



WMO RA VI
RCC Network

Deutscher Wetterdienst
Wetter und Klima aus einer Hand



Climate monitoring information on the Mediterranean

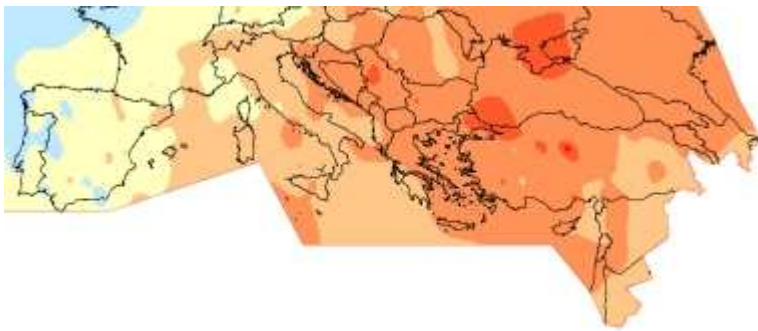
Peter Bissolli

**Deutscher Wetterdienst (DWD, Germany), Dep. Climate Monitoring
WMO RA VI Regional Climate Centre on Climate Monitoring**



Seasonal temperature anomalies: last 4 seasons

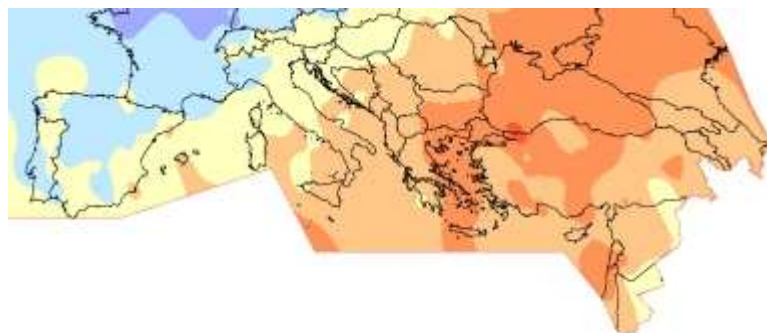
Autumn 2012



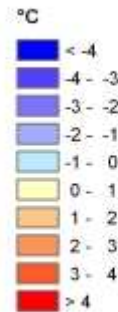
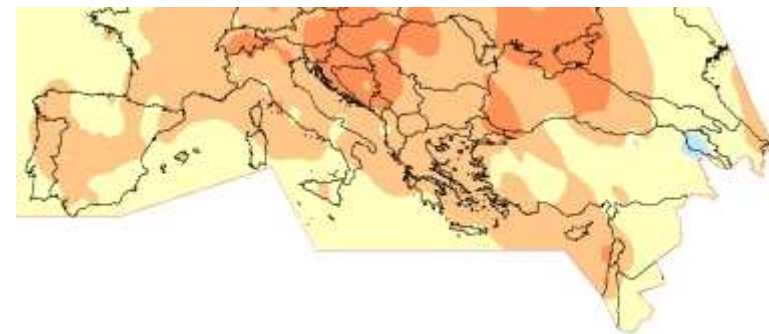
Winter 2012/13



Spring 2013

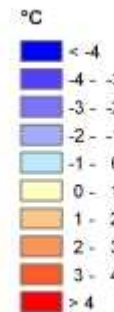
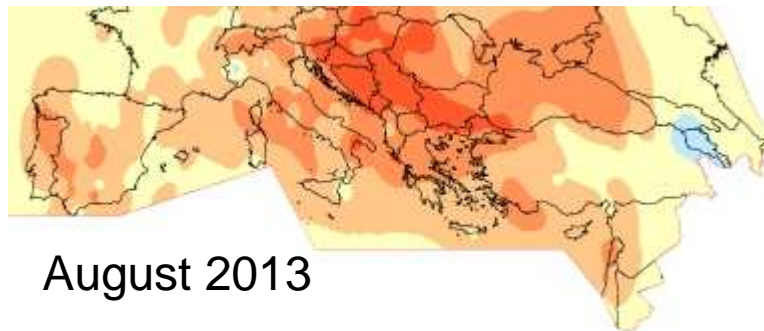
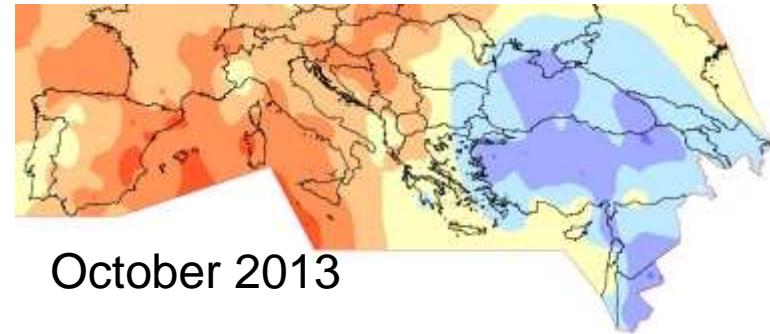
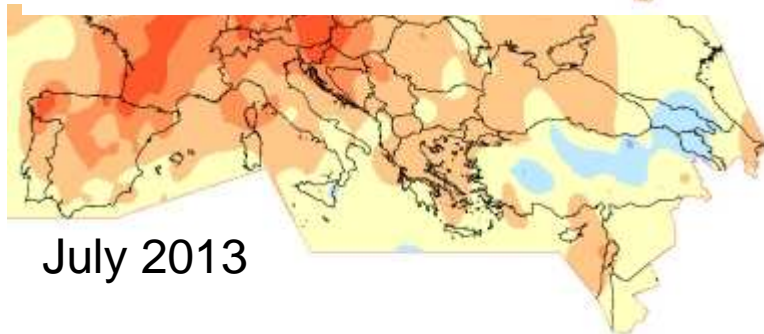
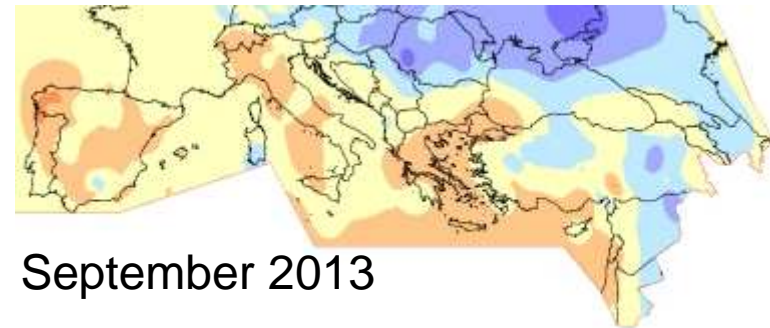
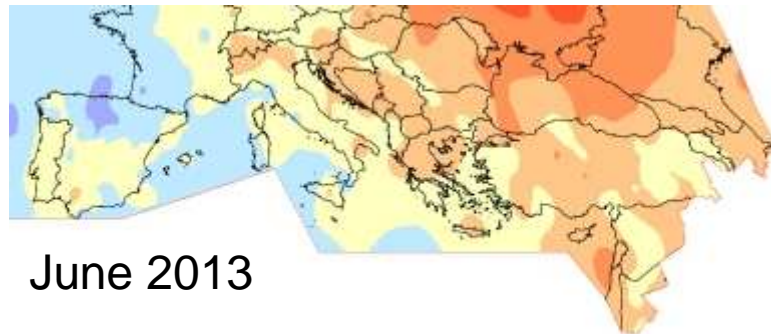


Summer 2013

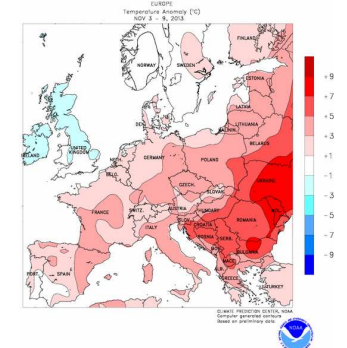




Monthly temperature anomalies: Summer / Autumn 2013



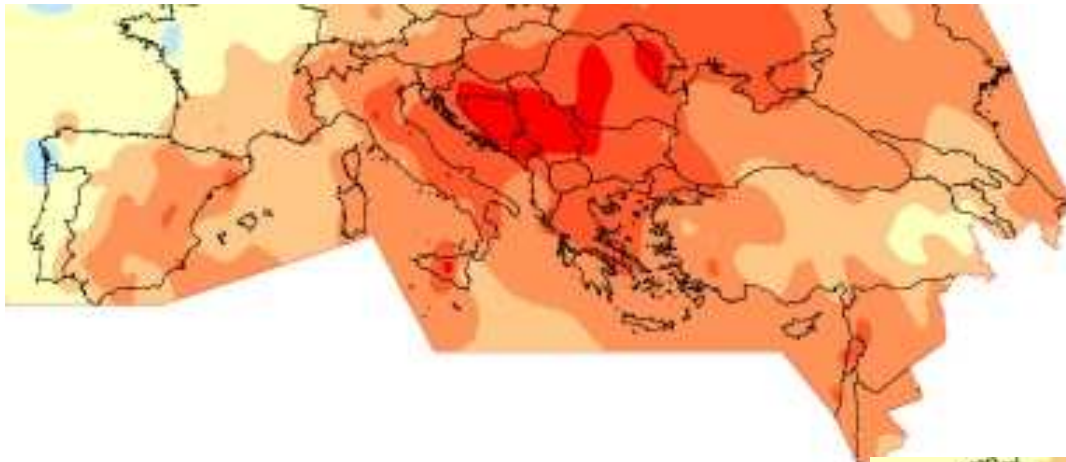
First week
November 2013



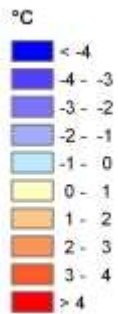
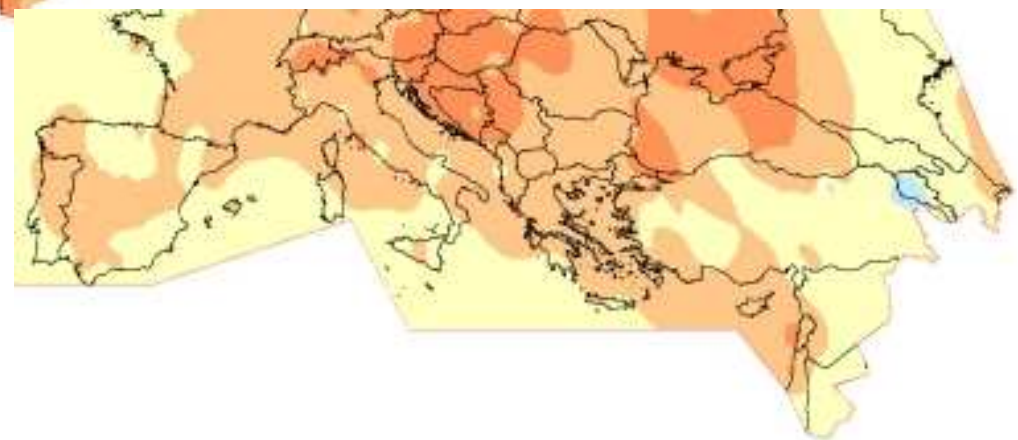


Summer 2012 and 2013

Summer 2012

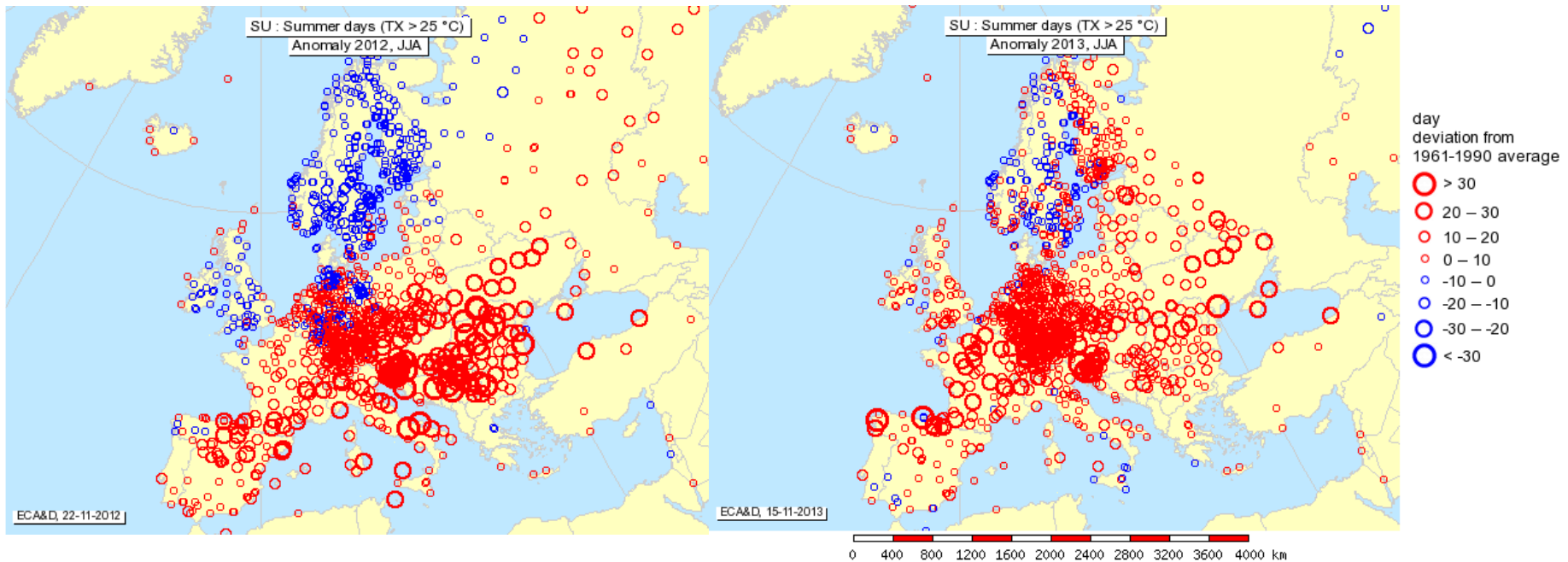


Summer 2013





Anomalies of the number of summer days ($T_{\max} \geq 25 \text{ }^\circ\text{C}$)



JJA 2012

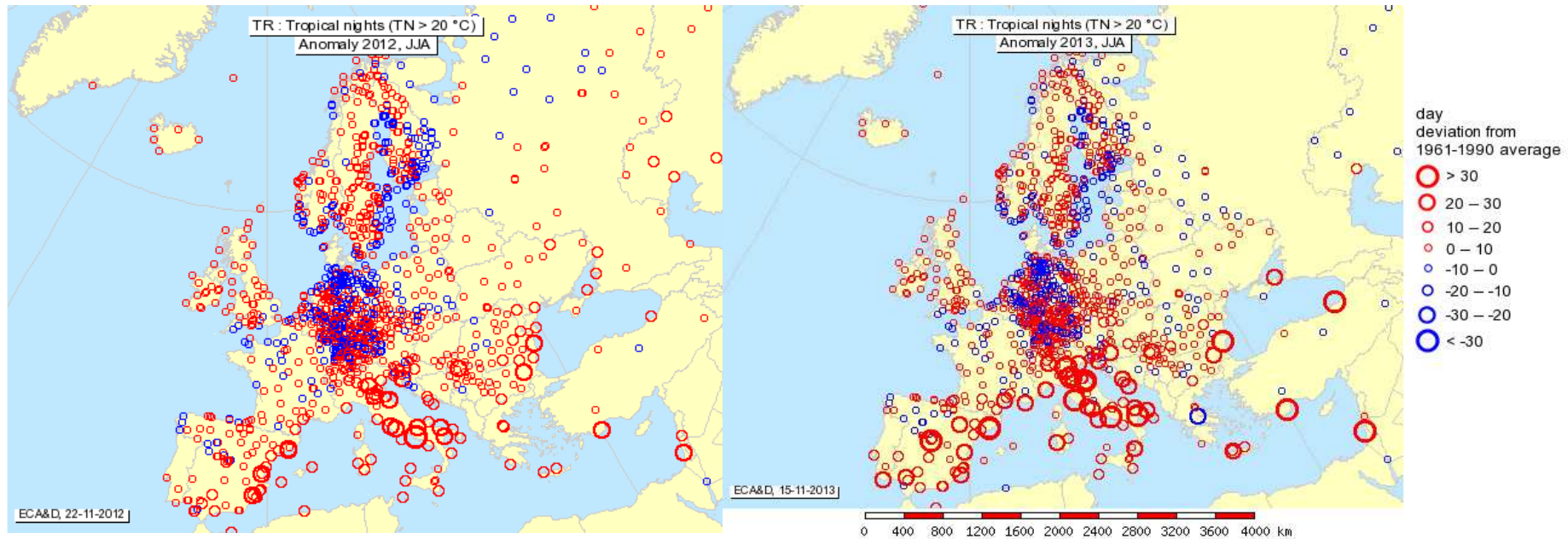
JJA 2013

Source: ECA&D





Anomalies of the number of tropical nights ($T_{\min} \geq 20 \text{ }^\circ\text{C}$)



JJA 2012

JJA 2013



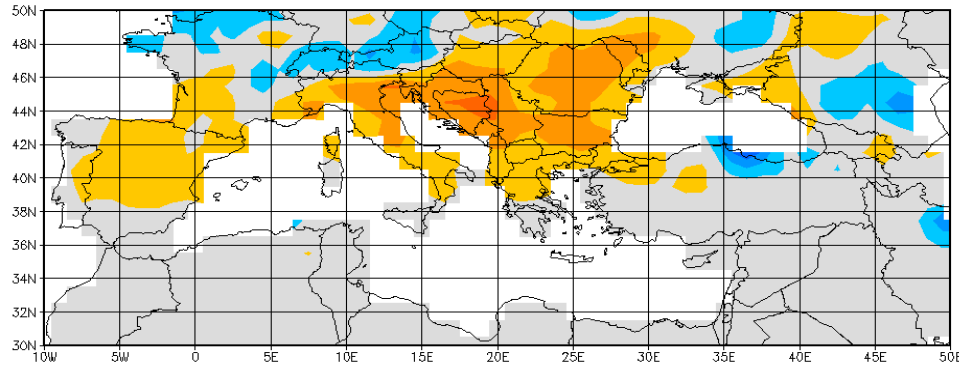


Summer 2012

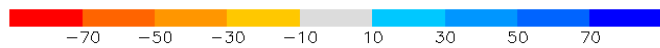
Seasonal

Summer 2013

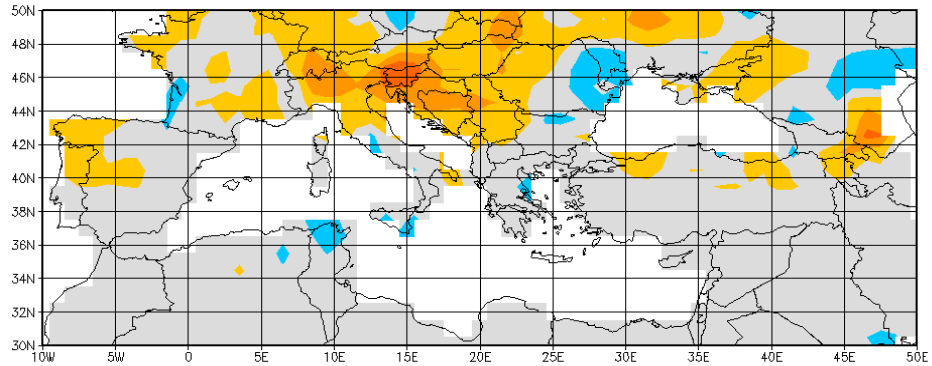
GPCC Monitoring Product Gauge-Based Analysis 1.0 degree
precipitation anomaly for Season (Jun,Jul,Aug) 2012 in mm/month
(deviation from normals 1951/2000) (grid based)



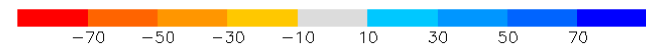
(c) GPCC 2013/11/16



GPCC First Guess 1.0 degree
precipitation anomaly for Season (Jun,Jul,Aug) 2013 in mm/month
(deviation from normals 1951/2000) (grid based)

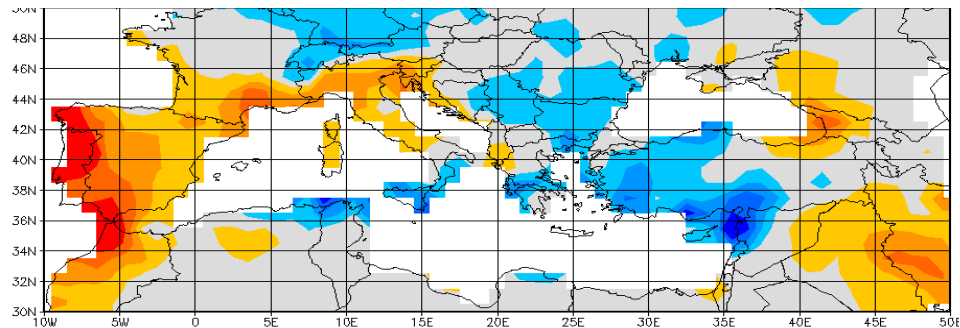


(c) GPCC 2013/11/15

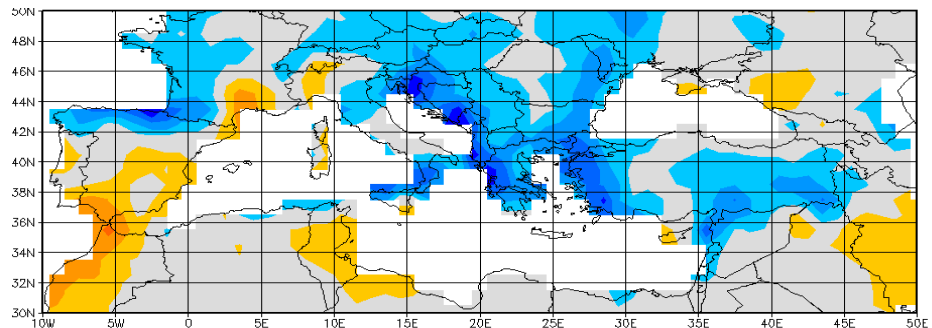


Winter 2011/12

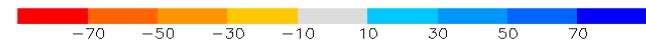
Winter 2012/13



(c) GPCC 2013/11/16



(c) GPCC 2013/11/16



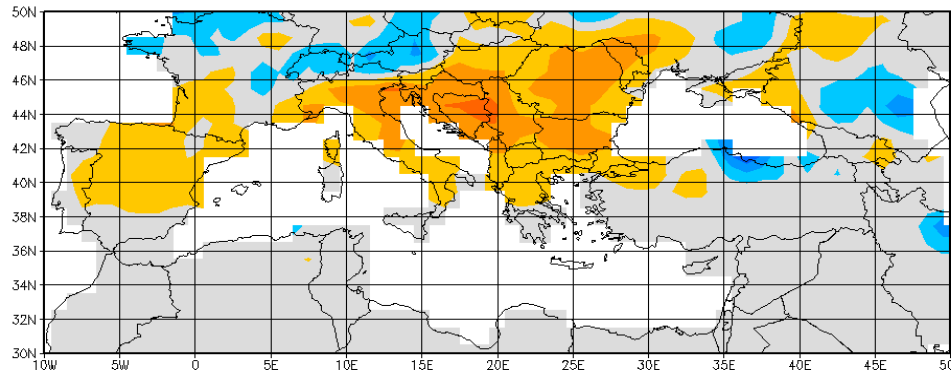


Summer 2012

Seasonal

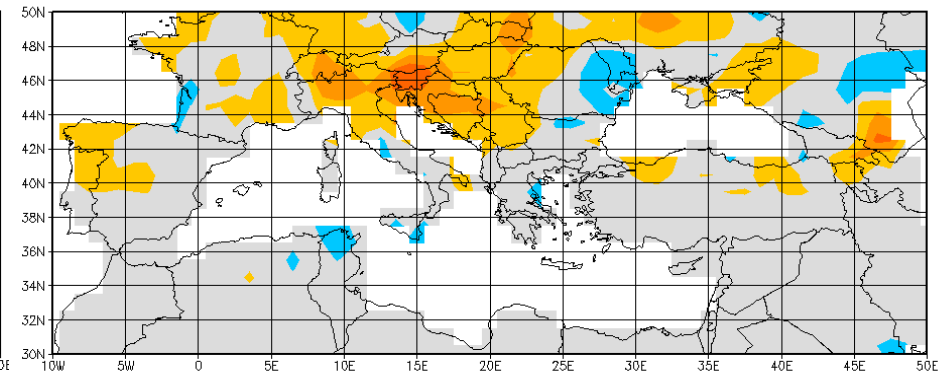
Summer 2013

GPCC Monitoring Product Gauge-Based Analysis 1.0 degree
precipitation anomaly for Season (Jun,Jul,Aug) 2012 in mm/month
(deviation from normals 1951/2000) (grid based)



(c) GPCC 2013/11/15

GPCC First Guess 1.0 degree
precipitation anomaly for Season (Jun,Jul,Aug) 2013 in mm/month
(deviation from normals 1951/2000) (grid based)



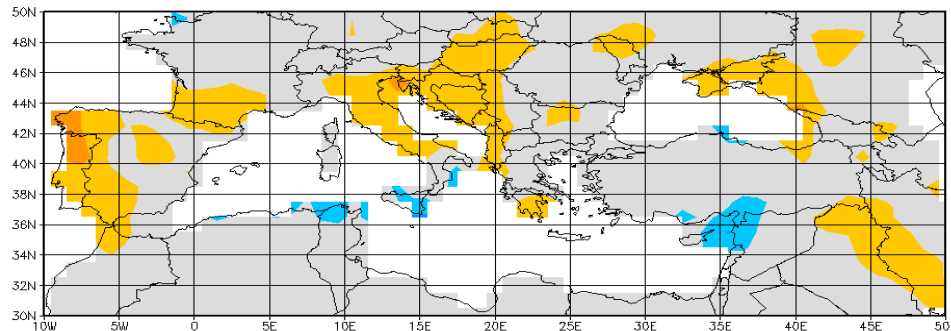
(c) GPCC 2013/11/15

2011/12

Hydrological year (Nov.-Oct.)

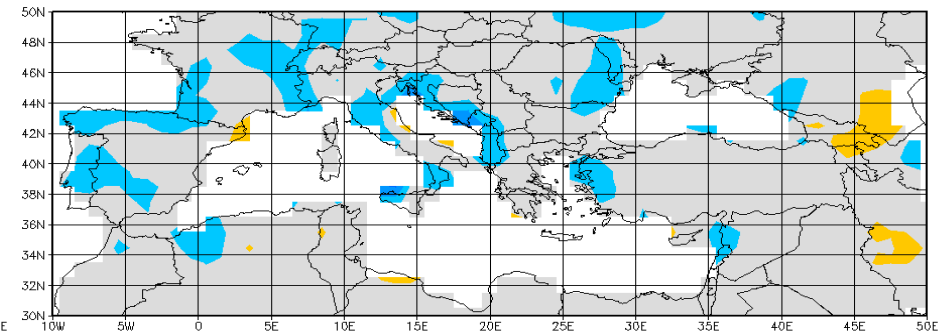
2012/13

GPCC Monitoring Product Gauge-Based Analysis 1.0 degree
precipitation anomaly for year (Nov - Oct) 2011/2012 in mm/month
(deviation from normals 1951/2000) (grid based)

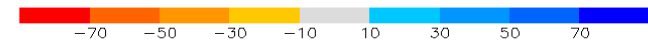
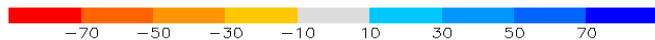


(c) GPCC 2013/11/15

GPCC First Guess 1.0 degree
precipitation anomaly for year (Nov - Oct) 2012/2013 in mm/month
(deviation from normals 1951/2000) (grid based)

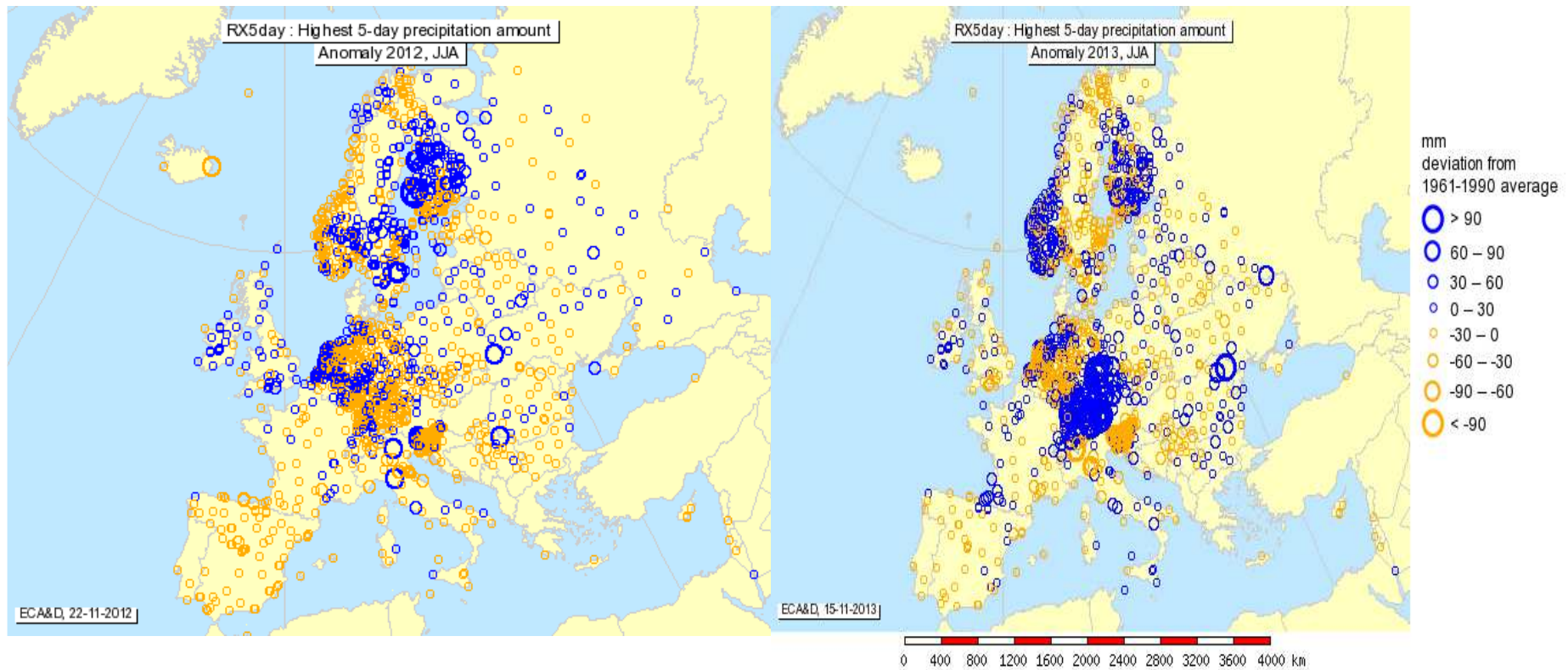


(c) GPCC 2013/11/15





Anomalies of highest 5-day precipitation amount



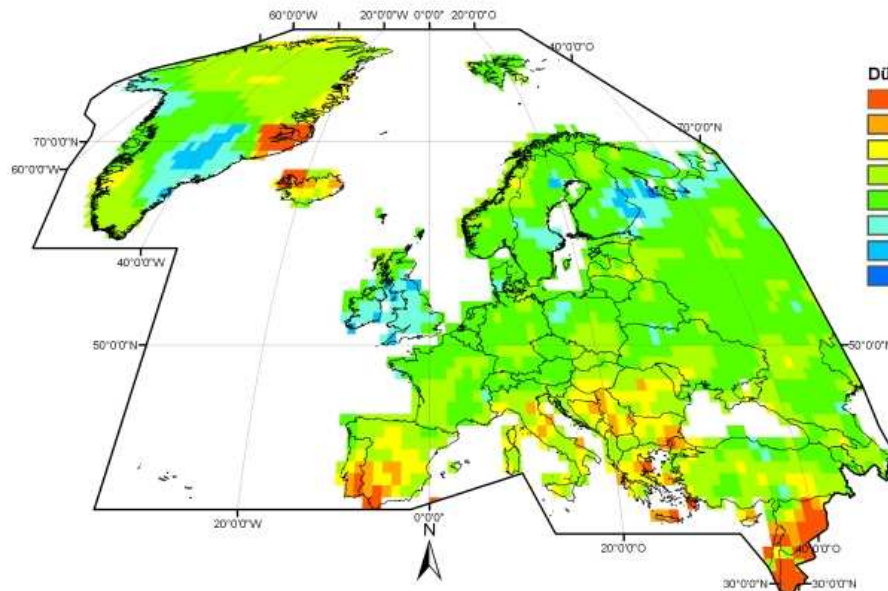
Summer 2012

Summer 2013

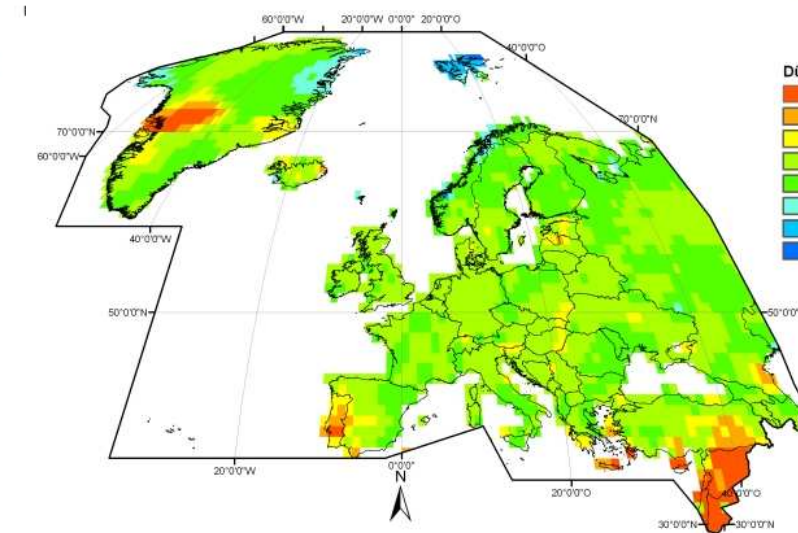




DWD-Standardisierter Niederschlags-Index Sommer 2012 DWD Standardized Precipitation Index Summer 2012



DWD-Standardisierter Niederschlags-Index Sommer 2013 DWD Standardized Precipitation Index Summer 2013



Datenbasis / Data basis:
WZM/GPCC
Landsurface First Guess
Product 1.0*

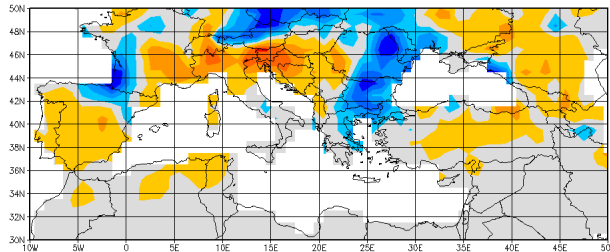
Projektion / Projection:
Mollweide

Stand / last update :
04.10.2013

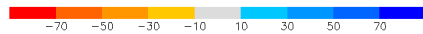


Monthly precipitation anomalies

GPCC Monitoring Product Gauge-Based Analysis 1.0 degree precipitation anomaly for June 2013 in mm/month (deviation from normals 1951/2000) (grid based)

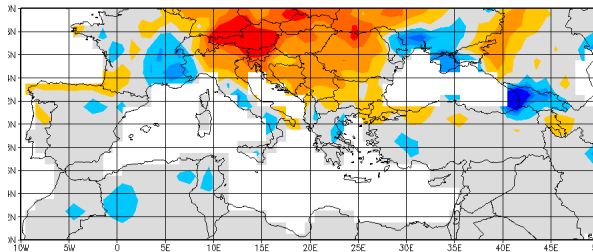


(c) GPCC 2013/11/15



June 2013

GPCC Monitoring Product Gauge-Based Analysis 1.0 degree precipitation anomaly for July 2013 in mm/month (deviation from normals 1951/2000) (grid based)

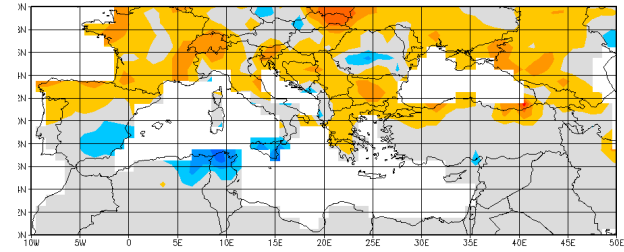


(c) GPCC 2013/11/15



July 2013

GPCC Monitoring Product Gauge-Based Analysis 1.0 degree precipitation anomaly for August 2013 in mm/month (deviation from normals 1951/2000) (grid based)

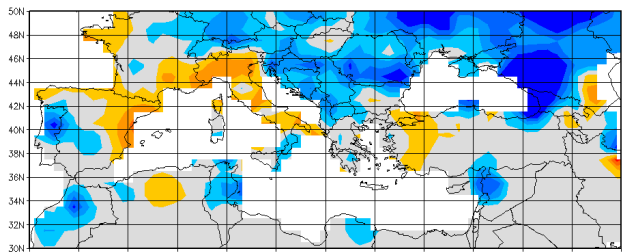


(c) GPCC 2013/11/15

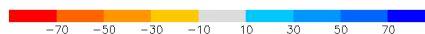


August 2013

GPCC First Guess 1.0 degree precipitation anomaly for September 2013 in mm/month (deviation from normals 1951/2000) (grid based)

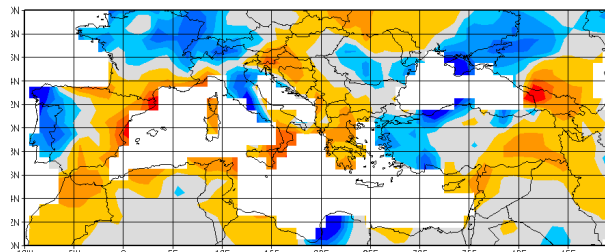


(c) GPCC 2013/11/15

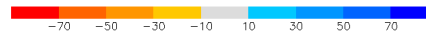


September 2013

GPCC First Guess 1.0 degree precipitation anomaly for October 2013 in mm/month (deviation from normals 1951/2000) (grid based)

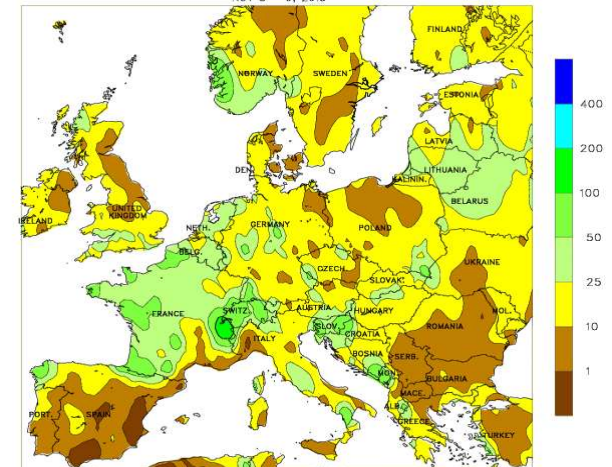


(c) GPCC 2013/11/15



October 2013

EUROPE
Total Precipitation (mm)
NOV 3 - 9, 2013



CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
based on preliminary data



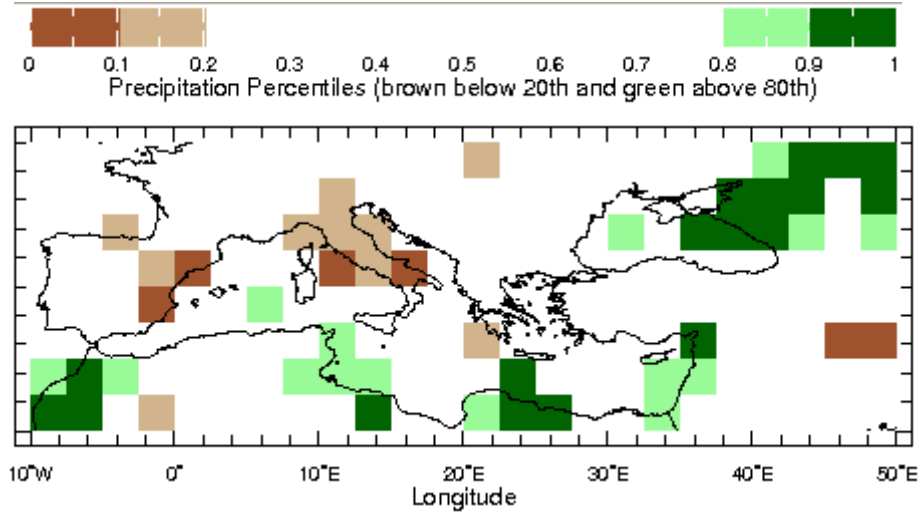
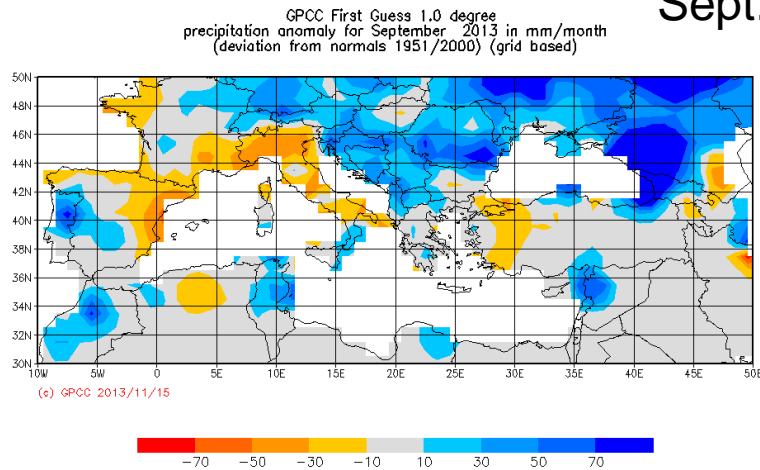
First week Nov. 2013



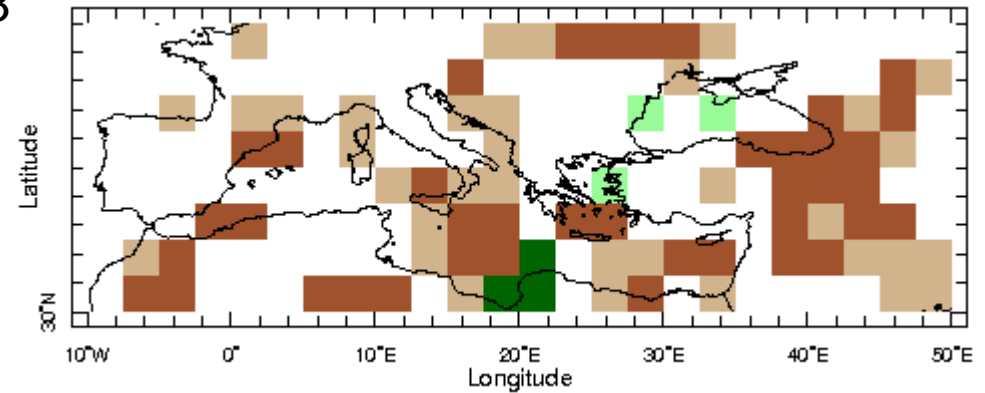
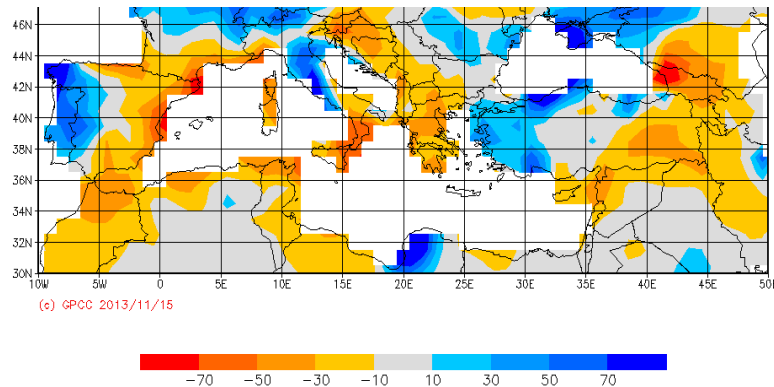
Precipitation anomalies (1951-2000 reference)

Precipitation percentiles (source: IRI) (1981-2010 reference)

Sept. 2013



Oct. 2013



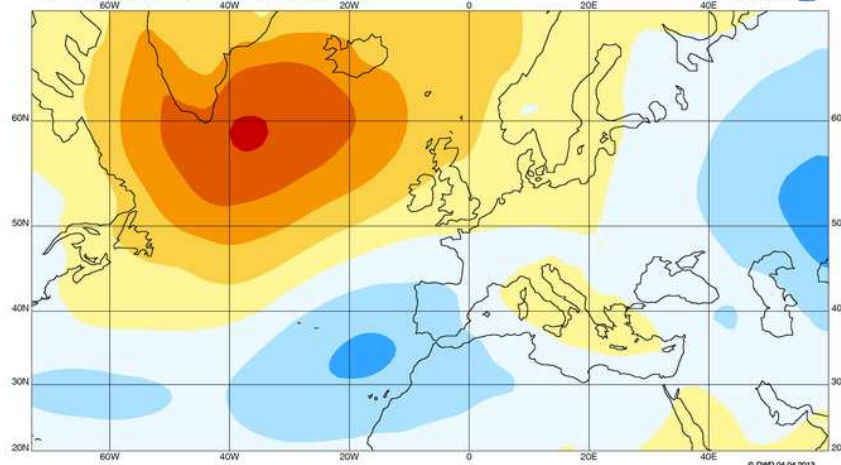
Selected Significant Events in the MedCOF region

- **18-20 June:** A Short intense **heat wave**, which occurred first in Central Europe, moved even southwards to Italy, Malta and the Balkan Peninsula and was followed by intense thunderstorms and an abrupt temperature decrease.
- **June:** 21 days of **hail** were recorded in Bulgaria, 9 days more than normal. Large hail at the end of June caused considerable damage on agriculture, especially fruits and vegetables.
- **19-30 July:** **Floodings** in Georgia, in the west and the north of the country
- **8 August:** **Flooding** at the Turkish Black Sea coast (Samsun, daily total >200mm)
- **29 August:** large **forest fire** in Portugal in the Caramulo Mountains
- **12-18 September:** **flooding** in Romania, southern Moldova, southern Ukraine



Sea level pressure mean Winter 2012/13

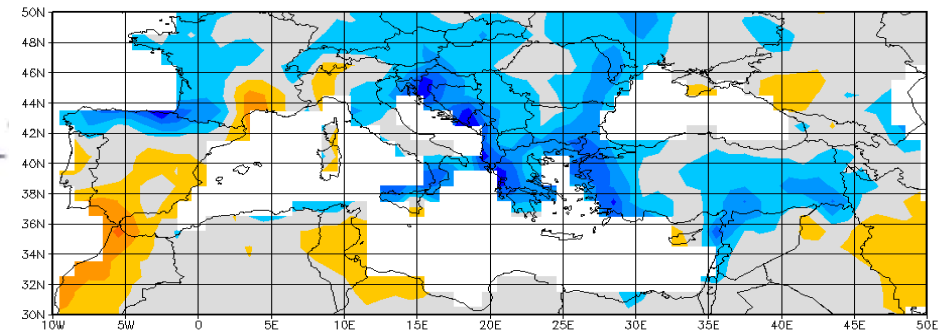
Mittel des Luftdrucks in Meereshöhe, Winter(DJF) 2013
Means of Sea Level Pressure, Winter(DJF) 2013



990 995 1000 1005 1010 1015 1020 1025 1030 hPa



GPCC Monitoring Product Gauge-Based Analysis 1.0 degree
precipitation anomaly for Season (Dec,Jan,Feb) 2012/2013 in mm/month
(deviation from normals 1951/2000) (grid based)



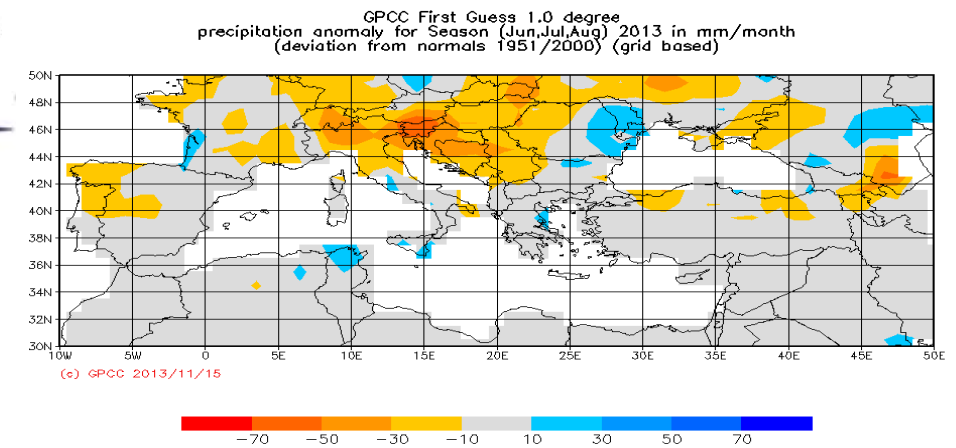
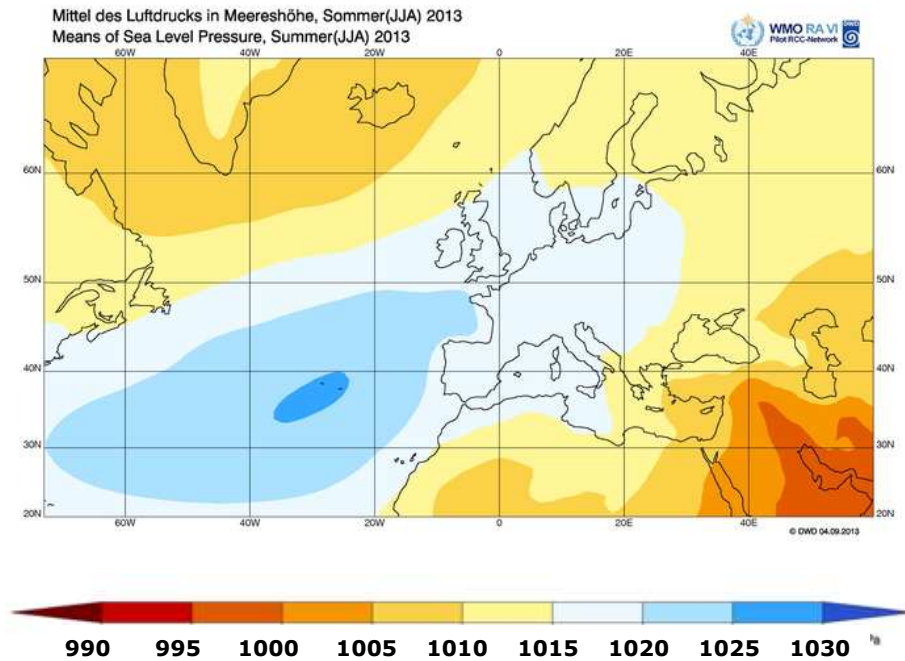
(c) GPCC 2013/11/16

-70 -50 -30 -10 10 30 50 70





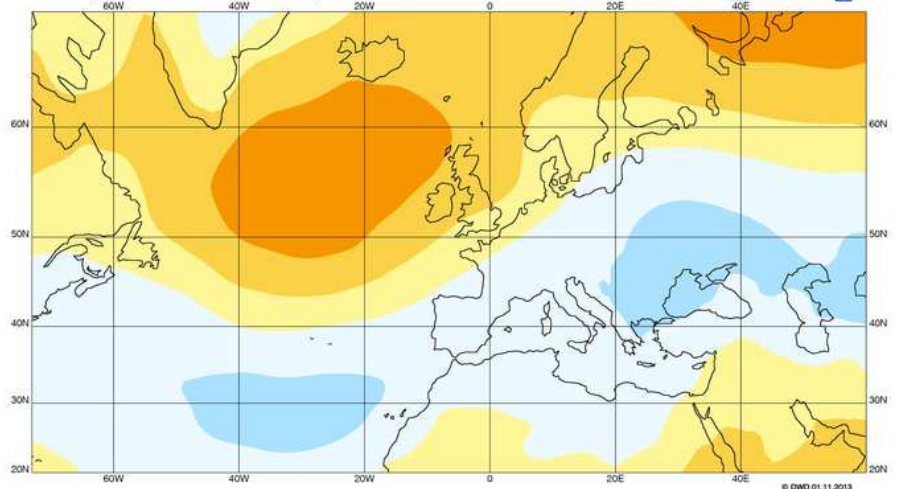
Sea level pressure mean Summer 2013





Monatsmittel des Luftdrucks in Meereshöhe, Oktober 2013
Monthly Means of Sea Level Pressure, October 2013

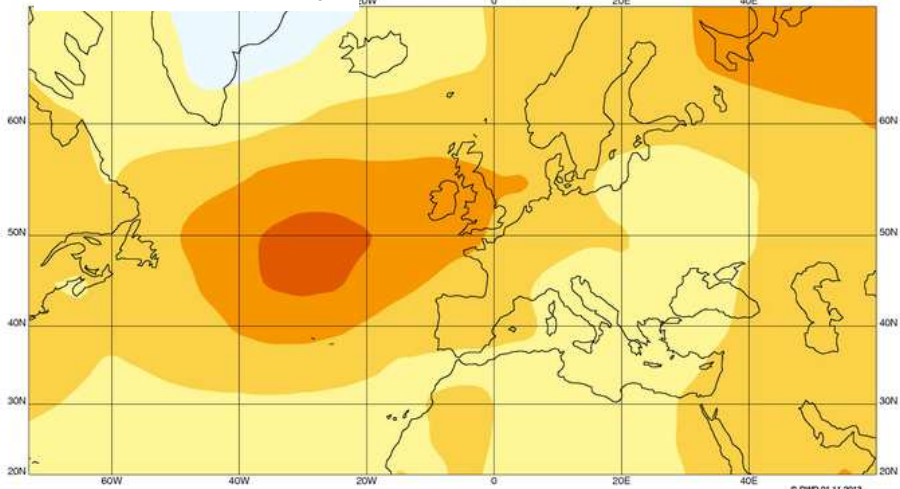
Mean SLP



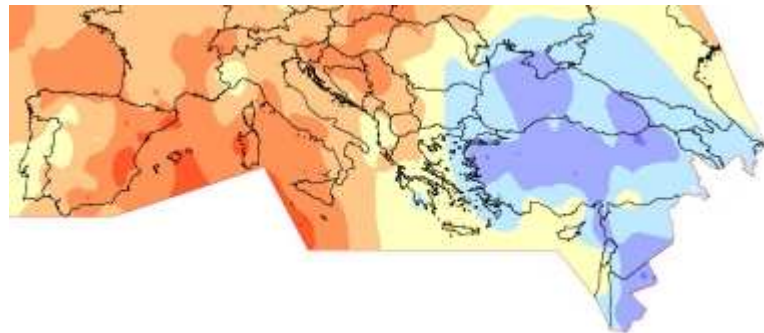
990 995 1000 1005 1010 1015 1020 1025 1030 hPa

SLP anomaly

Zeugsperiode: 1961 - 1990, Oktober 2013
Period: 1961 - 1990, October 2013

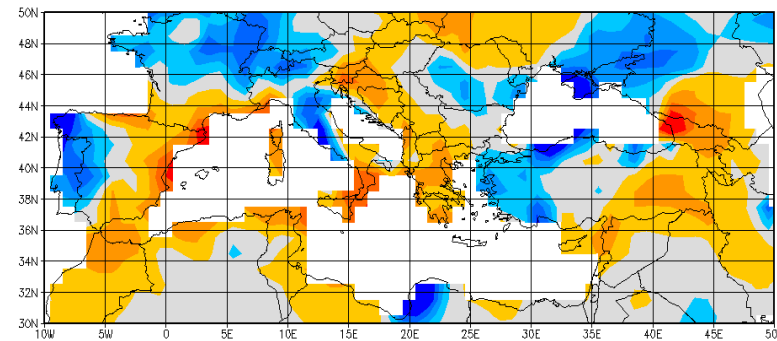


-16 -12 -8 -4 0 4 8 12 16 hPa



Temperature anomaly

precipitation anomaly for October 2013 in mm/month
(deviation from normals 1951/2000) (grid based)

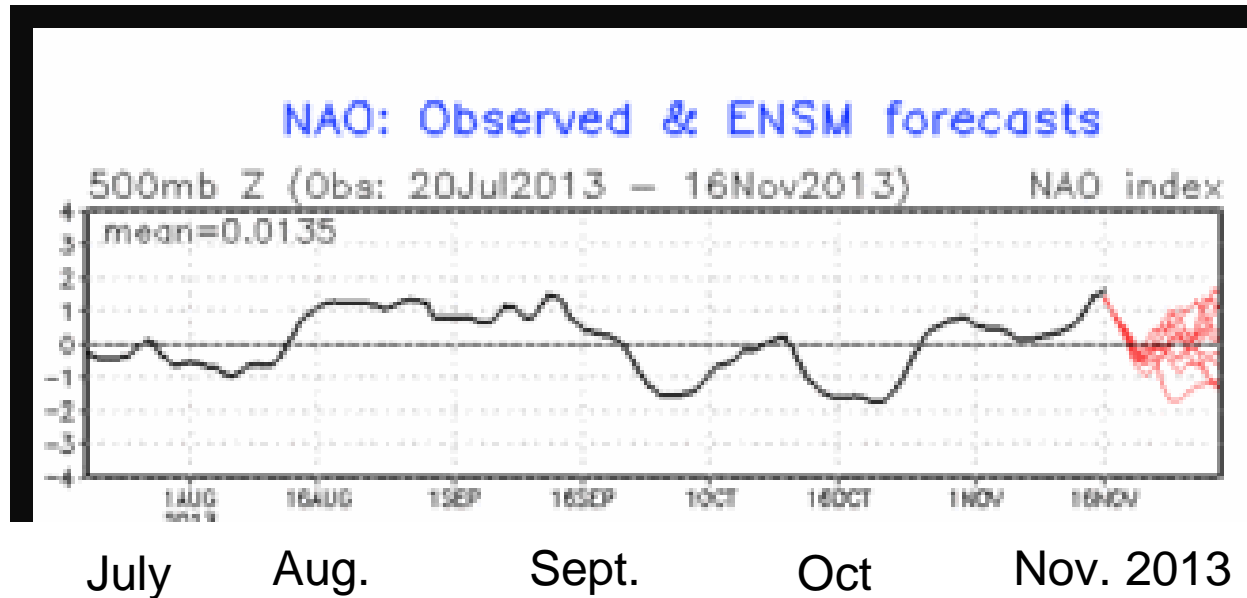


(c) GPCC 2013/11/15

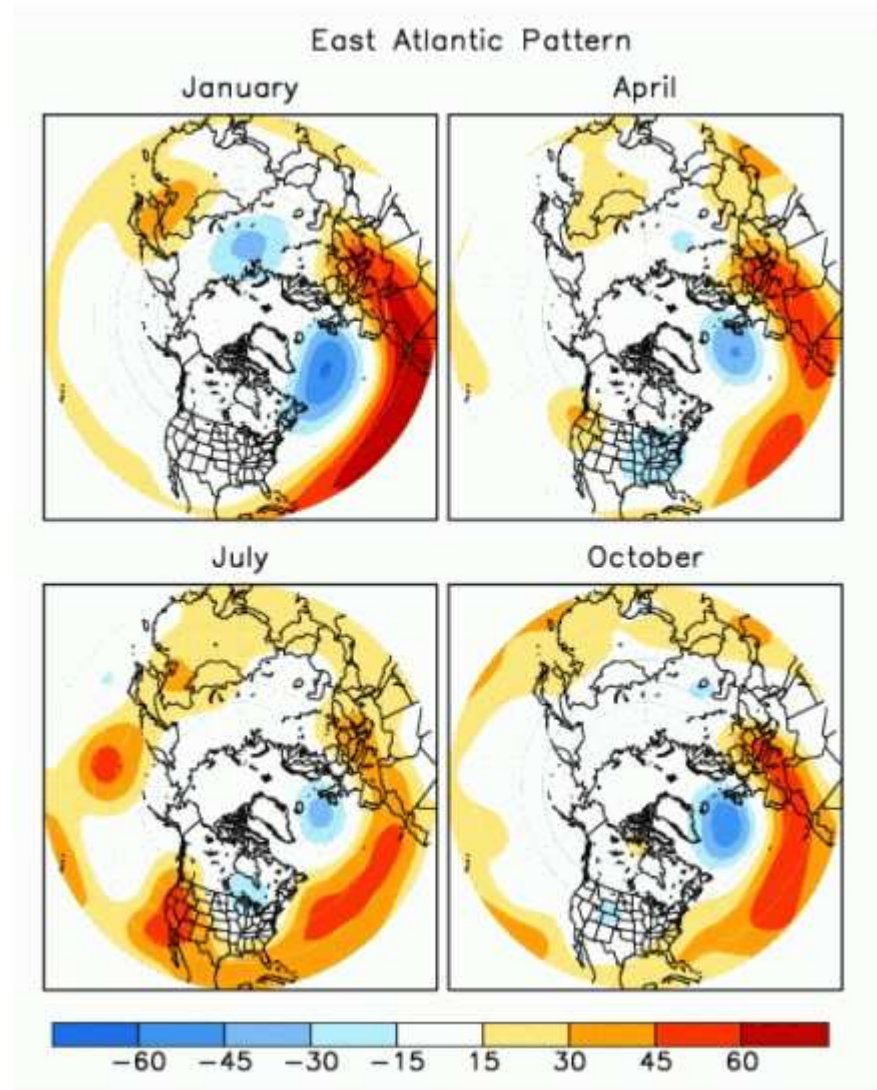
-70 -50 -30 -10 10 30 50 70

Precipitation anomaly





Source: NOAA CPC



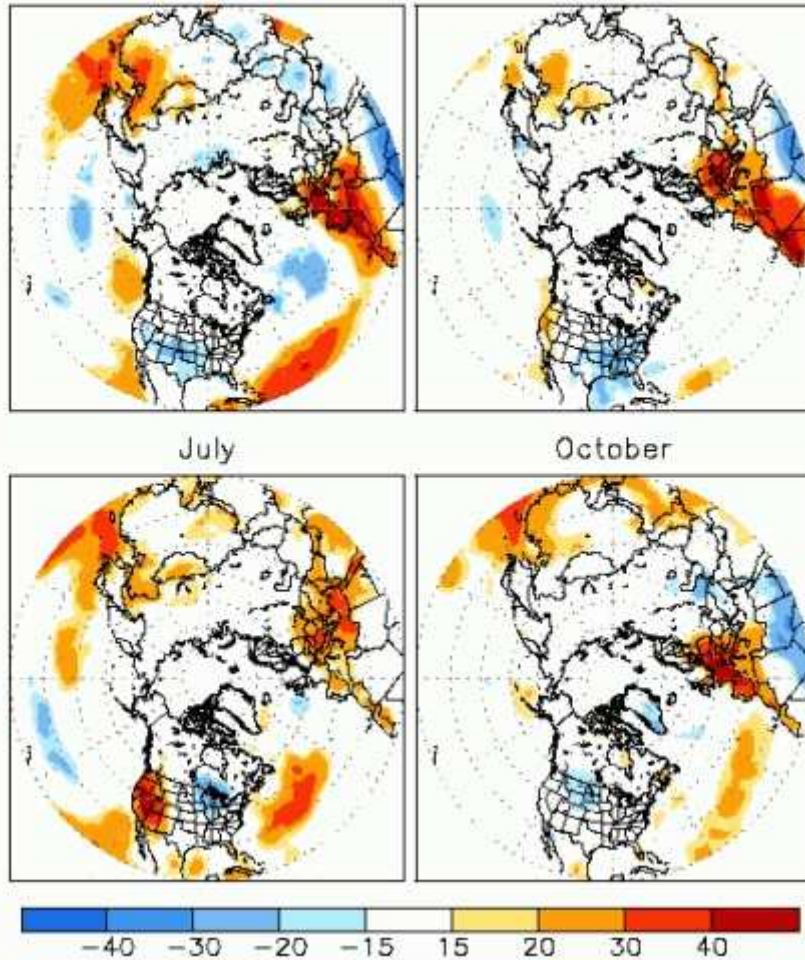
EA: southward shifted NAO

Correlation geopotential anomalies
to the EA pattern
(represents geopotential signal for
positive EA phase)





East Atlantic Pattern
Correlation with Surface Temperature Departures

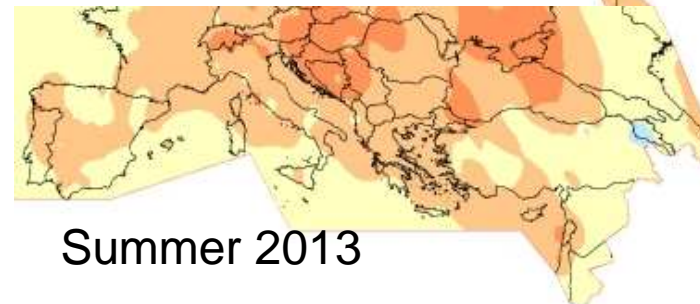


High positive correlation western Med
EA – seasonal temperature.
Particularly in winter.



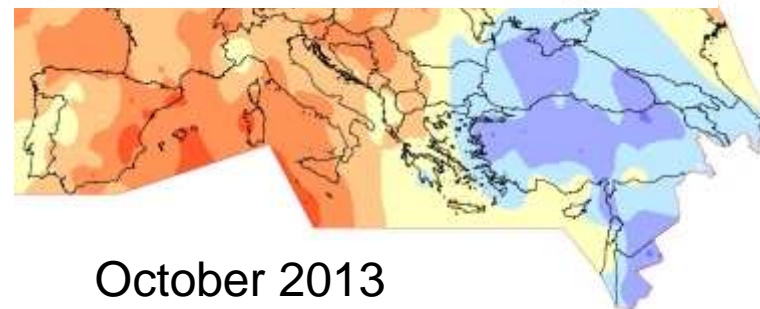
Winter 2012/13

no



Summer 2013

yes



October 2013

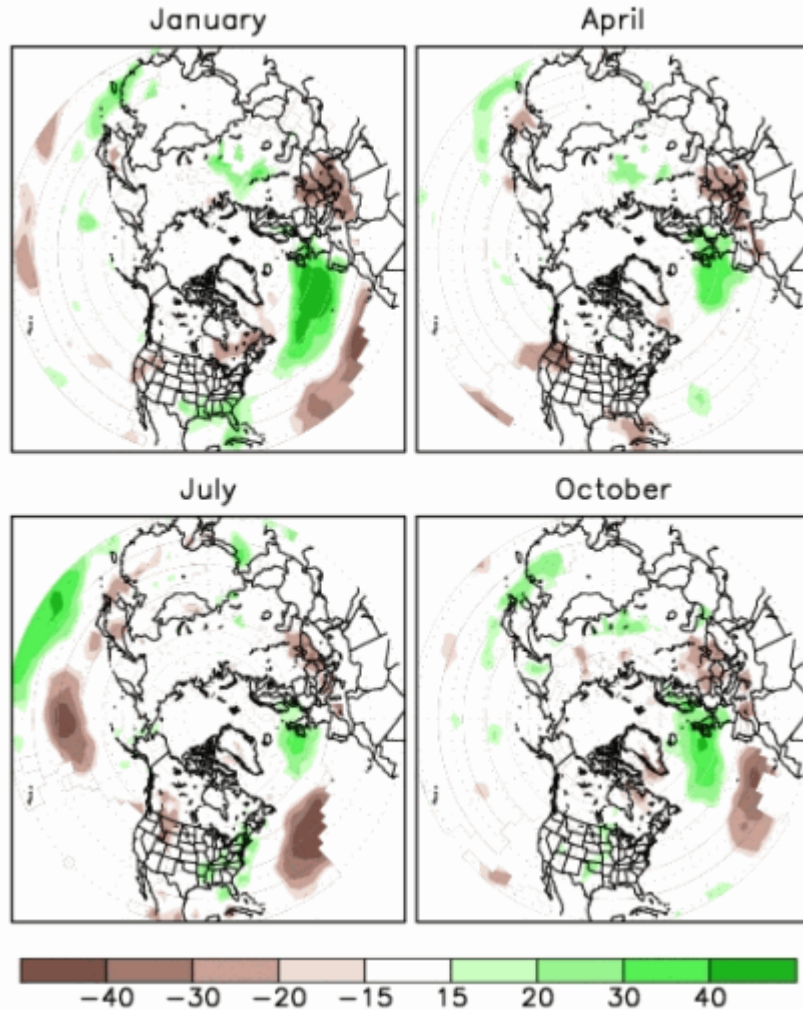
yes



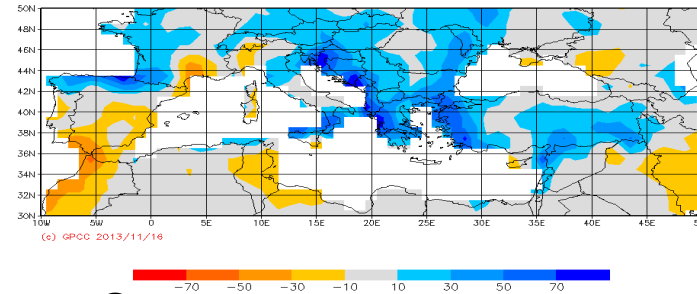


Winter 2012/13

East Atlantic Pattern
Correlation with Precipitation Departures

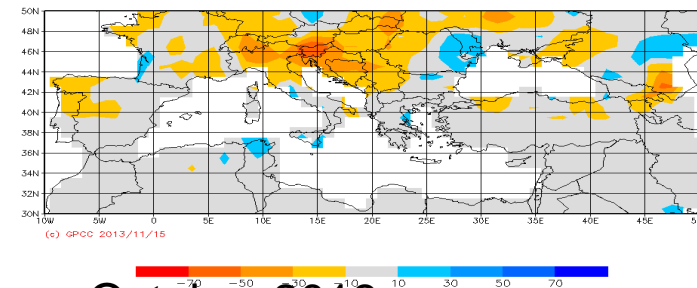


GPCP Monitoring Product Gauge-Based Analysis 1.0 degree
precipitation anomaly for Season (Dec,Jan,Feb) 2012/2013 in mm/month
(deviation from normals 1951/2000) (grid based)



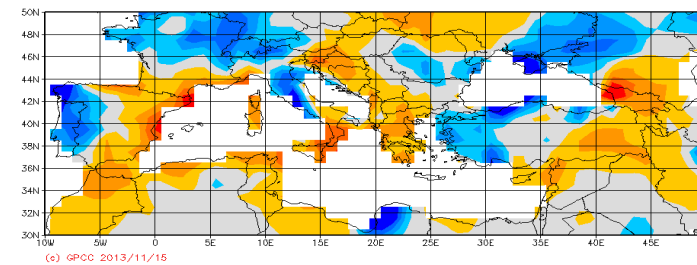
Sommer 2013

precipitation anomaly for Season (Jun,Jul,Aug) 2013 in mm/month
(deviation from normals 1951/2000) (grid based)

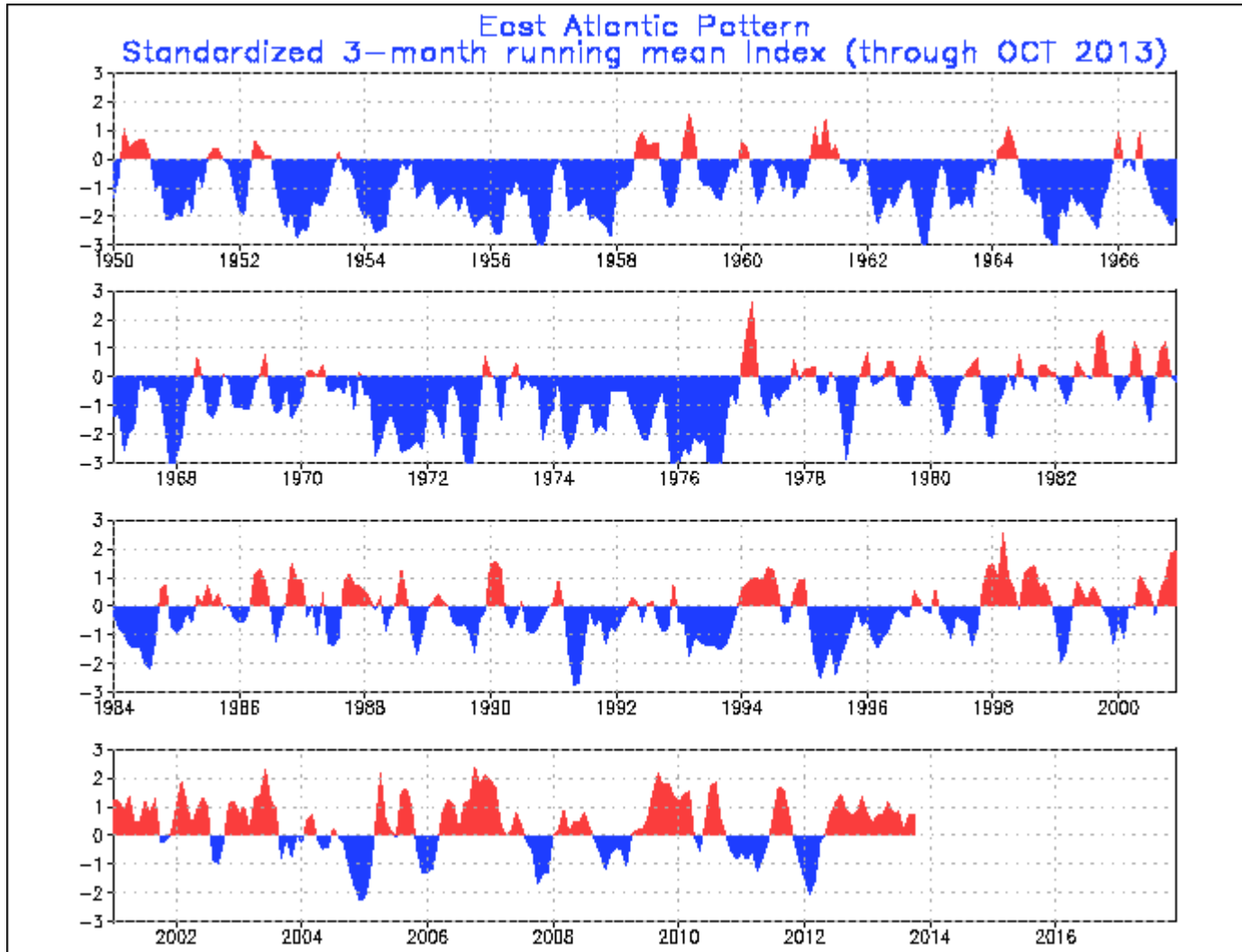


October 2013

precipitation anomaly for Season (Oct,Nov,Dec) 2013 in mm/month
(deviation from normals 1951/2000) (grid based)



Some impact on Atlantic coastal areas (western France, Portugal)



3-month running means
1981-2010 reference

Trend to positive
EA phase

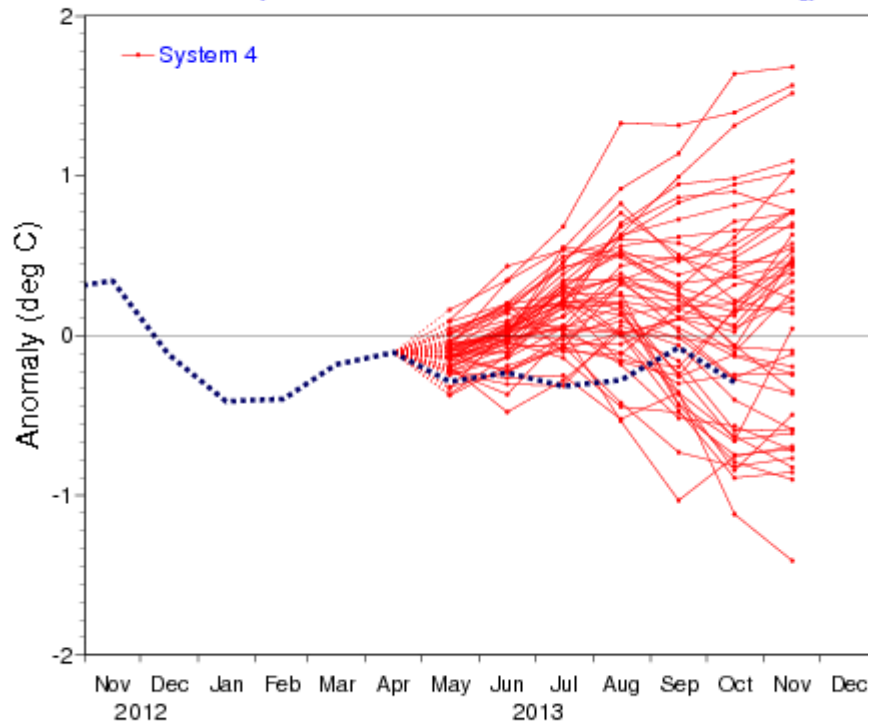
Positive EA in
almost all months
in 2013





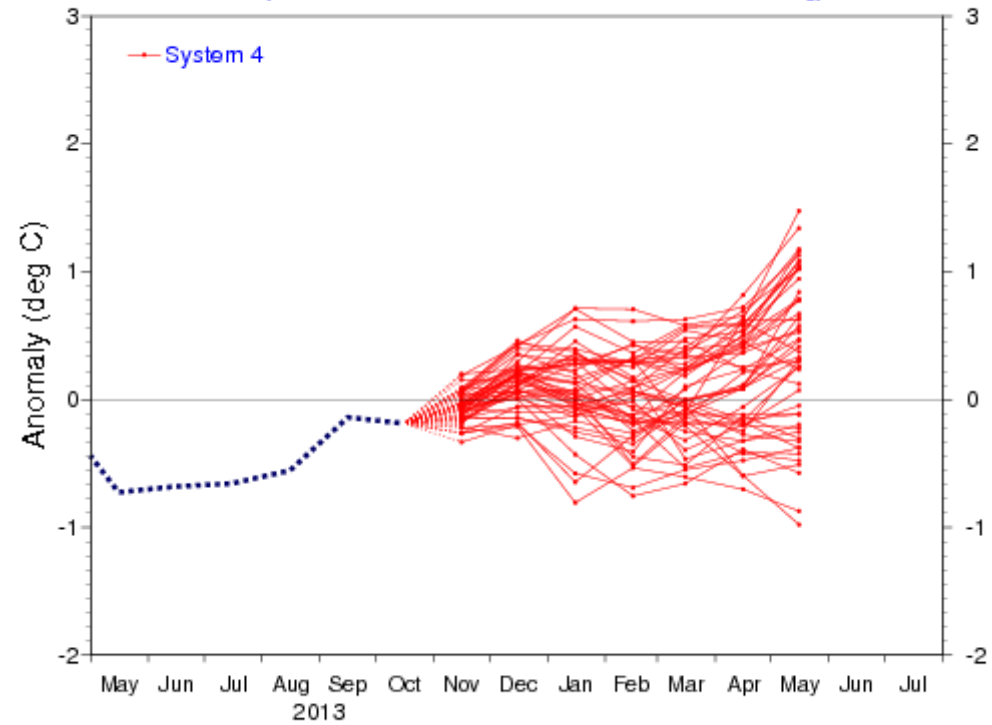
NINO3.4 SST anomaly plume
ECMWF forecast from 1 May 2013

Monthly mean anomalies relative to NCEP OIv2 1981-2010 climatology



NINO3 SST anomaly plume
ECMWF forecast from 1 Nov 2013

Monthly mean anomalies relative to NCEP OIv2 1981-2010 climatology

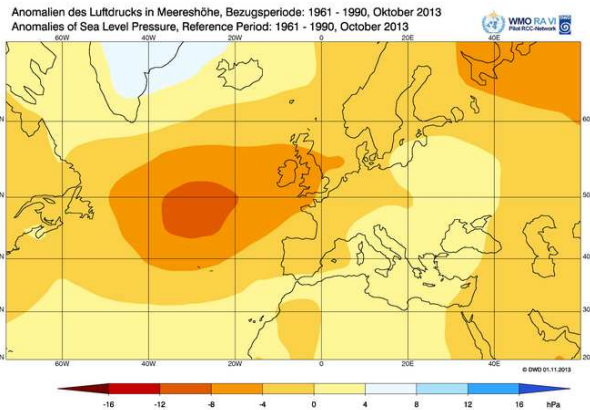




SLP and Geopotential anomaly forecast

DJF 2013/14

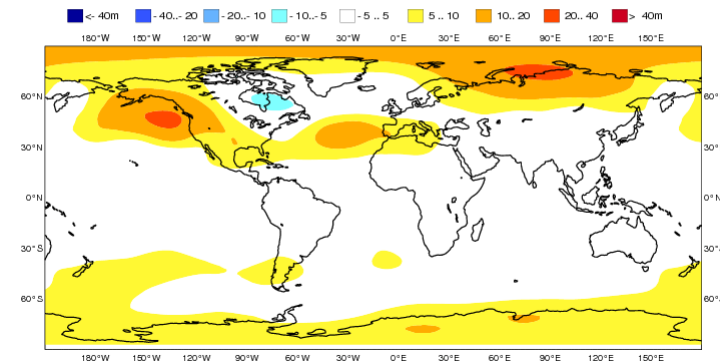
Z500



SLP anomaly October 2013

EUROSIP multi-model seasonal forecast
Mean Z500 anomaly
Forecast start reference is 01/11/13
Variance-standardized mean

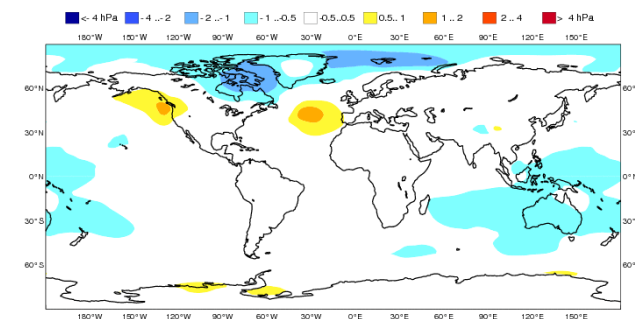
ECMWF/Met Office/Meteo-France/NCEP
DJF 2013/14



EUROSIP Prediction for Winter 2013/14:
Extension of the Azores high to the north,
which means rather positive NAO pattern,
change of the October situation

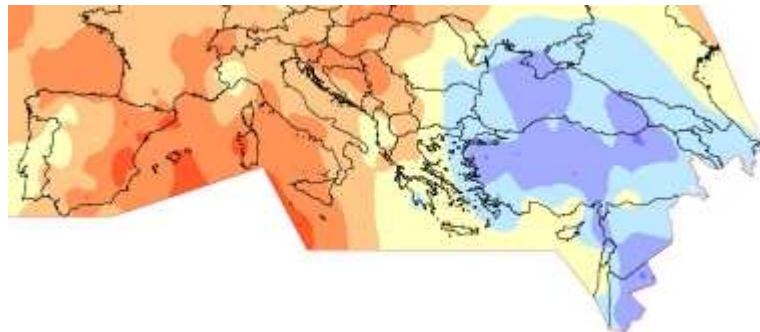
EUROSIP multi-model seasonal forecast
Mean MSLP anomaly
Forecast start reference is 01/11/13
Variance-standardized mean

ECMWF/Met Office/Meteo-France/NCEP
DJF 2013/14





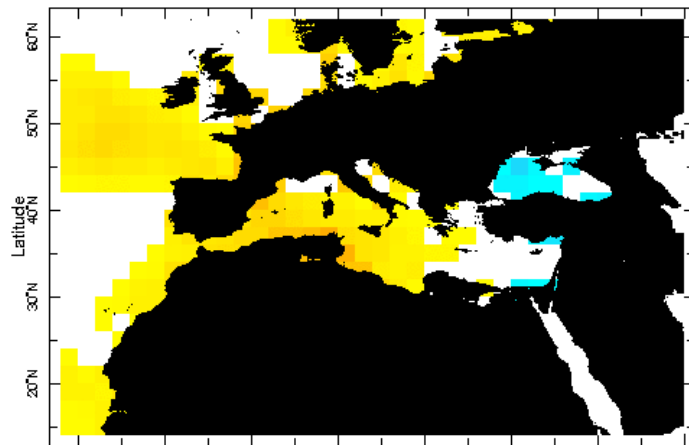
RA VI RCC



T 2m

October 2013

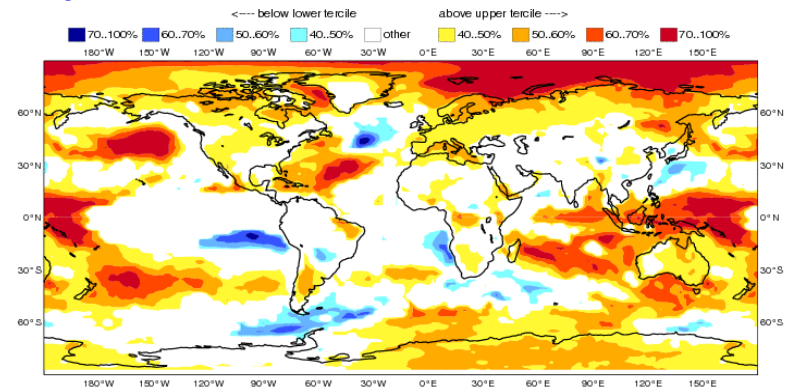
NOAA CPC



SST

EUROSIP multi-model seasonal forecast
Prob(most likely category of 2m temperature)
Forecast start reference is 01/11/13
Unweighted mean

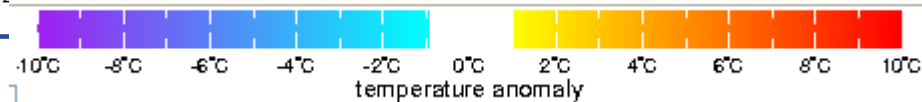
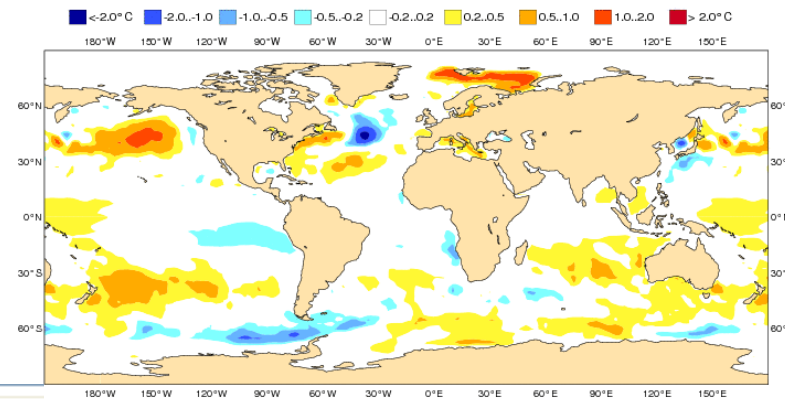
ECMWF/Met Office/Meteo-France/NCEP
DJF 2013/14



EUROSIP forecast DJF 2013/14

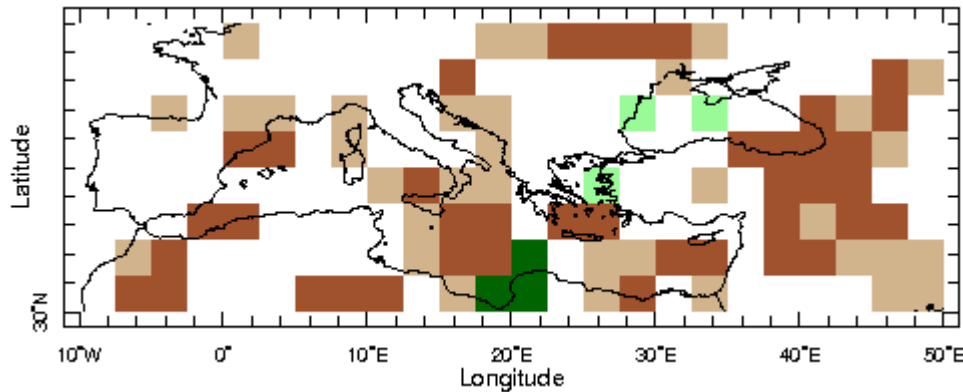
EUROSIP multi-model seasonal forecast
Mean forecast SST anomaly
Forecast start reference is 01/11/13
Variance-standardized mean

ECMWF/Met Office/Meteo-France/NCEP
DJF 2013/14





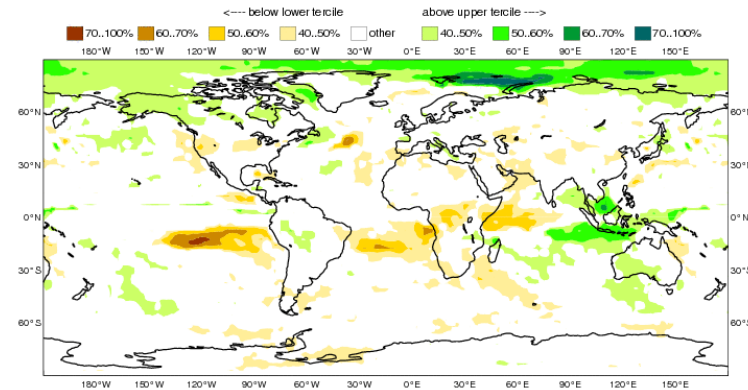
Oktober 2013



DJF 2013/14

EUROSIP multi-model seasonal forecast
Prob(most likely category of precipitation)
Forecast start reference is 01/11/13
Unweighted mean

ECMWF/Met Office/Meteo-France/NCEP
DJF 2013/14



Precipitation: no clear signal for winter 2013/14 for the Mediterranean in the EUROSIP forecast -> change from October 2013 which was mostly dry. Positive NAO phase would expect rather a drier-than-normal northern Mediterranean.





Summary and Conclusions

- **Temperature:** After a mainly warm summer 2013, cold spells over eastern parts of the MedCOF region in September and October 2013. Winter 2013/14 tends to be mild over the whole region.
- **Precipitation:** Summer mostly dry, although some heavy precipitation with flooding particularly around the Black Sea, also in autumn. Winter 2013/14 has no clear signal.
- **Circulation:** After 2 major phases of negative NAO there is a tendency rather to positive NAO to be expected. EA pattern was very significant in October, but this will probably change. No major ENSO event occurred/expected.



Thank you for your attention!



Image from NASA