

Seasonal Bulletin on the Climate in WMO Region VI



- Europe and Middle East -

Winter 2016

Deutscher Wetterdienst

Last Change: Thu Apr 7 12:35:27 UTC 2016



Highlights:

- **Winter 2015/2016 one of the warmest winters in long time series in many European countries**
- **Winter 2015/2016 was dry in the South**
- **Winter 2015/2016 was second-wettest in the West**
- **An unusual stormy winter with high impact mainly in the UK, Ireland and the northern European continent**

The following maps are first guess products based on meteorological bulletins which have been quality checked roughly. The text is based upon these maps as well as the monthly climate bulletins of the countries of RA VI as far as they are available on the web. More detailed information including updated analyses of more data which have undergone a better quality control and further aspects like clouds and water vapour may be found on the link of the Regional Climate Centre on Climate Monitoring in RAVI:

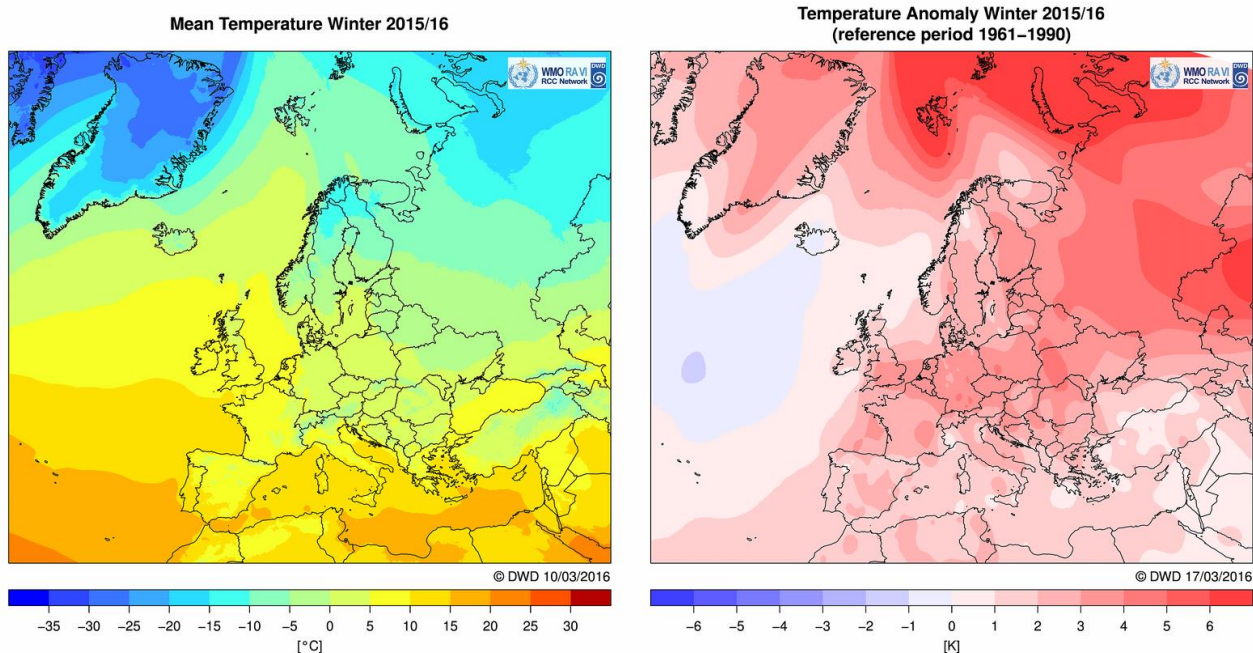
[RCC-CM RA VI http://www.dwd.de/rcc-cm](http://www.dwd.de/rcc-cm)

and at the Global Precipitation Climatology Center (GPCC):

[The GPCC http://gpcc.dwd.de/](http://gpcc.dwd.de/)

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

Temperature



2

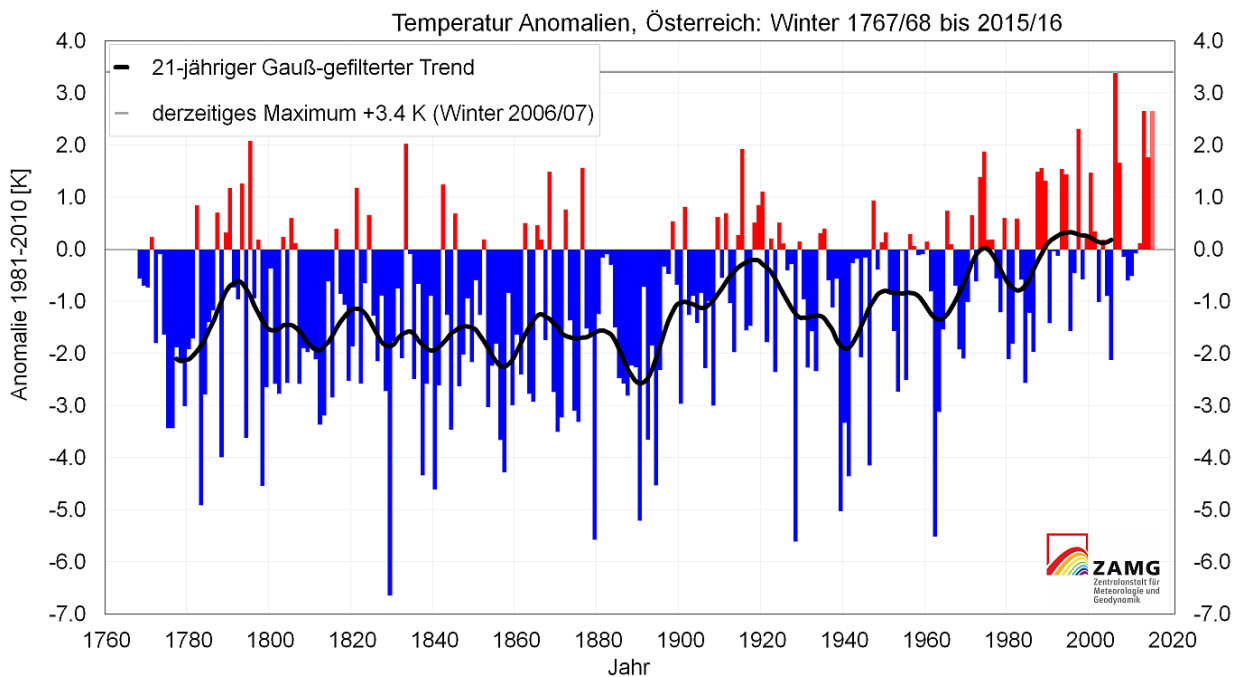
Temperature: seasonal mean (left) and anomaly (right) in °C for Europe in winter 2015/16 (December 2015 to February 2016)

The temperature anomalies for **winter 2015/16** show lower than normal values only over the North Atlantic Ocean. All continental Europe showed higher than normal values. The highest positive anomalies occurred in the far North and East. For example Svalbard Lufthavn reported a temperature anomaly for winter of 9.9°C (10.6 in February 2016) and Barentsburg 8.5°C.

The observed temperatures in February in Finland were about 5°C higher than usual in many areas, in the east even 6-7°C higher than usual. Also the anomalies in the

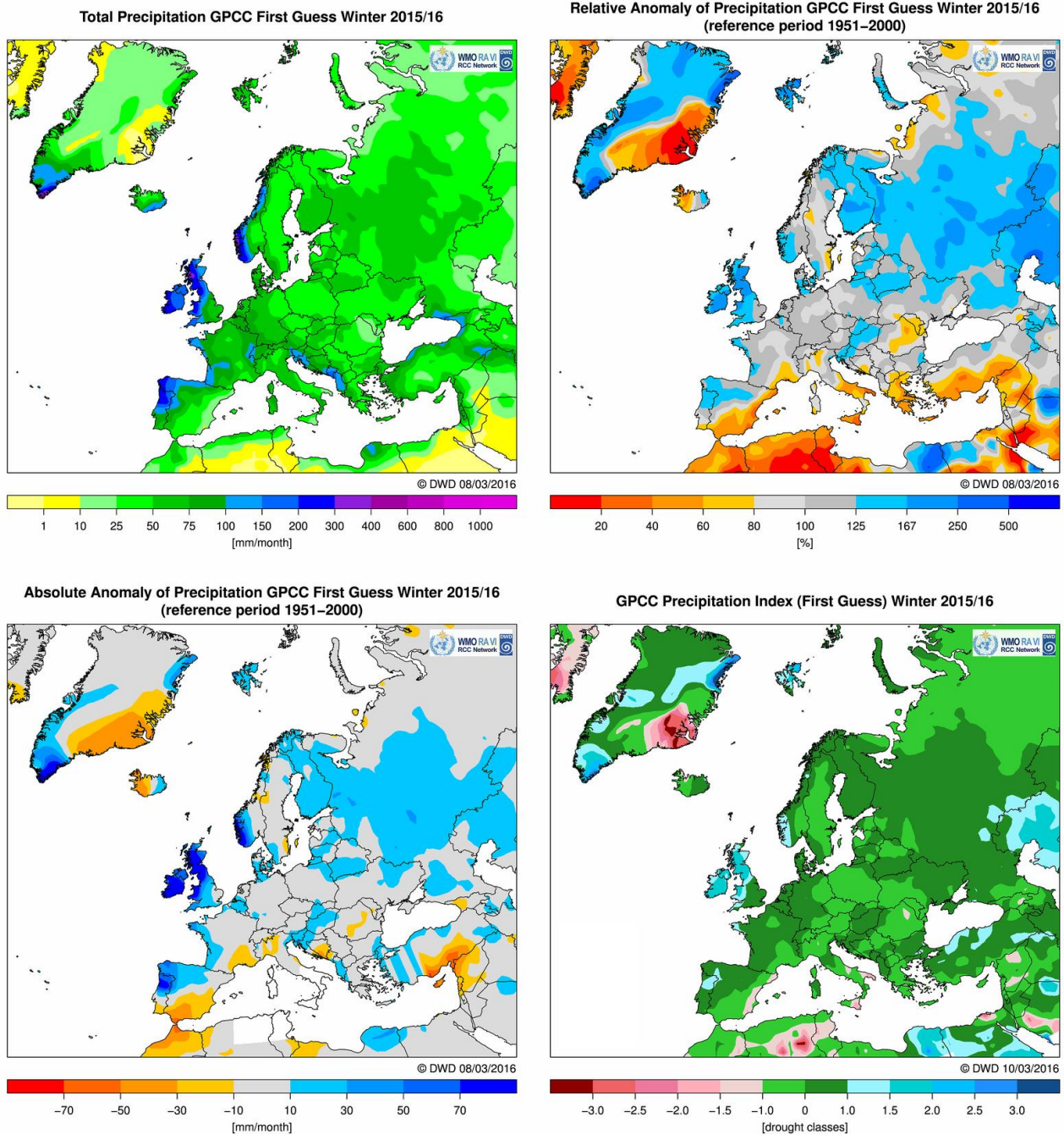
Table1: Rank statistic of winter temperature for some countries

Country	Rank	Anomaly in °C	Start of time series
Austria	2	2.7	1767
Germany	2	2.7	1881
France	1	2.6	1900
Hungary	6	2.4	1901
Netherlands (station De Bilt)	2	2.9	1706
Norway	30	1.8	1900
Portugal	3	1.25	1931
Switzerland	2	2.5	1864
United Kingdom	3	1.8	1910



Temperature anomalies for winter from **Austria** for the period 1767/68-2015/16 (as provided by the NMHS)

Precipitation



Seasonal precipitation for Europe in winter 2015/16 (December 2015 to February 2016): totals (mm/month, top left), relative anomalies (in %; top right), absolute anomalies (mm/month, bottom left) and precipitation index (in drought classes, bottom right)

Precipitation anomalies in Winter 2015/16 showed higher than normal values in East Europe as well as in southern Norway, Ireland, western and northern UK also in northern Iberia. The precipitation amount in Central Europe was around normal while southern Europe received less than normal.

In the **United Kingdom** winter 2015/16 was the second-wettest in a series from 1910, with only winter 2013/14 being wetter. In all three winter month above normal precipitation amounts were

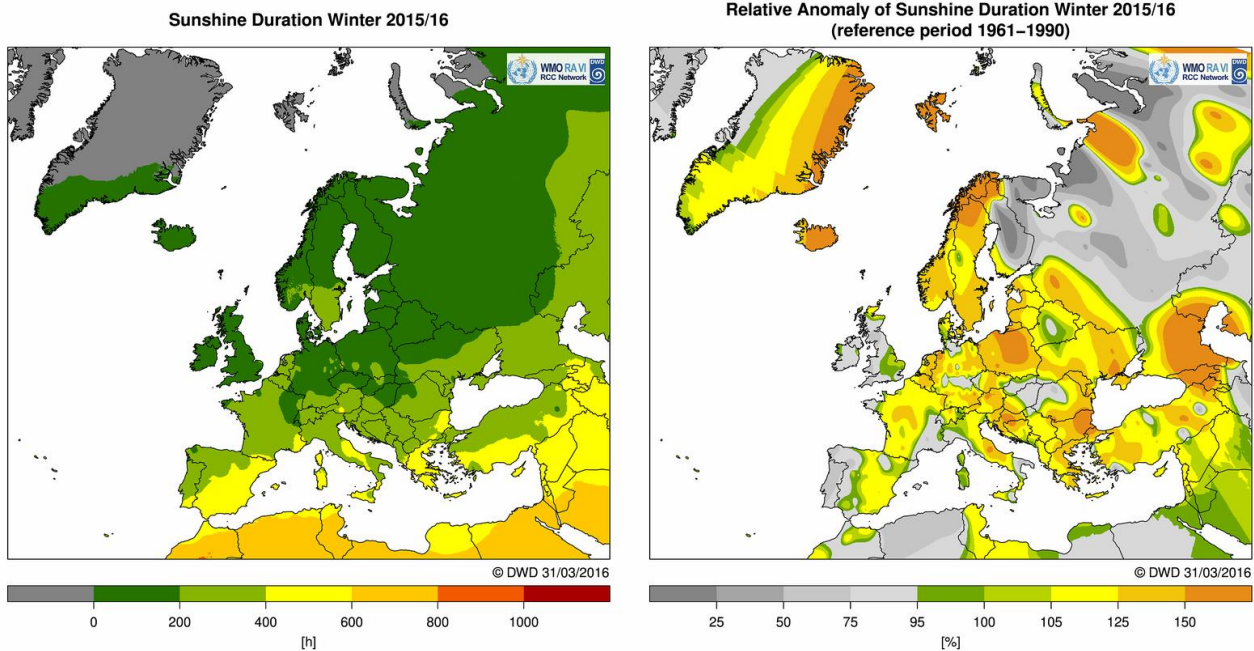
registered. For Wales, Scotland and Northern Ireland, it was the wettest winter in the series. Rainfall totals for the winter varied from less than 150 mm across parts of East Anglia to more than 1000 mm across upland areas in the north and west; Capel Curig recorded over 2000 mm.

Ireland reported that over half of stations measured their wettest winter on record. Seasonal percentage of the long term mean rainfall values ranged from 134% at Mace Head (seasonal rainfall total 514.2 mm) to 248% at Roche's Point, Co Cork (seasonal rainfall total 682.8 mm).

The northern part of **Portugal** reported more than 150% of precipitation although for the whole country the amount was quite normal. On the 13th February station Lamas de Mouro measured 184.2 mm/24h. In the north the winter totals amounted at station Cabril 1054 mm. Station Faro in southern Portugal received only 87 mm as winter totals or 36%.

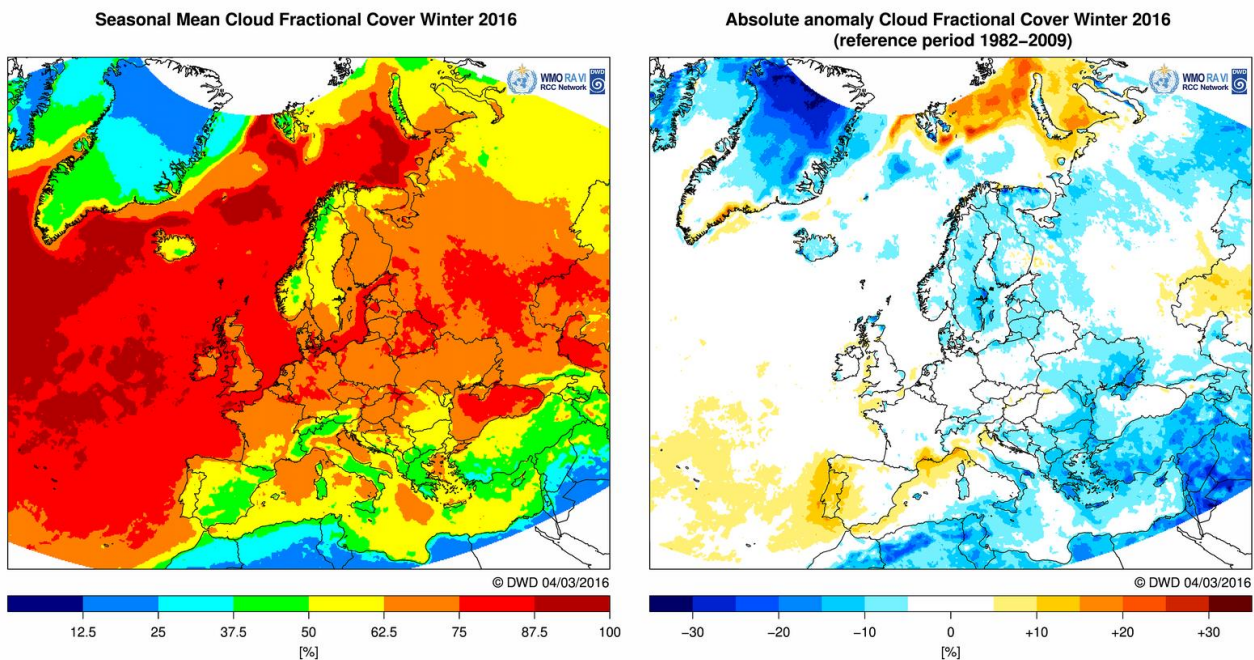
Southern Europe and the Mediterranean region showed in this winter a precipitation deficit visible in the relative precipitation anomalies.

Sunshine Duration and Cloud Cover



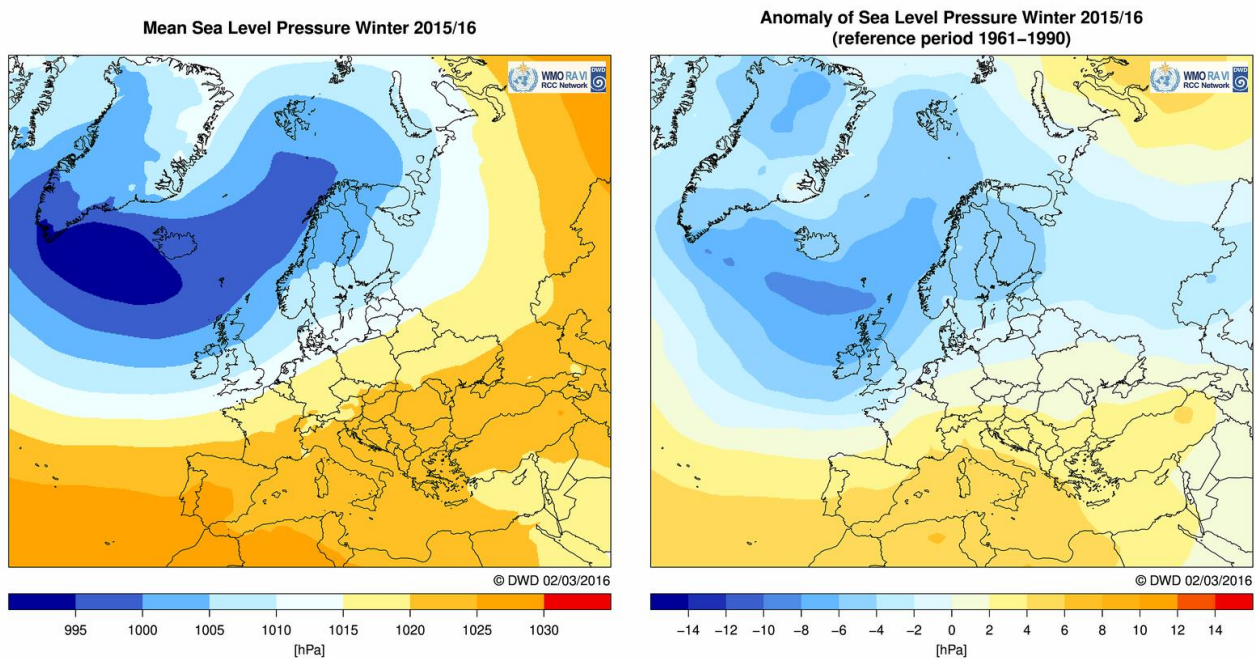
Seasonal sunshine duration for Europe in winter (DJF) 2016: mean (left, in h) and absolute anomaly (right, in %) from synoptic network.

Many parts of Europe received more than average sunshine in winter 2015/16. Only western Iberia, the United Kingdom, Finland and Russia noted below normal sunshine. This coincided well with above normal cloud cover in Western Europe. South-western Europe showed less clouds and more sunshine than normal in winter 2015/16.



Seasonal cloud cover for Europe in winter (DJF) 2016 in %: mean (left) and absolute anomaly (right) from satellites.

Surface Air Pressure



7

Sea level pressure for winter (DJF) 2015/16 in hPa: mean (left) and anomalies (right)

The surface pressure distribution for winter 2015/16 was dominated by the pressure distribution of December and February. The core pressure of the Icelandic low for winter 2015/16 was below 995 hPa and the anomaly more than -8 hPa below normal. The Azores high showed a core pressure of more than 1025 hPa or an anomaly of more than 4 hPa. This is also documented by the North Atlantic Oscillation (NAO) index of 0.99 for winter 2015/16. The United Kingdom, the Norwegian Sea, Scandinavia and western Russia showed below normal pressure anomalies which were in accordance with the East Atlantic Pattern (EA) index of 2.0. Southern Europe noted above normal pressure anomalies of up to 4 hPa.

Ireland noted six named storms with the season’s highest gust of 37 m/s reported at both Belmullet, Co Mayo on December 23rd (Storm Eva) and Sherkin Island, Co Cork on February 8th (Storm Imogen).

Table2: Standardized Northern Hemisphere teleconnection indices for winter 2015/16 relevant for Europe (source: ftp://ftp.cpc.ncep.noaa.gov/wd52dg/data/indices/tele_index.nh)

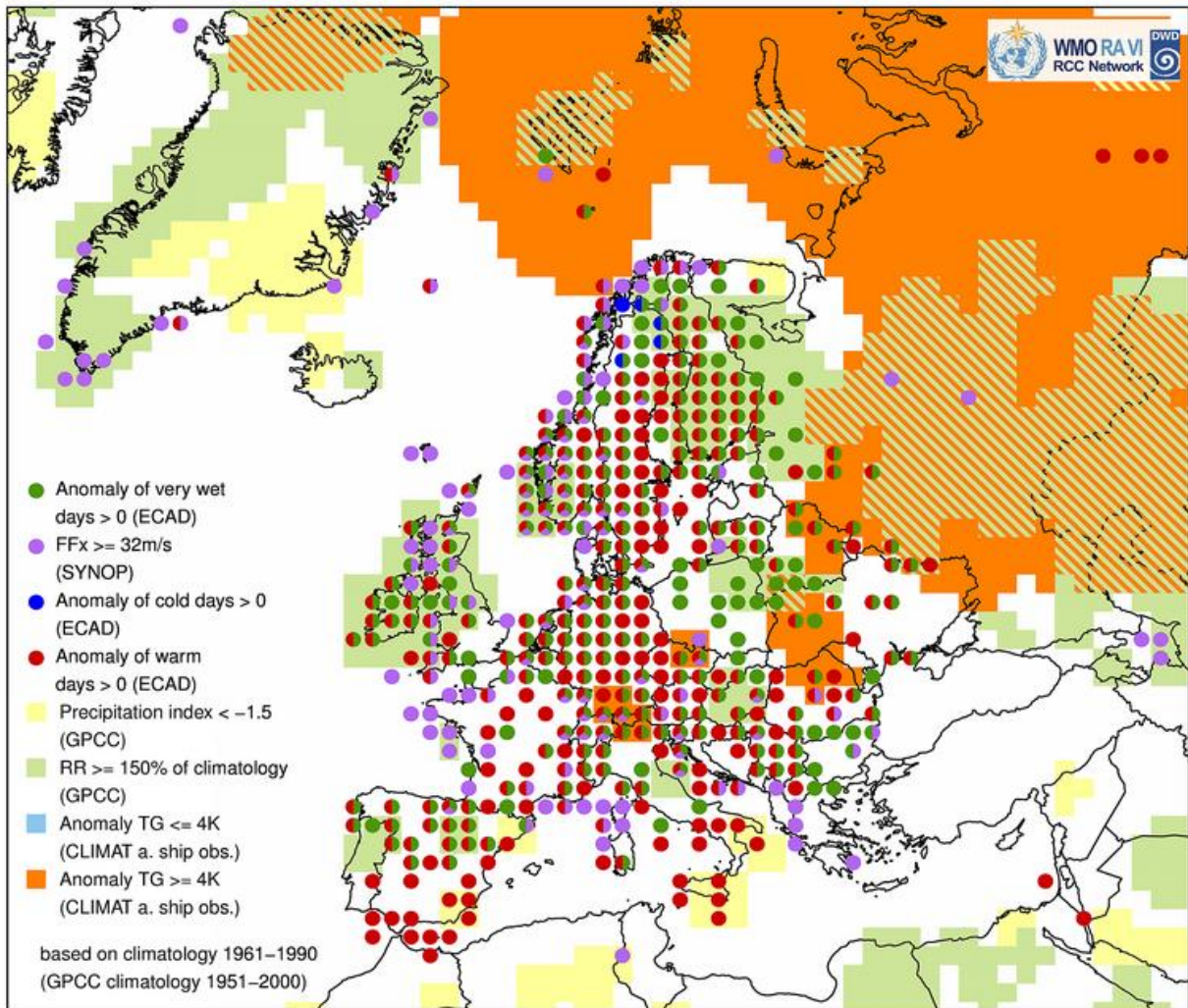
Year	Month	NAO	EA	EAWR	SCA	POL	AO
2015	December	1.99	3.14	1.28	0.08	0.58	1.44
2016	January	-0.37	1.01	-0.50	-0.68	-2.63	-1.45
2016	February	1.35	1.85	-2.39	-0.54	-2.33	-0.02
2015/16	Winter	0.99	2.00	-0.54	-0.38	-1.46	-0.01

North Atlantic Oscillation (NAO)
 East Atlantic Pattern (EA)
 East Atlantic/West Russia Pattern (EAWR)
 Scandinavia Pattern (SCA)

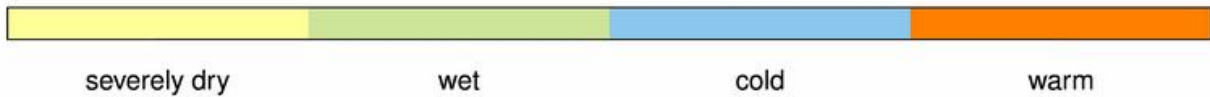
Polar/ Eurasia Pattern (POL)
 Arctic Oscillation (AO, source:
http://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily_ao_index/monthly.ao.index.b50.current.ascii.table)

Climate Extremes and Severe Weather Events:

Event Map Winter 2015/16



© DWD 18/03/2016



References

Seasonal summaries in RA VI at national web-sites:

- Austria: HISTALP Langzeitklimareihen - Österreich Winterbericht 2015/16
<http://www.zamg.ac.at/cms/de/klima/news/histalp/histalp-langzeitklimareihen-oesterreich-winterbericht-2015-16>
- Belgium: <http://www.meteo.be/meteo/view/fr/1124472-Bilan+climatologique+saisonnier.html>
- Croatia: http://klima.hr/klima_e.php?id=ocjsez_e
- Denmark: Vejret i Danmark - vinteren 2015-2016 <http://www.dmi.dk/vejrr/arkiver/maanedsaesonaar/>
- Estonia: <http://www.ilmateenistus.ee/kliima/aastakokkuvotted/ulevaated/>
- Finland: <http://en.ilmatieteenlaitos.fi/press-release/157564592>
- France: <http://www.meteofrance.fr/climat-passe-et-futur/bilans-climatiques/bilan-2016/hiver>
- Germany: http://www.dwd.de/EN/ourservices/klimakartendeutschland/klimakartendeutschland_monatsbericht.html
- Ireland: <http://www.met.ie/climate/monthly-weather-reports.asp>
- Netherlands: <http://www.knmi.nl/nederland-nu/klimatologie/maand-en-seizoensoverzichten/>
- Norway: http://met.no/Klima/Varet_i_Norge/2016/
- Portugal: <http://www.ipma.pt/pt/publicacoes/boletins.jsp?cmbDep=cli&idDep=cli&idTema=&curAno=-1>
- Switzerland: <http://www.meteoschweiz.admin.ch/home/klima/gegenwart/klima-berichte.html>

Main URLs:

(URLs of used data and further information)

- RCC-CM <http://www.dwd.de/rcc-cm>
- RCC-CD (ECA&D): <http://www.ecad.eu>
- GPCC: <http://gpcc.dwd.de>
- ESWD: <http://essl-org/cgi-bin/eswd/eswd.cgi>