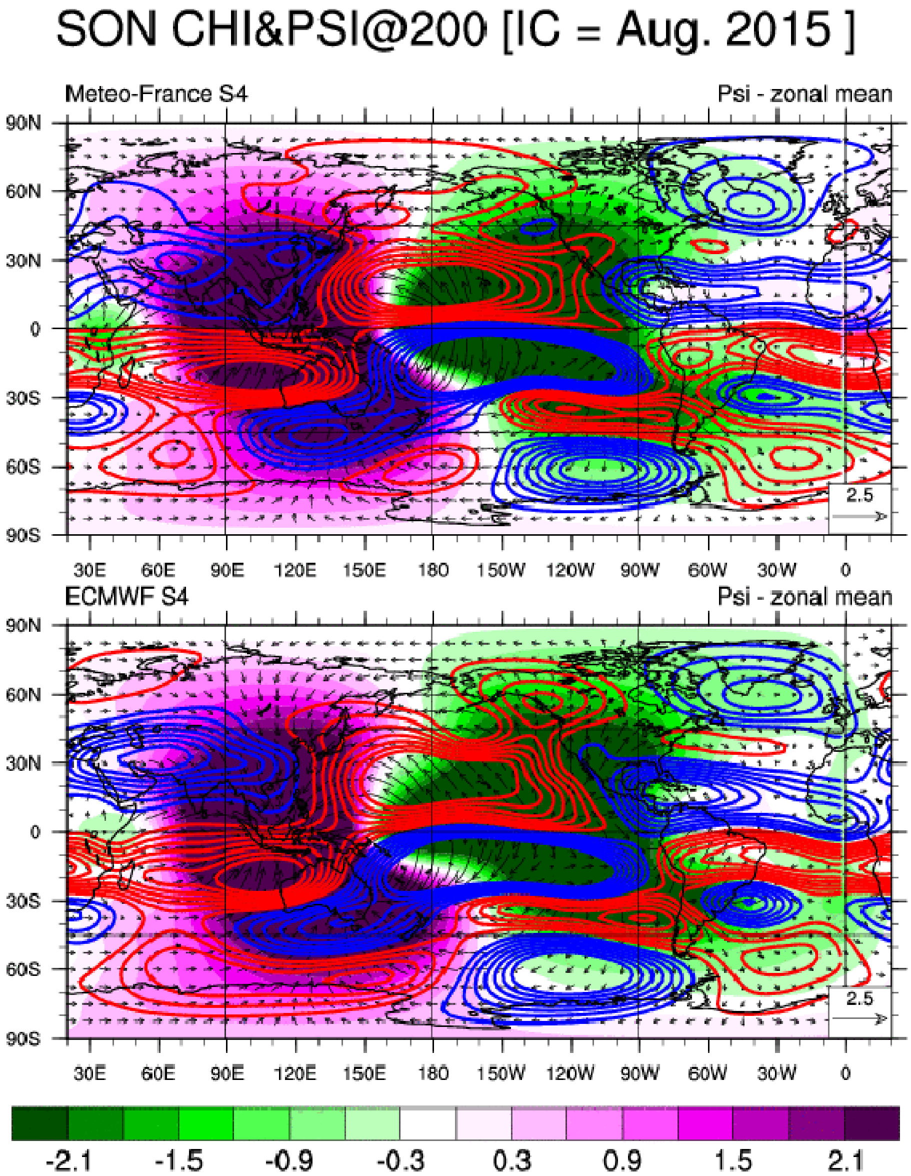


fig.II.2.1: Velocity Potential anomaly field χ (shaded area – green negative anomaly and pink positive anomaly), associated Divergent Circulation anomaly (arrows) and Stream Function anomaly ψ (isolines – red positive and blue negative) at 200 hPa by Météo-France (top) and ECMWF (bottom).

II.2.b North hemisphere forecast and Europe

Geopotential height anomalies (fig. 20 – insight into mid-latitude general circulation anomalies) : Z500 cyclonique anomaly southward of Greenland is fairly consistent between ECMWF and Arpege. However the anticyclonic anomaly belt surrounding has much stronger cores in ECMWF. Consequently there is a clear difference between the two models for Europe.

Regime occurences with Arpege and ECMWF are close with the predominance of "Atlantic Low" to the detriment of the "NAO-" et "Atlantic Ridge" regimes.

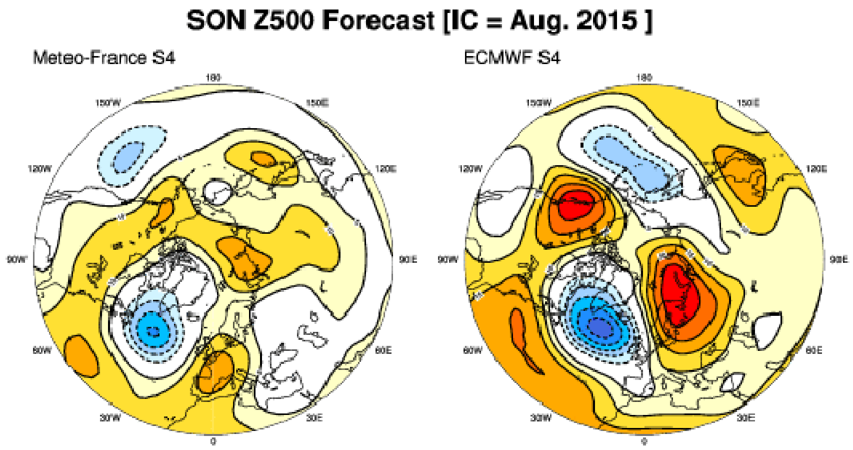


fig.II.2.2: Anomalies of Geopotential Height at 500 hPa from Météo-France (left) and ECMWF (right).

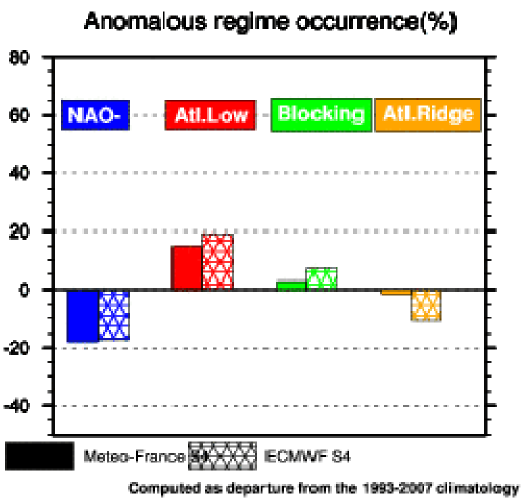


fig.II.2.3: North Atlantic Regime occurrence anomalies from Météo-France and ECMWF : vertical bars represent the excitation frequency anomaly (in %) for each of the 4 regimes.

II.3. IMPACT: TEMPERATURE FORECASTS

The ENSO+ and PDO+ context is favorable to enhanced probability of warm anomaly over most of the globe. The few exceptions are Northern Atlantic and in Pacific Ocean, from Solomon Islands to French Polynesia and New-Zeland (SST effect) . Few land areas are froecasted neutral or rather colder than normal can be linked with known consequencies of El Nino event : Southern South-America, Quebec and a part of the United States and the Himalayan area.

A signal " more warmly than normal " is expected on Europe, with the exception of the British Isles..

II.3.a ECMWF

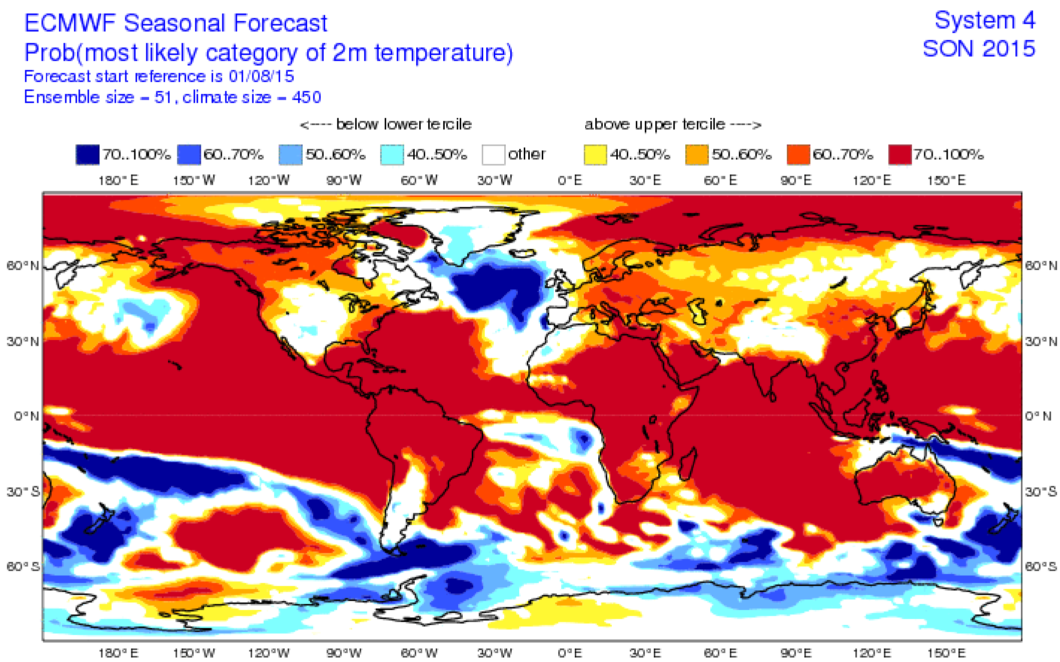


fig.II.3.1: Most likely category probability of T2m from ECMWF. Categories are Above Normal, Below Normal and « other » category (Normal and No Signal). http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/

II.3.b Météo-France

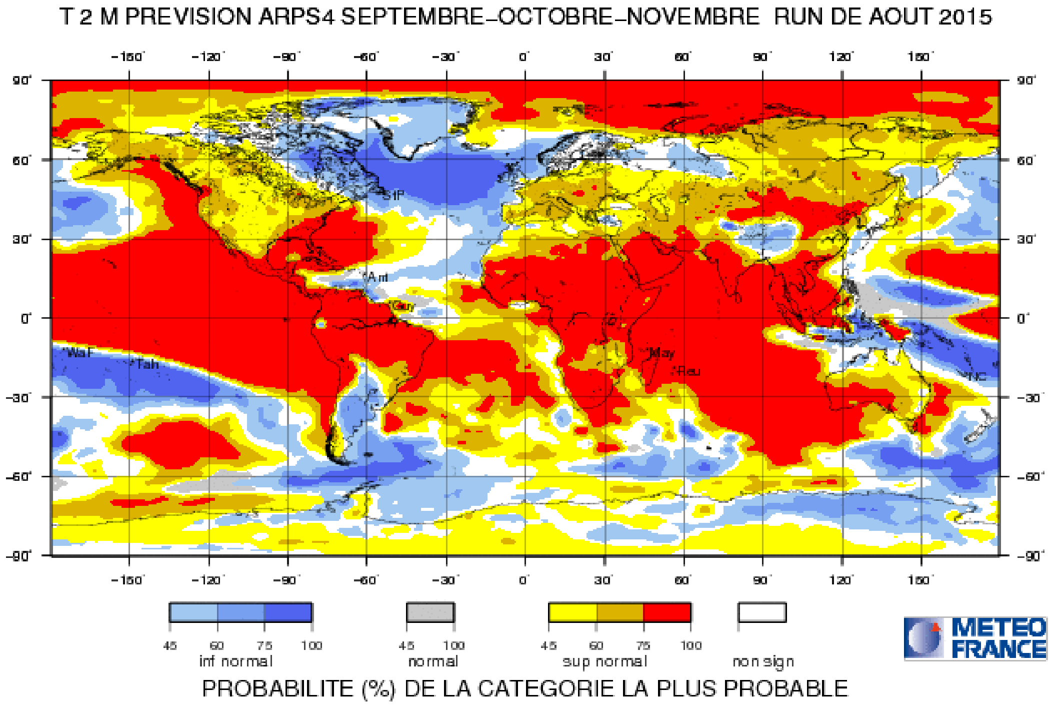


fig.II.3.2: Most likely category of T2m. Categories are Above, Below and Close to Normal. White zones correspond to No Signal. http://elaboration.seasonal.meteo.fr/

II.3.c Japan Meteorological Agency (JMA)

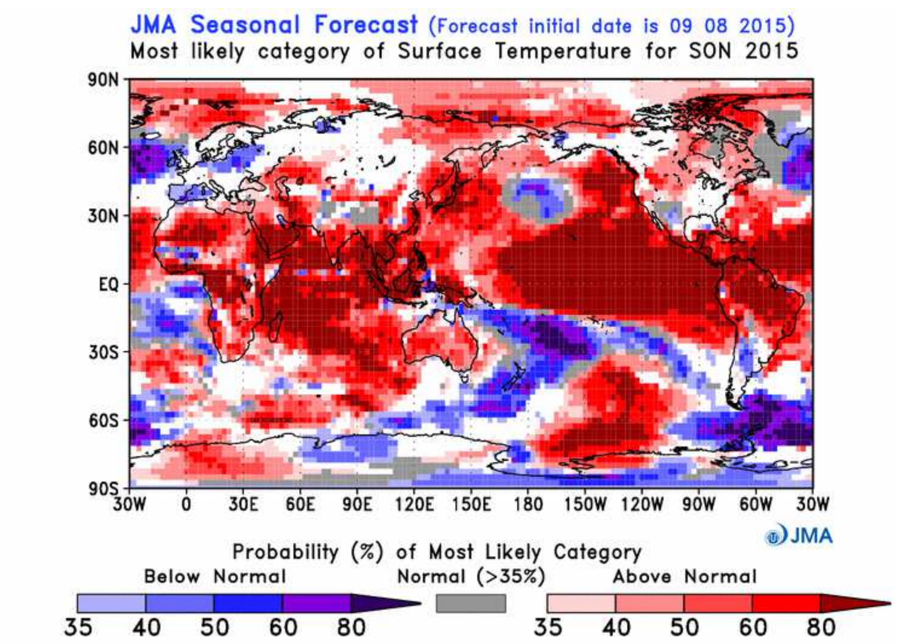


fig.II.3.3: Most likely category of T2m. Categories are Above, Below and Close to Normal. White zones correspond to No Signal. http://ds.data.jma.go.jp/tcc/tcc/products/model/probfcst/3-mon/fcst/fcst_gl.php

II.3.d EUROSIP

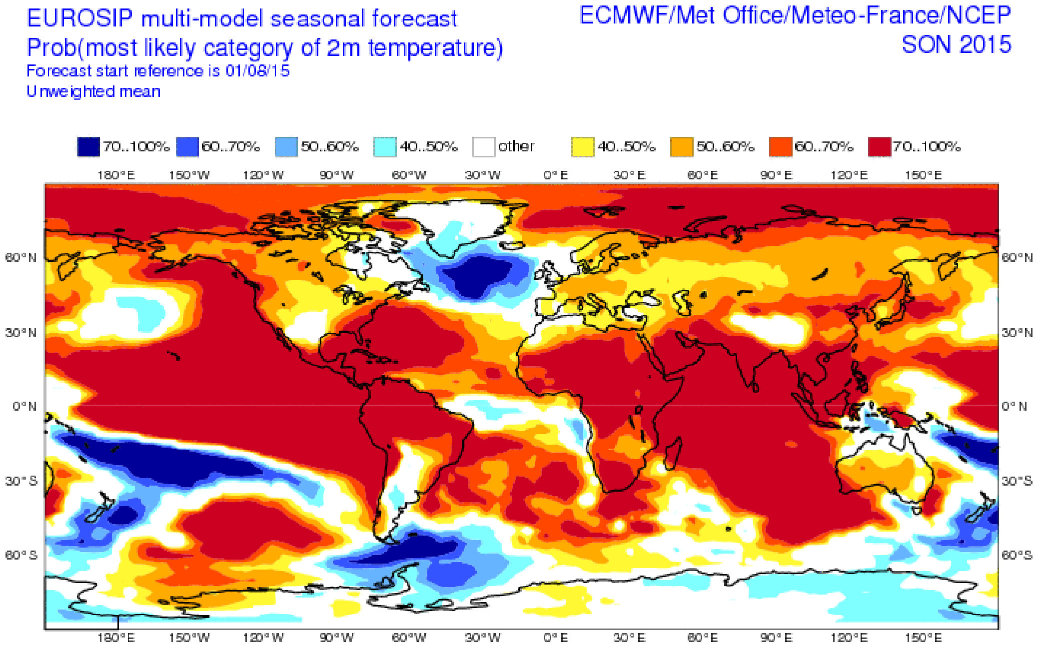


fig.II.3.4: Multi-Model Probabilistic forecasts for T2m from EUROSIP (2 Categories, Below and Above normal – White zones correspond to No signal and Normal).

http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/eurosip/

II.4. IMPACT : PRECIPITATION FORECAST

There is a large contribution of the El Nino Event to the forecasted anomalies distribution. Enhanced probability of excess precipitation in central and eastern equatorial Pacific extended northward to Mexico and USA. The same in southern Brazil, Argentina and southern Chile. Also in Eastern Africa, a large part of Indian Ocean and southeast of China. Conversely, dry anomalies are forecasted from the Equatorial Atlantic to the Gulf of Mexico and north of South America, as well as India and over the Maritime Continent to the Cook Islands, and more weekly to New Zealand.

On Europe, there is a wet signal form eastern Mediterranean Sea to Middle East extended weakly to westward. And there is a weak dry signal northeastern Europe, from Poland to Russia.

II.4.aECMWF

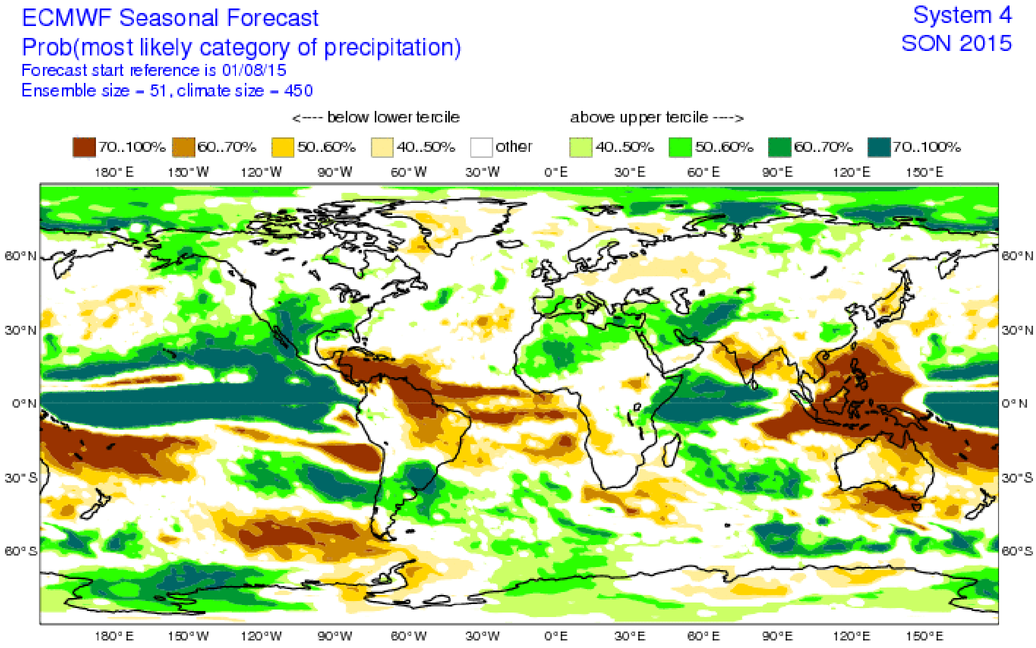


fig.II.4.1: Most likely category probability of rainfall from ECMWF. Categories are Above Normal, Below Normal and « other » category (Normal and No Signal). http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/

II.4.b Météo-France

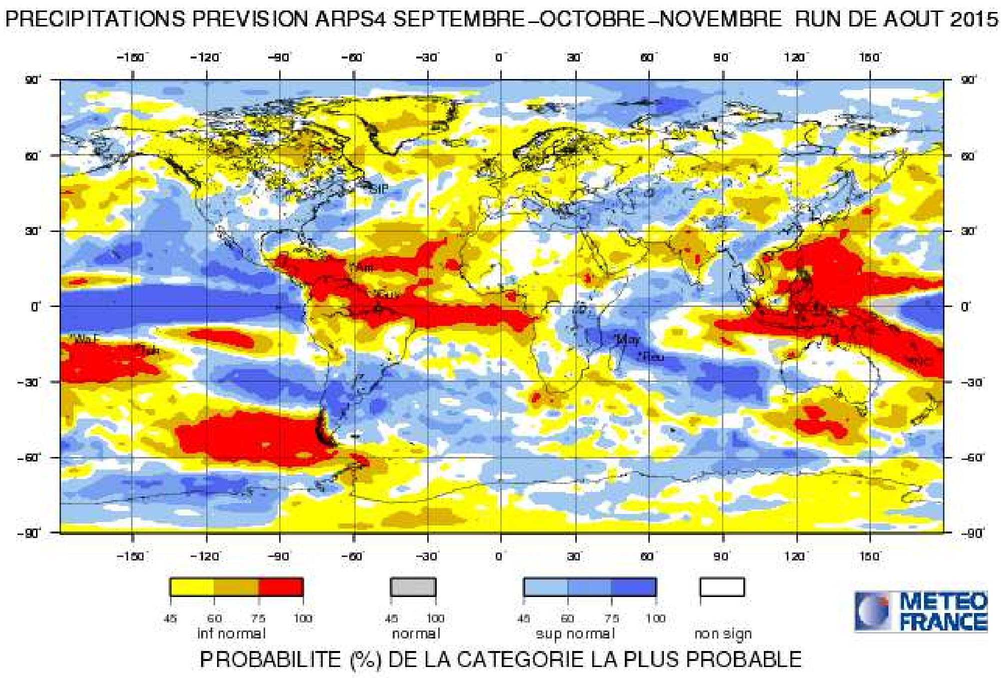


fig.II.4.2: Most likely category of Rainfall. Categories are Above, Below and Close to Normal. White zones correspond to No Signal. http://elaboration.seasonal.meteo.fr/

II.4.c Japan Meteorological Agency (JMA)

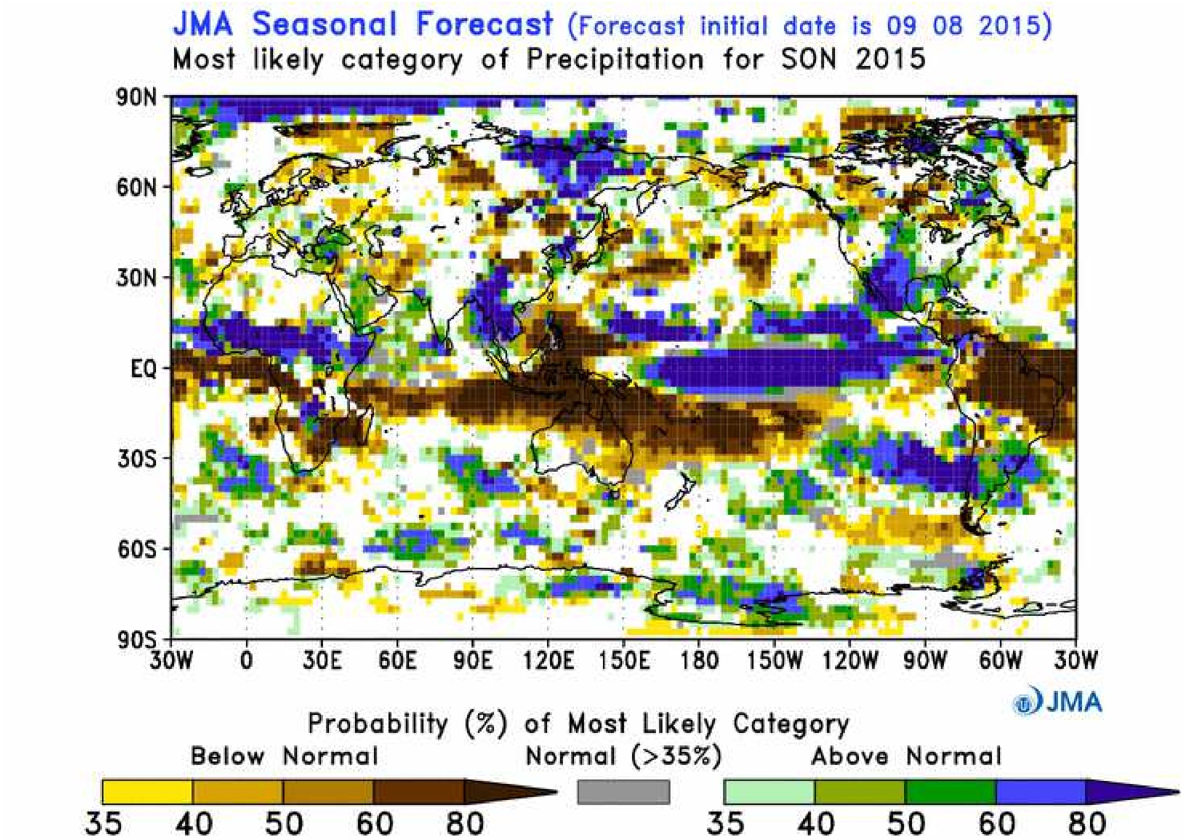


fig.II.4.5: Most likely category of Rainfall from JMA. Categories are Above, Below and Close to Normal. White zones correspond to No Signal. http://ds.data.jma.go.jp/tcc/tcc/products/model/probfcst/3-mon/fcst/fcst_gl.php

II.4.d EUROSIP

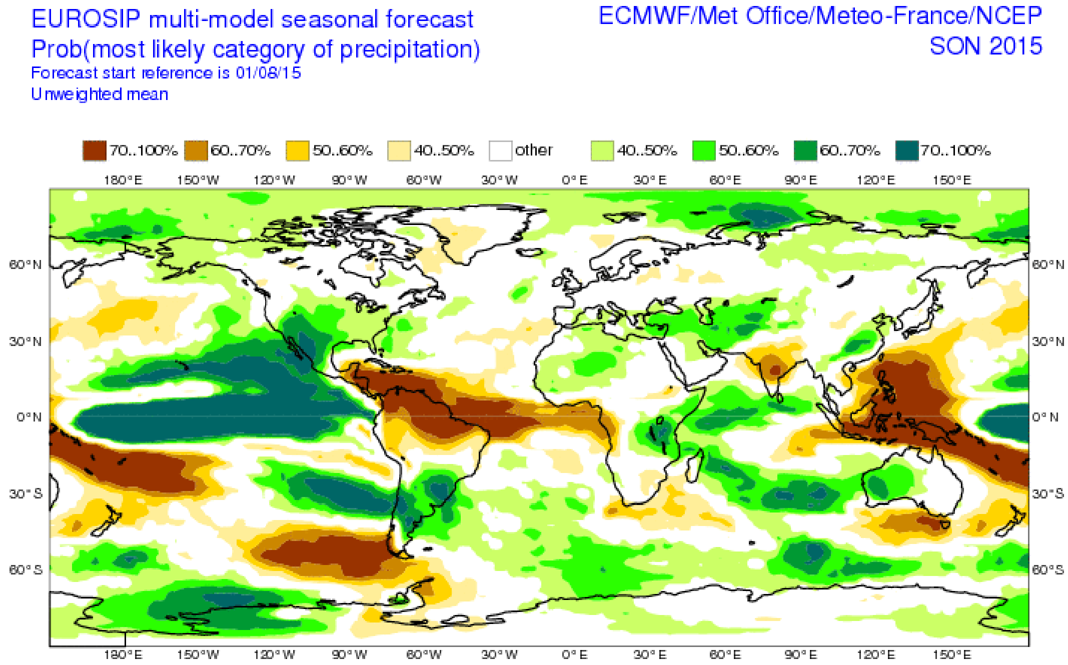
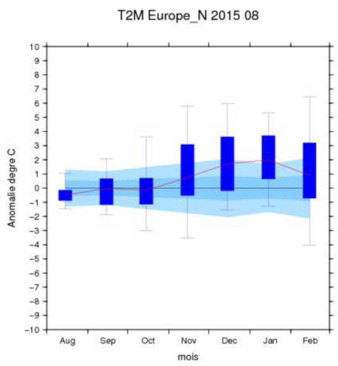
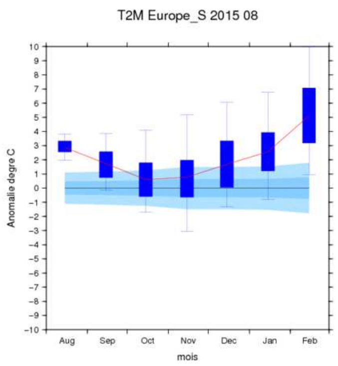


fig.II.4.7: Multi-Model Probabilistic forecasts for precipitation from EUROSIP (2 Categories, Below and Above normal – White zones correspond to No signal).

http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/eurosip/

II.5. REGIONAL TEMPERATURES and PRECIPITATIONS





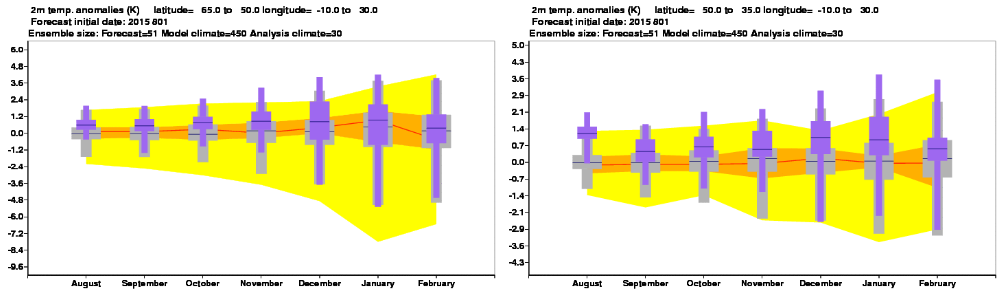


fig.II.5.1 : Climagrams for Temperature in Northern Europe (left) and in Southern Europe (right) from Météo-France (top) and ECMWF (bottom).

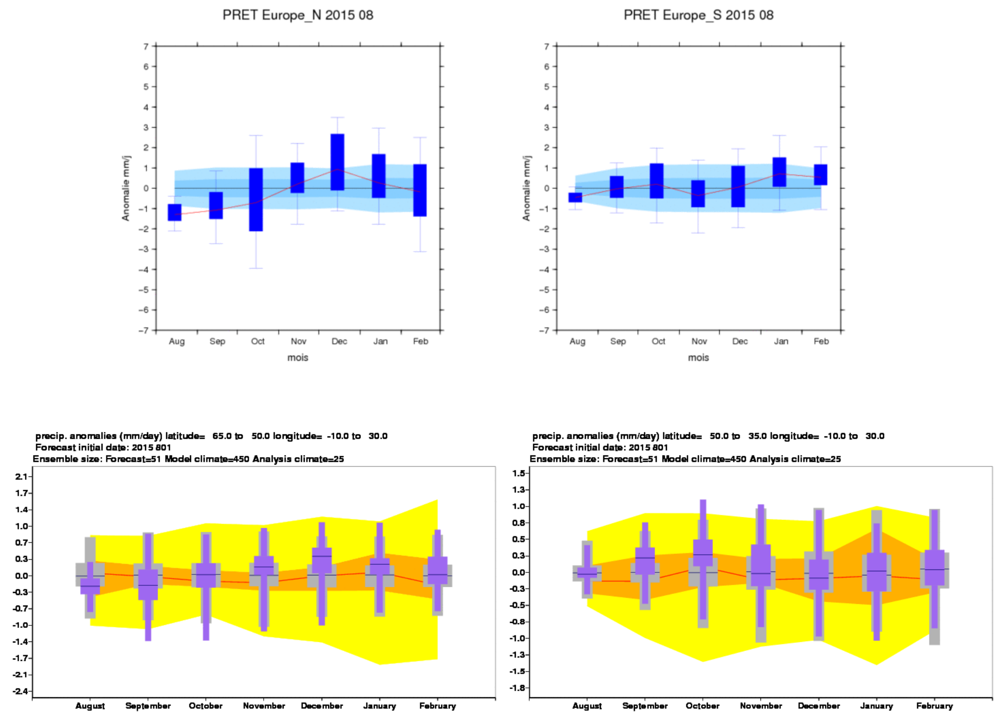


fig.II.5.2 : Climagrams for Rainfall in Northern Europe (left) and in Southern Europe (right) from Météo-France (top) and ECMWF (bottom).

II.6. MODEL'S CONSISTENCY : NOT AVAILABLE

Not available

fig.II.6.1 : GPCs Consistency maps from LC-MME http://www.wmolc.org/

For SST :

For Z500 :

For T2m :

For Precipitation :

II.7. "EXTREME" SCENARIOS

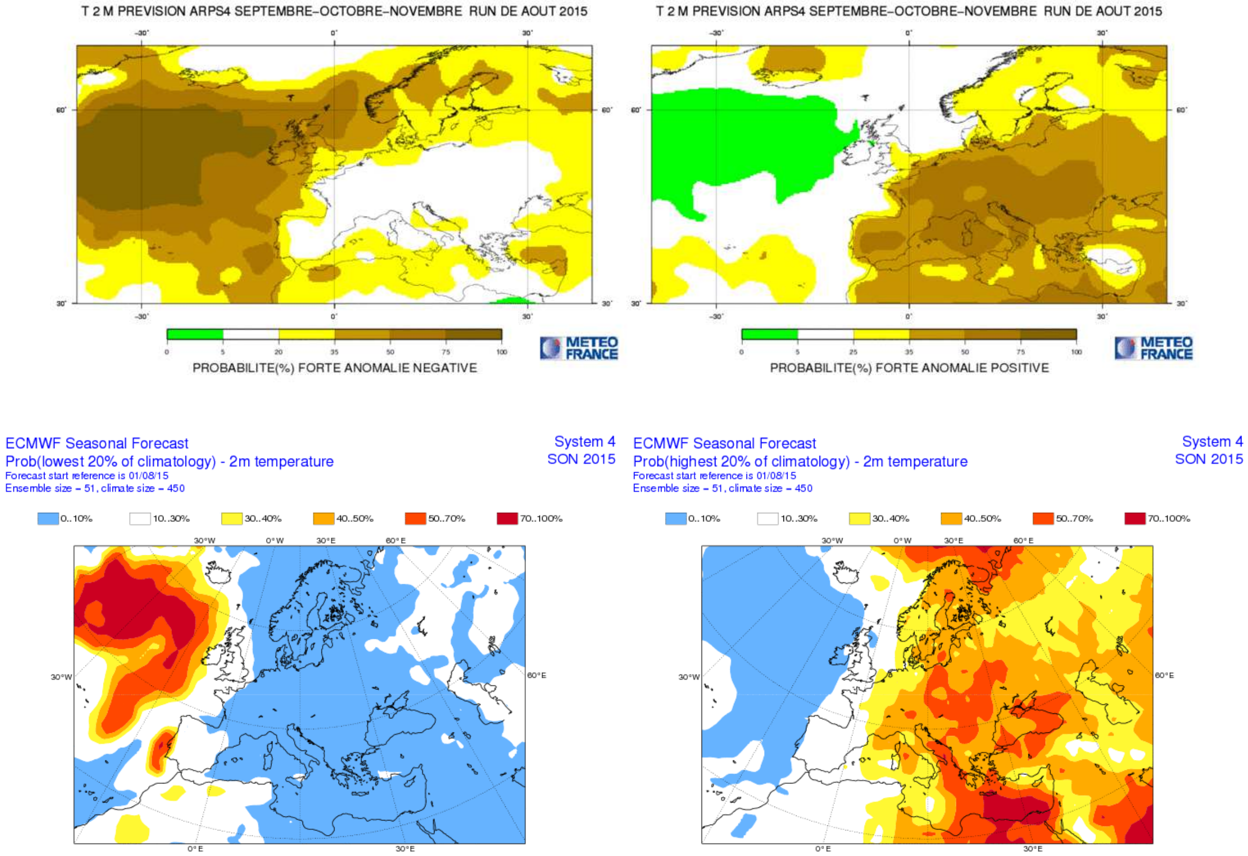
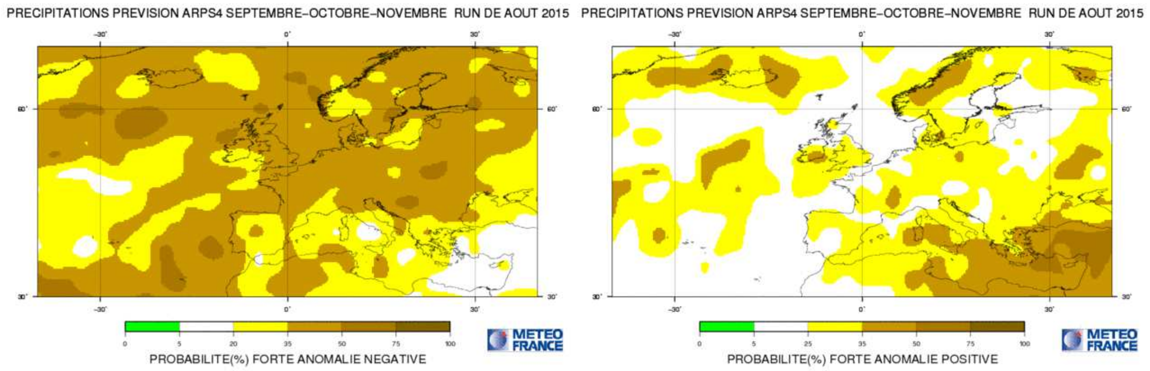


fig.II.7.1 : Top : Meteo-France T2m probability of « extreme » below normal conditions (left - lowest ~15% of the distribution) and "extreme" above normal conditions (right - highest ~15% of the distribution). Bottom : ECMWF T2m probability of « extreme » below normal conditions (left - lowest ~20% of the distribution) and "extreme" above normal conditions (right – highest ~20% of the distribution).



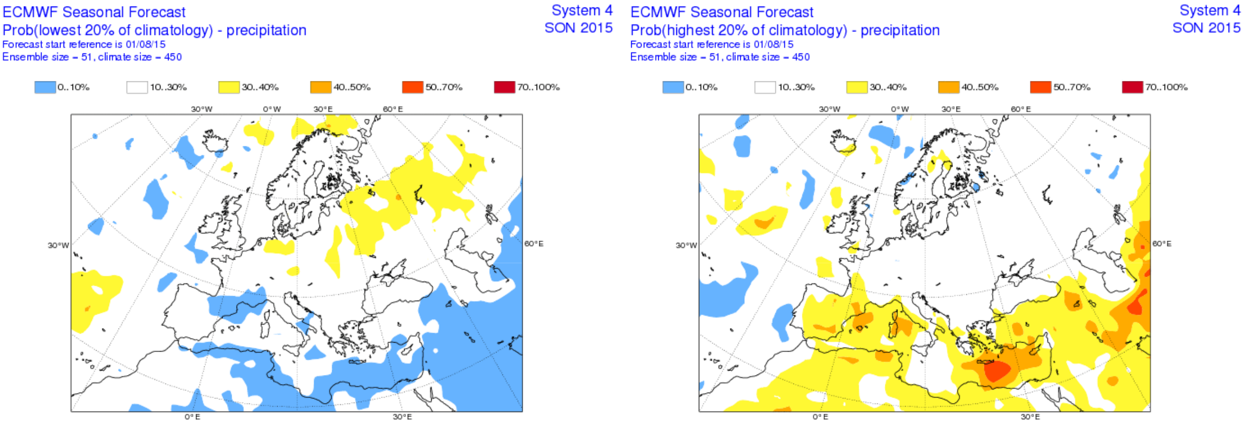


fig.II.7.2 : Top : Meteo-France rainfall probability of « extreme » below normal conditions (left - lowest ~15% of the distribution) and "extreme" above normal conditions (right - highest ~15% of the distribution).
Bottom : ECMWF rainfall probability of « extreme » below normal conditions (left - lowest ~20% of the distribution) and "extreme" above normal conditions (right – highest ~20% of the distribution).

II.8. DISCUSSION AND SUMMARY

II.8.a Forecast over Europe

Temperatures: More warmly than the normal signal on Europe, except British Iles where normal temperatures are likely.

Precipitation: No scenario emerges over western Europe. Enhanced probability for a wet signal on the Eastern Mediterranean Sea and dry tendency in north part of Europe.

II.8.b Tropical cyclone activity

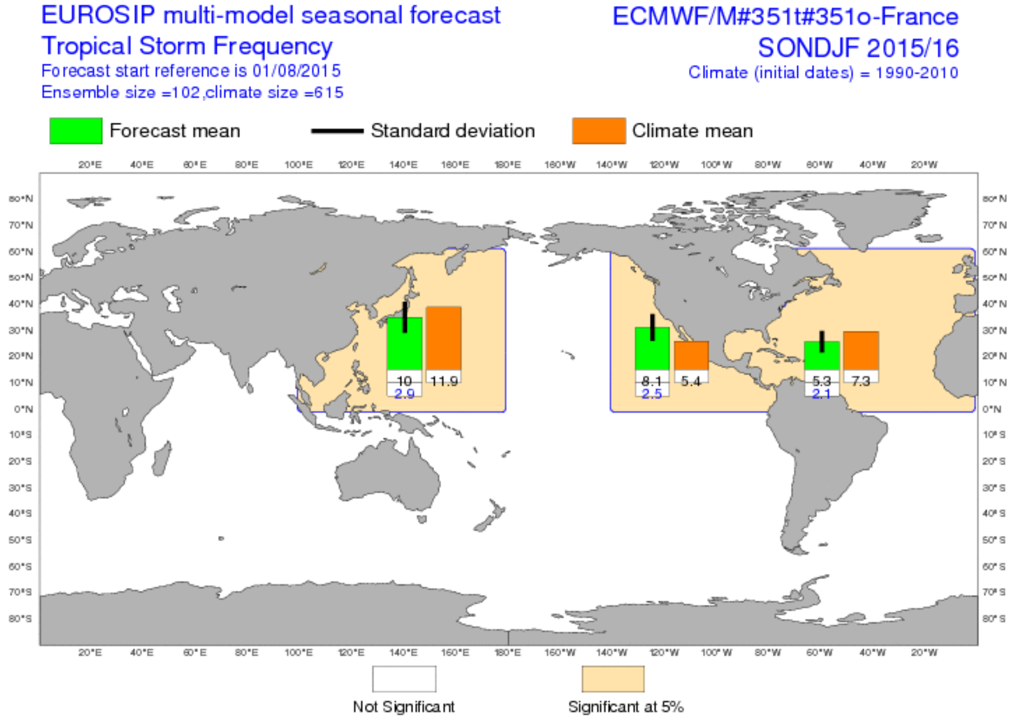


fig.II.8.1: Seasonal forecast of the frequency of Tropical Cyclones from EUROSIP (Météo-France & ECMWF).
http://www.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/eurosip/

Consistent with the current El Niño phenomena, the hurricane season is expected significantly weaker than normal in the Atlantic and significantly stronger in Eastern Pacific. The hurricane season is expected significantly weaker than normal in Western Pacific.

II.8.d African monsoon activity forecast

The large scale downward motion is enhanced on Africa and unfavorable for the end of the monsoon, most forecasts proposes a scenario drier than normal.

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WMO RA VI
RCC Network

Synthesis of Temperature forecasts for September-October-November 2015 for European regions

Results are expressed with respect of 3 possible scenarios : « Above normal », « close to normal » and « Below normal ». The limits between each category is given by the corresponding tercile such that each scenario have the same climatological probability of occurrence (33,3%). If the forecast shows no specific signal (because of low predictability and/or divergent scenarios between several models), the cell is filled in grey and "No privileged scenario" is indicated.

MODELS	Northern Europe	Southern Europe	Central Europe	Eastern Europe	SEE Region
MF	No privileged scenario	T Above normal (Warm)	T Above normal (Warm)	T Above normal (Warm)	T Above normal (Warm)
ECMWF	No privileged scenario	No privileged scenario	T Above normal (Warm)	T Above normal (Warm)	T Above normal (Warm)
JMA	No privileged scenario	No privileged scenario	No privileged scenario	No privileged scenario	T Above normal (Warm)
synthesis	No privileged scenario	No privileged scenario	T Above normal (Warm)	T Above normal (Warm)	T Above normal (Warm)
Eurosip	No privileged scenario	T Above normal (Warm)	T Above normal (Warm)	T Above normal (Warm)	T Above normal (Warm)
privileged scenario by RCC-LRF node	***no privileged scenario***	***above normal***	***above normal***	***above normal***	***above normal***

T Below normal (Cold) T close to normal T Above normal (Warm) No privileged scenario

WMO RA VI
RCC Network

Synthesis of Rainfall forecasts for September-October-November 2015 for European regions

Results are expressed with respect of 3 possible scenarios : « Above normal », « close to normal » and « Below normal ». The limits between each category is given by the corresponding tercile such that each scenario have the same climatological probability of occurrence (33,3%). If the forecast shows no specific signal (because of low predictability and/or divergent scenarios between several models), the cell is filled in grey and "No privileged scenario" is indicated.

MODELS	Northern Europe	Southern Europe	Central Europe	Eastern Europe	SEE Region
MF					
ECMWF					
JMA					
synthesis					
Eurosip					
privileged scenario by RCC-LRF node	***no privileged scenario***	***no privileged scenario***	***no privileged scenario***	***Below normal***	***Above normal***

RR Below normal (Dry)

RR close to normal

RR Above normal (Wet)

No privileged scenario

III. ANNEX

III.1. SEASONAL FORECASTS

Presently several centres provide seasonal forecasts, especially those designated as Global Producing Centres by WMO (see http://www.wmo.int/pages/prog/wcp/wcasp/clips/producers_forecasts.html).

■ BoM, CMA, CPTEC, ECMWF, JMA, KMA, Météo-France, NCEP and UK Met Office have ocean/atmosphere coupled models. The other centres have atmospheric models which are forced by a SST evolution which is prescribed for the entire period of forecast.

■ LC-MME and Euro-SIP provide multi-model forecasts. Euro-Sip is presently composed using 4 models (ECMWF, Météo-France, NCEP and UK Met Office). LC-MME uses information coming from most of the GPCs ; providing deterministic and probabilistic combinations of several coupled and forced models.

Seasonal forecasts use the ensemble technique to sample uncertainty sources inherent to these forecasts. Several Atmospheric and/or oceanic initial states are used to perform several forecasts with slightly different initial state in order to sample the uncertainty related to imperfect knowledge of the initial state of the climate system. When possible, the model uncertainty is sampled using several models or several version of the same model. The horizontal resolution of the Global models is currently between 100 and 300km. This mean that only Large Scale feature make sense in the interpretation of the issued forecasts. Generally speaking, the temperature forecasts show better skills than rainfall forecasts. Then, it exists a natural weakness of the seasonal predictability in Spring (ref to North Hemisphere).

In order to better interpretate the results, it is recommended to look to verification maps and graphs which give some insight into the expected level of skill for a specific parameter, region and period. A set of scores is presented on the web-site of the Lead-Centre for Verification (see http://www.bom.gov.au/wmo/lrfvs/) ; scores are also available at the specific web site of each centres.

This bulletin collects all the information available the 21st of the current month preceding the forecasted 3-month period.

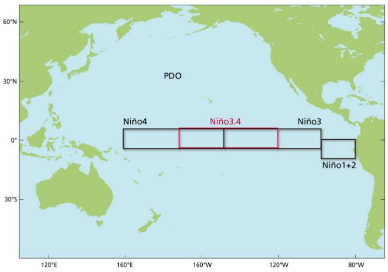
III.2. « NINO », SOI INDICES AND OCEANIC BOXES

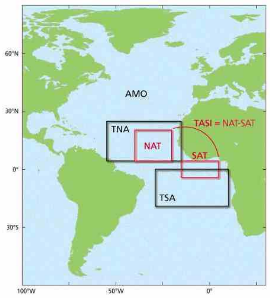
El Niño and La Niña events primarily affect tropical regions and are monitored by following the SST evolution in specific area of the equatorial Pacific.

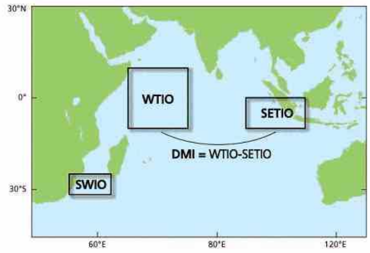
- Niño 1+2 : 0°/10°S 80W-90W ; it is the region where the SST warming is developing first at the surface (especially for coastal events).
- Niño 3 : 5°S/5°N 90W-150W ; it is the region where the interanual variability of SST is the greatest.
- Niño 4 : 5°S/5°N 160E- 150 W ; it is the region where SST evolution have the strongest relationship with evolution of convection over the equatorial Pacific.
- Niño 3.4 : 5°S/5°N 120W-170W ; it is a compromise between Niño 3 and Niño 4 boxes (SST variability and Rainfall impact).

Associated to the oceanic « El Niño / La Niña » events, and taking into account the strong ocean/atmopshere coupling, the atmosphere shows also interanual variability associated to these events. It is monitored using the SOI (Southern Oscillation Index). This indice is calculated using standardized sea level pressure at Tahiti minus standardized sea level pressure at Darwin (see above figure). It represents the Walker (zonal) circulation and its modifications. Its sign is opposite to the SST anomaly meaning that when the SST is warmer (respectively colder) than normal (Niño respectively Niña event), the zonal circulation is weakened (respectively strengthened).

Oceanic boxes used in this bulletin :

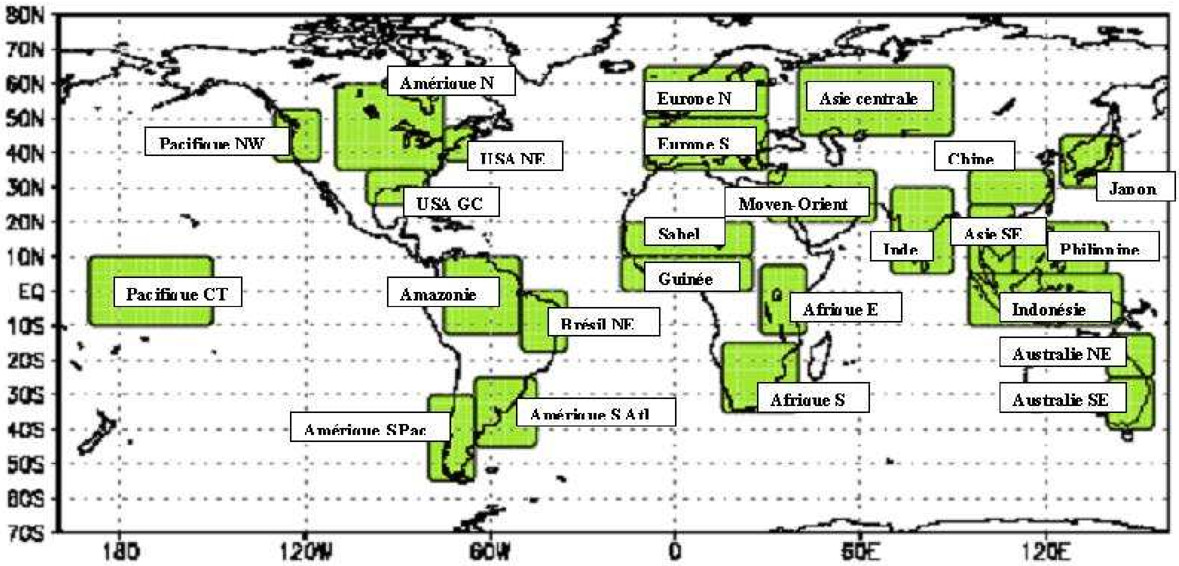






III.3.LAND BOXES

Some forecasts correspond to box averaged values for some specific area over continental regions. These boxes are described in the following map and are common to ECMWF and Météo-France.



III.4. ACKNOWLEDGEMENT

This bulletin is edited by the RCC-LRF Node of the RCC Network in Toulouse for the RA VI. It is a joint effort of the RCC-Climate Monitoring Node (led by DWD) and the RCC-LRF Node (Co-Led by Météo-France).