Seasonal Bulletin on the Climate in WMO Region VI

- Europe and Middle East -

Summer 2011

Deutscher Wetterdienst

Last Change: Fri Oct 21 11:44:33 UTC 2011

The Seasonal Bulletin on the Climate in WMO Region VI will usually be delivered within 2 month after the end of a season.

Highlights:

Warm except in the west

Mostly wet in central, western and northern Europe, dry in the south and east

Mostly dull

Related Links:

This is the Link to the Regional Climate Centre on Climate Monitoring in RA VI:

RCC-CM RA VI /

and partners producing further European monthly climate monitoring products including:

- anomalies for 42 climate indices from the ECA&D dataset

- Showcases of analyses of extreme weather or climate events

may be found under these links:

ECA&D monitoring products /

Overview:

Summer 2011 was mostly warm in WMO region VI except on the British Isles, the northwestern continent and the North Atlantic. The southwestern British Isles and Ireland had more cold days (days with a mean temperature below the 10th percentile of daily mean temperatures) than normal and the British Isles, southern Norway and the northwestern continent had less warm days (days with a mean temperature above the 90th percentile of daily mean temperature) than normal. The number of tropical nights was clearly above normal in the south around the Mediterranean Sea as well as around the Black Sea. The warm spell duration index had mostly slightly negative anomalies in western Europe and northern central Europe and slightly positive anomalies in southern and southeastern Europe. The trends of mean daily mean temperature are clearly positive for central, western, northern and southern Europe but not for eastern and northeastern Europe.

It was also wetter than normal mostly in western, central and northern Europe but drier than normal in southern and eastern Europe. Extremely wet days (days with a precipitation above 99th percentile of daily amounts) were more often in Norway, and close to the southern coasts of the North Sea and the Baltic Sea and days with very heavy precipitation (equal or above 20 mm) were more often there as well as elsewhere in Central Europe, especially in the Alpine region. The highest 1-day amounts were clearly higher than normal in southern Norway, northeastern Germany and western Poland, the eastern Alps and locally in southern France, Italy and the Aegean Sea.In southern Norway, northeastern Germany and western Poland as well as locally the Baltic States, Ukraine and southeastern France also the highest 5-day amounts were remarkably higher than normal.

The trends of the summer precipitation totals (reference 1951-2010) are significantly positive in the northwest, north, northeast and east and significantly negative in the southwest and central Europe, but at many stations over the whole RAVI region they are not significant. The precipitation fraction due to extremely wet days (days with precipitation above the 99th percentile) exceeded 60 % of the monthly totals at some stations in Italy and the Aegean Sea as well as on the Peninsula Iberica.

Europe was affected by a severe drought situation that started in spring. This is very impressively represented in the anomaly maps of the 3-month resp. 6-month precipitation index. Note that this is the usual standardized precipitation index, whereas the seasonal mean standardized precipitation index was calculated for a modified standardized precipitation index.

Information about monthly soil moisture may be found under these links:

NOAA CPC: Monthly Global Soil Moisture (mm)

JRC: European Drought Observatory (daily maps)

It was more or less dull everywhere.

The trends of sunshine duration (reference 1951-2010) are positive in central Europe and negative partly on the Peninsula Iberica but not significant at many stations. Much of the region is not represented due to the lack of information.

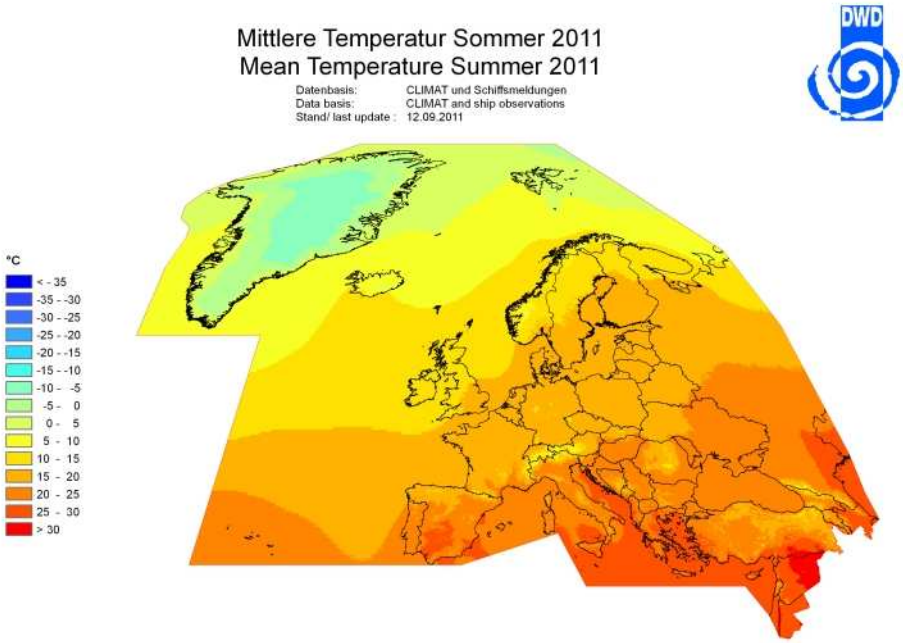
The seasonal mean of the air pressure at sea surface level show the Azores high with a weak extension to western Europe and also high pressure over Greenland. The Icelandic low is weak and the NAO-Index negative.

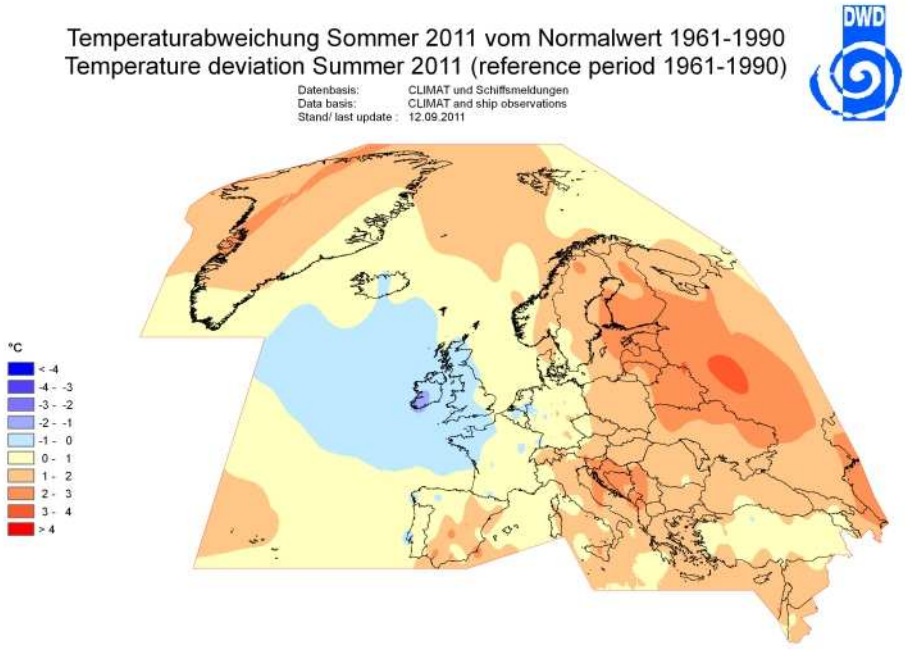
The event maps highlight the convective character of summer 2011 by widly spread positive anomalies of very wet days as well as the reported observations of hail, severe windgusts and tornadoes. See the Monthly Bulletin on the Climate in WMO Region VI for June, July and August 2011 for details of events.

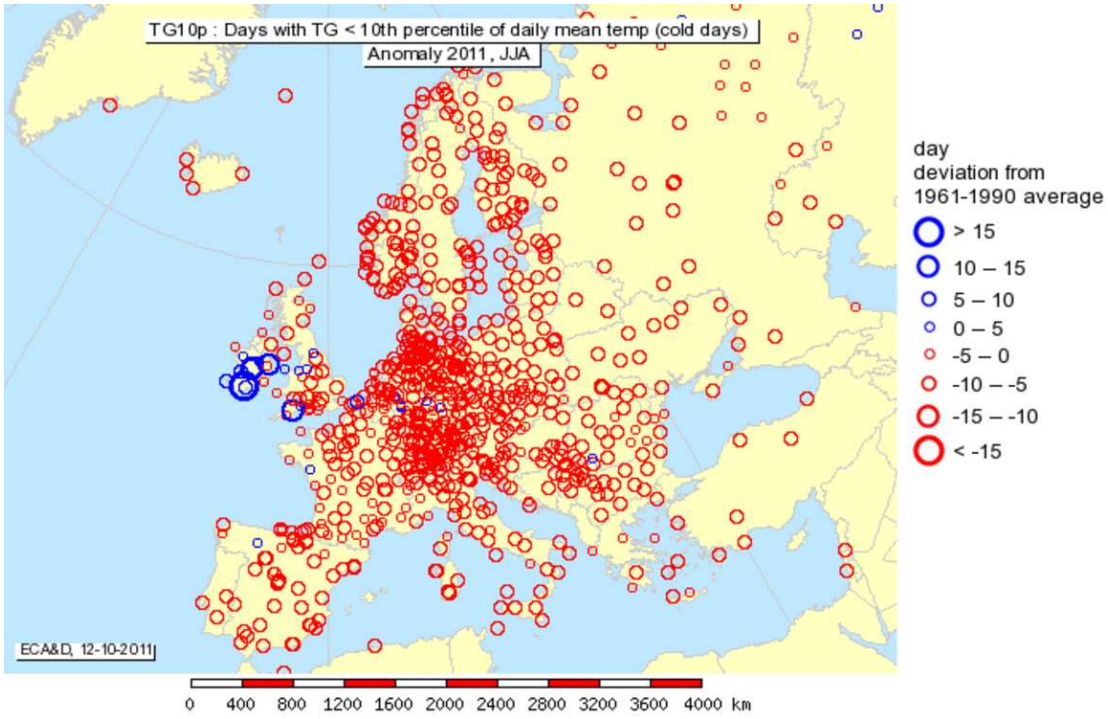
Seasonal Ranking as estimated by countries:

Belarus: Warmest summer since 15 years http://pogoda.by/press-release/?page=370 on 9 August 2011
Denmark: Wettest summer since 1874 http://www.dmi.dk/dmi/den_vade_sommer_2011 on 7 September 2011
Germany: Summer 2011 the 44th warmest since 1891 and the 17th wettest since 1881 http://www.dwd.de/KLIS
Netherlands: Natste zomer in zeker honderd jaar http://www.knmi.nl/cms/content/100859/natste_zomer_in_zeker_honderd_jaar
Norway: Wettest summer in 111 years http://www.newsinenglish.no/ on 3 September 2011

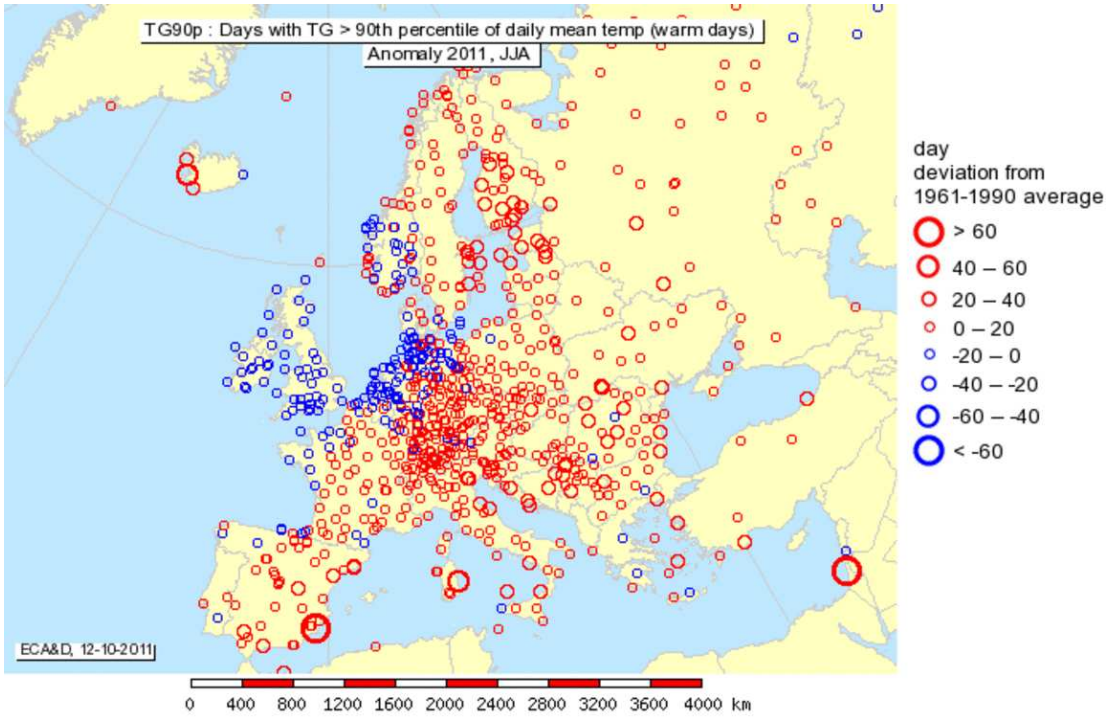
Temperature:



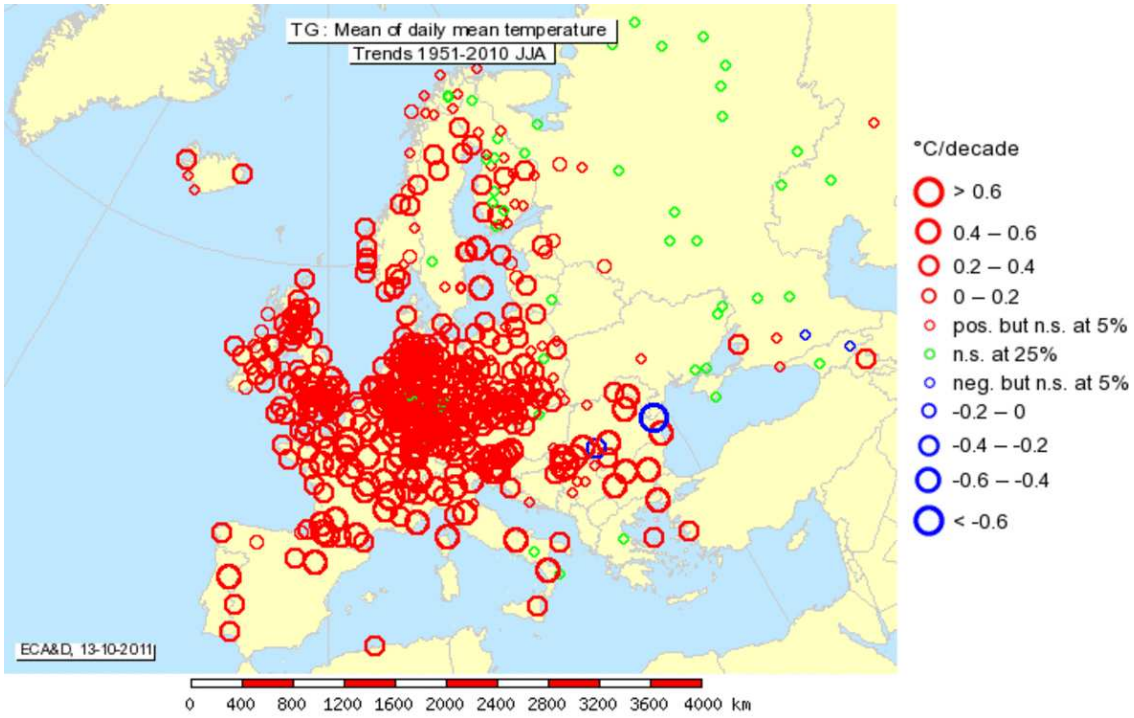




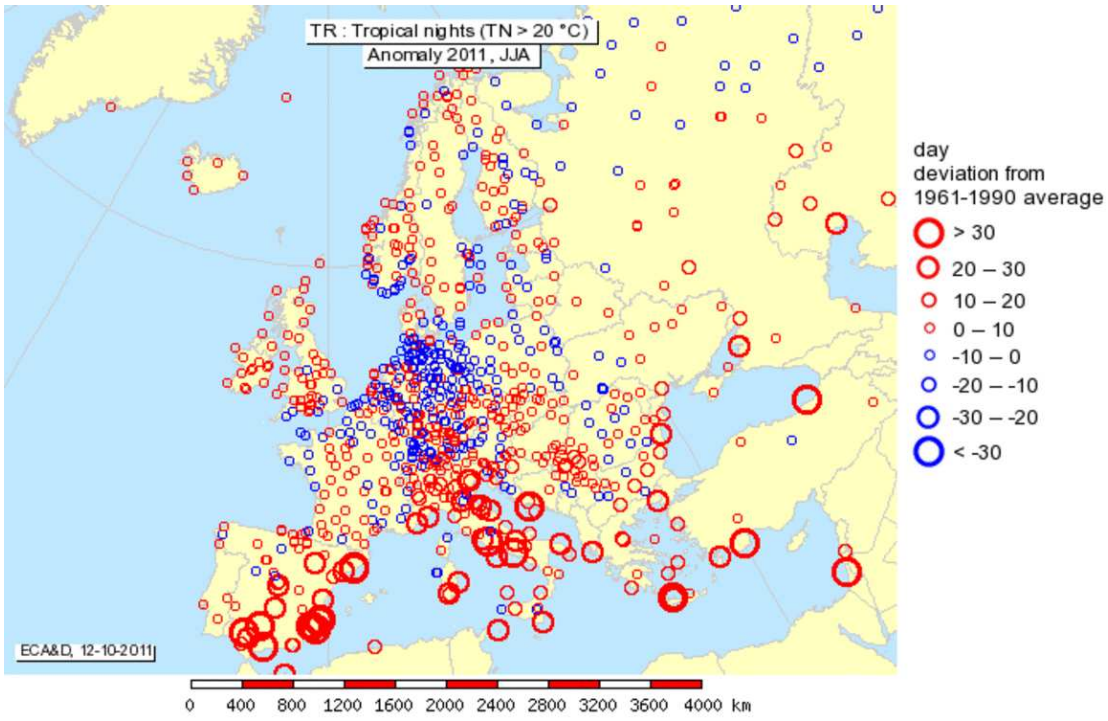
Anomalies of cold days (Days with TG < 10th percentile of mean temperature) (reference 1961-1990)



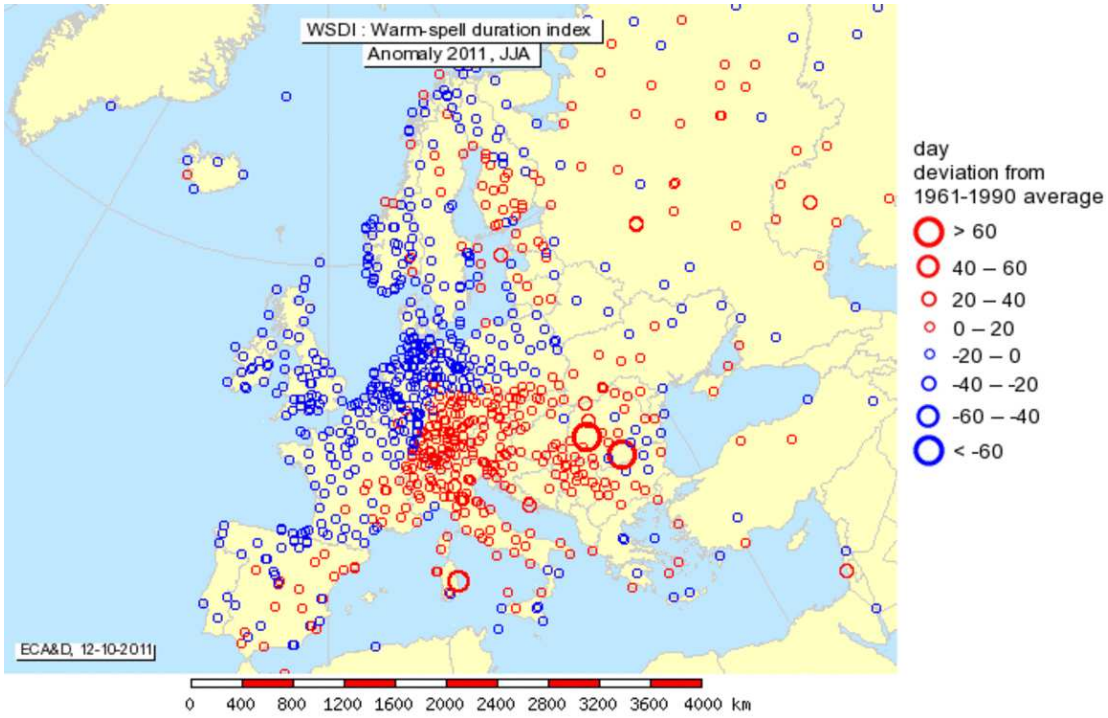
Anomalies of warm days (Days with TG > 90th percentile of mean temperature) (reference 1961-1990)



Trends of daily mean temperature (reference 1951-2010)

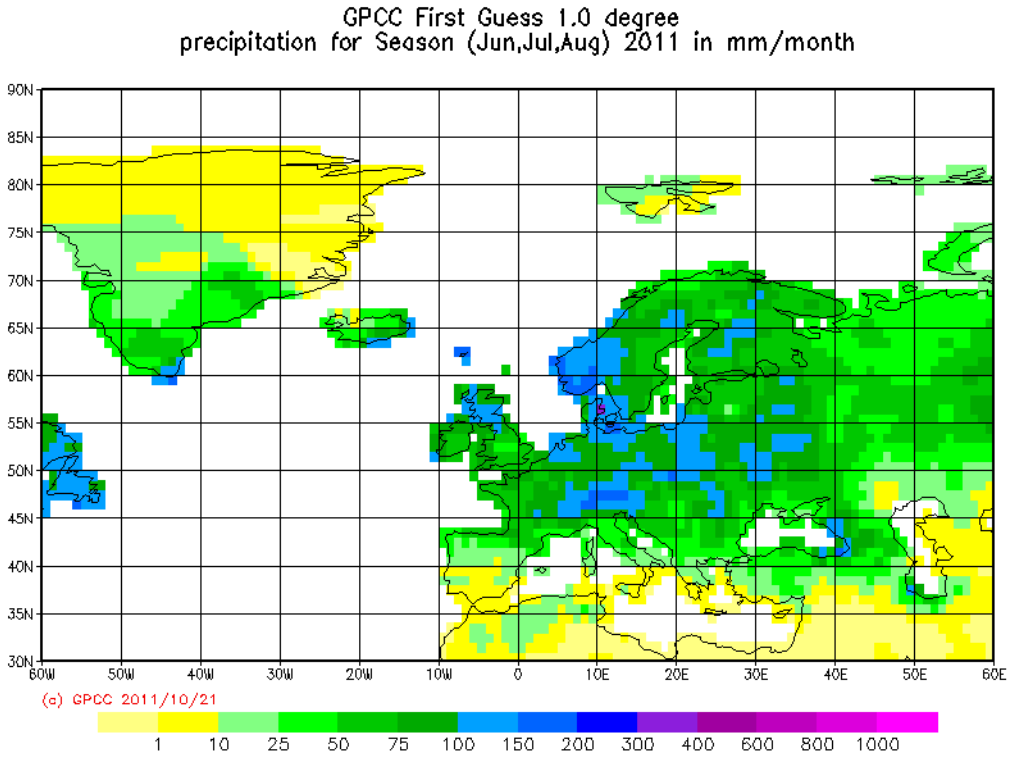


Anomalies of tropical nights (reference 1961-1990)

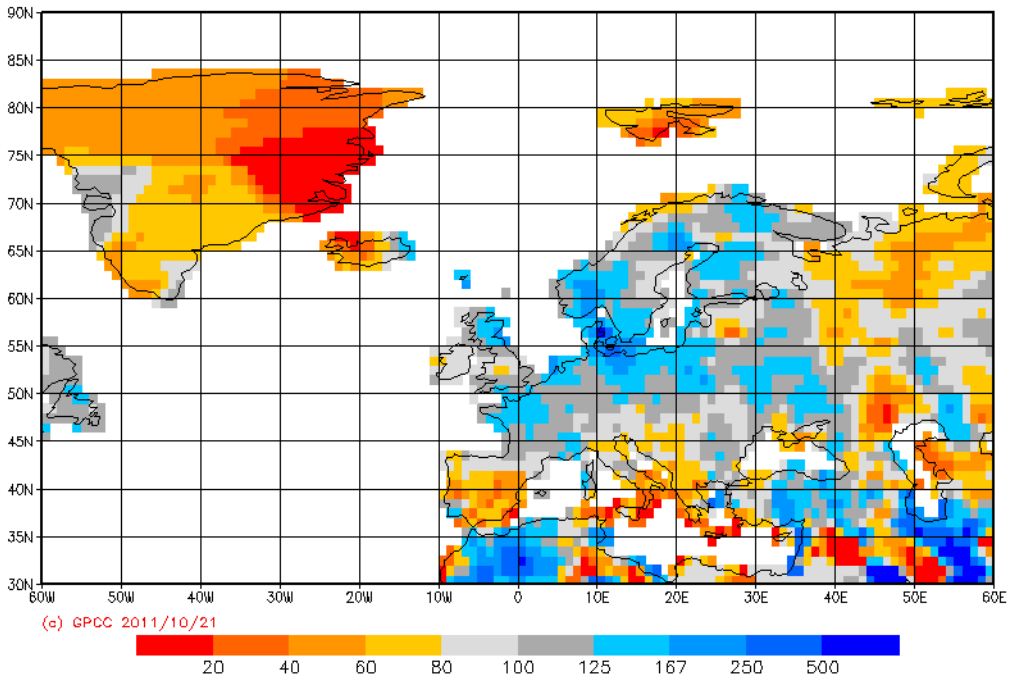


Anomalies of the warm spell duration index (reference 1961-1990)

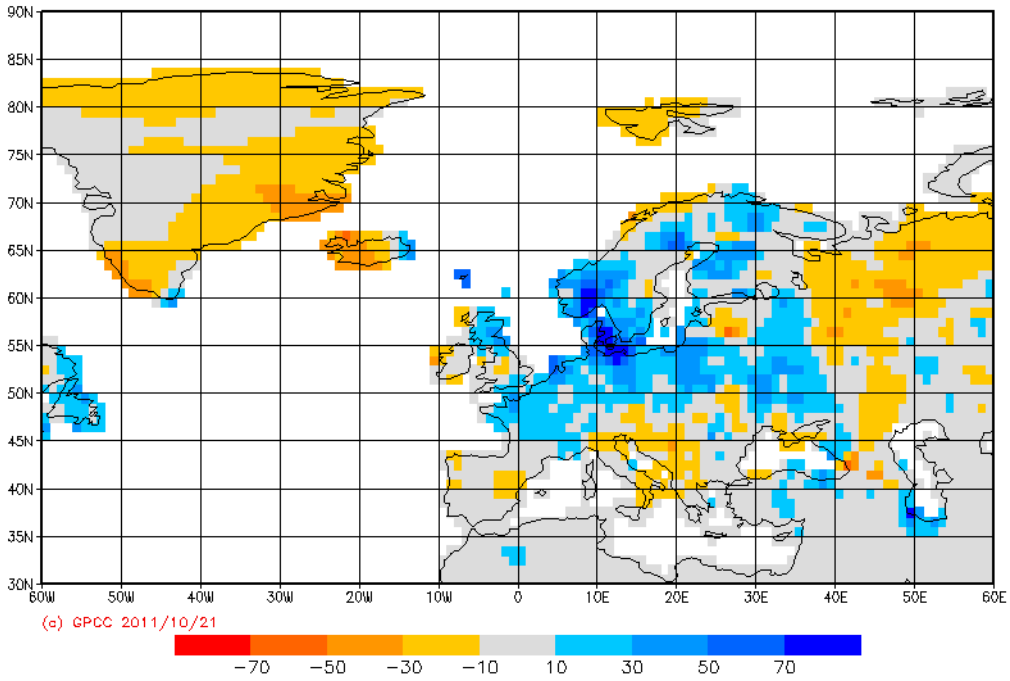
Precipitation:

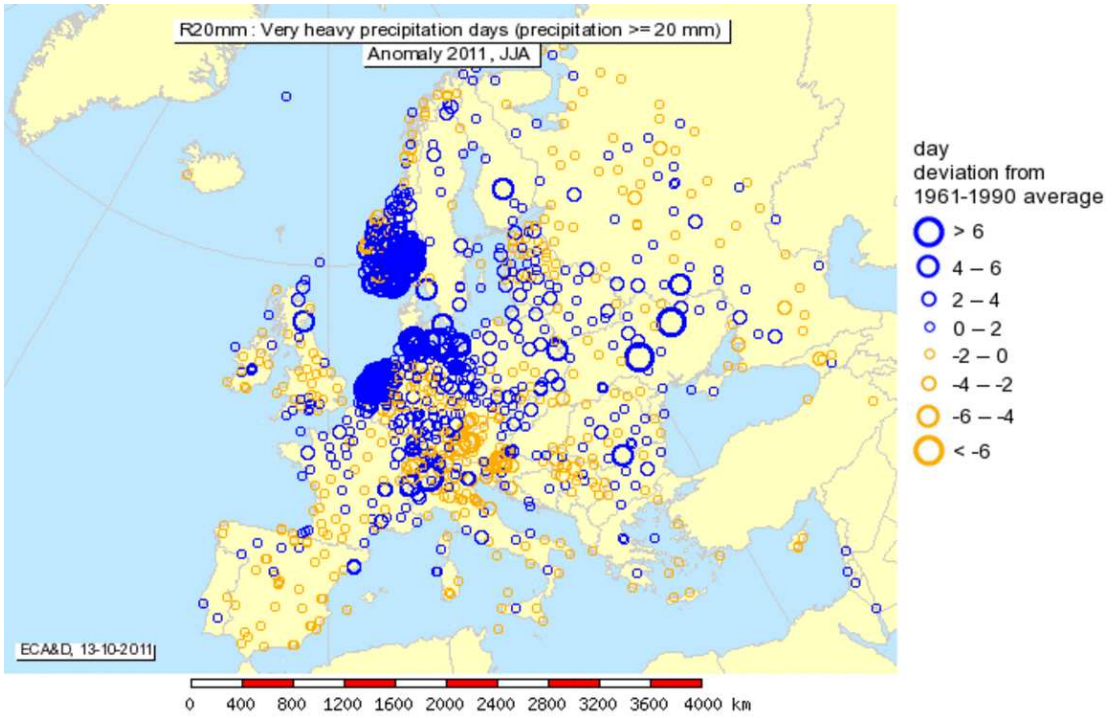


GPCC First Guess 1.0 degree
precipitation percentage of normals 1951/2000 for Season (Jun,Jul,Aug) 2011
(grid based)

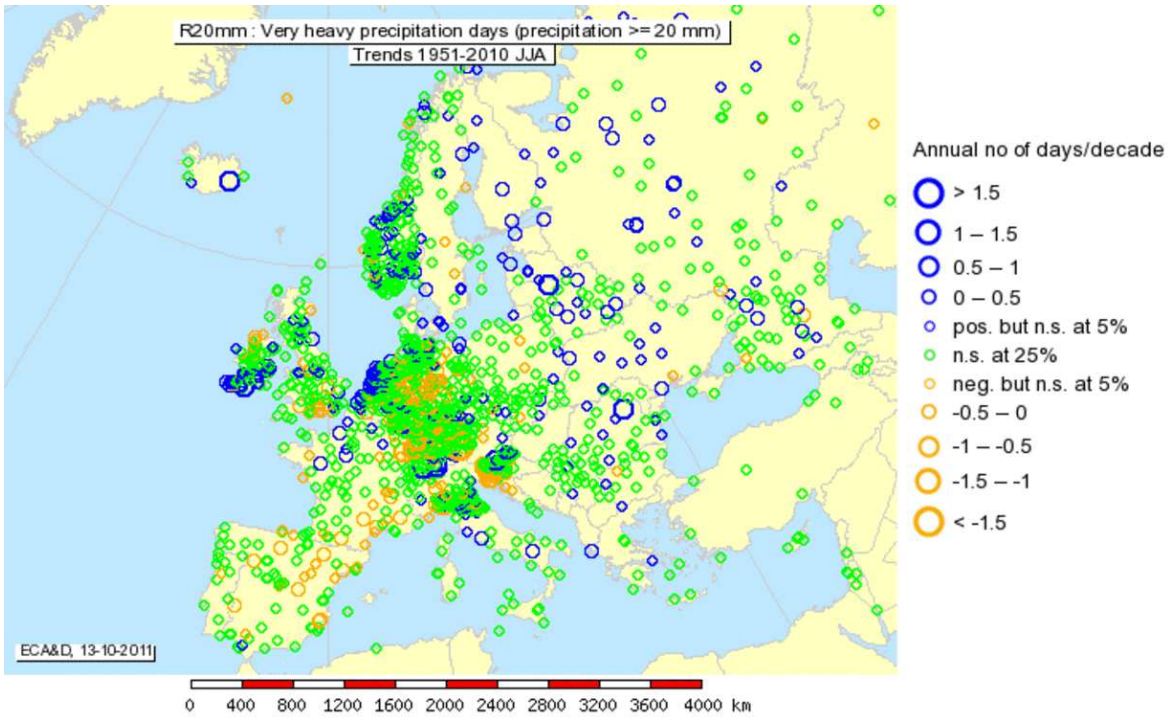


GPCC First Guess 1.0 degree
precipitation anomaly for Season (Jun,Jul,Aug) 2011 in mm/month
(deviation from normals 1951/2000) (grid based)

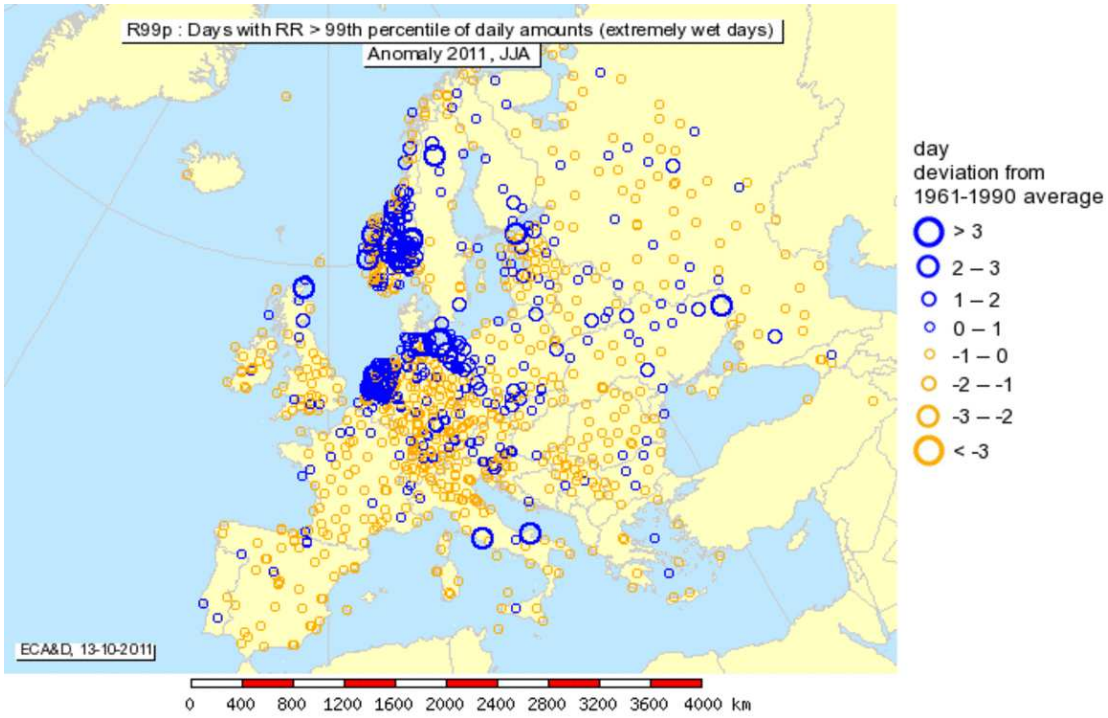




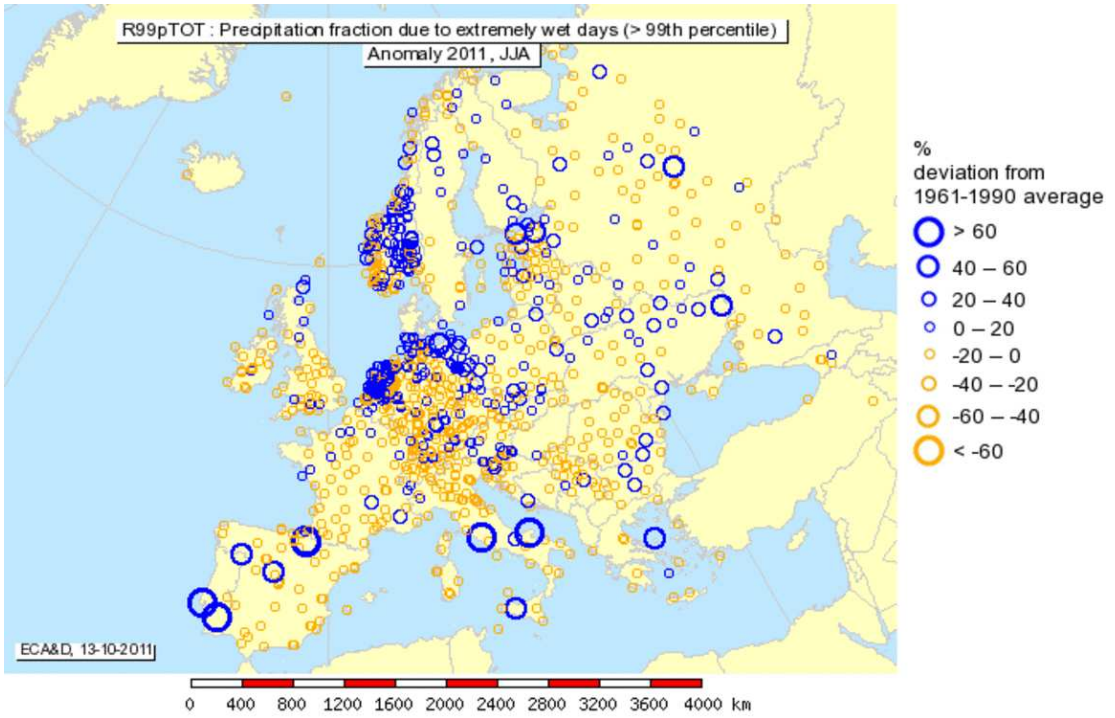
Anomalies of days with very heavy rain (RR>20 mm/day) (reference period 1961-1990)



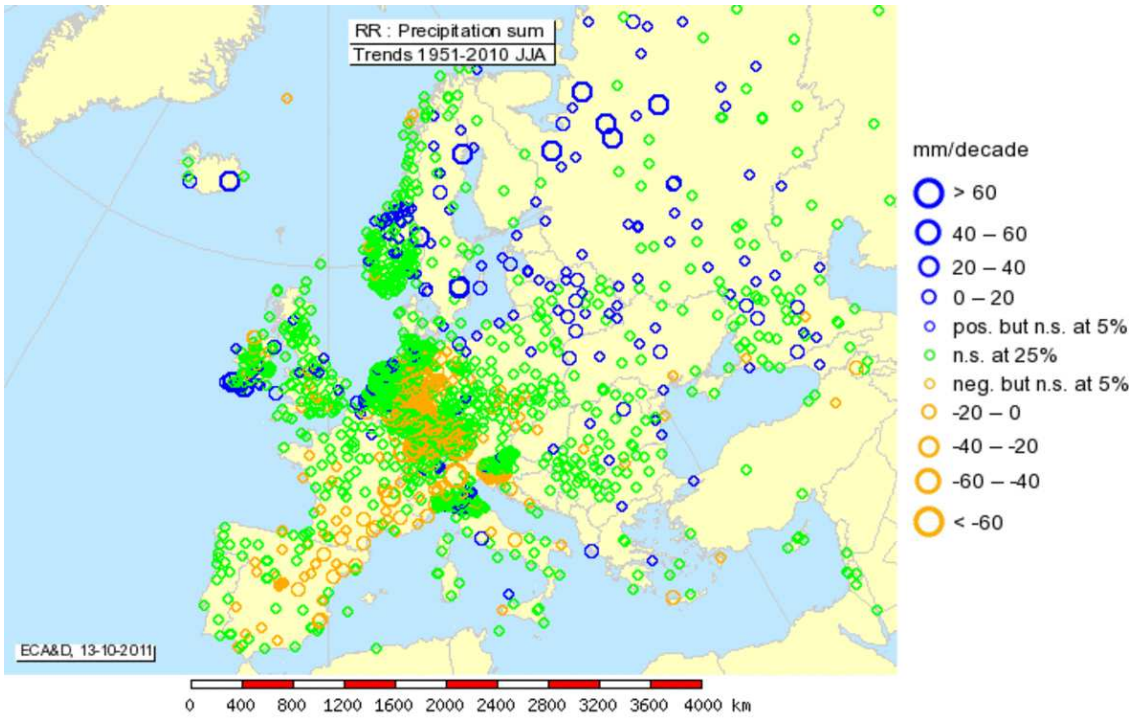
Trends of days with very heavy rain (RR>20 mm/day) (reference period 1951-2010)



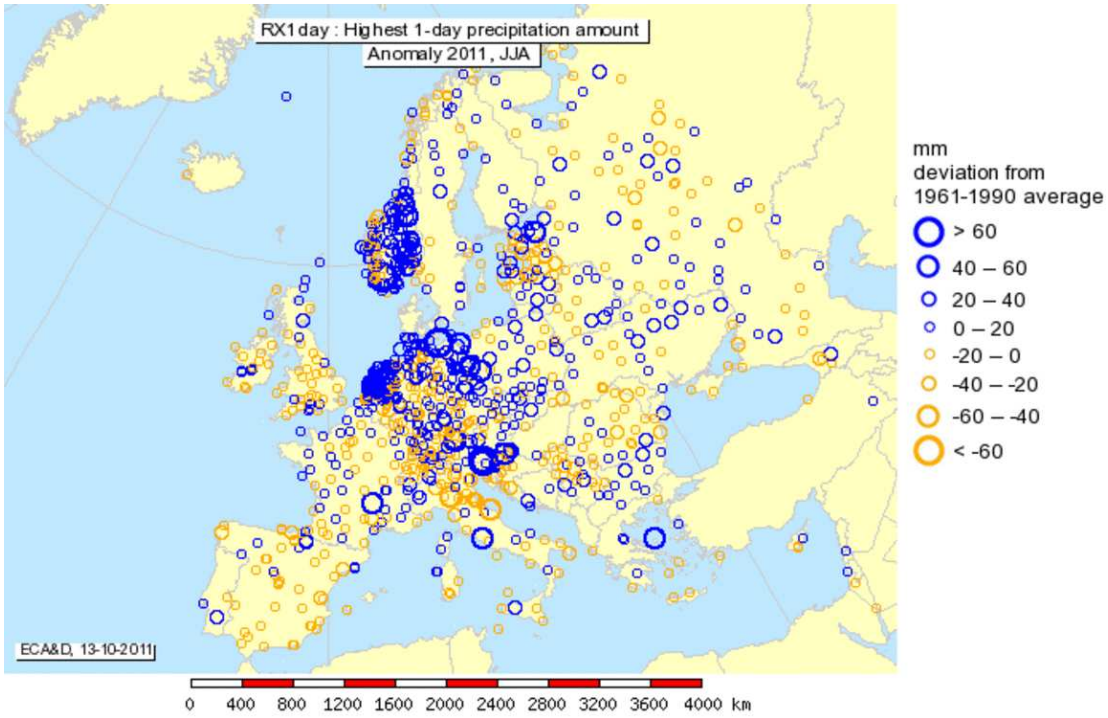
Anomalies of extremely wet days (RR > 99 percentile of daily precipitation) (reference period 1961-1990)



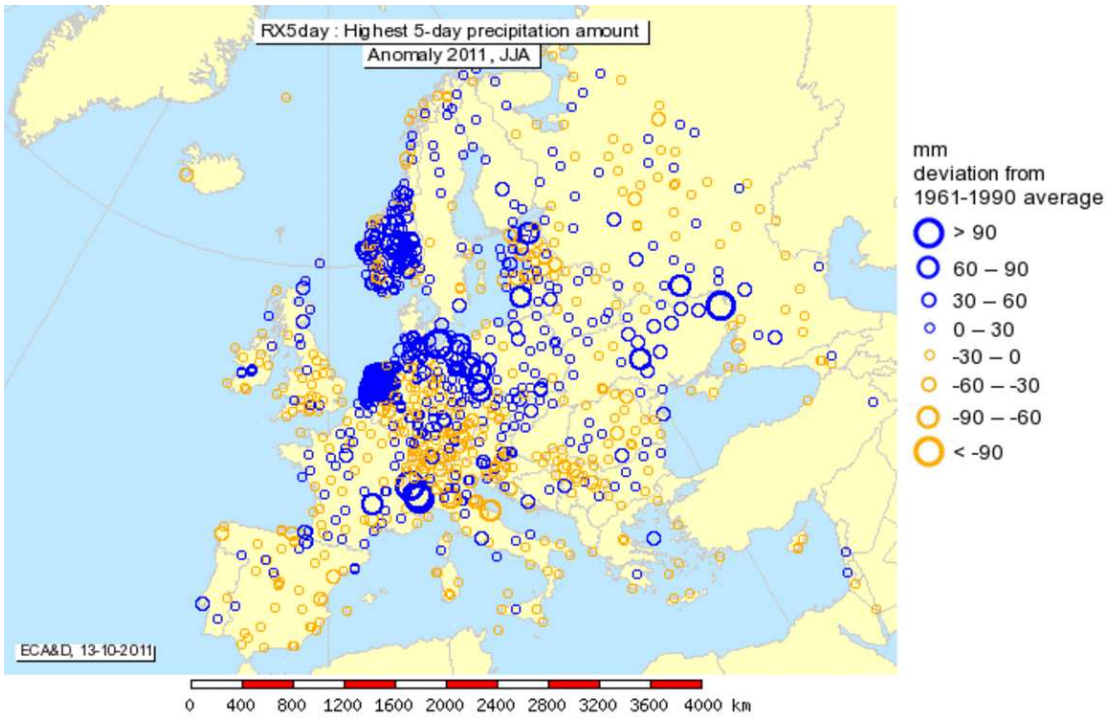
Anomalies of the precipitation fraction due to extremely wet days (in %) (reference period 1961-1990)



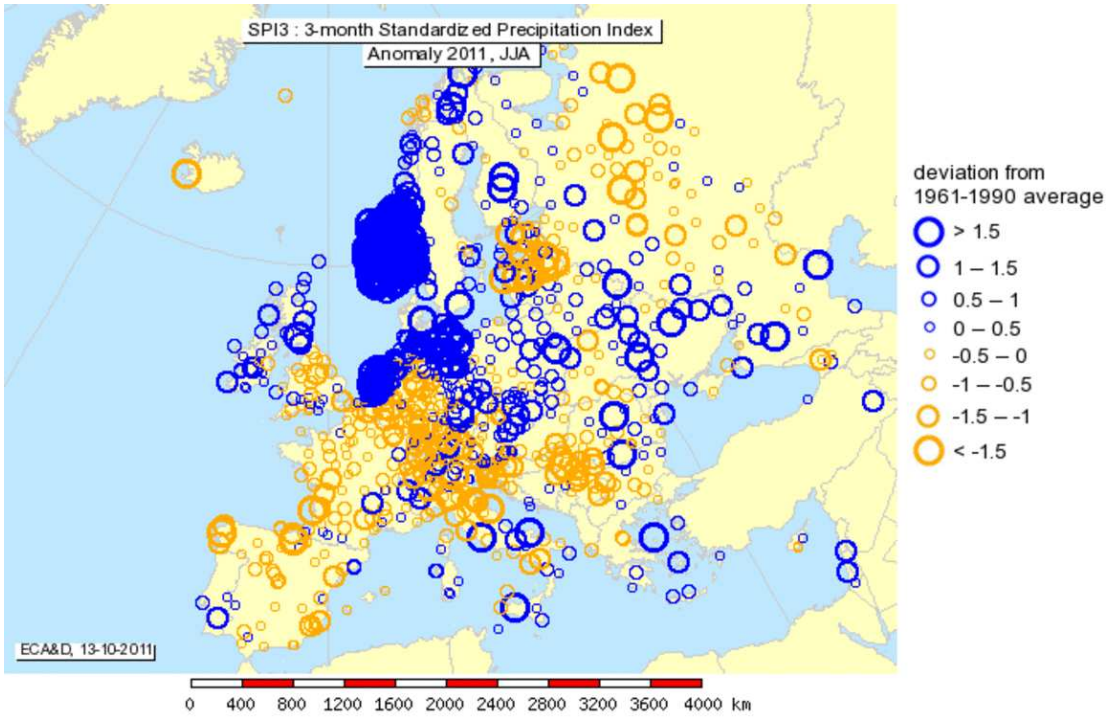
Trends of the precipitation totals (mm/month) (reference period 1951-2010)



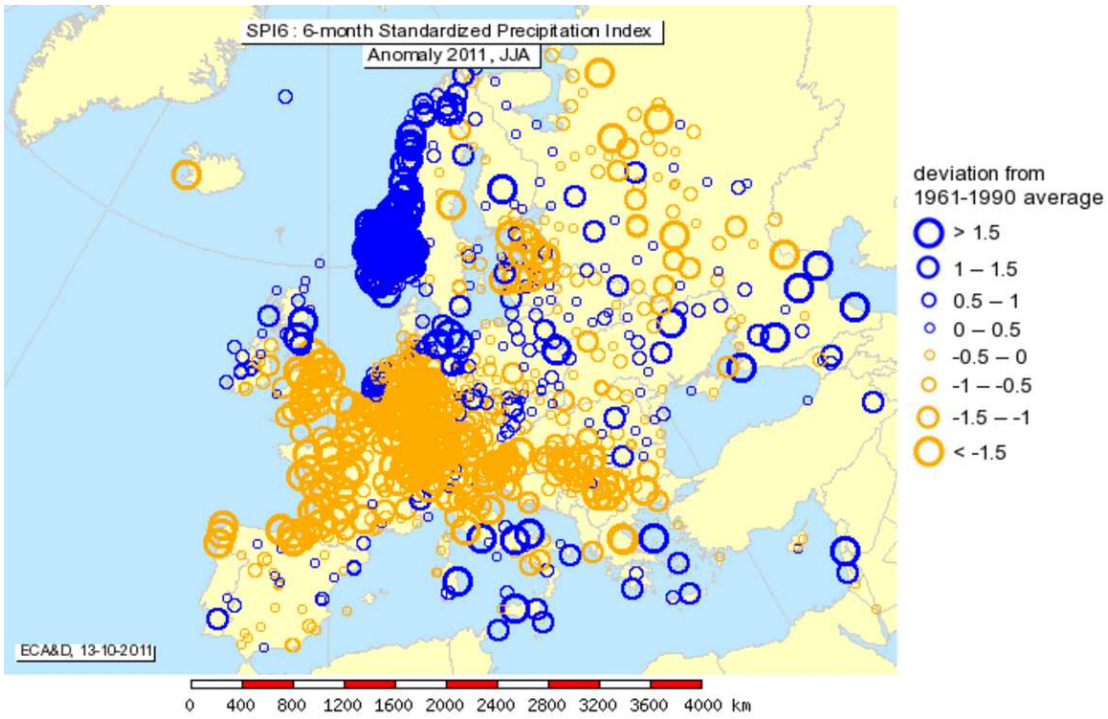
Anomalies of the highest 1-day precipitation amount (reference period 1961-1990)



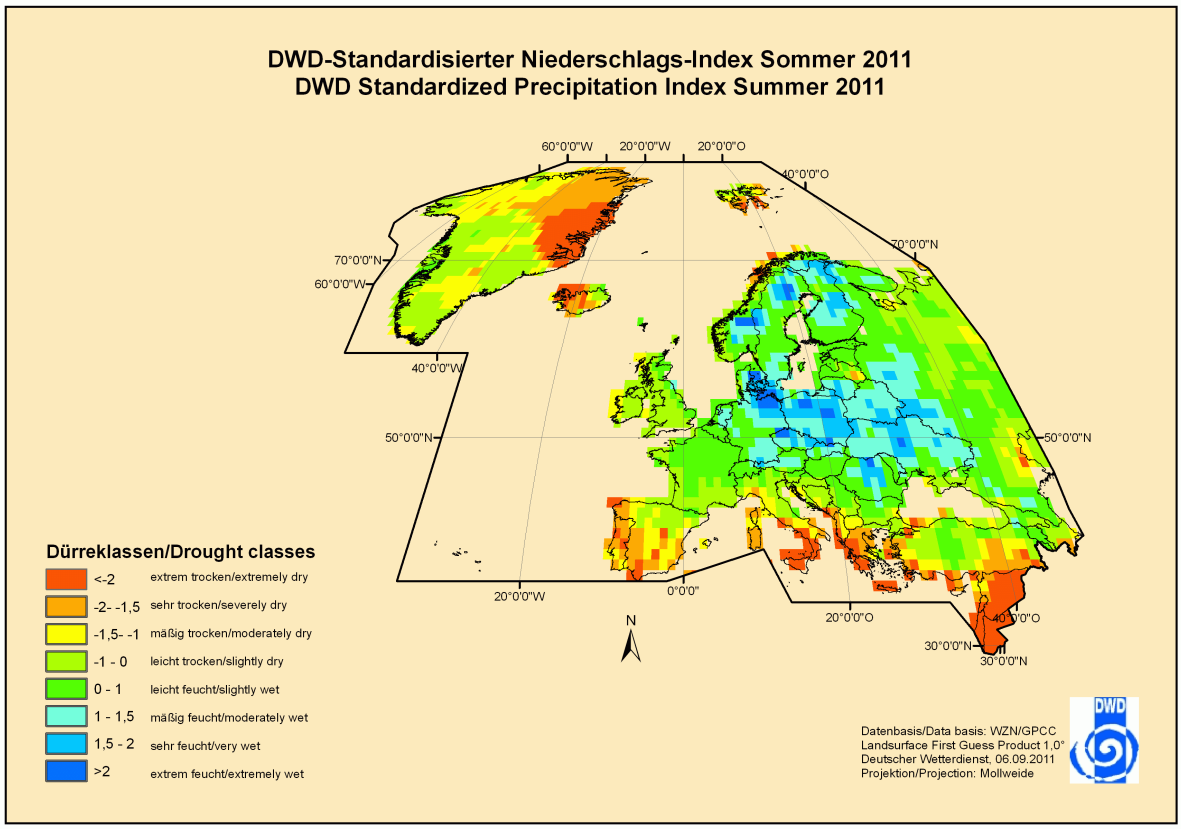
Anomalies of the highest 5-day precipitation amount (reference period 1961-1990)



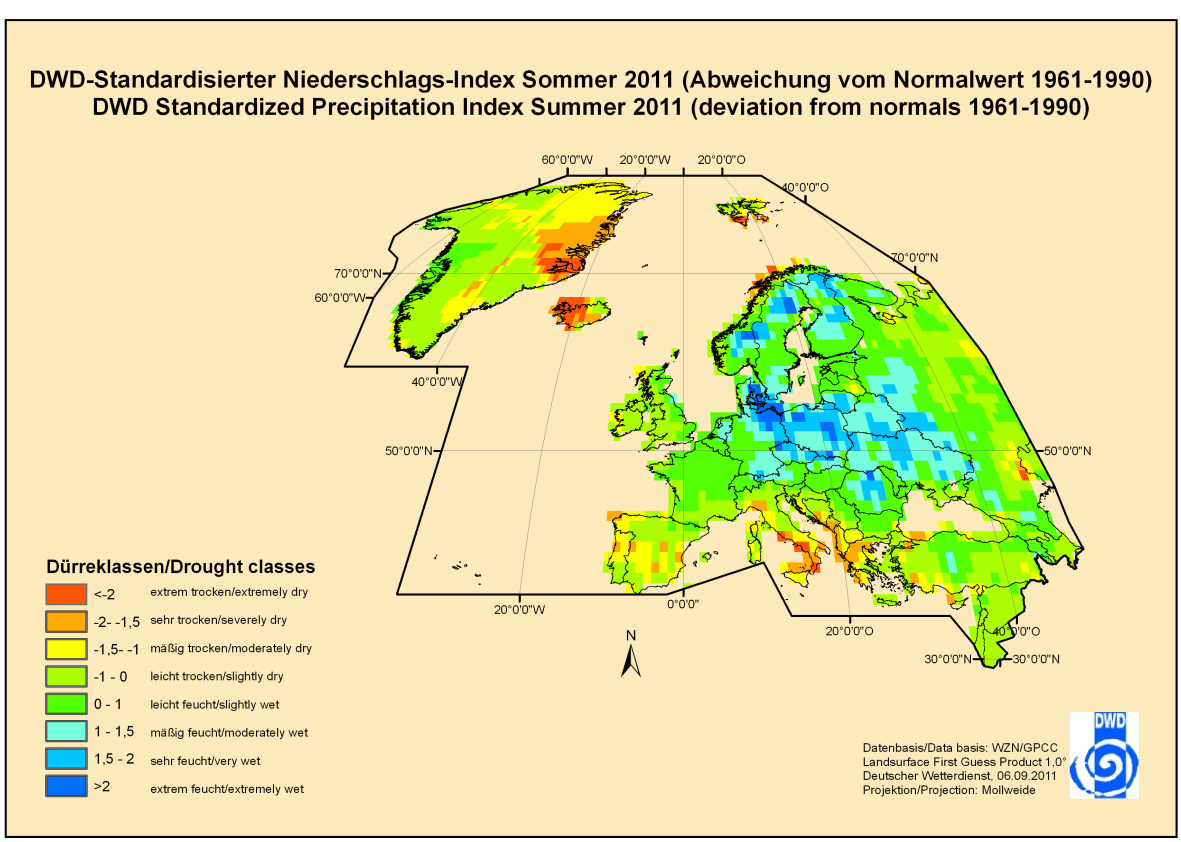
Anomalies of the 3-month Standardized Precipitation Index (reference period 1951-2010)



Anomalies of the 6-month Standardized Precipitation Index (reference period 1951-2010)

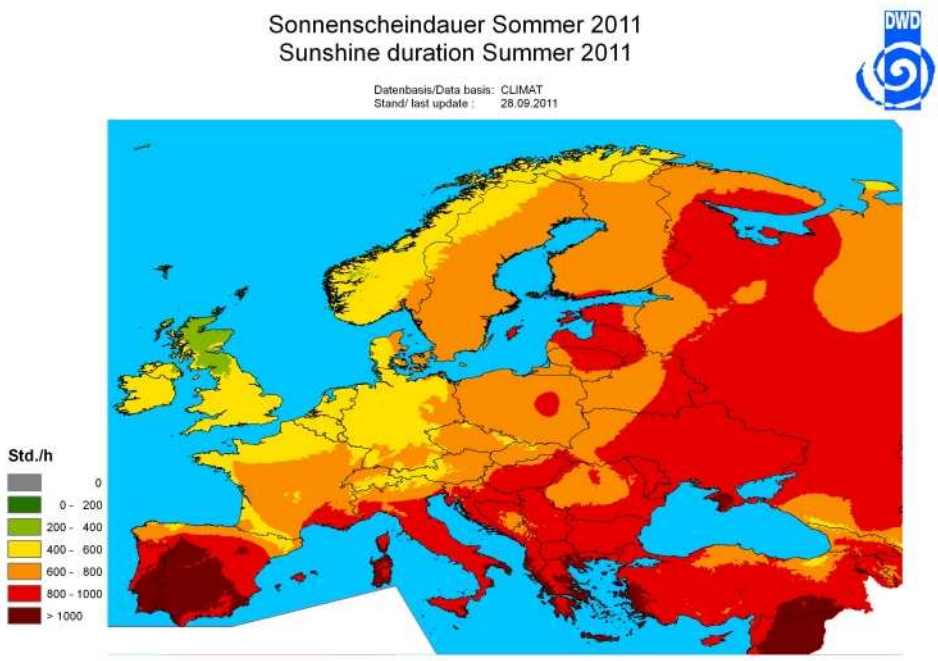


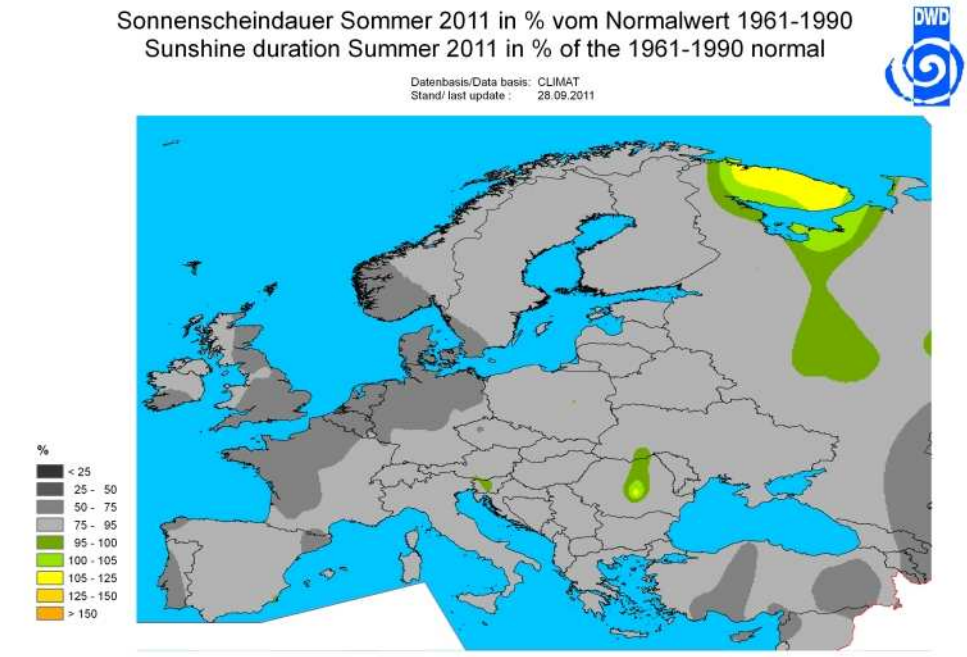
Map of mean seasonal drought index (SPI, modified by DWD) Europe

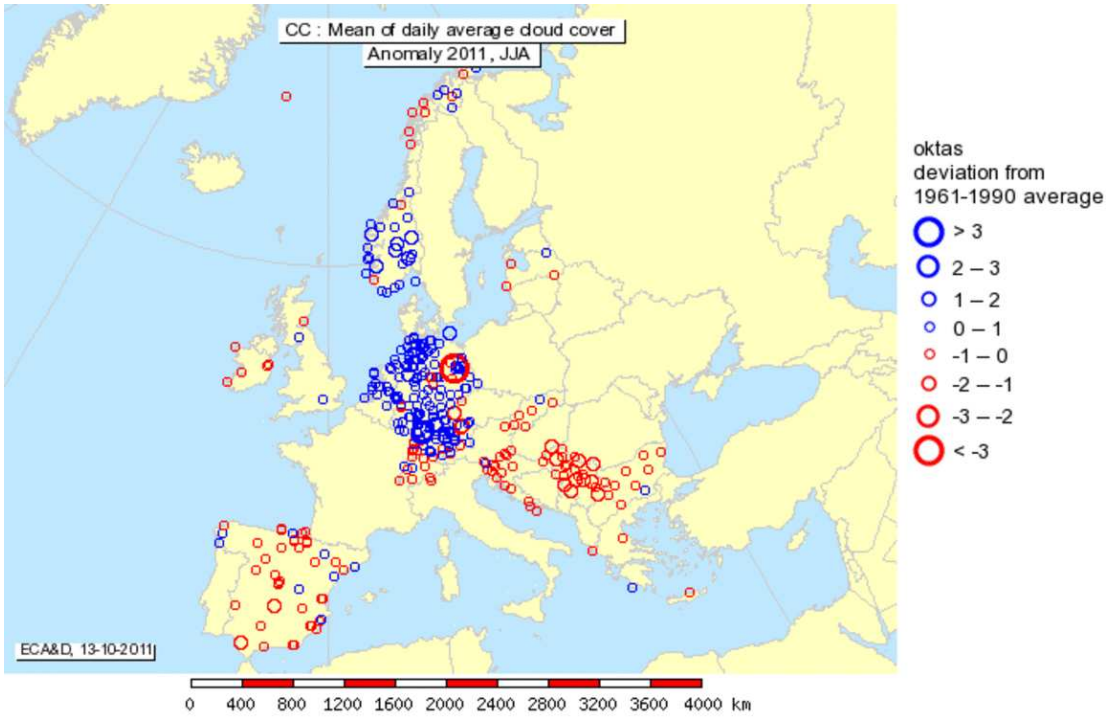


Map of anomaly of mean seasonal drought index (SPI, modified by DWD) Europe

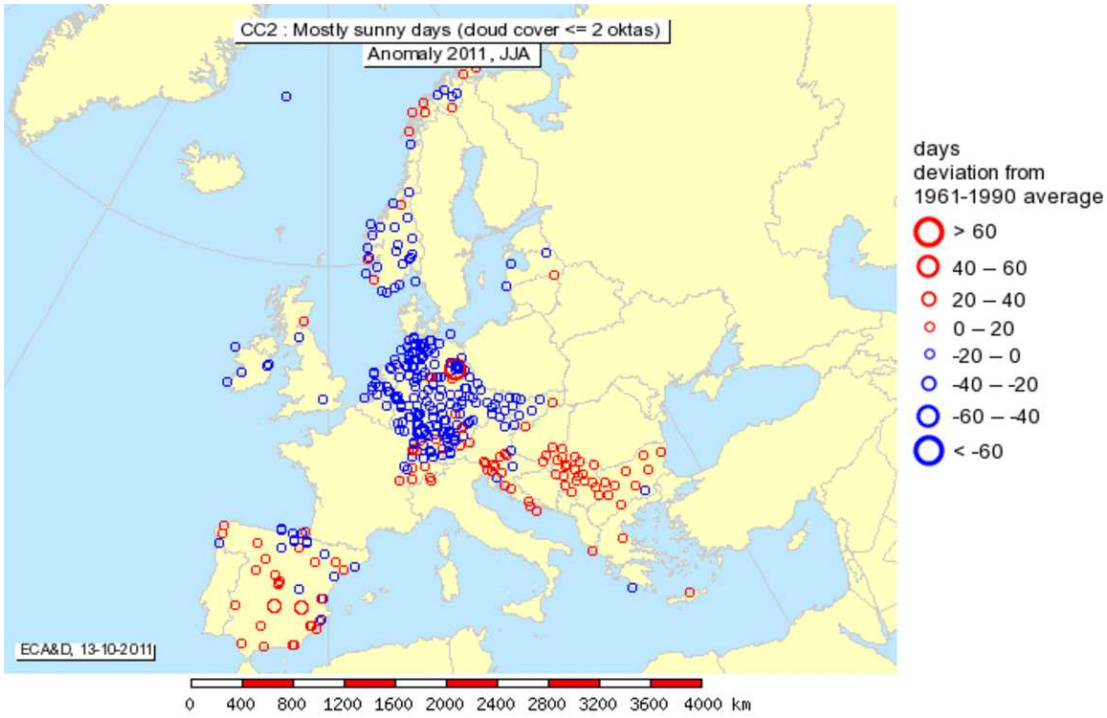
Sunshine Duration and Cloud Cover:



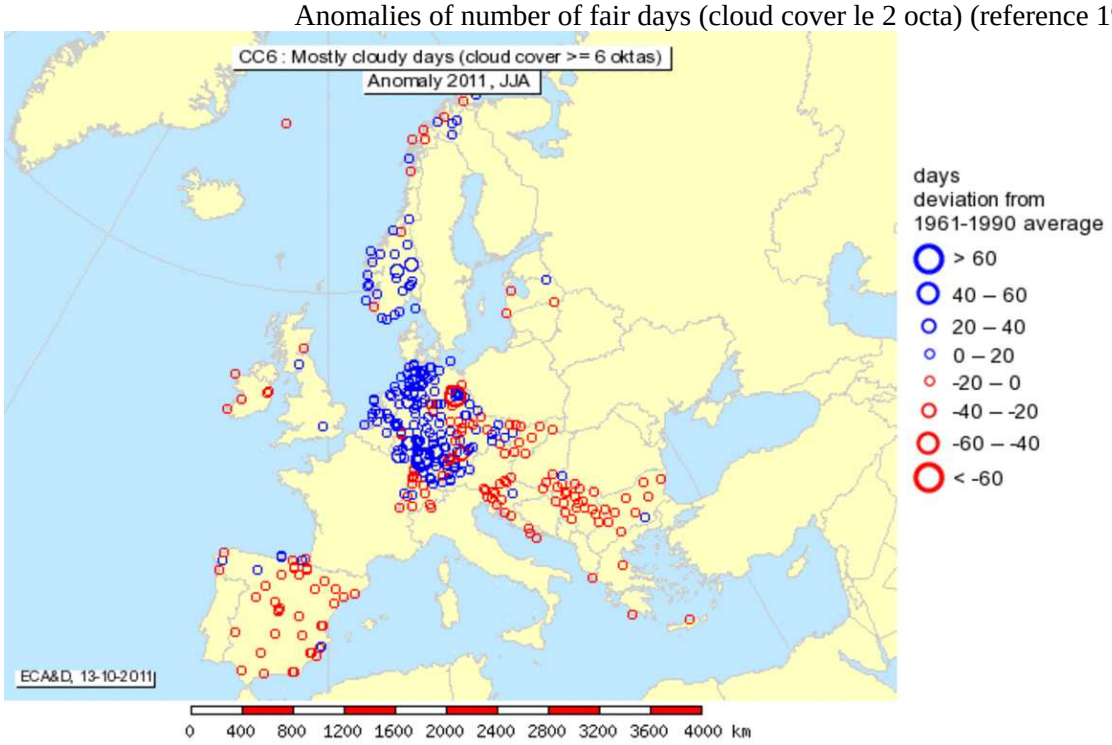




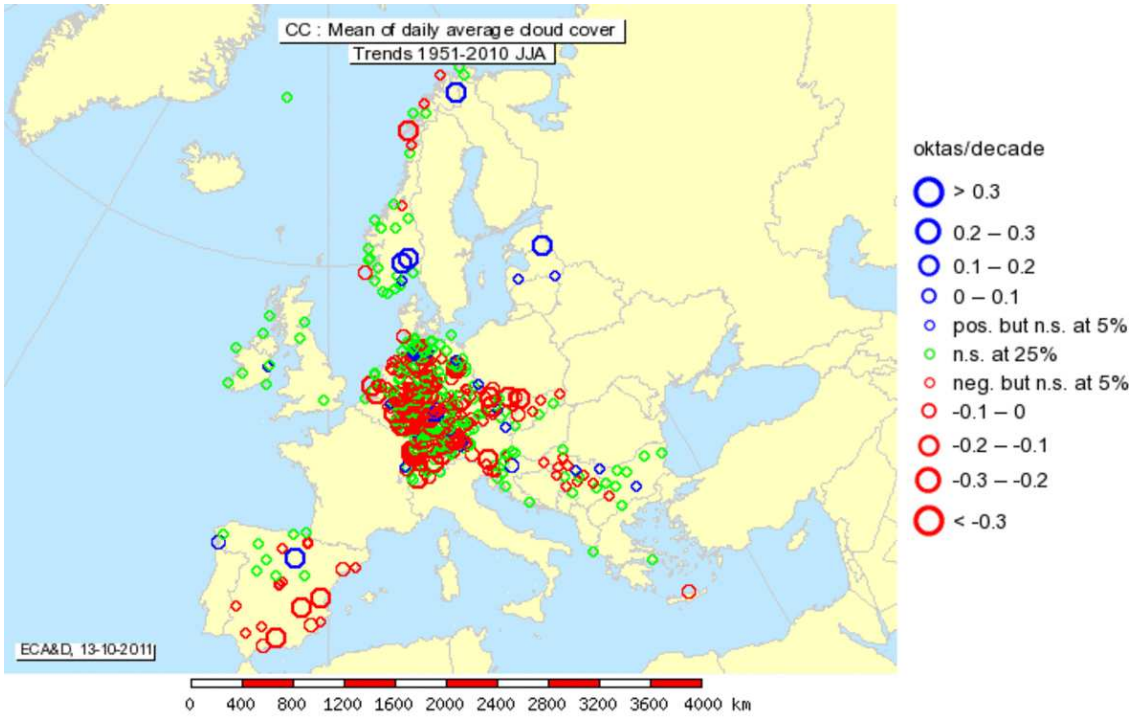
Anomalies of mean cloud cover (reference 1961-1990)



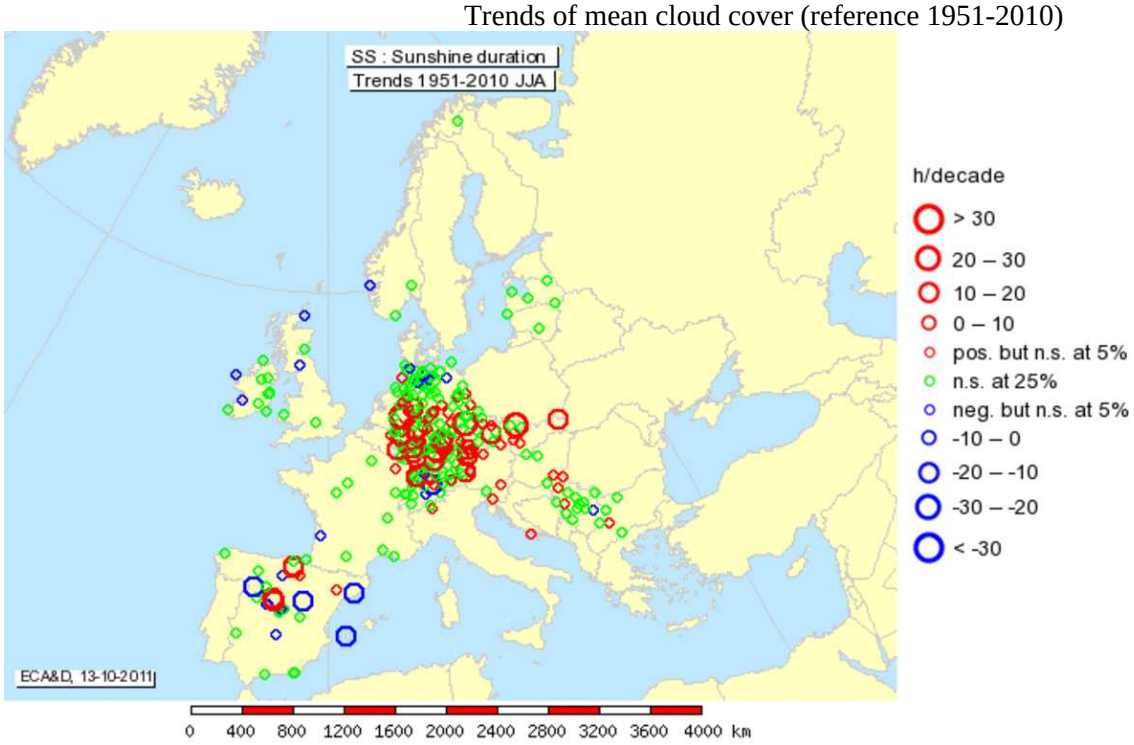
Anomalies of number of fair days (cloud cover le 2 octa) (reference 1961-1990)



Anomalies of number of dull days (cloud cover ge 6 octa) (reference 1961-1990)

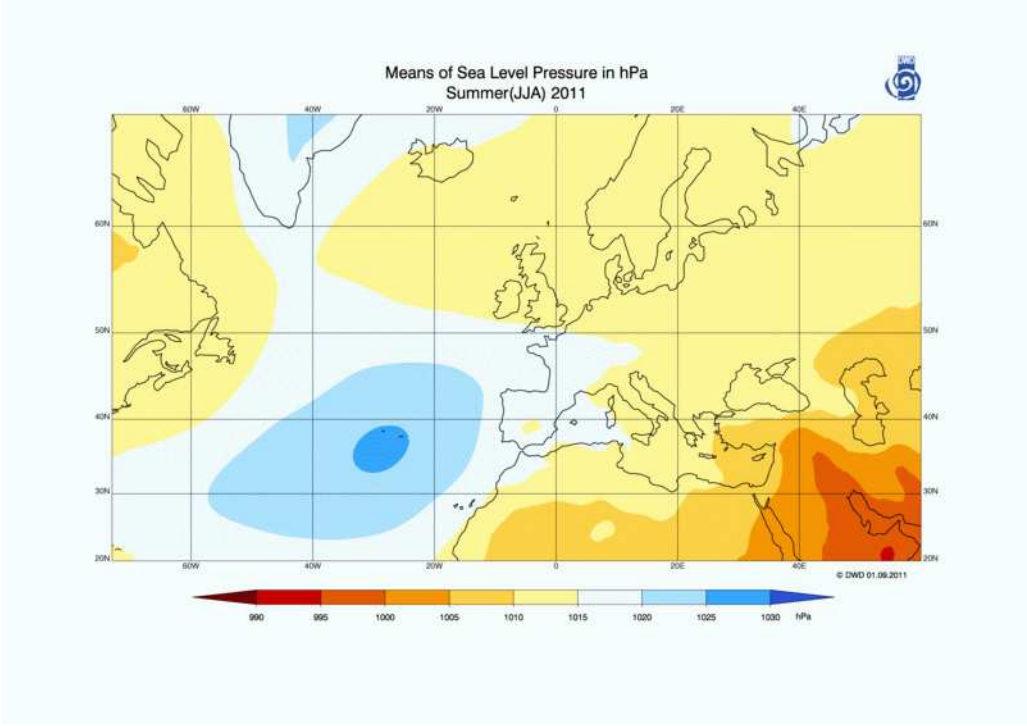


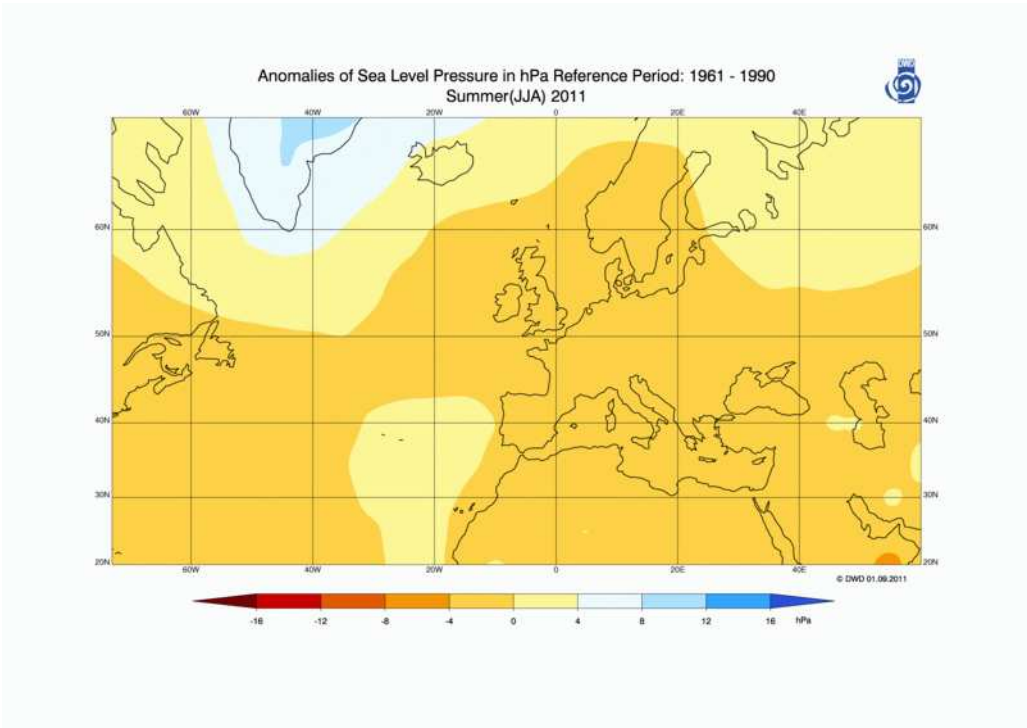
Trends of mean cloud cover (reference 1951-2010)



Trends of sunshine duration (reference 1951-2010)

Air Pressure (surface):





Circulation indices are a means to analyse the atmospheric large scale influences upon climate. One of the best known indices is the North Atlantic Oscillation (NAO).Another well known one is ENSO which is especially connected to the El Niño phenomenon.

Monthly values of different circulation indices relevant for Europe: North Atlantic Oscillation (NAO), East Atlantic Pattern (EA), East Atlantic/West Russia Pattern (EA/WR), European Zonal Index (ZI_EU)

(see www.cpc.noaa.gov/data/teledoc/telecontents.shtml and www.dwd.de/GWL for more information)

Index	Monthly Value	Mean Value	Reference Period	Producer
NAO	-1.44			cpc/noaa
EA	.42			cpc/noaa
EA/WR	-0.05			cpc/noaa
ZI_EU	-0.01	2.4	1961-1990	dwd

Seasonal extreme values:

Data source: http://www.knmi.ecad.nl

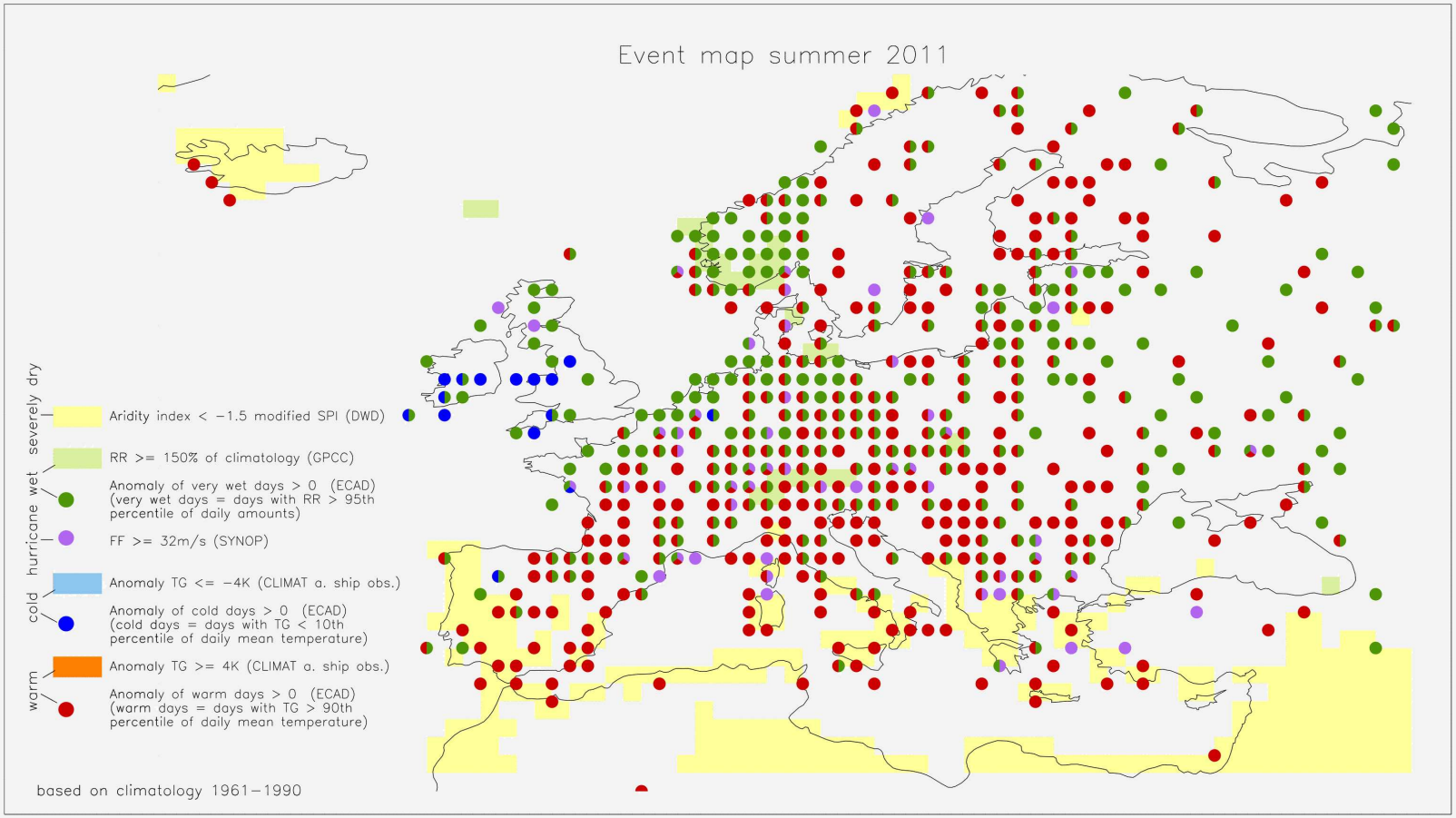
RX1d: highest 24 hours total (in mm), RX5d: highest 120 hours total (in mm), R10: highest number of days with heavy precipitation (10 mm/d), R20: highest number of days with very heavy precipitation (20 mm/d), TN: lowest mean minimum temperature (° C), TNN:lowest absolute minimum temperature (° C), TX: highest mean maximum temperature (° C), TXX: highest absulute maximum temperature (° C)

Country	RX1d [mm]	RX5d [mm]	RR10 [days]	RR20 [days]	TN [°C]	TNN [°C]	TX [°C]	TXX [°C]
Austria	81.0	145.0	22	9	0.9	-6.4	25.7	36.5
Bosnia and Herzegovina	43.0	65.0	7	4	-	7.6	28.0	38.0
Belgium	45.0	74.3	10	4	-	2.6	23.0	36.1
Bulgaria	65.0	69.1	7	4	-	7.6	32.9	39.1
Belarus	69.0	90.3	14	5	-	7.1	25.2	32.1
Switzerland	123.0	204.9	28	15	3.5	-5.3	25.9	35.5
Cyprus	2.0	2.0	0	0	-	-	-	-
Czech Republic	96.5	182.2	16	7	-	1.8	-	36.7
Germany	111.4	140.7	25	9	0.2	-6.6	24.9	35.9
Denmark	-	-	-	-	-	0.7	20.5	28.2
Algeria	-	-	-	-	-	-	40.8	46.4
Estonia	78.0	120.0	10	5	-	6.0	24.8	31.9
Canar. Island	-	-	-	-	-	-	27.0	37.9
Spain	73.0	133.0	14	6	-	0.2	35.5	42.6
Finland	52.0	90.3	17	6	8.4	-0.4	23.2	31.6
France	94.0	135.0	12	6	8.9	-0.5	29.0	40.0
United Kingdom	49.0	97.2	12	5	7.8	0.7	21.4	32.0
Georgia	80.0	80.0	9	4	-	-	-	-

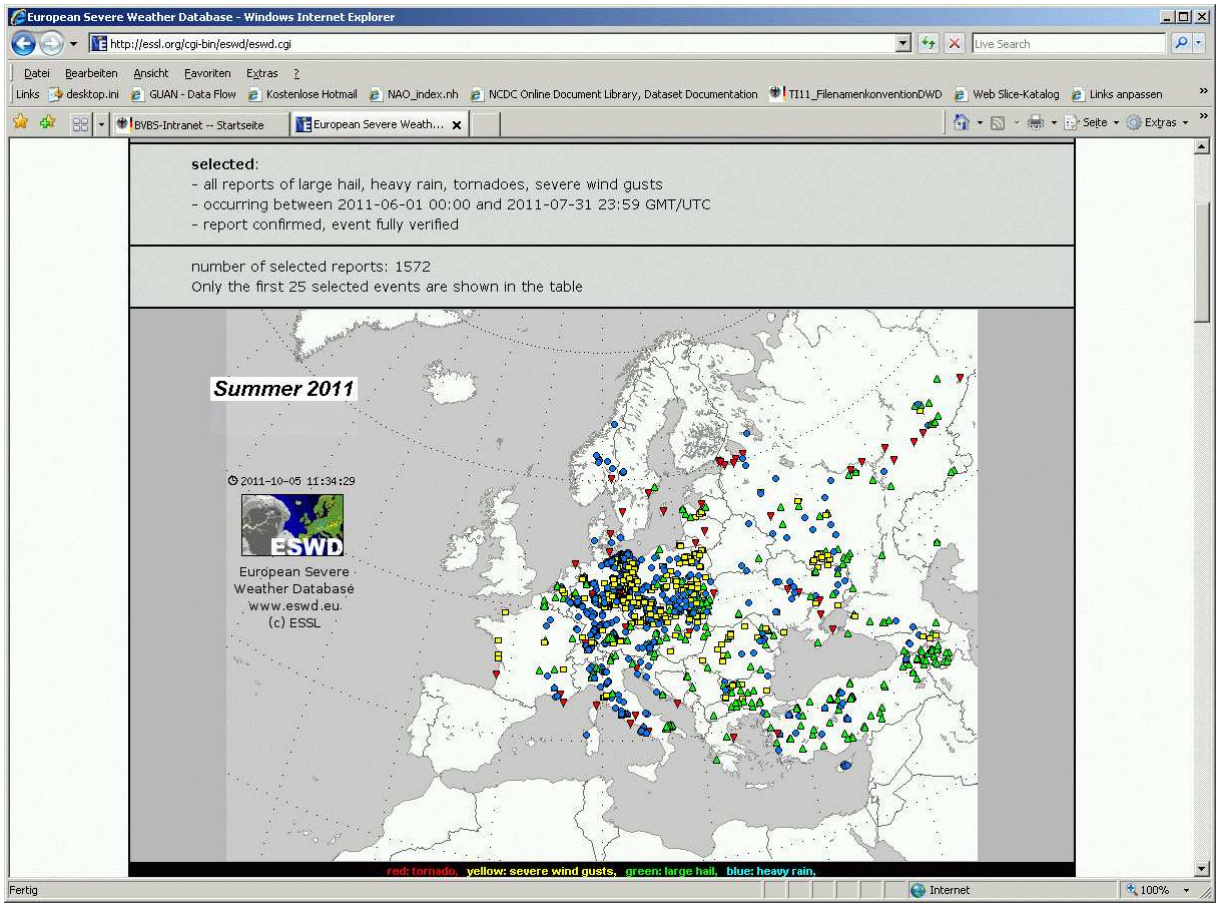
Greenland	-	-	-	-	3.0	-4.0	10.7	17.1
Greece	64.0	64.0	2	2	-	7.9	32.9	40.9
Croatia	71.5	117.0	14	8	-	2.1	30.2	37.9
Hungary	48.0	59.7	4	3	-	5.1	28.6	38.4
Ireland	29.2	58.1	9	2	9.1	0.6	17.8	24.1
Israel	1.3	1.3	0	0	-	-	39.9	44.7
Iceland	2.1	4.1	0	0	6.5	1.6	14.3	22.1
Italy	107.2	193.8	13	6	-0.9	-8.5	33.0	40.6
Kyrgyzstan	-	-	-	-	-	-	31.4	39.0
Kazakhstan	-	-	-	-	-	1.1	36.1	45.1
Liechtenstein	-	-	-	-	14.7	9.1	23.5	34.6
Lithuania	56.0	116.3	14	6	-	5.6	23.8	32.6
Luxembourg	28.6	61.1	9	2	-	6.3	21.8	32.7
Latvia	61.0	88.7	12	5	-	5.0	23.8	31.5
Moldova	27.0	73.0	6	2	-	-	27.0	33.6
Netherlands	76.8	134.3	18	9	-	1.6	22.1	34.5
Norway	107.0	168.2	24	13	0.6	-4.6	21.2	31.1
Poland	89.0	145.7	15	7	6.2	0.1	24.3	34.4
Portugal	50.1	55.0	2	1	-	7.9	31.2	39.1
Romania	63.0	93.4	17	7	4.0	-4.0	30.7	37.9
Serbia	63.0	100.0	7	4	9.5	1.1	30.0	39.7
Russian Federation	70.0	110.0	14	6	7.1	-2.1	32.7	42.0
Sweden	62.0	81.8	14	6	7.7	-3.0	22.6	31.6
Slovenia	138.4	157.0	18	9	4.3	-2.9	27.3	36.0
Slovakia	55.0	99.8	10	5	-	4.0	27.0	36.9
Tajikistan	4.0	4.7	0	0	-	-	37.4	45.1
Turkmenistan	-	-	-	-	-	-	38.8	47.2
Turkey	17.0	28.0	5	0	-	6.6	33.8	43.1
Ukraine	61.0	139.0	15	8	-	5.9	29.2	37.6
Uzbekistan	-	-	-	-	-	9.6	39.2	45.6

Maps of Climate Extremes and Severe Weather Events:

Map of Extremes and Events of the Season:


Event map summer 2011
severely dry
Aridity index < −1.5 modified SPI (DWD)
RR >= 150% of climatology (GPCC)
wet
Anomaly of very wet days > 0 (ECAD)
(very wet days = days with RR > 95th
percentile of daily amounts)
hurricane
FF >= 32m/s (SYNOP)
cold
Anomaly TG <= −4K (CLIMAT a. ship obs.)
Anomaly of cold days > 0 (ECAD)
(cold days = days with TG < 10th
percentile of daily mean temperature)
warm
Anomaly TG >= 4K (CLIMAT a. ship obs.)
Anomaly of warm days > 0 (ECAD)
(warm days = days with TG > 90th
percentile of daily mean temperature)
based on climatology 1961−1990

Map of reported Severe Weather Events of the Season:



Web-available seasonal summaries in RA VI:

Austria: HISTALP-Langzeitklimareihen Österreich - Sommerbericht 2011

Belgium: Zomer 2011

Denmark: Sommeren 2011 blev den næstvådeste

Estonia: Üks suvi sai läbi, kaks jätkuvad

Germany: Deutschlandwetter im Sommer 2011

Ireland: The weather of Summer 2011: Cooler than average everywhere with below average rainfall in parts

France: Bilan de l'été 2011

Croatia: temperature and precipitation Summer 2011 (maps)