

Seasonal Bulletin on the Climate in

WMO Region VI

- Europe and Middle East -

Summer 2017

Deutscher Wetterdienst

Issued: 16 October 2017



Highlights:

- **Thunderstorms with heavy precipitation in Western and Central Europe in June and August**
- **Heatwave in southern Europe and the Balkans in June**
- **Extreme temperature in southern half of Europe in July**
- **High precipitation amounts in Central Europe, Iberia and Turkey in August**
- **Heat wave in the Balkans in August**
- **Drought in southern Europe in Summer**

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:

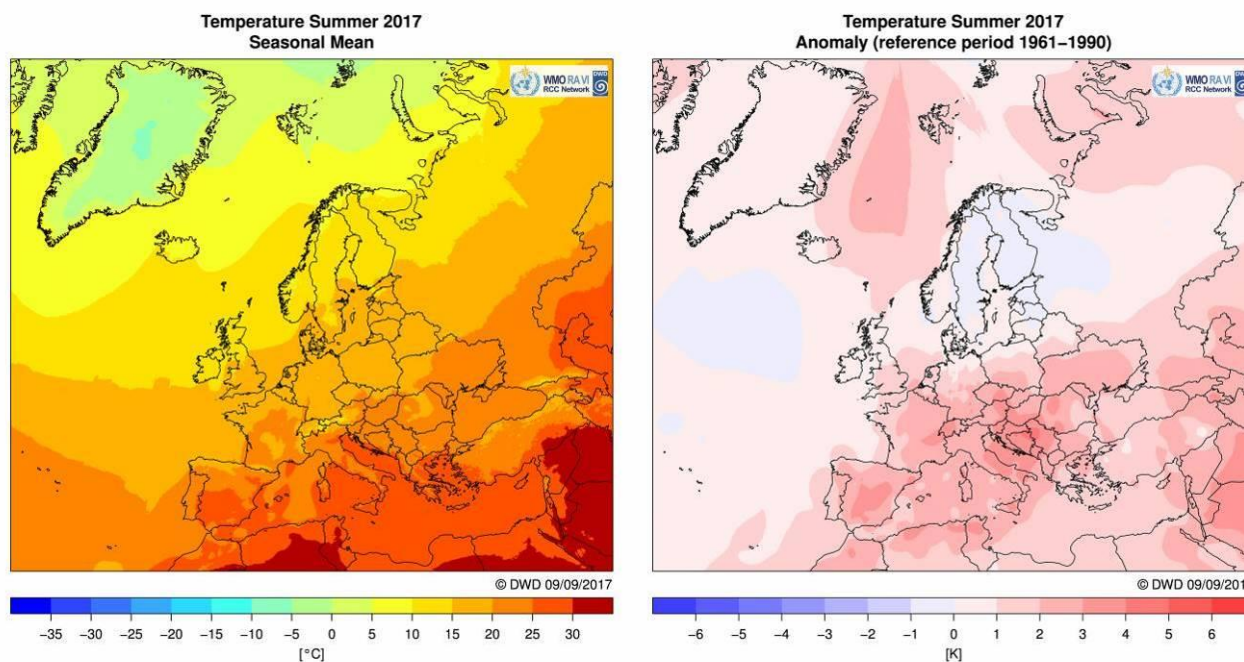
[RCC-CM RA VI /](#)

and at the Global Precipitation Climatology Center (GPCC):

[The GPCC](#)

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

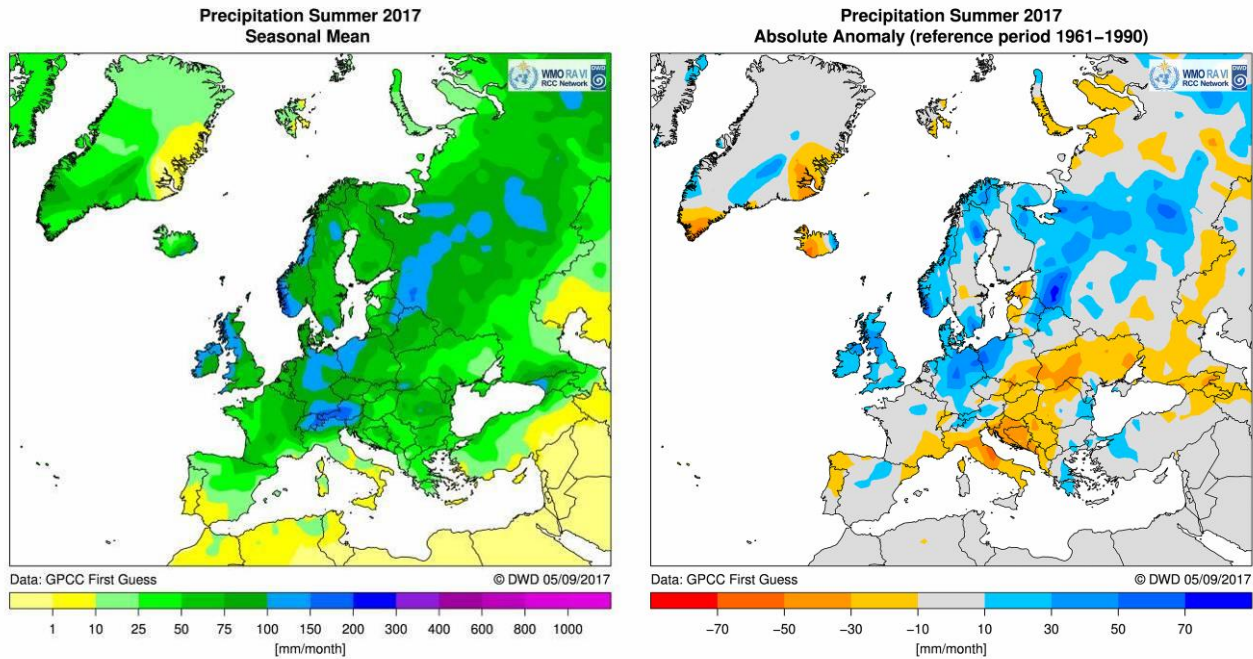
Seasonal temperature (in °C, left) and their anomalies (in K or °C, right) with respect to the reference period 1961-1990 for Europe JJA 2017

In summer 2017 temperature anomalies for Europe were mostly positive with a maximum of more than +5°C over the Balkans and Spain. Scandinavia showed the lowest temperature anomalies.

The temperature in **Portugal** in summer 2017 was characterized as hot and extremely dry and it was the 9th hottest since 1931 with an anomaly of +1.43 °C (reference period 1971-2000) Two heat waves were observed this summer in Portugal (07/06 to 24/06 and 12/07 to 17/07). In **Spain** this summer reached the second rank (since 1956, after 2003) with an anomaly of +1.6 °C above the average of 1981-2010. Spain reported 5 heat waves for this summer and also **France** (18-22 June, 5-8 and 17-19 July, 1-6 and 26-29 August)

Air temperature anomalies for summer (June, July, August) 2017 ranged in **Croatia** from +2.4 °C to +4.0 °C. In **Serbia** it was the second warmest summer on record with highest daily air temperature of 41.6 °C on August 6. The summer temperature anomalies ranged from +1.1 °C to +3.2 °C (base period 1981-2010) with six recorded heat waves. **Slovakia** reported 2 heat waves one from 19.6.-28.6.2017 and one from 30.7.-5.8.2017. At Bratislava (Slovakia) summer season air temperature was the 2nd highest for period 1931-2017. Summer was hot in the **Republic of Moldova**. The average air temperature for the season ranged from 20.7 to 22.9 °C, which is +1.1 to +2.0 °C above the norm and is observed on average once every 10 years for the entire observation period, and for the last 20 years - an average of once every 3 years. The maximum air temperature over the summer increased to +39 °C, that on the territory of the republic in August is noted on average once every 15 years.

Precipitation



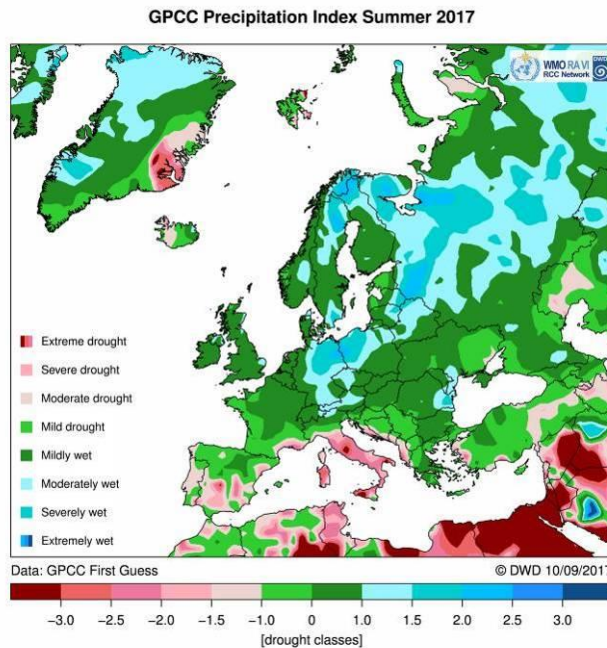
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Map of seasonal precipitation totals (mm, left) and their anomalies (in %, right) with respect to the reference period 1961-1990 for Europe JJA 2017

Precipitation anomalies in summer were highest in Western, Central Europe, Scandinavia and European Russia with partly more than 150%. Greece and western Turkey were wetter than normal due to convection. Iberia, southern France, Italy, the Balkans and eastern Turkey showed a precipitation deficit.

The United Kingdom received 320 mm of rainfall over the summer (1 June – 30 August), 32.8% more than the 241 mm average. This makes this summer the UK's 11 wettest on record. In Germany the start of the summer saw long periods of dry weather, from the end of June onwards there were frequent thunderstorms and intensive heavy rain events. Berlin Airport measured on 29th of June 197 mm/day (low RASMUND). From 24 to 26 July, low ALFRED moved slowly through central Germany (Harz-region, Lower Saxony and Thuringia) with a precipitation amount of 302 mm/72h inducing floods and damages. Greece was also affected by thunderstorms with highest daily precipitation amount of locally up to 99 mm on 29th of August. Local thunderstorms in Turkey induced local heavy precipitation of 98.4 mm/d in August.

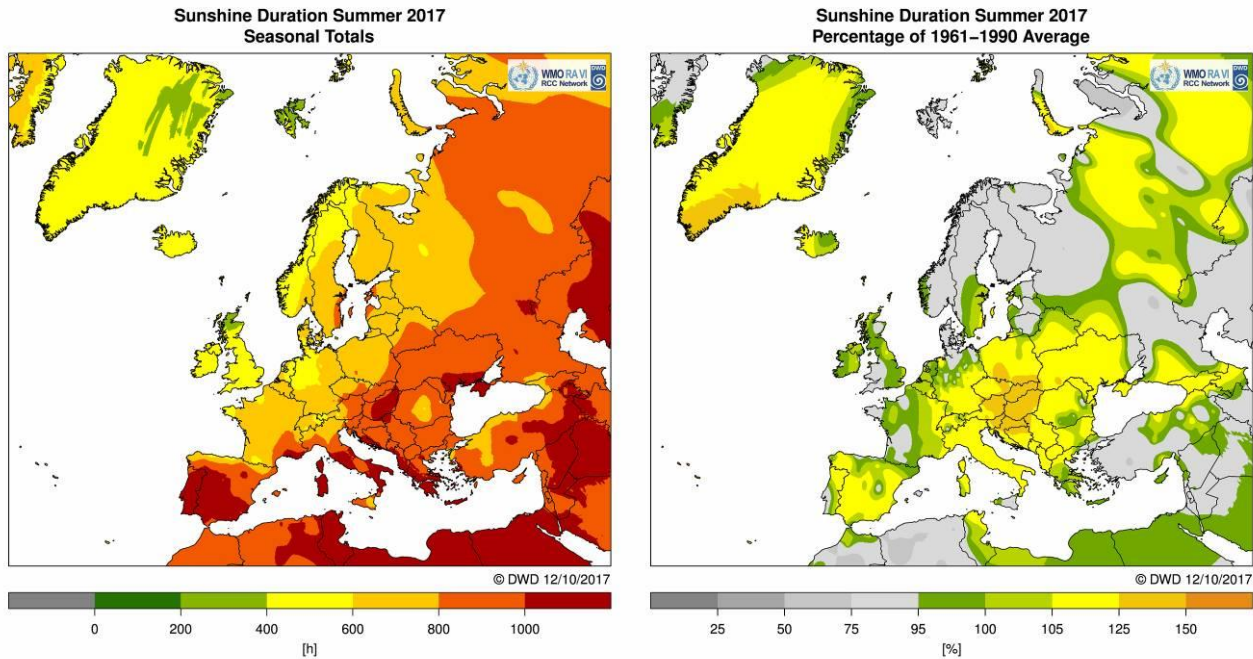
Drought



Map of mean seasonal drought index (SPI, modified by DWD) Europe JJA 2017

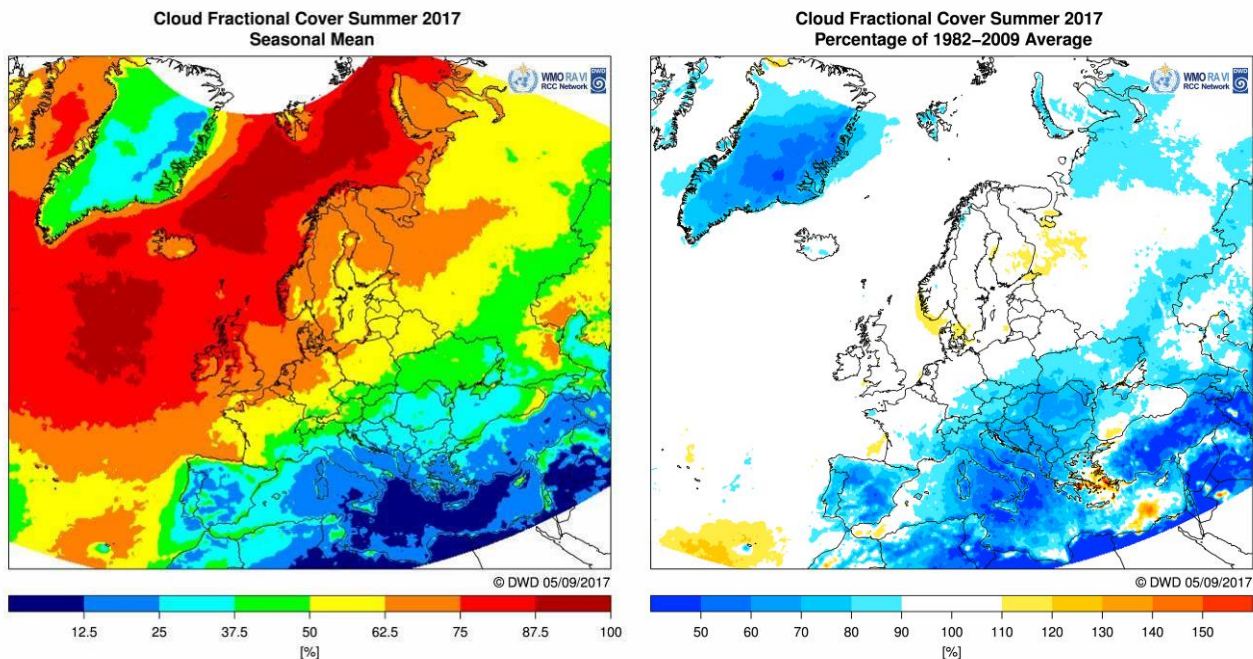
The drought situation for Europe in summer 2017 was limited to the southern parts, especially Portugal and Italy. In Portugal this summer was the 3rd driest since 2000 (after 2005 and 2016). The total precipitation in summer of 23.1 mm corresponds to about 40% of the mean value. Therefore, after the Palmer Drought Severity Index 38% of the Portuguese territory was moderate dry and 59% severe dry. The drought in southern and central Italy lasted since one year and therefore water reservoirs getting empty. The drought and water shortage increased the number of wild fires and reduced the agricultural yields.

Sunshine Duration and Cloud Cover



5

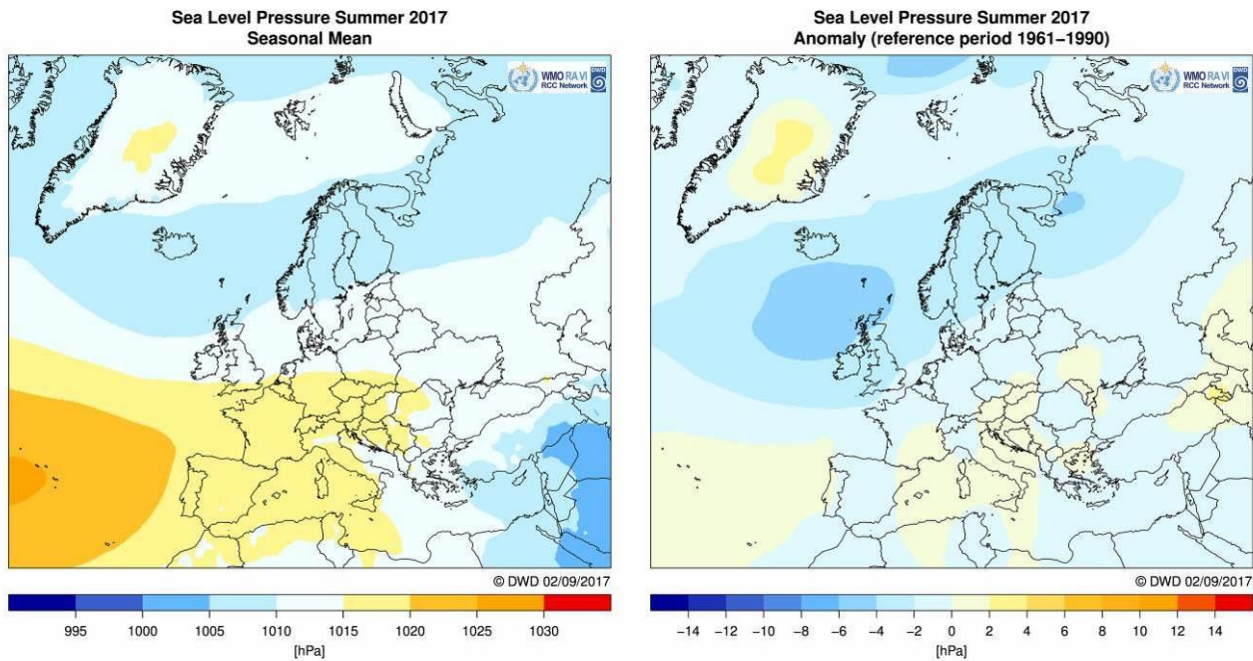
Seasonal Sunshine Duration (hours left) and their anomalies (in %, right) with respect to the reference period 1961-1990 for Europe JJA 2017



Mean seasonal cloud cover (in %, left) and percentage of the mean (in %, right) with respect to the reference period 1982-2009 for Europe JJA 2017

Southern and Central Europe had positive sunshine duration anomalies with up to 125% in the Balkans. Only Scandinavia, the Baltic States, and northern European Russia showed less sunshine and more cloud cover. Due to more radiation several heat waves were observed in southern Europe.

Surface Air Pressure



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Mean of sea level pressure (in hPa, left) and its anomaly (in hPa, right) with respect to the reference period 1961-1990 for Europe JJA 2017

Sea level pressure in summer 2017 was marked by several systems. The Azores high was shifted to the south with a core pressure of more than 1025 hPa. Due to the high pressure over Greenland with a core pressure of more than 1015 hPa the Icelandic low was also shifted to the south with a core pressure below 1010 hPa and was extended through Scandinavia to northern European Russia.

Above normal pressure anomalies ranged from the Azores high to Portugal and in the western Mediterranean. The anomalous high pressure over Greenland remained local. The negative anomalies in the central North Atlantic showed values below -4 hPa, centered between Iceland and Scotland. A second center with negative anomalies below -4 hPa was situated in the northern European Russia.

Extremes 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)

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

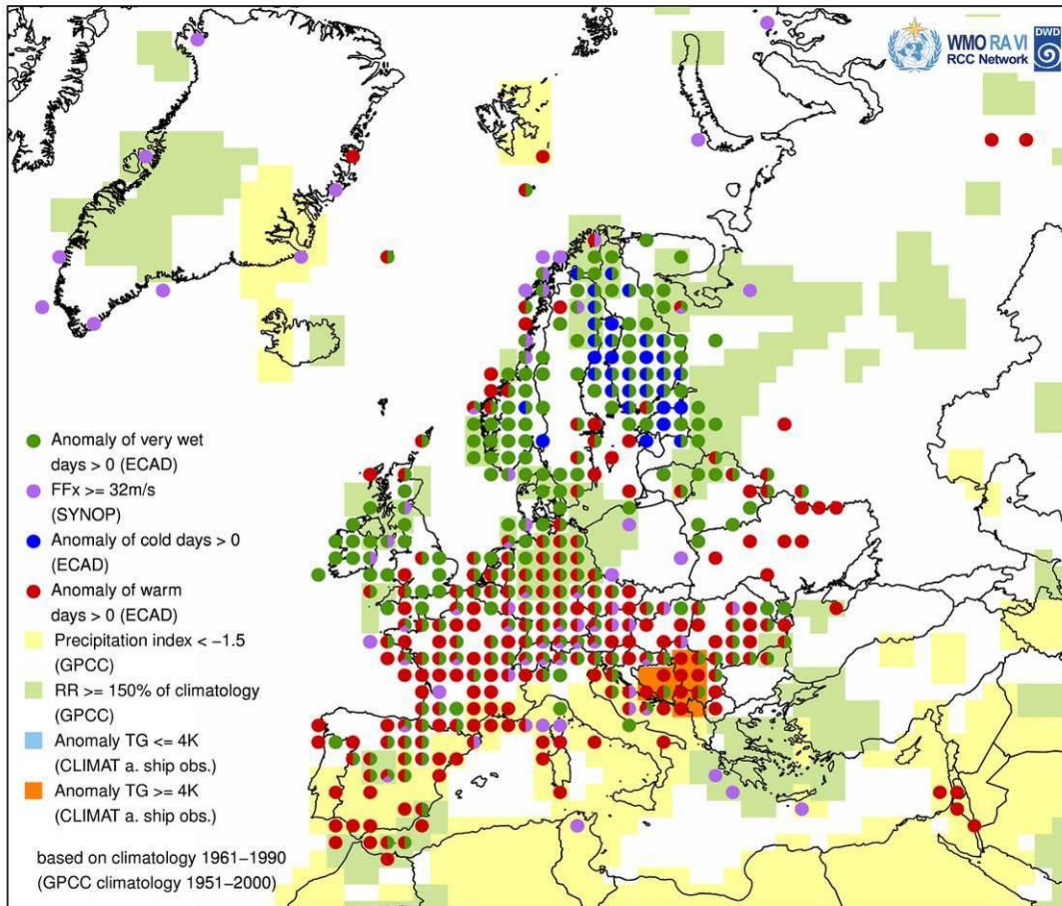
Country	RX1d [mm]	RX5d [mm]	RR10 [days]	RR20 [days]	TN [°C]	TNN [°C]	TX [°C]	TXX [°C]
Algeria	-	-	-	-	-	-	41.2	46.1
Austria	104	149.2	23	12	1.5	-10.1	28.7	38.9
Belarus	77	99	14	4	-	2.0	24.6	34.1
Belgium	36	41.4	5	1	-	1.7	24.4	35.4
Bosnia and Herzegovina	66	88	5	3	9.5	0.9	34.7	42
Canary Island	-	-	-	-	-	7.5	29	36.6
Croatia	65	116.9	8	4	-	-2.0	32.9	42.4
Cyprus	1	1	0	0	-	15.5	-	41.0
Czech Republic	70	82.4	14	6	-	1.5	-	36.7
Denmark	62	-	-	-	-	2.6	20.4	28.4
Estonia	37	86.1	10	4	9.3	1.1	21.5	30.8
Finland	57	81.4	12	5	5.5	-6.1	19.8	27.6
France	70	128	11	5	-	1.5	33.2	42.7
Germany	196.9	280.5	24	9	1.7	-7.7	27.6	37.2
Greece	2.1	15.8	0	0	-	0.8	28.9	44.7
Greenland	43	-	-	-	0.7	-5.2	7.2	24.8
Hungary	60	69	9	5	-	2.6	30.5	41.4
Iceland	188	-	-	-	7.5	-4.2	13.9	27.7
Ireland	77	82	10	3	-	3.0	19.1	28.6
Israel	0	0	0	0	-	12.9	40.9	45.5

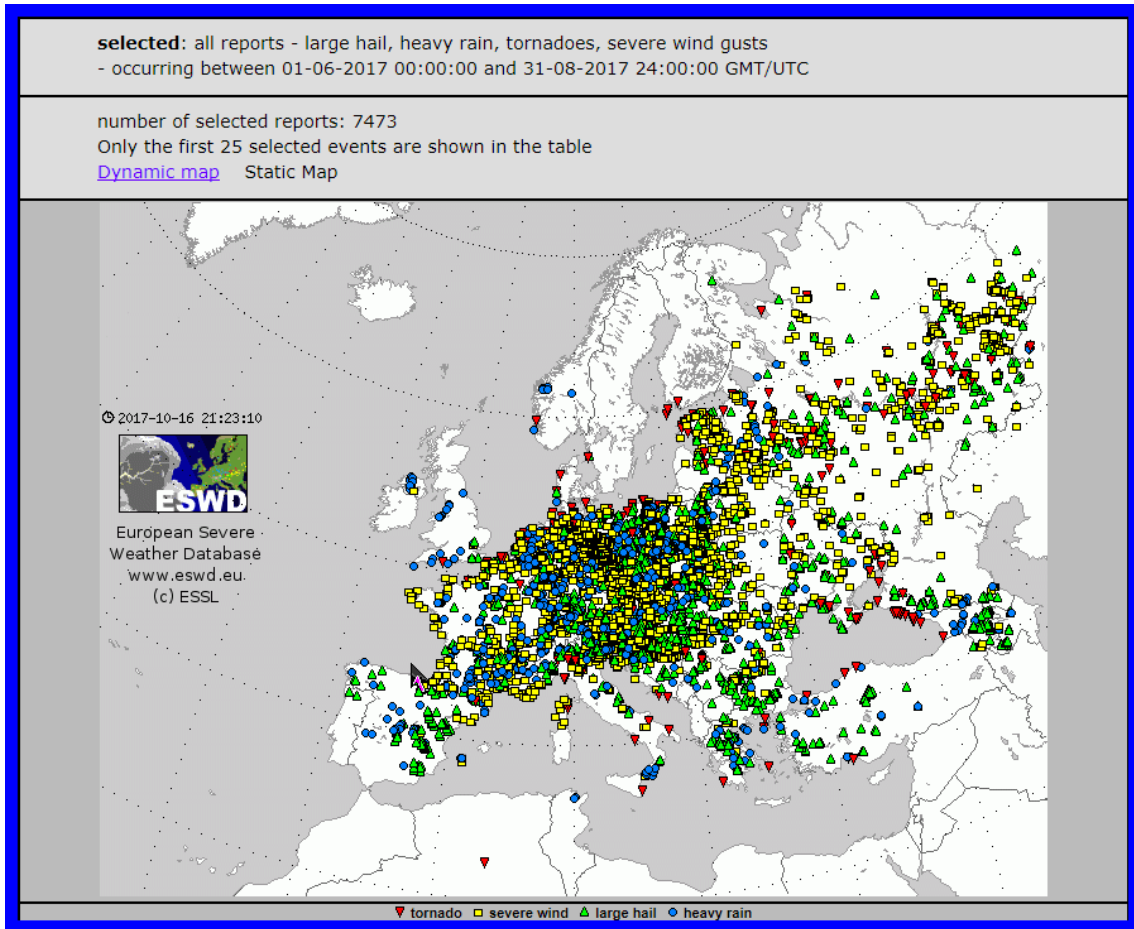
Italy	93	156	17	7	8.3	-6.3	32.8	44.4
Kazakhstan	7	-	-	-	-	3.1	34.8	45.9
Kyrgyzstan	-	-	-	-	-	-	32.1	40.7
Latvia	80	117.4	12	4	-	-1.3	19.6	34.3
Lithuania	59	90	11	6	-	-1.4	21.9	34.2
Luxembourg	33.8	47.3	6	1	-	7.6	23.6	35.7
Moldova	31	54	7	3	-	3.6	28.1	39.2
Netherlands	51.2	66.9	15	5	-	2.9	24.0	35.2
Norway	85.2	205.6	36	18	0.8	-8.3	21.5	28.5
Poland	30	52.6	9	2	-	-0.42	24.5	36.3
Portugal	21.3	21.5	1	1	15.2	4.6	30.2	43.9
Romania	73	97.4	20	9	4.8	-2.4	32.7	42.2
Russian Federation	155	195.8	13	6	6.5	-7.5	27.2	40.0
Serbia	80	81.2	8	4	9.5	1.3	31.6	41.6
Slovakia	65	88.1	9	4	-	-3.5	29.5	38.1
Slovenia	80.1	153.7	19	12	5.5	-4	29.3	39.8
Spain	83	130	11	4	-	0.3	38.4	46.9
Sweden	54	92	13	5	5	-9.2	21.8	28.0
Switzerland	216.5	264.6	28	16	4.8	-10.2	27.7	36.9
Tajikistan	-	-	-	-	-	-	36.5	43.7
Turkey	110	-	-	-	-	1.2	30.8	44.8
Turkmenistan	-	-	-	-	-	-	38.4	46.1
Ukraine	67	67	10	5	-	1.7	29.3	38.0
United Kingdom	112		17		9.4	-2.3	23.2	34.5
Uzbekistan	-	-	-	-	-	-	38.8	44.6

Climate Extremes and Severe Weather Events

Map of Climate Extremes and Events of the Season

Event Map Summer 2017





Source: [European Severe Weather Database \(http://essl.org/cgi-bin/eswd/eswd.cgi\)](http://essl.org/cgi-bin/eswd/eswd.cgi)

References:

Seasonal summaries in RA VI at national web-sites:

Austria: HISTALP - Österreich Sommerbericht 2016 <http://www.zamg.ac.at/cms/de/klima/news/histalp/histalp-oesterreich-sommerbericht-2017>

Belgium: Été 2017 <http://www.meteo.be/meteo/view/fr/1124472-Bilan+climatologique+saisonnier.html>

Croatia: http://klima.hr/klima_e.php?id=ocjsez_e

Denmark: <http://www.dmi.dk/vejr/arkiver/maanedsaesonaar/>

Estonia: <http://www.ilmateenistus.ee/kliima/aastakokkuvotted/ulevaated/>

France: <http://www.meteofrance.fr/climat-passe-et-futur/bilans-climatiques/bilan-2017/bilan-climatique-de-l-ete-2017>

Germany: https://www.dwd.de/EN/press/press_release/EN/2017/20170830_the_weather_in_germany_in_summer_2017.pdf

Germany: https://www.dwd.de/DE/leistungen/besondereereignisse/duerre/20170811_hitze_italien.pdf

Ireland: <http://www.met.ie/climate/monthly-weather-reports.asp>

Montenegro: <http://195.66.163.23/klimatologija.php?tip=sezonski>

Netherlands: <http://www.knmi.nl/nederland-nu/klimatologie/maand-en-seizoensoverzichten/>

Norway: http://met.no/Klima/Varet_i_Norge/

Serbia: http://www.hidmet.gov.rs/eng/meteorologija/klimatologija_produkti.php

Spain:

http://www.aemet.es/documentos/es/conocermas/recursos_en_linea/publicaciones_y_estudios/estudios/Olas_Calor_ActualizacionOctubre2017.pdf

Spain: 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>