
European Flood Awareness System

EFAS *Bulletin*

October – November 2015

Issue 2015(6)



The European Flood Awareness System (EFAS) produces European overviews of ongoing and forecasted floods up to 15 days in advance and contributes to better protection of the European citizens, the environment, properties and cultural heritage. It has been developed at the European Commission's in house science service, the Joint Research Centre (JRC), in close collaboration with national hydrological and meteorological services and policy DG's of the European Commission.

EFAS has been transferred to operations under the European Commission's COPERNICUS Emergency Management Service led by DG ENTR in direct support to the EU's Emergency Response Coordination Centre (ERCC) of DG ECHO and the hydrological services in the Member States.

ECMWF has been awarded the contract for the EFAS Computational centre. It is responsible for providing daily operational EFAS forecasts and 24/7 support to the technical system.

A consortium of Swedish Meteorological and Hydrological Institute (SMHI), Rijkswaterstaat (RWS) and Slovak Hydro-Meteorological Institute (SHMU) has been awarded the contract for the EFAS Dissemination centre. They are responsible for analysing EFAS output and disseminating information to the partners and the ERCC.

A Spanish consortium (REDIAM and ELIMCO) has been awarded the contract for the EFAS Hydrological data collection centre. They are responsible for collecting discharge and water level data across Europe.

A German consortium (KISTERS and DWD) has been awarded the contract for the EFAS Meteorological data collection centre. They are responsible for collecting the meteorological data needed to run EFAS over Europe.

Finally, the JRC is responsible for the overall project management related to EFAS and further development of the system.

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Cover image: Torrential rain on October 3, 2015 at the football stadium in Nice. Photo: AFP

EFAS news

News

During the last EFAS annual meeting all partners agreed to change the current EFAS Flood Alert/Watches and Flash Flood Watches to the new EFAS Flood and Flash Flood Notifications. The new EFAS Flood and Flash Flood Notifications have been re-designed with the contribution from all EFAS partners and with the aim to make the warnings coming from EFAS easier understandable for all EFAS partners. One of the most important changes is that notifications are now sent out for a minimum upstream area of 2000 km² instead of 4000 km².

The switch to the EFAS Notifications and the corresponding update of the EFAS web interface took place on Wednesday 11th November 2015 after the forecast 2015-11-11 00UTC. For more information about how the new notifications are defined, please see the EFAS web site.

Meetings

EFAS kick-off meeting

The kick-off of the next Framework contract was held at JRC in Ispra, Italy on 5-7 October. This meeting was already reported on in the previous bulletin, and for a summary of the main points we refer to that issue. The major change of the operational EFAS is that the meteorological data collection is now fully out-sourced, and we take the opportunity to welcome Kisters and DWD on board as the new Meteorological Data Collection Centre.

First Scientific Seminar of DRMKC

The first Scientific Seminar of the Disaster Risk Management Knowledge Centre (DRMKC) took place in London, UK on 24-25 November, jointly organised by the EC and the UK Met Office. Around 100 participants attended the meeting, representing international organisations, national meteorological services, academia, policy-makers and private-sector stakeholders. EFAS was represented through Peter Salamon from the JRC and several delegates from ECMWF and SMHI representing the Computational and Dissemination centre.



Figure 1. Peter Salamon (JRC) together with Florence Rabier, David Richardson and Ervin Zsoter from ECMWF at the DRMKC seminar in London.

Among many hazards, floods, heat waves and the management of the refugee crisis in winter conditions were discussed. This DRMKC first seminar follows in the footsteps of previous workshops of the JRC and UK MetOffice on "Bridging the gap between science and operations".

Workshop on S2S

Fredrik Wetterhall was involved as a teacher in the Advanced School and Workshop on Subseasonal to Seasonal (S2S) Prediction and Application to Drought Prediction which was held in Trieste, Italy on 23 November – 4 December. The workshop was directed to PhD Students and young professionals who were interested in using model output on the subseasonal to seasonal scale. Fredrik described EFAS and GloFAS and showed the preliminary results from the EFAS seasonal forecasting.

Training

Michaela Mikulickova and Marcel Zvolensky from EFAS Dissemination Centre held a training on EFAS in Sarajevo, Bosnia and Herzegovina (BiH) on 27 October 2015. The training was requested by the Bosnian side before the Conditions of Access would be signed. Participants from all institutions involved in flood protection in BiH (ministries, civil protection, hydro-meteorological institutes and water management authorities) expressed approval and necessity of being a part of EFAS.



Figure 2. EFAS training in Sarajevo.

Michaela and Marcel gave a presentation about EFAS, its possibilities and limits, added value for hydrological services, probabilistic forecasts, EFAS Flood and Flash flood Notifications and national data provided to EFAS. Hydrologists were trained in working with EFAS-IS on examples of EFAS predictions of Balkan floods in May 2014. Next steps of how to become an EFAS partner were shown.

Country-wide discussion about utilization of EFAS products arose in the meeting. Signing of CoA by Bosnian partners is expected in the near future.

Upcoming events



Figure 3. #FloodHack - Help improve the Global Flood Awareness System!

On the 16-17 January ECMWF is hosting a workshop dedicated to improving GloFAS in terms of usefulness for the forecaster and come up with new innovative ideas. If you are interested in joining or know someone who would be interested you can sign up for the event here: <https://www.eventbrite.co.uk/login/?referrer=/edit%3Fleid%3D19819558834>

EFAS results

Meteorological situation for October- November 2015

The large-scale atmospheric flow over Europe was in October dominated by anti-cyclone conditions over northern and central Europe and cyclonic conditions over the Mediterranean. This led to drier than normal conditions for northern Europe while the Mediterranean coast saw a continuation from September of events of heavy rainfall, leading to flash floods. On 3 October the area around Cannes was hit with extreme rainfall which led to flash floods and 19 people were killed. The extreme rain came from a convective cells within an area of more moderate rainfall, leading a very local extreme rainfall.

The unstable conditions in the Mediterranean continued into early November causing floods in Spain and southern Italy with reported casualties. In the second half of November, the flow turned into a strong westerly flow over north-western Europe bringing heavy precipitation to the northern British Isles and western Scandinavia. At the end of November, cyclonic activity over the Mediterranean brought heavy precipitation over Romania and Bulgaria causing high river levels and EFAS flood and flash flood notifications. The temperatures were in general very mild for November.

Summary of EFAS flood notifications, alerts and watches for October - November 2015

The EFAS formal (previously alerts) and informal (prev. watches) flood notifications sent in October - November 2015 are summarized in Table 1 and their locations are shown in Figure 13 and Figure 14.

Summary of flash flood watches and notifications for October - November 2015

In October 2015, 1179 flash flood reporting points were detected by ERIC, having probability higher than 35% of exceeding the severe threshold (20-year return period). The forecast lead time of the predicted storm peaks was in the range 6 - 132 hours, with average lead time of 53 hours. Catchment size of flash flood alerts was in the range 51 - 4997 km², with average size of 568 km².

In November 2015, 686 flash flood reporting points were detected by ERIC, having probability higher than 35% of exceeding the severe threshold (20-year return period). The forecast lead time of the predicted storm peaks is in the range 6 - 132 hours, with average lead time of 28 hours. Catchment size of flash flood alerts was in the range 51 - 4998 km², with average size of 613 km².

142 Flash Flood watches were sent to the corresponding EFAS partners. The locations are shown in Figure 15 and Figure 16 and Table 2.

It should be noted that on the abnormal high number of ERIC points and warnings was mainly due to an inconsistency in between the ERIC climatology and the actual COSMO-LEPS forecasts. This problem has been fixed and the numbers of ERIC points and EFAS FF notifications are now at a more expected level.

Table 1: EFAS flood alerts, watches and notifications sent in October-November 2015

Type	Forecast date	Issue date	Lead time	River	Country
Watch	01/10/2015 12 UTC	02/10/2015	1	Po, above Dora Baltea	Italy
Watch	04/10/2015 00 UTC	04/10/2015	1	Tormes	Spain
Watch	04/10/2015 12 UTC	05/10/2015	0	Tietar	Spain
Watch	06/10/2015 12 UTC	07/10/2015	3	Seman	Albania
Watch	08/10/2015 00 UTC	08/10/2015	3	Timok	Bulgaria
Watch	12/10/2015 12 UTC	13/10/2015	3	Gacka	Croatia
Alert	14/10/2015 00 UTC	14/10/2015	2	Kupa	Croatia
Watch	14/10/2015 00 UTC	14/10/2015	1	Sava, above Kupa	Croatia
Watch	14/10/2015 00 UTC	14/10/2015	1	Raab, Raba	Hungary
Alert	14/10/2015 12 UTC	15/10/2015	4	Sava	Croatia
Alert	17/10/2015 00 UTC	17/10/2015	2	Sava, below Drina	Croatia
Alert	18/10/2015 00 UTC	18/10/2015	4	Sava, below Drina	Serbia
Watch	18/10/2015 12 UTC	19/10/2015	0	Raab, Raba	Hungary
Watch	29/10/2015 12 UTC	02/11/2015	3	Tietar	Spain
Informal	11/11/2015 12 UTC	12/11/2015	2	Mersey	United Kingdom
Informal	11/11/2015 12 UTC	12/11/2015	3	Ribble	United Kingdom
Informal	21/11/2015 00 UTC	21/11/2015	2	Sebes Koros, Crisul Repede	Hungary
Formal	25/11/2015 00 UTC	25/11/2015	1	Olt	Romania
Formal	25/11/2015 00 UTC	25/11/2015	2	Vedea	Romania
Informal	26/11/2015 12 UTC	27/11/2015	2	Arges	Romania
Formal	27/11/2015 00 UTC	27/11/2015	1	Mersey	United Kingdom
Informal	27/11/2015 12 UTC	28/11/2015	1	Ialomita (Yalomita)	Romania
Informal	29/11/2015 00 UTC	29/11/2015	1	Ialomita (Yalomita)	Romania

* Lead time [days] to the first forecasted exceedance of the 5-year simulated discharge threshold.

** This was changed to Formal and informal notification on 11 November 2015

Verification

The EFAS headline score which we use to monitor the general performance of EFAS is Continuous ranked probability score run by the ECMWF ensemble forecast. As can be seen in Figure 4 the positive sign of improvement is continuing, and there was a clear shift

of the performance of the worst performing catchments following the latest calibration. It should be noted that the figure now includes all catchments larger than 2000 km² since we have switched to the new notification and with that also changed to disseminating for smaller catchments than previous.

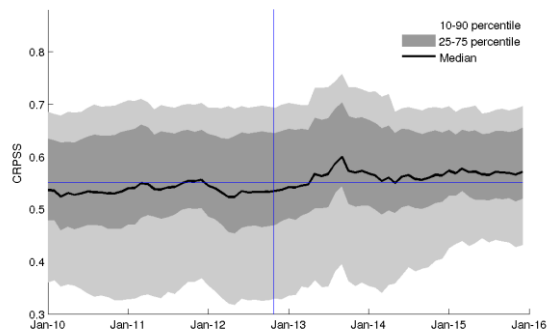


Figure 4. CRPSS for EFAS using the ECMWF ENS for catchments over 2000 km². The scores are filtered with a 12-month running average.

Team publications

Revilla-Romero, B., Hirpa, F. A., Thielen-del Pozo, J., Salamon, P., Brakenridge, R., Pappenberger, F. and De Groeve, T., On the Use of Global Flood Forecasts and Satellite-Derived Inundation Maps for Flood Monitoring in Data-Sparse Regions, *Remote Sensing*, 2015, 7(11), 15702-15728; doi:10.3390/rs71115702

Giustarini, L., Chini, M, Hostache, R, Pappenberger, F and Matgen, P., Flood Hazard Mapping Combining Hydrodynamic Modeling and Multi Annual Remote Sensing data, *Remote Sensing*, 2015, 7(10), 14200-14226; doi:10.3390/rs71014200

Appendix - figures

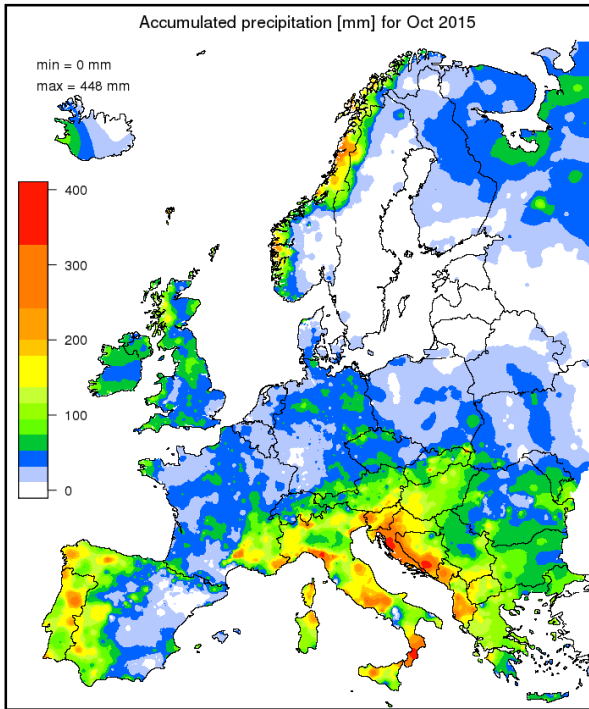


Figure 5: Accumulated precipitation [mm] for October 2015.

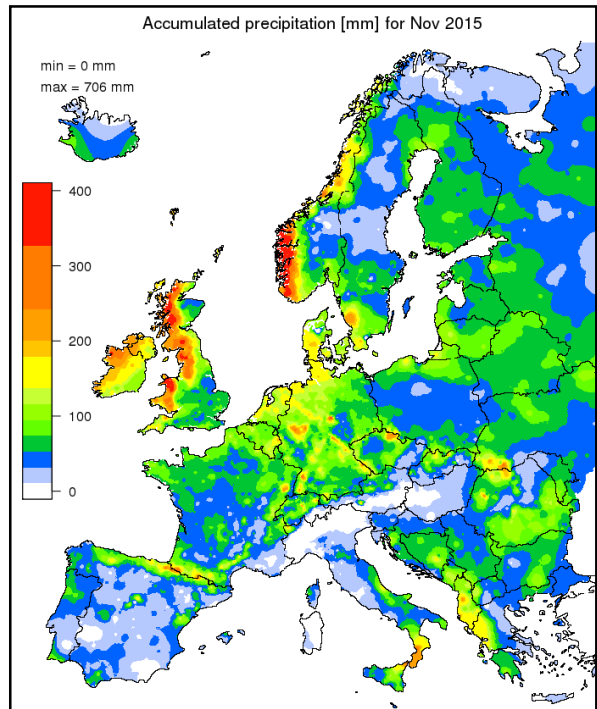


Figure 7: Accumulated precipitation [mm] for November 2015.

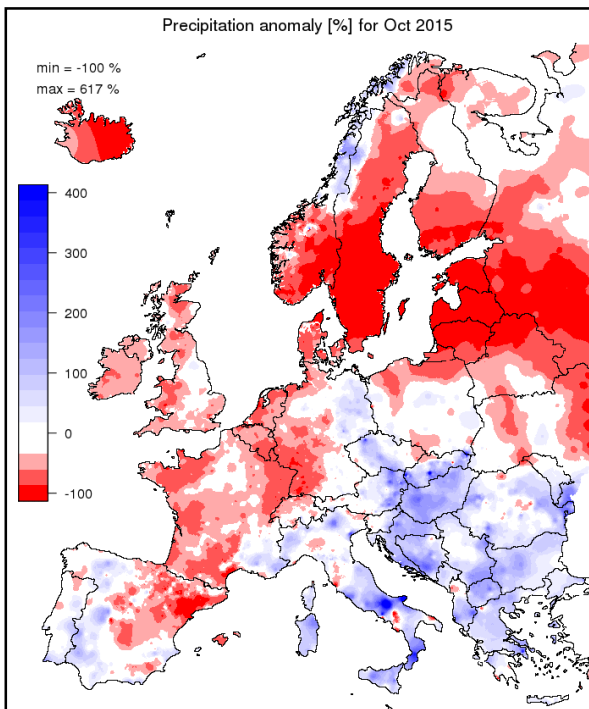


Figure 6: Precipitation anomaly [%] for October 2015, relatively to a long term average (1990-2011). Blue (red) denotes wetter (drier) conditions than normal.

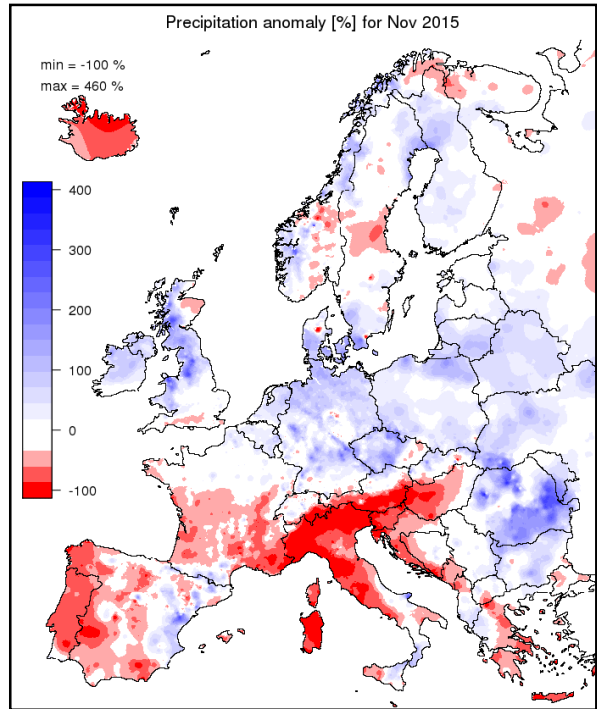


Figure 8: Precipitation anomaly [%] for November 2015, relatively to a long term average (1990-2011). Blue (red) denotes wetter (drier) conditions than normal.

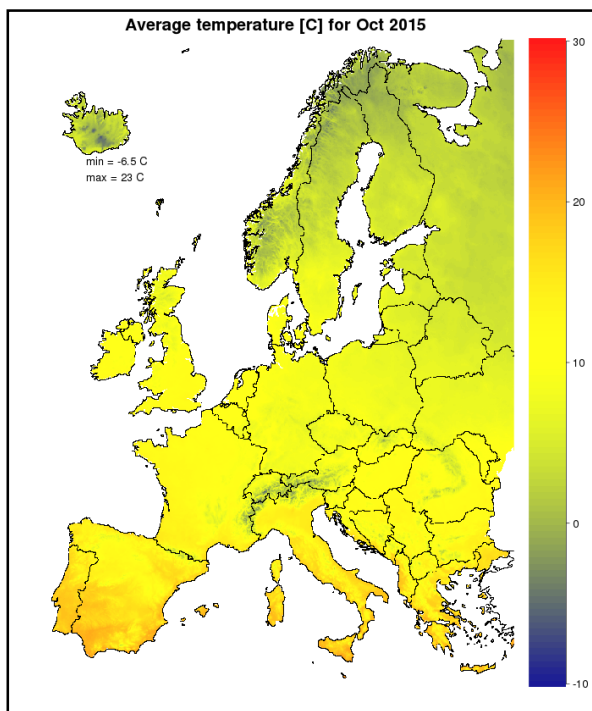


Figure 9: Mean temperature [°C] for October 2015.

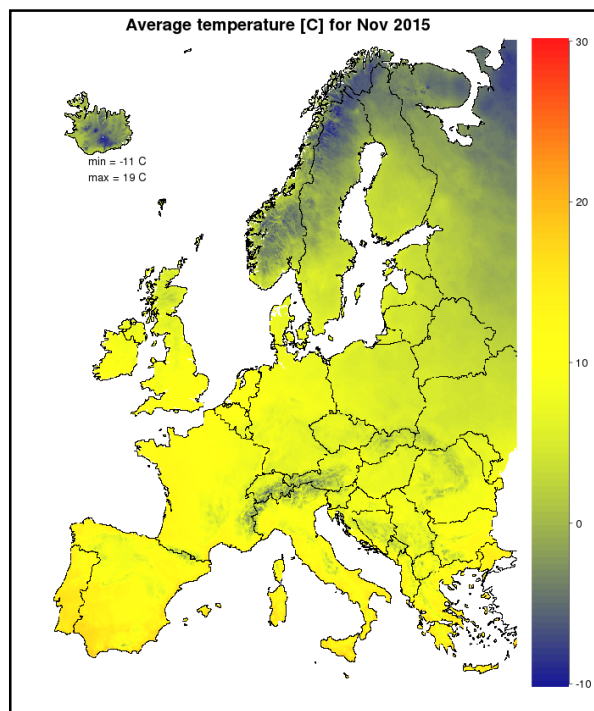


Figure 11: Mean temperature [°C] for November 2015.

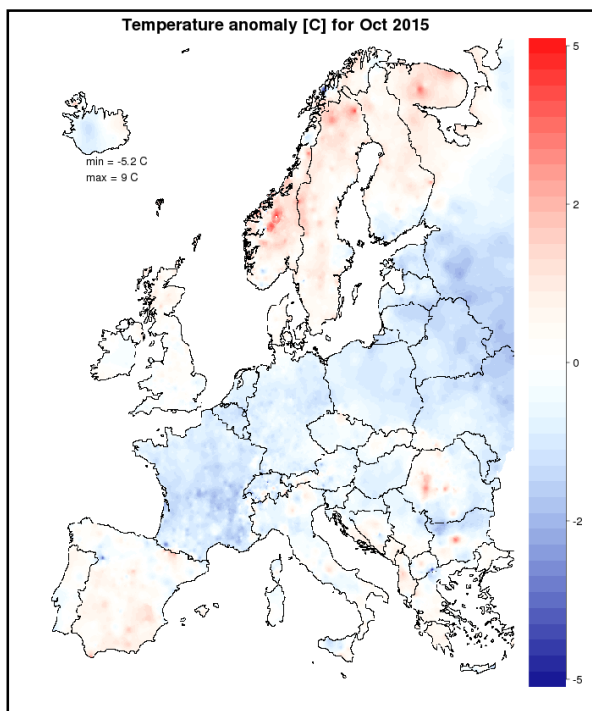


Figure 10: Temperature anomaly [°C] for October 2015, relatively to a long term average (1990-2011). Blue (red) denotes colder (warmer) temperatures than normal.

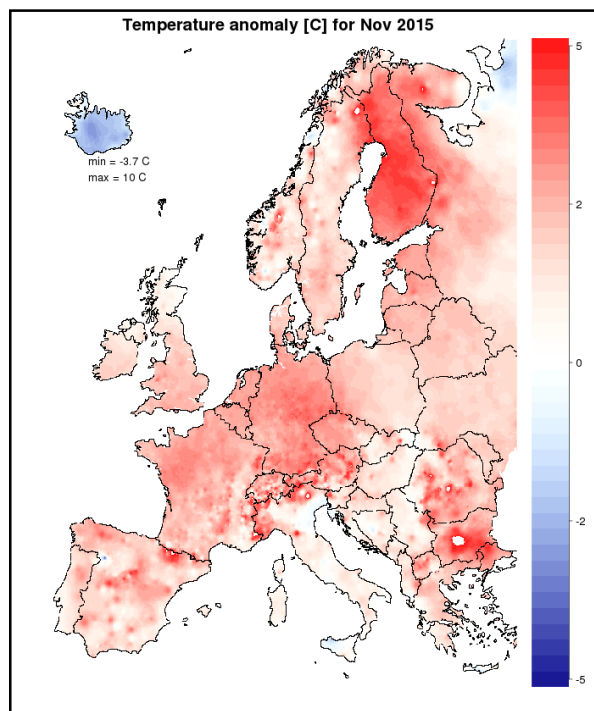


Figure 12: Temperature anomaly [°C] for November 2015, relatively to a long term average (1990-2011). Blue (red) denotes colder (warmer) temperatures than normal.

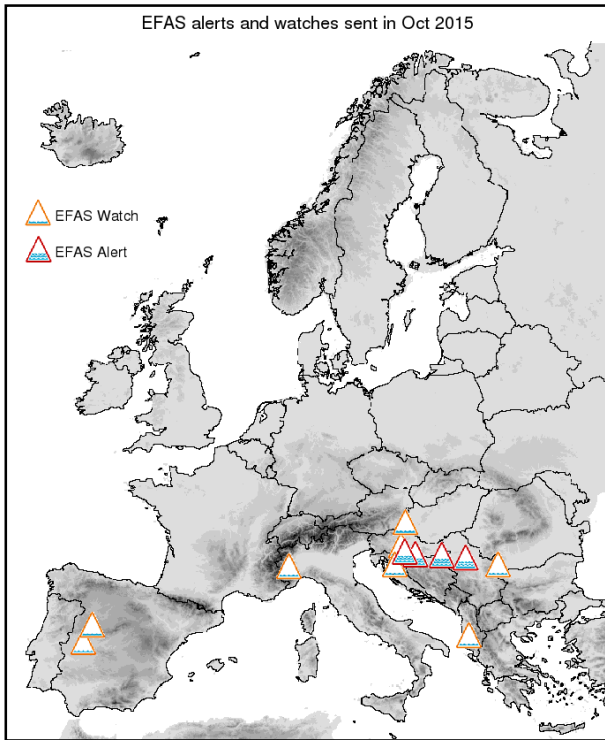


Figure 13: EFAS flood alerts and watches for October 2015.

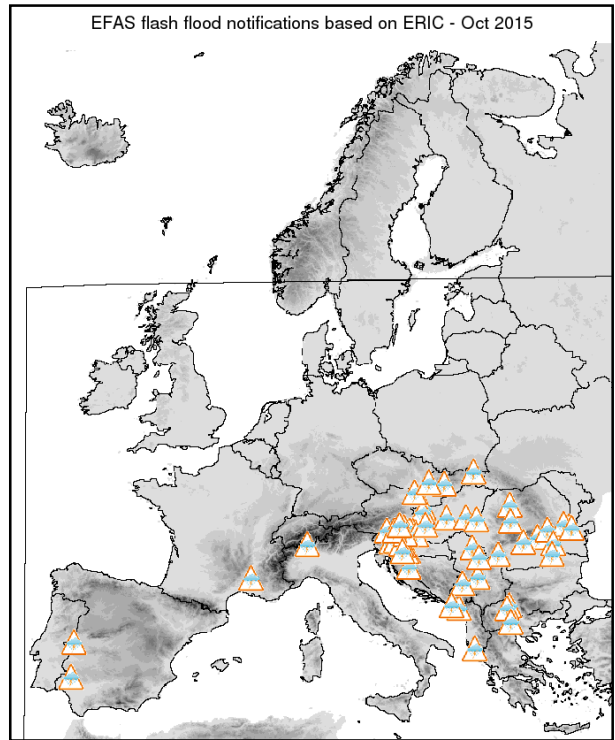


Figure 15: Flash flood reporting points for October 2015.

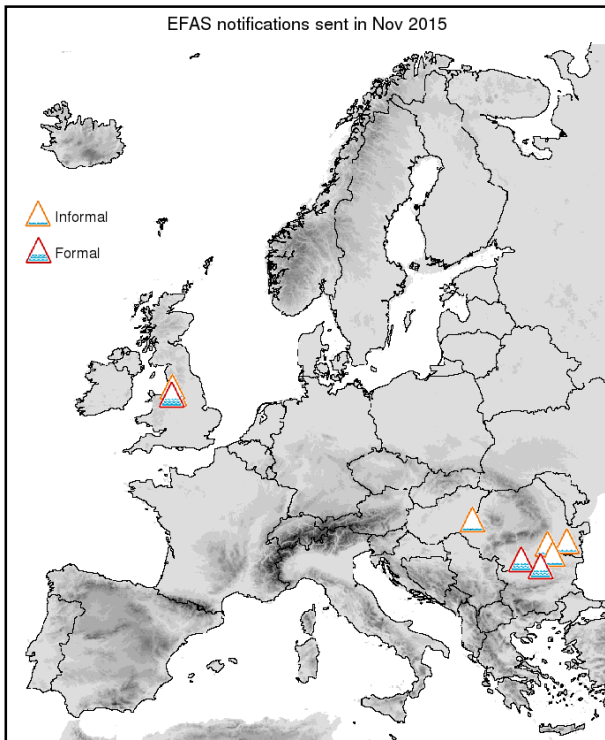


Figure 14: EFAS flood notifications for November 2015.

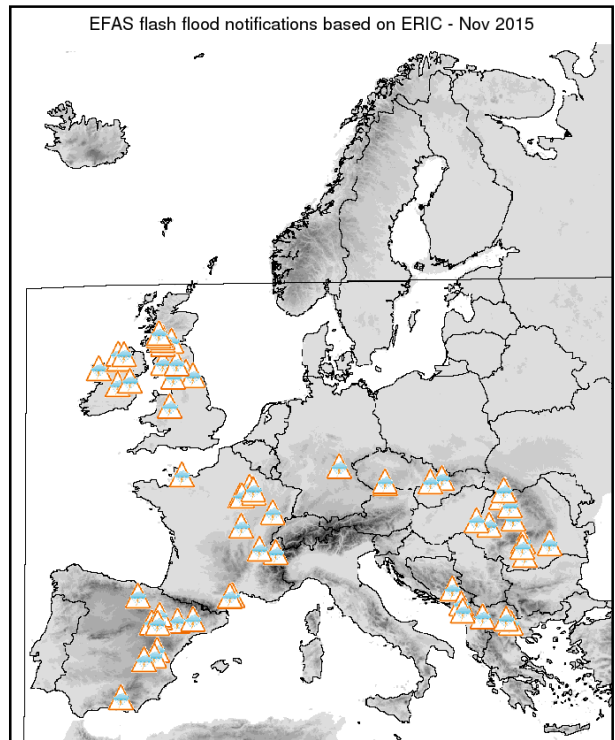


Figure 16: Flash flood reporting points for November 2015.

Acknowledgements

The following partner institutes are gratefully acknowledged for their contribution:

- DG Enterprise - Copernicus and DG ECHO for funding the EFAS Project
- All data providers, including meteorological data providers, hydrological services and weather forecasting centres
- The EFAS Operational Centres

Table 2: EFAS flash flood watches sent in October-November 2015

Type	Forecast date	Issue date	Lead time*	River	Country
FF Watch	02/10/2015 00 UTC	02/10/2015	54	Italy - Ticino	Italy
FF Watch	03/10/2015 00 UTC	03/10/2015	18	France - Rhone, section Isere -	France
FF Watch	06/10/2015 12 UTC	07/10/2015	42	Macedonia - Axios	Macedonia
FF Watch	08/10/2015 00 UTC	08/10/2015	78	Serbia and Montenegro -	Serbia
FF Watch	08/10/2015 00 UTC	08/10/2015	78	Serbia and Montenegro - Ve-	Serbia
FF Watch	07/10/2015 12 UTC	08/10/2015	108	Romania - Olt	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	60	Serbia and Montenegro - Za-	Serbia
FF Watch	09/10/2015 00 UTC	09/10/2015	72	Romania - Siret	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	78	Romania - Siret, above Buzau	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	72	Romania - Buzau	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	72	Romania - Ialomita (Yalomita)	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	72	Romania - Arges	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	72	Romania - Danube, sector Ialo-	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	72	Romania - Mures, above Tir-	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	66	Romania - Danube, section	Romania
FF Watch	09/10/2015 00 UTC	09/10/2015	66	Serbia and Montenegro - Bega	Serbia
FF Watch	09/10/2015 00 UTC	09/10/2015	60	Serbia and Montenegro - Ve-	Serbia
FF Watch	09/10/2015 00 UTC	09/10/2015	66	Macedonia - Bregalnica	Macedonia
FF Watch	09/10/2015 00 UTC	09/10/2015	66	Albania - coastal zone	Albania
FF Watch	08/10/2015 12 UTC	09/10/2015	72	Croatia - Kupa	Croatia
FF Watch	08/10/2015 12 UTC	09/10/2015	72	Serbia and Montenegro - Lim	Serbia
FF Watch	10/10/2015 00 UTC	10/10/2015	48	Macedonia - Bregalnica	Macedonia
FF Watch	10/10/2015 00 UTC	10/10/2015	42	Croatia - Kupa	Croatia
FF Watch	10/10/2015 00 UTC	10/10/2015	36	Croatia - Sava, above Kupa	Croatia
FF Watch	10/10/2015 00 UTC	10/10/2015	36	Slovenia - Sava, above Kupa	Slovenia
FF Watch	10/10/2015 00 UTC	10/10/2015	30	Slovenia - Drau (Drava)	Slovenia
FF Watch	10/10/2015 00 UTC	10/10/2015	42	Slovenia - Drau (Drava)	Slovenia
FF Watch	10/10/2015 00 UTC	10/10/2015	30	Austria - Mura	Austria
FF Watch	10/10/2015 00 UTC	10/10/2015	42	Hungary - Zala-Balaton-Sio	Hungary
FF Watch	10/10/2015 00 UTC	10/10/2015	48	Hungary - Danube, section	Hungary
FF Watch	10/10/2015 00 UTC	10/10/2015	36	Serbia and Montenegro - Mo-	Montenegro
FF Watch	09/10/2015 12 UTC	10/10/2015	60	Romania - Szamos	Romania
FF Watch	09/10/2015 12 UTC	10/10/2015	60	Hungary - Lower Koros section	Hungary
FF Watch	09/10/2015 12 UTC	10/10/2015	60	Hungary - Feher Koros, Crisul	Hungary
FF Watch	11/10/2015 00 UTC	11/10/2015	24	Macedonia - Bregalnica	Macedonia
FF Watch	11/10/2015 12 UTC	12/10/2015	30	Romania - Ialomita (Yalomita)	Romania
FF Watch	13/10/2015 00 UTC	13/10/2015	48	Croatia - Drau (Drava)	Croatia
FF Watch	12/10/2015 12 UTC	13/10/2015	66	Croatia - Sava, above Kupa	Slovenia
FF Watch	12/10/2015 12 UTC	13/10/2015	66	Slovenia - Sava, above Kupa	Slovenia
FF Watch	12/10/2015 12 UTC	13/10/2015	66	Slovenia - Sava, above Kupa	Slovenia
FF Watch	12/10/2015 12 UTC	13/10/2015	66	Slovenia - Sava, above Kupa	Slovenia
FF Watch	12/10/2015 12 UTC	13/10/2015	66	Slovenia - Sava, above Kupa	Slovenia
FF Watch	12/10/2015 12 UTC	13/10/2015	66	Slovenia - Sava, above Kupa	Slovenia
FF Watch	14/10/2015 00 UTC	14/10/2015	24	Croatia - Una	Croatia
FF Watch	14/10/2015 00 UTC	14/10/2015	36	Croatia - Mura	Croatia
FF Watch	14/10/2015 00 UTC	14/10/2015	42	Slovenia - Mura	Slovenia

FF Watch	14/10/2015 00 UTC	14/10/2015	42	Slovenia - Mura	Slovenia
FF Watch	14/10/2015 00 UTC	14/10/2015	42	Slovenia - Drau (Drava)	Slovenia
FF Watch	14/10/2015 00 UTC	14/10/2015	48	Slovakia - Vah	Slovakia
FF Watch	13/10/2015 12 UTC	14/10/2015	48	Croatia - Kupa	Croatia
FF Watch	13/10/2015 12 UTC	14/10/2015	48	Croatia - Kupa	Croatia
FF Watch	13/10/2015 12 UTC	14/10/2015	48	Croatia - Sava, above Kupa	Croatia
FF Watch	13/10/2015 12 UTC	14/10/2015	48	Croatia - Sava, above Kupa	Croatia
FF Watch	13/10/2015 12 UTC	14/10/2015	48	Slovenia - Sava, above Kupa	Slovenia
FF Watch	13/10/2015 12 UTC	14/10/2015	48	Slovenia - Drau (Drava)	Slovenia
FF Watch	13/10/2015 12 UTC	14/10/2015	42	Austria - Drau (Drava)	Austria
FF Watch	13/10/2015 12 UTC	14/10/2015	54	Austria - Mura	Austria
FF Watch	14/10/2015 12 UTC	15/10/2015	42	Serbia and Montenegro -	Serbia
FF Watch	14/10/2015 12 UTC	15/10/2015	30	Slovenia - Drau (Drava)	Slovenia
FF Watch	14/10/2015 12 UTC	15/10/2015	30	Hungary - Zala-Balaton-Sio	Hungary
FF Watch	15/10/2015 12 UTC	16/10/2015	54	Slovakia - Hron	Slovakia
FF Watch	17/10/2015 00 UTC	17/10/2015	60	Croatia - Kupa	Croatia
FF Watch	17/10/2015 00 UTC	17/10/2015	60	Croatia - Kupa	Croatia
FF Watch	18/10/2015 00 UTC	18/10/2015	66	Romania - Olt	Romania
FF Watch	18/10/2015 00 UTC	18/10/2015	18	Spain - Tejo, section Tietar -	Spain
FF Watch	18/10/2015 00 UTC	18/10/2015	54	Slovakia - Vah	Slovakia
FF Watch	18/10/2015 00 UTC	18/10/2015	12	Spain - Guadalquivir, below	Spain
FF Watch	19/10/2015 00 UTC	19/10/2015	18	Austria - Drau (Drava)	Austria
FF Watch	19/10/2015 00 UTC	19/10/2015	30	Austria - Mura	Austria
FF Watch	19/10/2015 00 UTC	19/10/2015	30	Hungary - Raab, Raba	Hungary
FF Watch	18/10/2015 12 UTC	19/10/2015	42	Austria - Morava	Austria
FF Watch	19/10/2015 12 UTC	20/10/2015	30	Slovakia - Bodrog	Slovakia
FF Watch	19/10/2015 12 UTC	20/10/2015	24	Hungary - Raab, Raba	Hungary
FF Watch	01/11/2015 00 UTC	01/11/2015	36	Spain - Turia	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	48	Spain - Cinca	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	48	Spain - Segre	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	42	Spain - Jalon	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	42	Spain - Ebro, section Aragon -	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	42	Spain - Ebro, section Aragon -	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	42	Spain - Jalon	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	36	Spain - Jucar, below Cabriel	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	36	Spain - Jucar, above Cabriel	Spain
FF Watch	01/11/2015 00 UTC	01/11/2015	30	Spain - Guadiana Menor	Spain
FF Watch	01/11/2015 12 UTC	02/11/2015	48	France - coastal zone	France
FF Watch	01/11/2015 12 UTC	02/11/2015	42	France - Orb	France
FF Watch	08/11/2015 00 UTC	08/11/2015	12	Irish Republic - Shannon	Irish Republic
FF Watch**	08/11/2015 00 UTC	08/11/2015	12	Irish Republic - Boyne	Irish Republic
Flash flood	13/11/2015 00 UTC	13/11/2015	66	United Kingdom - coastal zone	United Kingdom
Flash flood	13/11/2015 00 UTC	13/11/2015	54	Irish Republic - coastal zone	Irish Republic
Flash flood	13/11/2015 00 UTC	13/11/2015	54	Irish Republic - coastal zone	Irish Republic
Flash flood	13/11/2015 00 UTC	13/11/2015	54	Irish Republic - coastal zone	Irish Republic
Flash flood	13/11/2015 00 UTC	13/11/2015	60	Irish Republic - coastal zone	Irish Republic
Flash flood	13/11/2015 00 UTC	13/11/2015	60	Irish Republic - coastal zone	Irish Republic
Flash flood	13/11/2015 00 UTC	13/11/2015	66	United Kingdom - Teith	United Kingdom
Flash flood	13/11/2015 00 UTC	13/11/2015	66	United Kingdom - coastal zone	United Kingdom
Flash flood	13/11/2015 00 UTC	13/11/2015	54	United Kingdom - Teith	United Kingdom
Flash flood	13/11/2015 00 UTC	13/11/2015	54	United Kingdom - coastal zone	United Kingdom

Flash flood	13/11/2015 00 UTC	13/11/2015	54	United Kingdom - coastal zone	United Kingdom
Flash flood	13/11/2015 00 UTC	13/11/2015	66	United Kingdom - coastal zone	United Kingdom
Flash flood	14/11/2015 00 UTC	14/11/2015	30	United Kingdom - R. Tees	United Kingdom
Flash flood	13/11/2015 12 UTC	14/11/2015	48	United Kingdom - coastal zone	United Kingdom
Flash flood	13/11/2015 12 UTC	14/11/2015	48	United Kingdom - Esk	United Kingdom
Flash flood	15/11/2015 00 UTC	15/11/2015	12	United Kingdom - R. Tees	United Kingdom
Flash flood	14/11/2015 12 UTC	15/11/2015	30	United Kingdom - coastal zone	United Kingdom
Flash flood	14/11/2015 12 UTC	15/11/2015	30	Slovakia - Vah	Slovakia
Flash flood	19/11/2015 00 UTC	19/11/2015	48	Slovakia - Vah	Slovakia
Flash flood	19/11/2015 00 UTC	19/11/2015	42	France - Marne	France
Flash flood	19/11/2015 00 UTC	19/11/2015	48	France - Marne	France
Flash flood	18/11/2015 12 UTC	19/11/2015	60	France - Isere	France
Flash flood	18/11/2015 12 UTC	19/11/2015	60	France - Rhone, above Saone	France
Flash flood	18/11/2015 12 UTC	19/11/2015	84	Hungary - Feher Koros, Crisul	Hungary
Flash flood	20/11/2015 00 UTC	20/11/2015	24	Czech Republic - Vltava, above	Czech Republic
Flash flood	20/11/2015 00 UTC	20/11/2015	18	France - Saone, above Doubs	France
Flash flood	20/11/2015 00 UTC	20/11/2015	24	France - Loire, above Allier	France
Flash flood	20/11/2015 00 UTC	20/11/2015	24	Czech Republic - Vltava, above	Czech Republic
Flash flood	19/11/2015 12 UTC	20/11/2015	24	France - Vire	France
Flash flood	19/11/2015 12 UTC	20/11/2015	30	France - Marne	France
Flash flood	19/11/2015 12 UTC	20/11/2015	30	France - Marne	France
Flash flood	19/11/2015 12 UTC	20/11/2015	30	France - Marne	France
Flash flood	19/11/2015 12 UTC	20/11/2015	30	France - Seine, above Yonne	France
Flash flood	19/11/2015 12 UTC	20/11/2015	30	France - Seine, above Yonne	France
Flash flood	19/11/2015 12 UTC	20/11/2015	36	Slovakia - Vah	Slovakia
Flash flood	19/11/2015 12 UTC	20/11/2015	54	Romania - Szamos	Romania
Flash flood	19/11/2015 12 UTC	20/11/2015	60	Romania - Szamos	Romania
Flash flood	19/11/2015 12 UTC	20/11/2015	42	Romania - Tisza	Ukraine
Flash flood	21/11/2015 00 UTC	21/11/2015	30	Romania - Mures, above Tir-	Romania
Flash flood	21/11/2015 00 UTC	21/11/2015	24	Serbia and Montenegro - Tara	Montenegro
Flash flood	21/11/2015 00 UTC	21/11/2015	30	Serbia and Montenegro - Mo-	Montenegro
Flash flood	21/11/2015 00 UTC	21/11/2015	24	Albania - Moraca	Albania
Flash flood	21/11/2015 00 UTC	21/11/2015	42	Romania - Olt	Romania
Flash flood	21/11/2015 00 UTC	21/11/2015	24	Romania - Tisza	Ukraine
Flash flood	20/11/2015 12 UTC	21/11/2015	18	Spain - Ebro, above Aragon	Spain
Flash flood	22/11/2015 00 UTC	22/11/2015	24	Macedonia - Vardar	Macedonia
Flash flood	21/11/2015 12 UTC	22/11/2015	12	Romania - Feher Koros, Crisul	Romania
Flash flood	25/11/2015 00 UTC	25/11/2015	90	Romania - Olt	Romania
Flash flood	26/11/2015 00 UTC	26/11/2015	60	Romania - Olt	Romania
Flash flood	27/11/2015 00 UTC	27/11/2015	42	Romania - Ialomita (Yalomita)	Romania
Flash flood	26/11/2015 12 UTC	27/11/2015	24	Macedonia - Axios	Macedonia
Flash flood	26/11/2015 12 UTC	27/11/2015	24	Macedonia - Axios	Macedonia
Flash flood	28/11/2015 12 UTC	29/11/2015	78	Romania - Feher Koros, Crisul	Romania
Flash flood	30/11/2015 00 UTC	30/11/2015	18	United Kingdom - Severn	United Kingdom
Flash flood	29/11/2015 12 UTC	30/11/2015	48	Germany - Main, above Reg-	Germany

* Lead time [hours] to the forecasted peak of the rain storm.

** This was changed to Flash flood notification on 11 November 2015