



# Seasonal Bulletin on the Climate in WMO Region VI

- Europe and Middle East -

## Winter 2014/15

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Issued: Apr 9 2015, updated: Apr 16 2015



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### Highlights

- Winter 2014/2015 one of the warmest winters in long time series in many European countries
- Winter 2014/2015 sunniest winter on record at Dublin Airport (Ireland)
- An unusual number of North Atlantic storm depressions with high impact mainly in UK and the northern European continent
- An unusually cold storm from 10<sup>th</sup>-12<sup>th</sup> February 2015 with snowfalls in Greece, and Turkey (also on the 17<sup>th</sup> and 25<sup>th</sup> February 2015).
- A winter storm affecting Syria, Lebanon, Israel and Jordan with 25 cm of snow around Jerusalem on 20<sup>th</sup> February 2015
- A storm delivered wet snow to parts of the United Kingdom on 26<sup>th</sup> December 2014 and reached on the 27<sup>th</sup> parts of France, Germany, Belgium, Luxembourg and Switzerland.

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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):

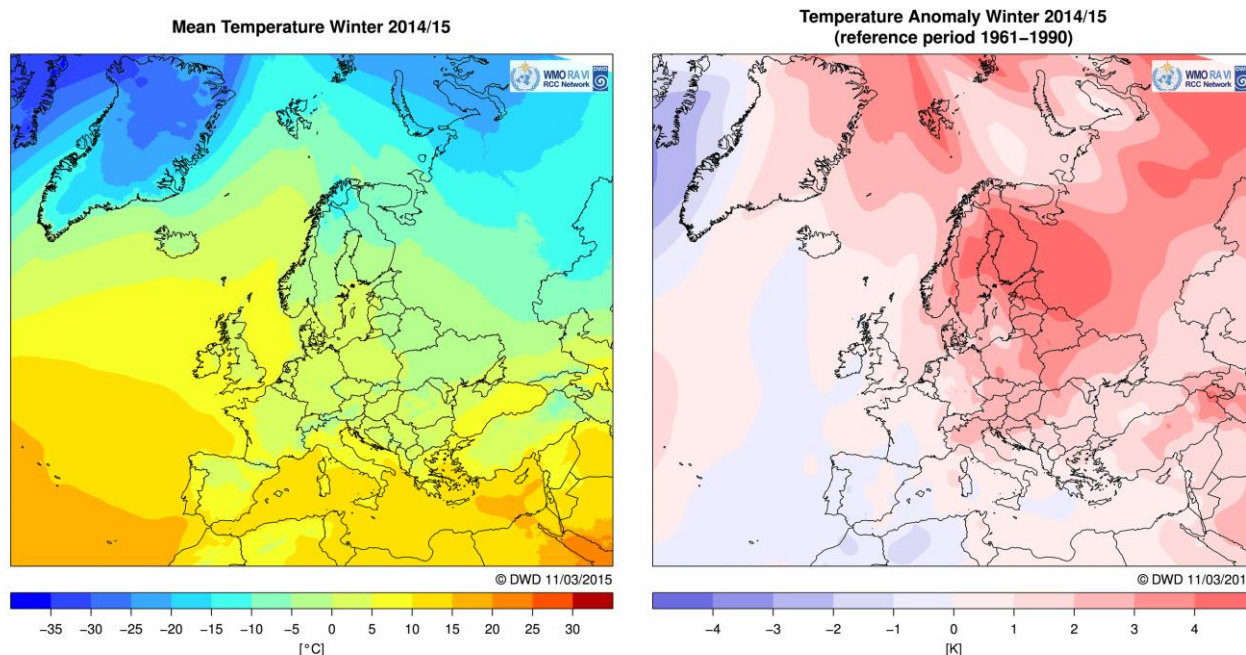
*[The GPCC http://gpcc.dwd.de/](http://gpcc.dwd.de/)*

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

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## Temperature



**Temperature:** seasonal mean (left) and anomaly (right) in °C for Europe in winter 2014/15 (December 2014 to February 2015)

The temperature anomalies for **winter 2014/15** show lower than normal values only in south-west Europe and higher than normal values in Northern and Eastern Europe. The positive anomalies reached values of more than 4°C in Scandinavia, northern Russia and in the area between Turkey and Armenia. In **Croatia** air temperature anomalies for winter ranged between 0.5°C and 2.7°C. In **Estonia** mean winter temperature was -0.3°C and 3.0°C above the long term mean. **Finland** reported temperature deviations from the long-term average of more than four degrees. For the whole country of **Norway** the winter temperature anomaly was +2.8°C.

This is also visible in the number of frost days (FD). In Scandinavia, Northern Italy and the Balkan the anomalies of frost days in comparison to the long term mean show values less than 30 days.

Some ranks of warm winters based on web-available bulletins by NMHSs are given below:

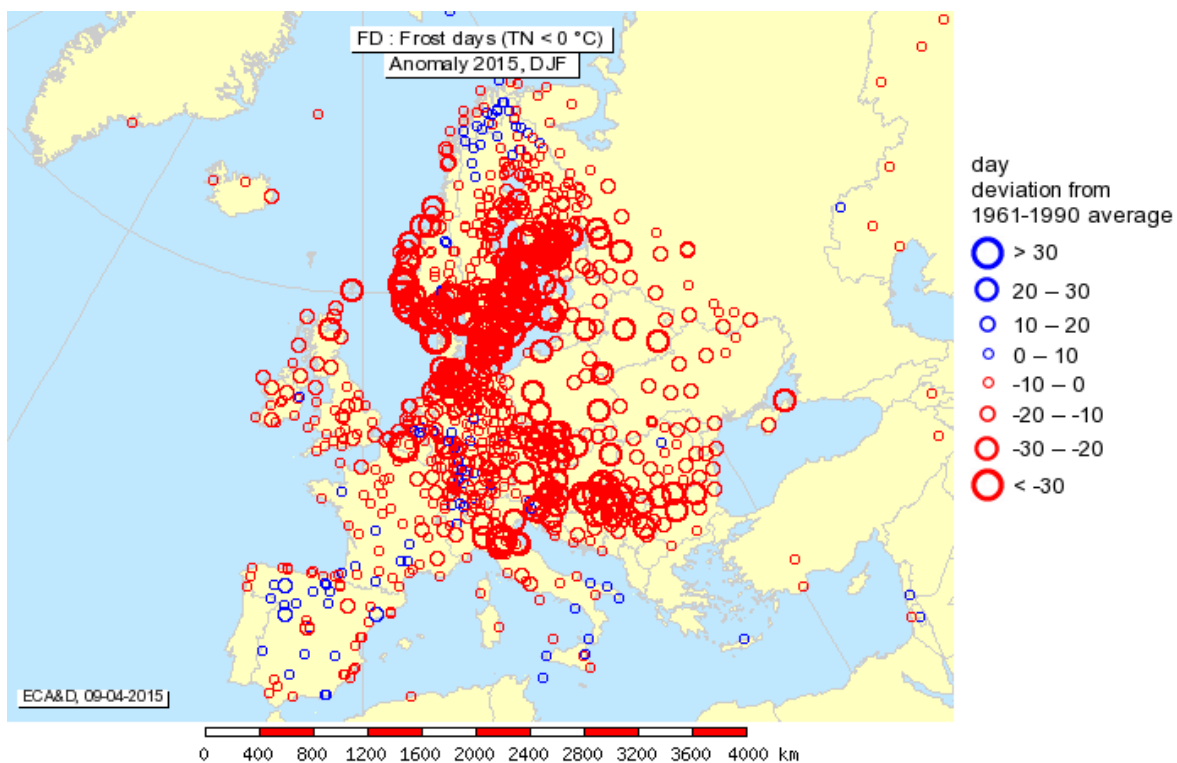
Country	Temperature anomaly	rank	Time series since
<b>Austria</b>	1.8°C	8	1767
<b>Denmark</b>	2.3°C	13	1874
<b>Finland</b>	4°C	2	1901
<b>Germany</b>	1.6°C		1881
<b>Norway</b>	2.8	16	1900
<b>Russia</b>	(4 - 5°C)	1	1891

The temperature in **December 2014** showed for most of the area positive anomalies. The highest positive anomalies of more than 4°C were registered in Finland, the arctic Russia and Turkey. Negative anomalies exist only in southwest Europe and Kazakhstan. The last days of December in many parts of Europe, except Northern Europe and Turkey were conditioned by a cold snap. In December 2014 the central western part of Finland was more than 4.0°C warmer than the average for 1981-2010. The average December temperature in Russia, was abnormally warm with anomalies exceeded +2°C in most of the country and in the North of the

Urals and Siberia +4 and +6°C. In Lugano (Switzerland) the December temperature reached 2.6°C above normal (1981-2010), the highest December mean since measurements began in 1864, and was 0.4°C above the last record from December 1953. In Turkey at stations Florya and Edremit new all-time records of maximum temperature were observed.

In **January 2015** Norway some stations reported 5 to 7 °C higher temperature than normal, for the whole country it was 2.6°C above normal. Latvia reported monthly mean air temperature between -1.7 and +1.0°C that is 4 – 5°C above normal. On European territory of Russia temperature anomalies reached values of +2°C to +5°C above normal. The temperature anomaly of Austria was 2.7 °C which is rank 17 in the 248 year long time series. At station Graz-Strassgang (Austria ) a new record for January maximum temperature was set with 21.7°C which was also the highest temperature for winter (djf). In Lucerne (Switzerland), the daily mean temperature reached 15.1 °C, which has never been registered in the available measurement series since 1871 in winter months (December to February). The daily maximum was 19.3 °C. For the first time maximum temperatures above 20°C in January were registered in Germany.

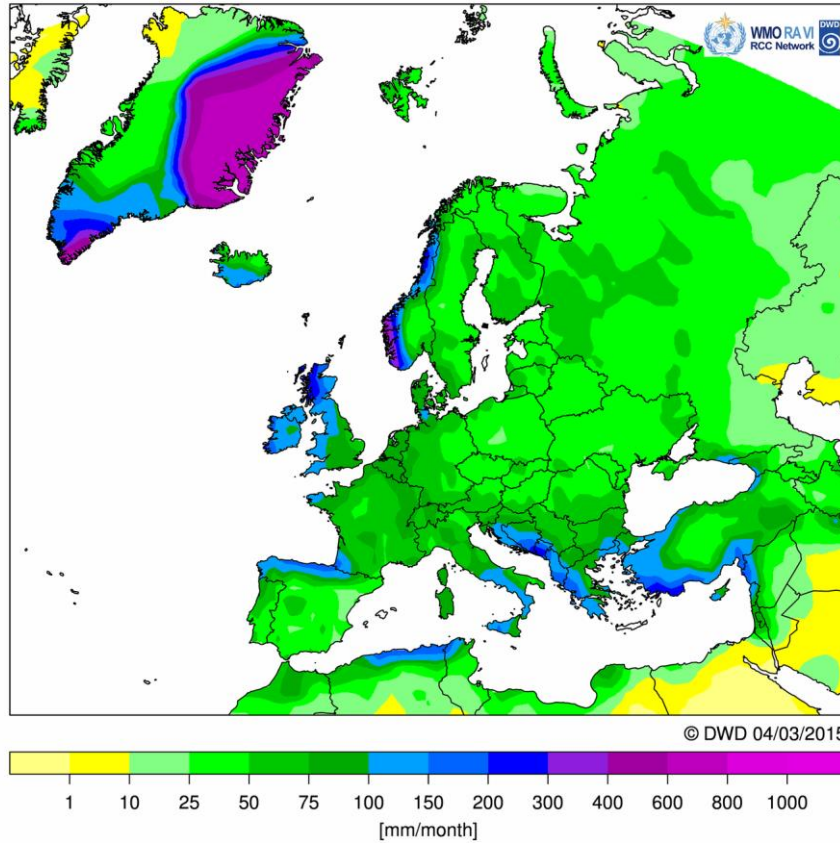
Monthly temperature for **February 2015** showed very high positive anomalies in the North-East with more than 4°C and negative anomalies in the South-West down to about -2 to -3°C. The average air temperature in **Latvia** was -0.2°C in February which was 4.6°C warmer than the normal and is the thirteenth warmest February in observational history.



Anomaly of the number of Frost Days (FD) in winter 2014/15 (December 2014 to February 2015) (source: RCC-CD, ECA&D)

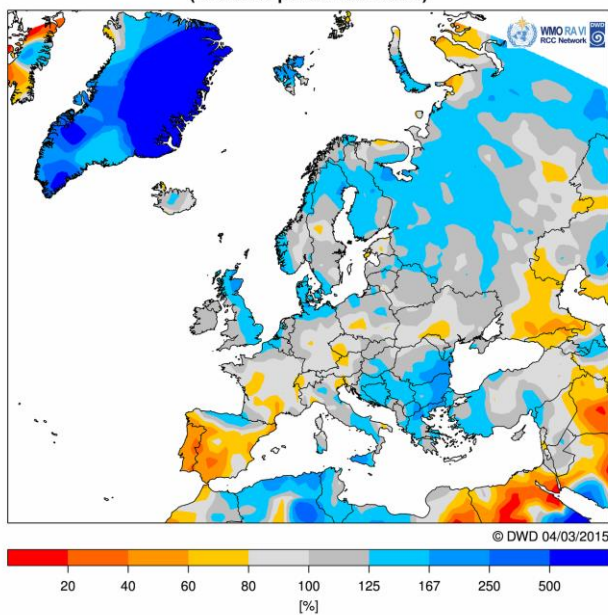
# Precipitation

**Total Precipitation GPCCC First Guess Winter 2014/15**

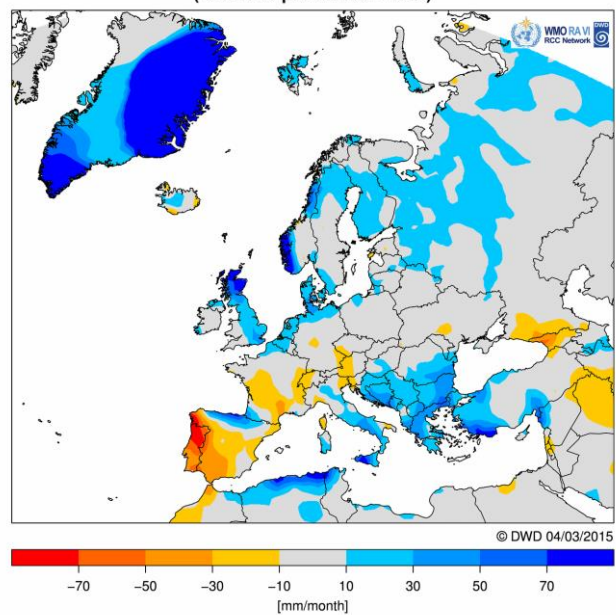


Seasonal precipitation totals (mm/month) for Europe in winter 2014/15 (December 2014 to February 2015)

**Relative Anomaly of Precipitation GPCCC First Guess Winter 2014/15**  
(reference period 1951–2000)



**Absolute Anomaly of Precipitation GPCCC First Guess Winter 2014/15**  
(reference period 1951–2000)



Relative (left, in %) and absolute (right, in mm/month) seasonal precipitation anomalies for Europe in winter 2014/15 (December 2014 to February 2015)

In **Winter 2014/15** most regions of Europe received the normal amount of precipitation. Some regions like northern Spain, Scotland, southern Norway, the Balkan and eastern Mediterranean area received up to 250% of their seasonal precipitation amount. Portugal, southern Spain, southern France and Georgia noted a precipitation deficit. **Ireland** reported the highest seasonal total of 702.0 mm (148% of the long term mean) at Newport, the lowest seasonal total with 150.0 mm (68% of the long term mean) at station Carlow (Oak Park). In **Croatia** the precipitation amount for winter 2014/2015 was within the range from 71% to 225% of the multi-annual average. In **Montenegro** the total amount of precipitation ranged from 196 mm in Rozaje to 1522 mm in Cetinje. In **Norway** precipitation was very variable this winter and ranged from more than 300% (in the west) down to 25% in the east (lee side). The highest daily and seasonal precipitation sum with 147.5 mm (19. February 2015) resp. 1846 mm was recorded at station Hovlandsdal. The predominance of northerly and north-westerly winds in the Biscay resulted in heavy precipitation along the Pyrenees with up to 300% of the normal. Precipitation in the winter months was higher than usual in **Finland** with more than 200 mm in western and central areas.

#### Precipitation rankings for winter 2013/2014 and several countries.

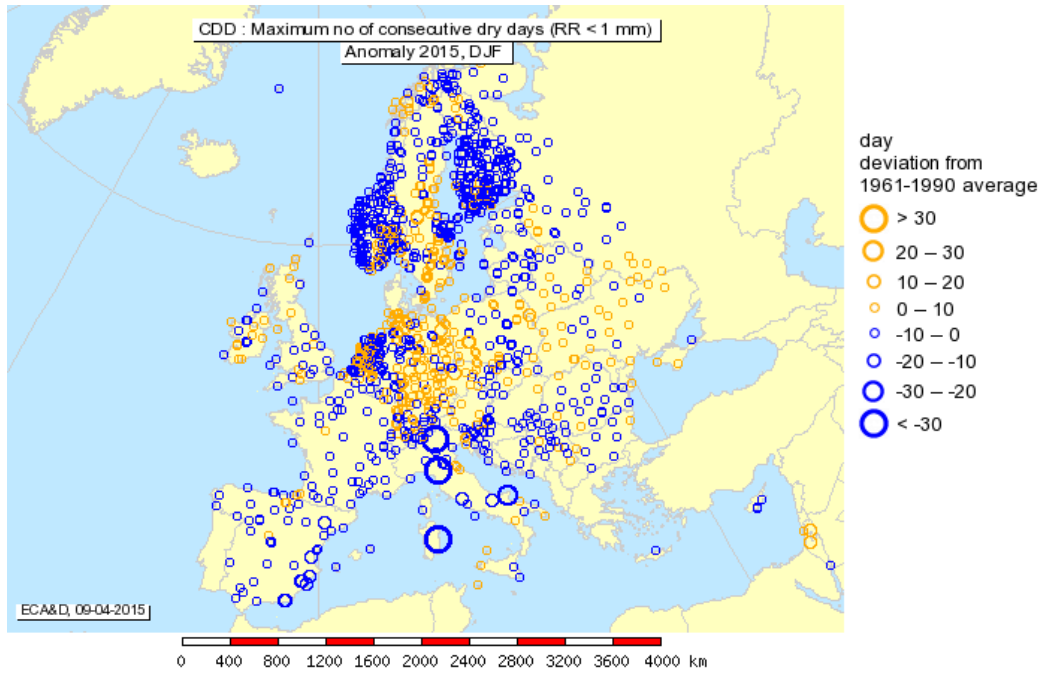
Country	Precipitation	rank	since
<b>Denmark</b>	245 mm	7	1874
<b>Norway</b>	140%	9	1900

Heavy precipitation occurred in **December 2014** at the coast of the British Isles and Scandinavia. South Eastern Europe received above-average precipitation. More precipitation than normal occurred in the north of Central Europe. Norway reported monthly totals of more than 600 mm (or 160-180% of the normal) at several stations. Southern Romania measured precipitation sums of up to 200 mm or more than 250% of the reference period 1961-1990. The maximum daily precipitation amount for December 2014 at station Hvar in Croatia was recorded on 3 December 2014 (142.3 mm). This was also a new all-time record of daily precipitation in December for Hvar (1858-2013).

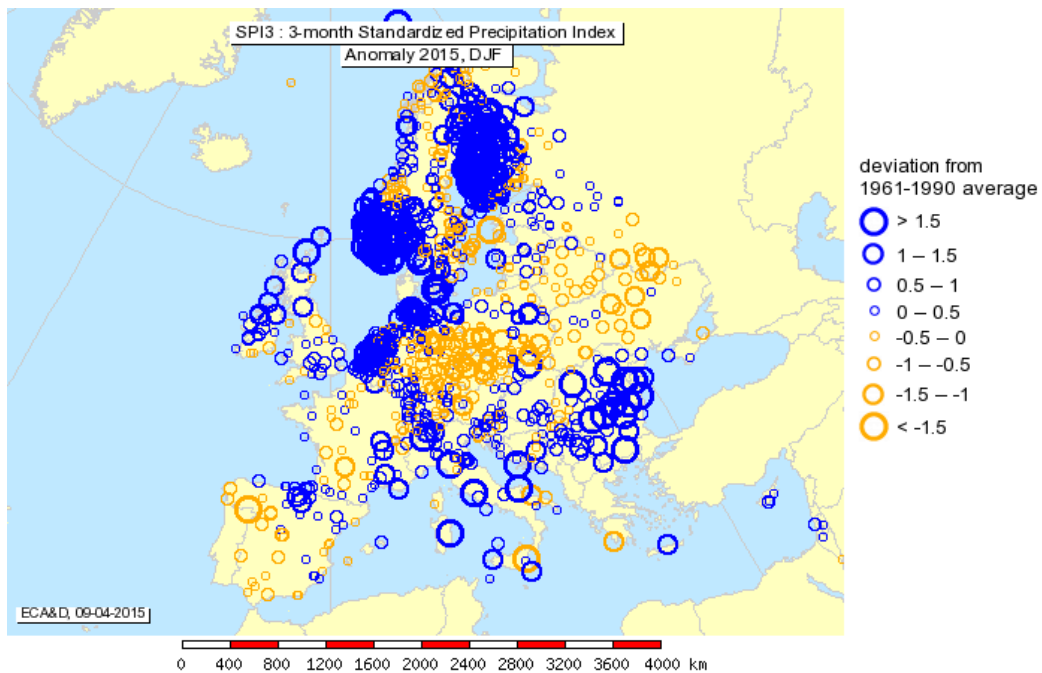
In **January 2015** most of Central, Eastern and Northern Europe show higher than normal precipitation with values of more than 250% in Scotland, although it was very sunny. The overall UK rainfall total was 126% of average. The West-Mediterranean was drier than normal except the coastal zone of northern Spain with partly more than 300 mm as reported by the national weather service AEMet.

In **February 2015** most of Central Europe, southern Scandinavia, the Baltic States and south-west Iberian Peninsula were drier than normal with values less than 20% of the long term mean. South-eastern Europe, Norway and the British Isles were wetter than normal.

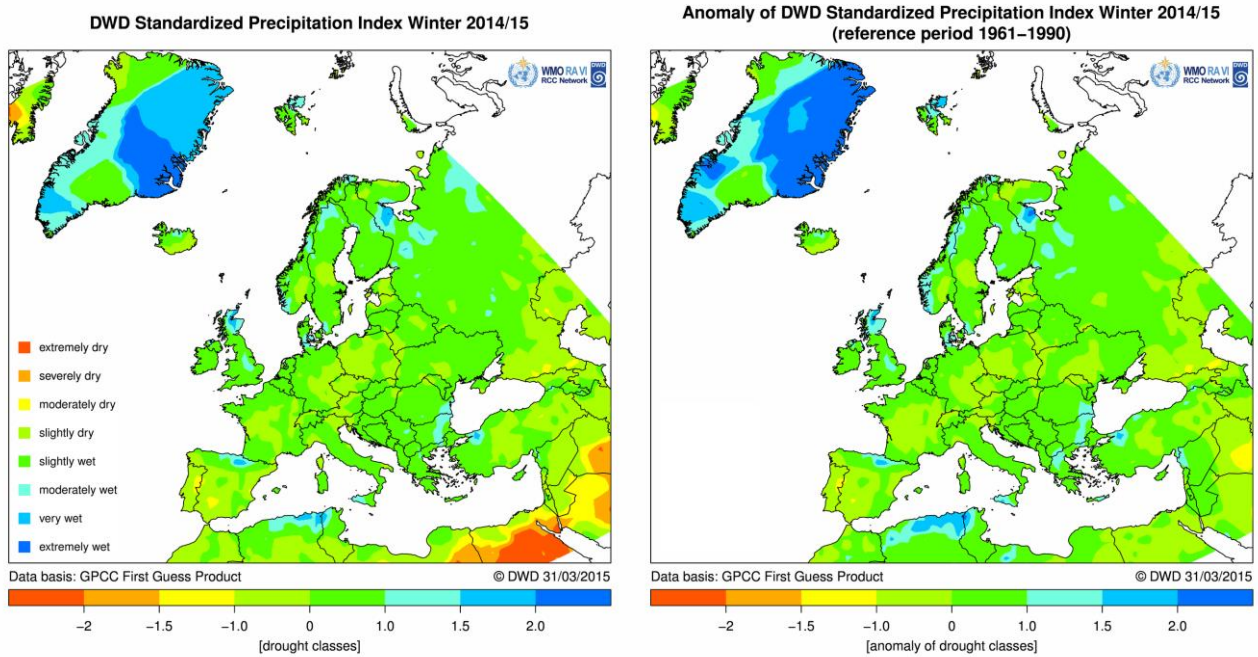
Most parts of **Austria** reported a precipitation deficit of more than 50%. At station Kollerschlag only 8% of the long term mean was registered. Monthly precipitation totals for whole **Norway** were 135% of the normal. Some stations received between 250% and 350% and others in the south only 25% of the normal. The highest amount was measured at station Lurøy with 467.0 mm or 237%. The relative anomaly of precipitation in **Portugal** ranged from values of 10% in Castelo Branco to 100% in Portimão. Compared with the average values of February the accumulated monthly precipitation in northern **Spain** exceeded 200%, at some stations even 300%. The precipitation amount in **Croatia** for February ranged between 37% and 300% or 15 and 99 mm. In **Italy** (Sicily) at stations Gela, Prizzi and Enna measured quantities of rain that exceeded the monthly records since 1951, with values respectively of 234.5 mm (previous extreme 191.2 mm), 265.1 mm (previous extreme 153.5 mm) and 246.2 mm (previous extreme 178.8 mm).



Anomaly of the maximum of consecutive dry days in winter 2014/15 (December 2014 to February 2015; source: RCC-CD, ECA&D)

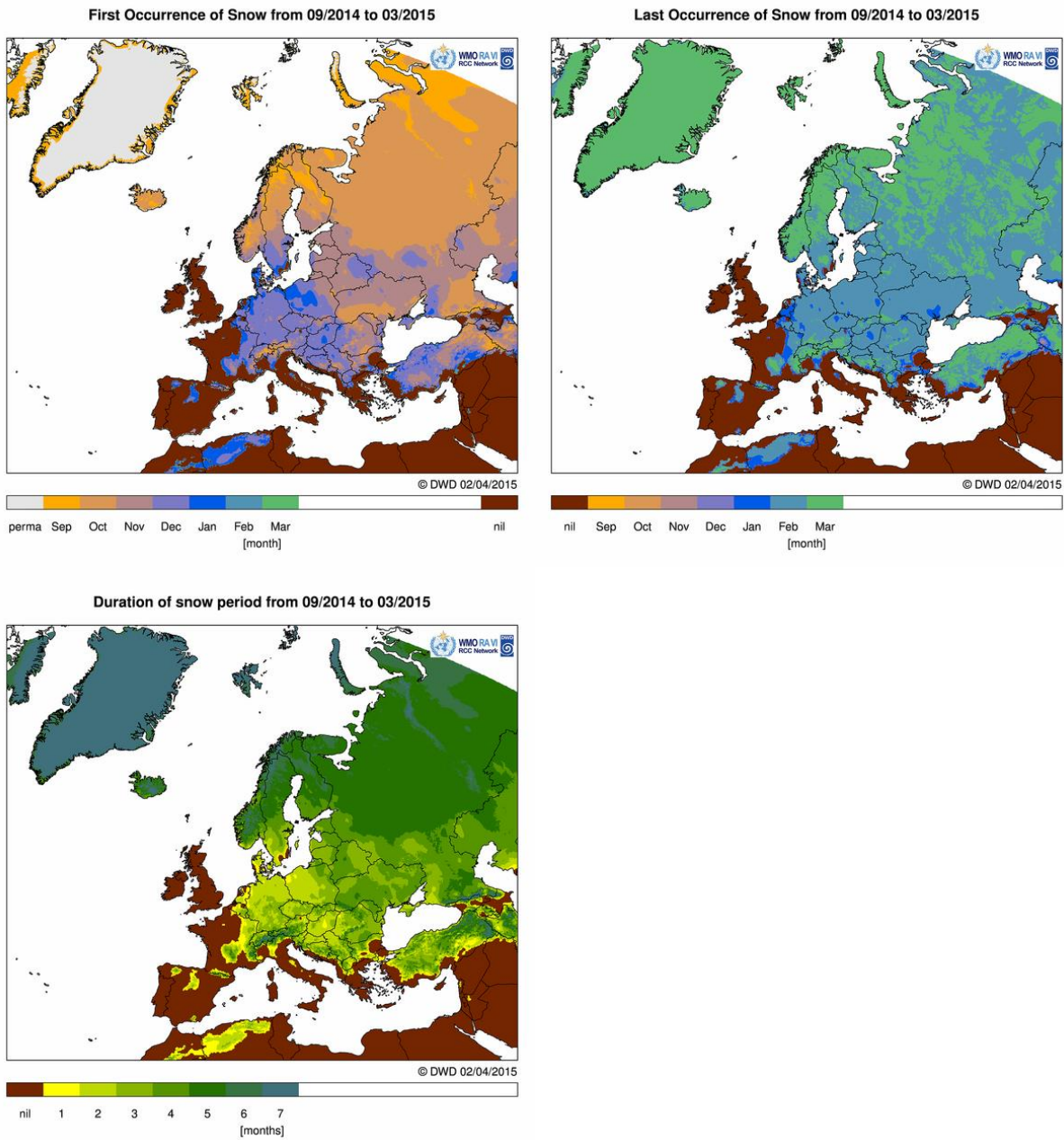


Anomaly of the 3-month SPI in winter 2014/15 (December 2014 to February 2015; source: RCC-CD, ECA&D)



**Standardized precipitation index:** seasonal mean (left) and anomalies (right, seasonal drought index, SPI) for Europe in winter 2014/15 (December 2014 to February 2015)

# Snow

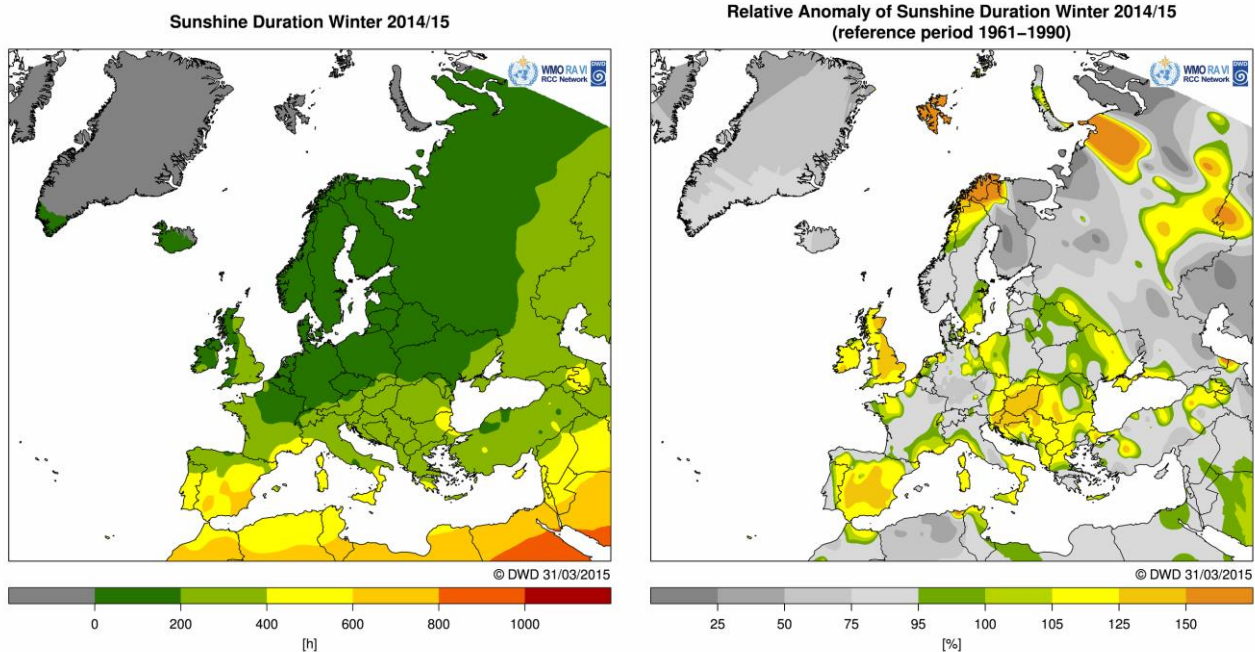


The days with snow cover in the Alps especially at low altitudes were around 40% less than the long term mean. The snow cover existed only few days at the end of December and from the end of January until February. In Italy, Greece and Great Britain very few snow was observed and also France and Spain had less than normal snow. In **Poland** the number of days with snow in relationship to normal period 1971-2000 was in some parts below 30%.

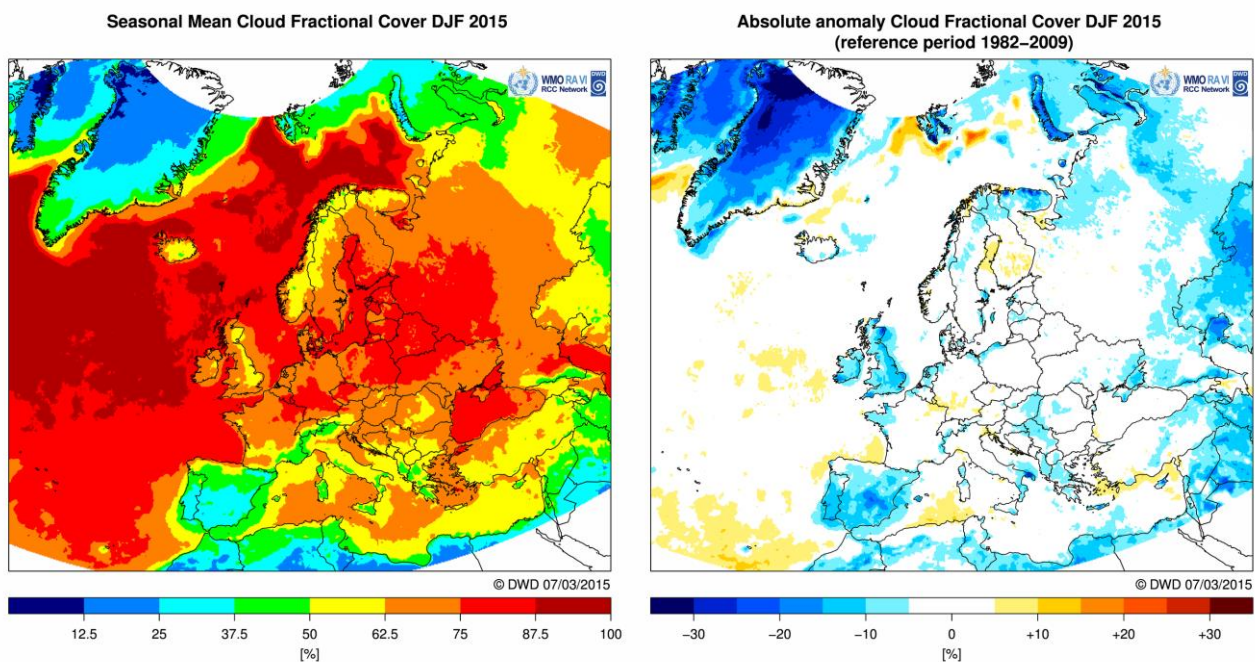
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## Sunshine Duration and Cloud Cover



**Sunshine Duration** seasonal mean (left, in h) and relative anomalies (right, in %) for Europe in winter 2014/15 (December 2014 to February 2015)



**Cloud cover:** seasonal mean (left, in %) and absolute anomalies (right, in %) for Europe in winter 2014/15 (December 2014 to February 2015)

Dublin Airport (Ireland) reported its sunniest winter since records began 73 years ago, with a seasonal total of 253.4 hrs (136% of the long term mean) exceeding its previous record by over 15 hours of sunshine.

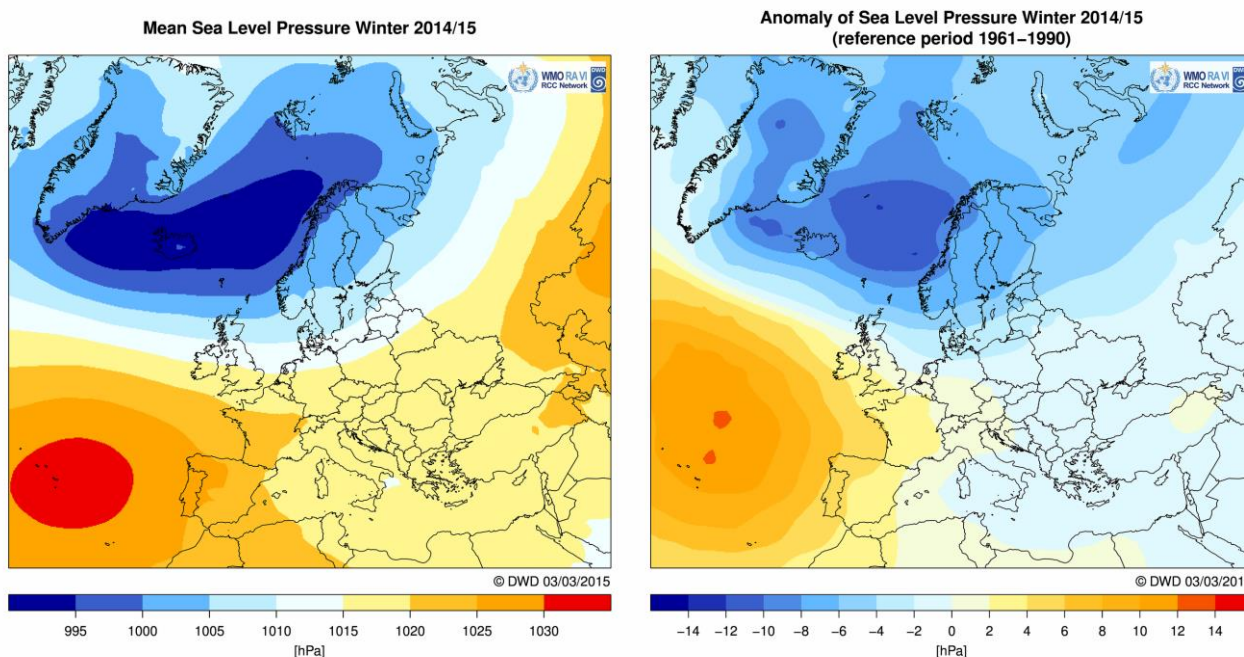
The UK received 146% of the average sunshine hours, and it was the second sunniest **December** in a series from 1929 whereas Northern Europe showed a lack of sunshine receiving only 25% of the long term mean.

In southern Scandinavia, Iberia, the Balkan, Ukraine and Belarus the anomalies of the sunshine duration showed values of more than 150%.

Most of Central, Eastern and Northern Europe had lower than normal sunshine in **January 2015**. The Mediterranean from Iberia to Turkey showed positive anomalies of the sunshine duration with values of more than 150% in Spain, Sardinia and Romania. In the United Kingdom the sunshine was well above normal in most places, especially eastern areas, and the UK received 126% of average sunshine hours. It was provisionally the UK's equal-fourth sunniest January in a series from 1929.

The dry areas **in February** had more sunshine than normal with a maximum at the border between Germany and Poland of more than +50%. **Austria** reported at station Hohenau an der March (Hohenau upon March) a surplus of +44% while in the south-western part of Austria stations showed a deficit of -30 to -37%.

## Air Pressure (surface)



Sea Level Pressure: Mean (left) and anomalies (right) for Europe in winter 2014/15 (December 2014 to February 2015)

The pressure distribution in winter show similar patterns for the mean and the anomalies. This indicates that the two pressure centres were intensified in relation to the reference period. It is associated with several storms in northern Europe. This can also be seen in the North Atlantic Oscillation index (NAO) with values above 1.0 in all three winter months. In Eastern Europe and the eastern Mediterranean the pressure anomalies are negative, also associated with several low pressure systems.

Month	North Atlantic Oscillation (NAO)	Polar/ Eurasia Pattern (POL)	Arctic Oscillation (AO)
December 2014	1.63	-0.93	0.413
January 2015	1.57	-0.03	1.092
February 2015	1.05	2.09	1.043

Data source: [http://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily\\_ao\\_index/teleconnections.shtml](http://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily_ao_index/teleconnections.shtml)

The mean sea level pressure (slp) in **December 2014** showed an anomaly-pattern similar to the mean slp. This means that the centres of action, the Icelandic low and the Azores high were more intense than normal and shifted to the north-east. This was indicated also by the high NAO-index value of 1.63. This circulation pattern was accompanied by flow of warm air to Central Europe and heavy precipitation at the coast of the British Isles and Scandinavia. Due to the warm Mediterranean sea surface temperature more than 20 tornadoes have been observed in the Aegean Sea.

The year 2015 started in **January** with a high North Atlantic Index (NAO) where both, the Azores high and the Icelandic low were more intensive than normal. Both were also shifted to north-east. This leads to more westerly winds and higher temperature anomalies (see section on temperature and weather types). Scandinavia was struck by two storms Svea (2nd January 2015) and Egon (10th January 2015) with wind gusts of nearly 40 m/s.

In **February** the Acores high was more intense than normal with sea level pressure anomalies of more than +10 hPa. The Iceland low was also more intense with anomalies below -14 hPa and shifted to the north. In eastern and southern Europe negative pressure anomalies prevailed. Both, the North Atlantic Oscillation (NAO) and Arctic Oscillation (AO) index showed values of more than 1. In **Lithuania** strong winds were observed at the 8th of February in Ventspils with up to 29 m/s. A deep low pressure, which was renamed to Ole of the **Norwegian** weather service, drew in the northernmost part of Scandinavia on 7th and was accompanied by strong winds. In Katterjåkk in Lapland (Sweden) 20 cm of snow was observed, the strongest wind was reported from Evelynlabayani (Sweden) with 38 m/s in average and 43 m/s in the wind gusts.

## Extreme Values

Data source: The RCC-CD-node: <http://www.ecad.eu>

RX1d: highest 24 hours total (in mm), RX5d: highest 120 hours total (in mm),

RR10: highest number of days with heavy precipitation (>10 mm/d),

RR20: 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 absolute maximum temperature (° C)

- : no values available

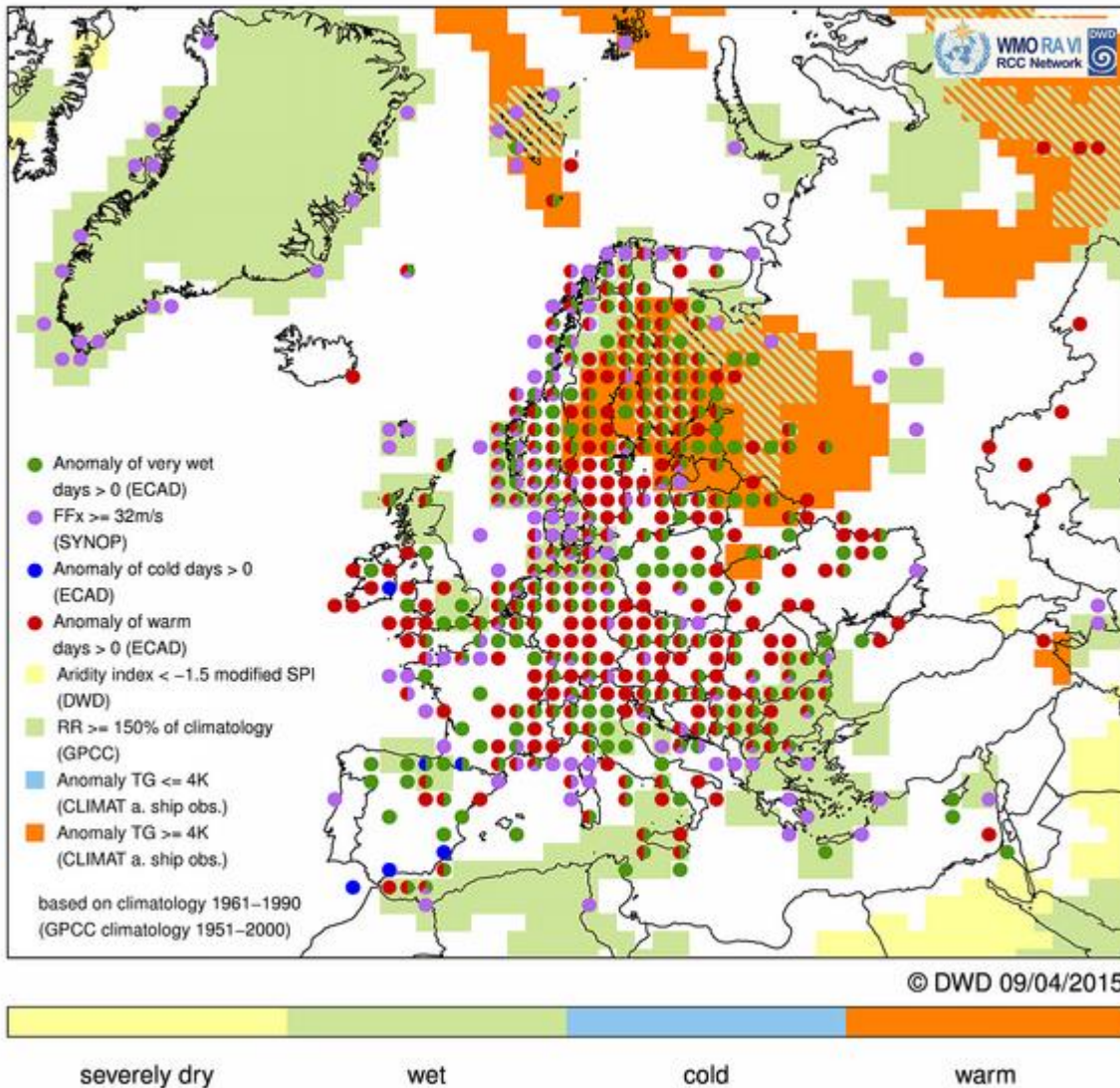
\* : value corrected according to NMHSs report, may still be preliminary

Country	RX1d [mm]	RX5d [mm]	RR10 [days]	RR20 [days]	TN [°C]	TNN [°C]	TX [°C]	TXX [°C]
Algeria	-	-	-	-	3.7	-3.9	20.9	30.1
Armenia	-	-	-	-	-7.9	-25	2.2	8.9
Austria*	70.0	152.7	11	2	-13.4	-25.7*	6.3	21.7*
Belarus	21.0	37.3	4	0	-3.5	-18.8	2.4	10.7
Belgium	30.0	70.1	19	5	0.7	-10.4	7.4	13.1
Bosnia and Herzegovina	42.0	60.3	8	3	-0.6	-16	5.4	16.1
Bulgaria	78.0	131.0	10	7	-2.4	-16.9	10.4	22.2
Canary Island	-	-	-	-	-	-	21.3	27.1
Croatia	88.0	115.0	18	9	-4.8	-19.3	13.9	20.4
Cyprus	70.0	84.8	11	4	-	-	-	-
Czech Republic	52.0	78.7	13	2	-	-18.0	-	16.0
Denmark	-	-	-	-	0.9	-8.8	5.8	10.7
Estonia*	30.0	34.7	8	0	-3.7	-20.7*	3.8	9.8*
Finland*	25.7	48.9	7	1	-16.0	-39.6*	2.9	9.6
France	70.0	151.0	19	8	-3.7	-13.4	15.2	21.9
Germany*	72.7	132.9	23	10	-12.6	-24.9*	6.7	20.5
Greece	45.0	101.0	13	6	-	3.6	16.4	25.1
Greenland	-	-	-	-	-8.8	-20.3	-3.5	4
Hungary	47.0	62.1	5	1	-0.9	-14.9	6.1	16.4
Iceland	-	-	-	-	-2.4	-11.5	3.2	16.5
Ireland*	38.9*	90.6	17	2	1.8	-7.9*	9.4	16.2*
Israel	58.0	123.2	12	8	6.7	-4.3	23.5	31
Italy	76.0	137.2	14	9	-12.6	-21.1	17.3	23.9
Kazakhstan	-	-	-	-	-17.8	-39.0	4.9	17.1
Kyrgyzstan	-	-	-	-	-3.8	-17.3	5.7	18.7
Latvia*	27.0	61.4	4	0	-4	-20.8	2.8	8.8*
Liechtenstein	-	-	-	-	0.1	-10.4	5.0	16.9
Lithuania	62.0	65.2	6	0	-2.6	-21	2.7	9.5
Luxembourg	27.5	75.4	3	0	-0.4	-10.2	3.9	12.8
Moldova	20.0	42.4	2	0	-2.0	-16.8	2.7	13.6

Country	RX1d [mm]	RX5d [mm]	RR10 [days]	RR20 [days]	TN [°C]	TNN [°C]	TX [°C]	TXX [°C]
Netherlands*	41.6	78.2	16	4	0	-9.1*	7.1	14.4
Norway*	147.5*	318.3	59	36	-18.4	-42.0	7.2	14.1*
Poland*	29.0	37.6	7	2	-2.6	-22.0*	5.7	15.3*
Portugal	24.0	31.9	2	2	0.7	-4.5	9.2	15.1
Romania	45.0	74.4	11	4	-11.8	-29.3	7.0	18.1
Russian Federation	40.0	64.1	9	1	-22.9	-41	3.1	14
Serbia	51.0	52.6	11	3	-5.7	-26.1	7.9	18.1
Slovakia	100.0	118.8	4	2	-4.7	-22.0	6.0	17.1
Slovenia	137.0	147.1	11	6	-9.3	-20.4	6.3	15.5
Spain*	127.3*	220.0	28	13	-2.6	-11.9*	17.8	25.6
Sweden	47.0	144.0	14	5	-18.4	-40.1	4.9	17.6
Switzerland	116.1.0	292.7	25	16	-11.5	-24.1	8.9	20.5
Tajikistan	-	-	-	-	-	-	10.7	19.6
Turkey	-	-	-	-	-4.4	-15.9	8.1	15.7
Ukraine	36.0	61.0	5	2	-4.7	-23.3	6.1	19.6
United Kingdom	78.0	129.0	29	10	0.4	-8.9	9.3	16.6
Uzbekistan	-	-	-	-	-6.1	-19.3	12.5	24.2

## Climate Extremes and Severe Weather Events:

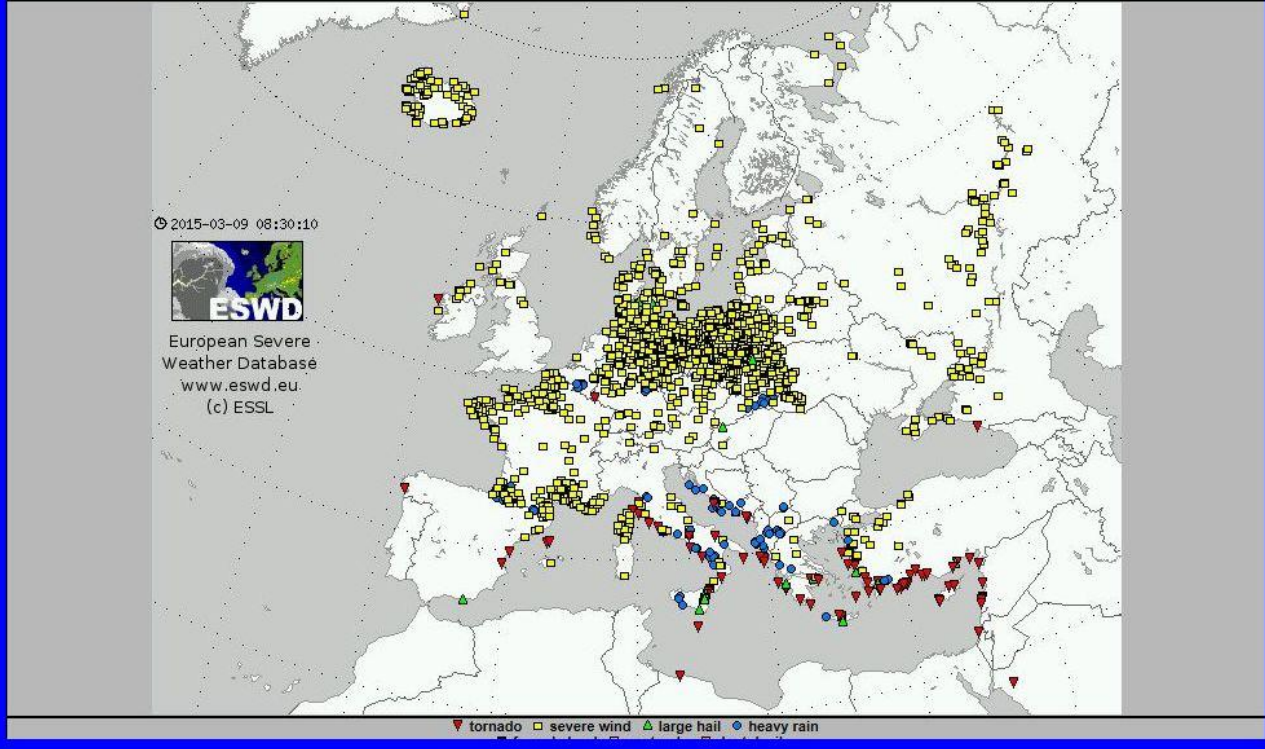
Event map Winter 2014/15



### Selected data from the database

**selected:** all reports - large hail, heavy rain, tornadoes, severe wind gusts  
- occurring between 01-12-2014 00:00:00 and 28-02-2015 24:00:00 GMT/UTC  
- report confirmed, event fully verified

number of selected reports: 2664  
Only the first 25 selected events are shown in the table  
[Dynamic map](#)   [Static Map](#)



Map of reported Severe Weather Events of the Season, Source: <http://essl.org/cgi-bin/eswd/eswd.cgi>



## References:

### Seasonal summaries in RA VI at national web-sites:

- Austria: <http://www.zamg.ac.at/cms/de/klima/news/winter-2014-2015-mild-und-relativ-wenig-schnee>  
<http://www.zamg.ac.at/cms/de/klima/news/histalp/histalp-langzeitklimareihen-oesterreich-winterbericht-2014-15>
- Belgium: <http://www.meteo.be/meteo/view/fr/18293903-Hiver+2015.html>
- Croatia: [http://klima.hr/klima\\_e.php?id=ocjsez\\_e](http://klima.hr/klima_e.php?id=ocjsez_e)
- Denmark: <http://www.dmi.dk/vejir/arkiver/maanedsaesonaar/vejret-i-danmark-vinteren-2014-2015/>
- Estonia: <http://www.ilmateenistus.ee/kliima/aastakokkuvotted/ulevaated/>
- Finland: <http://en.ilmatieteenlaitos.fi/press-release/56725081>
- France: <http://www.meteofrance.fr/climat-passe-et-futur/bilans-climatiques/bilan-2015/bilan-climatique-de-l-hiver-2014-2015>
- Germany: [http://www.dwd.de/bvbw/appmanager/bvbw/dwdwwwDesktop?nfpb=true&pageLabel=dwdwww\\_menu2\\_presse&T98029gsbDocumentPath=Content%2FPresse%2FPressemitteilungen%2F2015%2F20150227\\_DeutschlandwetterimWinter\\_news.html](http://www.dwd.de/bvbw/appmanager/bvbw/dwdwwwDesktop?nfpb=true&pageLabel=dwdwww_menu2_presse&T98029gsbDocumentPath=Content%2FPresse%2FPressemitteilungen%2F2015%2F20150227_DeutschlandwetterimWinter_news.html)
- Ireland: <http://www.met.ie/climate/monthly-weather-reports.asp>
- Latvia: <http://www.meteo.lv/lapas/noverojumi/meteorologija/laika-apstaklu-raksturojums/si-gada-laika-apstakli/?nid=955>
- Lithuania: <http://www.meteo.lt/apzvalgos.php>
- Montenegro: <http://195.66.163.23/klimatologija.php?tip=sezonski>
- Netherlands: [http://www.knmi.nl/klimatologie/maand\\_en\\_seizoenoverzichten/seizoen/win15.html](http://www.knmi.nl/klimatologie/maand_en_seizoenoverzichten/seizoen/win15.html)
- Norway: [http://met.no/Klima/Varet\\_i\\_Norge/](http://met.no/Klima/Varet_i_Norge/)
- Poland: [http://www.imgw.pl/extcont/biuletyn\\_monitoringu/](http://www.imgw.pl/extcont/biuletyn_monitoringu/)
- Russia: <http://www.meteoinfo.ru/climate/climat-tabl3/-2015-/10674--2015>
- Spain: [http://www.aemet.es/en/serviciosclimaticos/vigilancia\\_clima/resumenes?w=0&datos=1](http://www.aemet.es/en/serviciosclimaticos/vigilancia_clima/resumenes?w=0&datos=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>

University of Reading (UK, Department of Meteorology) <http://www.met.reading.ac.uk/~brugge/world.html>