





# **European Flood Awareness System**

# **EFAS** Bulletin

February – March 2020 Issue 2020(2)











#### **NEWS**

# EFAS annual meeting 2020 - New location and dates

The 15<sup>th</sup> EFAS annual meeting will take place at the premises of the Deltares in Delft (the Netherlands) on 22-23 October 2020. The meeting will be organized by the EFAS Dissemination Centre (RWS, SMHI and SHMÚ). It will start on Thursday morning 22 October morning and end on Friday afternoon 23 October. At the annual meeting, we will offer workshops and trainings that will address different EFAS-related interests.

Reimbursement of travel and accommodation costs is available for one expert per EFAS partner organisation that has signed the EFAS Conditions of Access with the Dissemination Centre. Reimbursement for potential future EFAS partners not having signed the EFAS Conditions of Access yet and other third parties cannot be guaranteed and will be decided on a case by case basis.

Considering the developing coronavirus outbreak (COVID-19), I would like to inform you that we continue monitoring the coronavirus situation closely and will follow guidance from the relevant national public health authorities and global health organizations. If you have any questions please contact the technical and local organizers: Eric Sprokkereef (RWS): eric.sprokkereef@rws.nl

# **New vacancy**

There is new exciting opportunity to work at ECMWF with the flood forecasting team: a distributed high-performance computing for flood forecasting. Please see: https://www.ecmwf.int/en/about/jobs/jobs-ecmwf

# New features

#### **New EFAS releases**

EFAS version 3.5 was released on Thursday 5 March 2020. It contains updates on static maps (rivers drainage network in Albania) and on the LISFLOOD model. Managing of riverbed and floodplain flow in LISFLOOD has been improved and all outputs are now saved in double precision. EFAS 3.5 is not a major update since the impact on the discharge is very limited. However, since the model was updated over Albania it comes with a new EFAS climatology.

EFAS version 3.6 was released on 26 March and the most important update was the new workflow for feedback on EFAS notifications.

For more information on these and previous releases, please see the <u>EFAS wiki</u>.

#### Webinars on use of national information in EFAS

A webinar series on how national information provided by the EFAS partners is used by each of the EFAS Centres are now available under <u>webinars</u>. The webinar was aired on 21 November 2019. The webinar is split into four parts where each part describes how the four centres use the data.

#### **CEMS flood monitoring contract notice**

The contract notice for the new, automated, global, satellite-based flood monitoring product for CEMS has been published. This product will provide a continuous, near real-time (NRT) global monitoring of all major flood events and will serve as a new element of the existing flood early warning and monitoring component of CEMS. If you are interested in contributing, then check out the contract notice which was published on 18 March:

https://ted.europa.eu/udl?uri=TED:NOTICE:129876-2020:TEXT:EN:HTML&src=0&tabId=1

#### New partner

We gladly welcome Bruxelles Environnement, Belgium as new EFAS partner.

# **Upcoming** events

# Joint HEPEX and GFP workshop in September

The 2020 joint HEPEX-GFP workshop will be the 8th International Workshop on Hydrological Ensemble Prediction organized by HEPEX (Hydrologic Ensemble Prediction Experiment) and the 10th annual meeting of the GFP (Global Flood Partnership). The theme of the workshop is "Connecting the Dots". Connecting people, disciplines, and efficient techniques is crucial for developing hydrological prediction systems, fostering global partnerships, and sharing knowledge whilst identifying knowledge gaps on flood forecasting, flood risk and drought management, and water resources planning.

The workshop will be an opportunity to discuss and exchange information on current practices, common challenges and future opportunities to facilitate operational implementations and raise awareness among decision makers in real-time forecasting, monitoring and crisis response. The format of the workshop will be interactive, and participants will have the opportunity

to connect with people and their work through different sessions, including oral presentations, ignite talks, poster presentations, user panels, and the "market-place", a possibility to highlight your latest advances live. For more information, please see:

https://hepex.inrae.fr/2020-joint-hepex-gfp-work-shop/

#### **RESULTS**

## Summary of EFAS Flood and Flash Flood Notifications

The 51 formal and 17 informal EFAS flood notifications issued in February-March 2020 are summarised in Table 1. The locations of all notifications are shown in Figure 23 and Figure 25 in the appendix.

652 Flash flood notification were issued in February - March 2020. They are summarised in Table 2. The locations of all notifications are shown in Figure 24 and Figure 26 in the appendix.

# Meteorological situation

by EFAS Meteorological Data Collection Centre

# **February**

The meteorological situation in February 2020 was characterised by higher than normal monthly mean surface pressure in the western Mediterranean region and lower than normal mean surface pressure elsewhere in the EFAS domain. Monthly precipitation totals reflect this pressure anomaly pattern with above long-term mean precipitation totals in the region with lower than normal surface pressure and vice versa. Monthly mean air temperatures were below the long-term mean in Iceland, Ireland and Scotland and southeast Turkey and northern Syria and above long-term means elsewhere in the EFAS domain.

At the beginning of February 2020, a high-pressure system was located over the Strait of Gibraltar and a low-pressure system over the Norwegian Sea with a secondary core over the north of Great Britain and Ireland and another low-pressure system over western Russia. The secondary core weakened as the low-pressure system moved via Scandinavia towards Russia. The high-pressure system started to move northward and extended to Great Britain and Ireland. During the same days, a low-pressure system moved from the Atlantic to the Baltic Sea before the high-pressure system

reached Great Britain and Ireland. A trough developed on the southern flank and become a new low-pressure system moving via southeast Europe to the eastern Mediterranean region and brought high precipitation totals along its track. Another low-pressure system developed over Svalbard and moved via Russia to Kazakhstan. The above-mentioned high-pressure system moved eastward, and a low-pressure system experienced a strong intensification between Greenland and Iceland. It moved via the Norwegian Sea to northern Scandinavia and brought strong winds to the European parts of the EFAS domain and heavy precipitation especially in Great Britain and Ireland as well as in western Norway. This was the first of a number of low-pressure systems moving in the following three weeks until the end of February at similar tracks and causing intense precipitation and strong winds along their tracks. From two of these low-pressure systems, troughs extended towards the eastern Mediterranean region and brought intense precipitation there as well as on the western Balkans. Only a very limited number of fronts with precipitation extended to the Iberian Peninsula from these systems against the stable Azores high-pressure system, with the highest precipitation totals in the northwest.

In February 2020, the highest precipitation totals were observed in Great Britain and Ireland and along the western Norwegian coast (Figure 9). High precipitation totals were also observed at the eastern coast of the Black Sea and the northern coast of the eastern Mediterranean Sea. According to a report from Met Office (national meteorological service for UK), February 2020 was the wettest February on record since 1862 in the UK. On the other hand, AEMET (national meteorological service for Spain) reported that this month was the driest on record since 1965 in Spain. In addition, other regions in Italy, east of the Caspian Sea, west of the Red Sea and in northwest Africa received also no or nearly no precipitation. More than normal precipitation was observed in most regions of the EFAS domain (Figure 10), whereas less than normal precipitation fell in Iceland, from the western Mediterranean region eastward to the Balkans, and from the eastern coast of the Mediterranean Sea to the Caspian Sea.

The monthly mean air temperature ranged from -18.8°C to 21°C with the highest values in the southern parts and lowest in the northern and mountainous parts of the EFAS domain (Figure 13). Air temperature anomalies ranged from -3.8°C to 10.5°C (Figure 14).

Monthly mean air temperature values were above the long-term mean in all regions, except for Iceland, Ireland, Scotland, southeast Turkey and northern Syria where values were below long-term means.

#### March 2020

The meteorological situation in March 2020 was characterised by close to normal monthly mean surface pressure in the majority of the EFAS domain and below normal in the Arctic. A clear majority of regions experienced monthly precipitation totals close to average. Positive anomalies were found only in some regions. The monthly mean air temperature was slightly below the long-term average in the western regions of the EFAS domain and showed positive anomalies in the eastern parts.

At the beginning of March 2020, a strong low-pressure system was located over northern Great Britain and Ireland and another low-pressure system over the arctic coast of Russia, while a high-pressure system influenced the central and eastern Mediterranean region towards the Black Sea. A trough developed from the first mentioned low-pressure system to the Bay of Biscay and swayed to the northern central Mediterranean region. It brought a lot of rain along its track. At the surface, it split into several cores, which weakened soon together with the high-pressure system mentioned before. One more high-pressure system developed over northern Scandinavia and moved eastward to Russia while strengthening. Another lowpressure system developed over the eastern Atlantic Ocean and moved via the English Channel and central Europe towards eastern Europe. The highest daily precipitation totals along its track were observed in eastern France. The Azores high extended eastward and another low-pressure system moved from the Atlantic Ocean south of Greenland and Iceland towards the Norwegian Sea. In the next days, an old and weak trough over the central Mediterranean region got active again and developed two cores at the surface.

The western core moved southward to northern Africa and later eastward to the Middle East bringing significant precipitation amounts along its track. The eastern core brought intense precipitation to the Aegean Sea and vanished soon. Another low-pressure system moved from the Atlantic Ocean via the Faroe Islands and Scandinavia to Russia. The Azores High extended again eastward and an additional core developed over

eastern Europe and getting later a separate high-pressure system. A steep trough formed between the new high and the Azores high extending from Great Britain and Ireland towards the Iberian Peninsula. Meanwhile an upper-level low-pressure system was cut-off at the same time as a bridge between the Azores and eastern Europe high-pressure systems developed. Another cutoff took place at the Atlantic Ocean and both upperlevel low-pressure systems were active around the Iberian Peninsula and western northern Africa causing heavy precipitation. Cold air moved at the south-eastern side of the high-pressure system over eastern Europe via the Balkans to the central Mediterranean region causing a recurrence of winter with notable amounts of snow at the Balkans. This cold air initiated the formation of a low-pressure system over the central Mediterranean region, which was active for some days and caused heavy precipitation at several locations around the Mediterranean Sea. During these days, a high-pressure system moved towards Iceland. By the end of the month, several low-pressure systems were routed south of the "Icelandic high" towards southwest Europe.

In March 2020, the highest precipitation totals were observed in south-eastern Turkey, the Northern Apennines, the Pyrenees, southeast Spain, western Scotland and the western Norwegian coast (Figure 11). On the other hand, no or nearly no precipitation fell at the southern edge of northern Africa in the EFAS domain and to the east of the Sea of Azov. Monthly precipitation totals showed only small deviations from the long term means in March 2020 for most parts of the EFAS domain (Figure 12). Larger regions with negative precipitation anomalies occurred from southern Poland and the Black Sea eastward, and with positive anomalies over south-eastern Spain and the Middle East.

The monthly mean air temperature ranged from -13.4°C to 23.7°C with the highest values in the southern regions, and lowest in the northern and mountainous regions of the EFAS domain (Figure 15). Air temperature anomalies ranged from -5.1°C to 9.9°C (Figure 16). Monthly mean air temperature anomalies showed a gradient from below normal at the western side of the EFAS domain to above normal at the eastern side of the EFAS domain.

## Hydrological situation

by EFAS Hydrological Data Collection Centre

#### **February**

For the month of February, the highest number of stations that exceeded their lowest threshold level were located in the western Danube river basin in Austria, Slovakia, Germany, Czech Republic, Croatia, Bosnia and Herzegovina, and basins in southern Sweden. Some stations with exceedances occurred in Po river basin in Italy, Rhine river basin in Germany, Llobregat river basin Spain and Jordan, and the Kishon and Lakhish river basins in Israel. In addition to the previous ones, we also find isolated stations exceeding the lowest threshold level in the rivers Mihno in Spain, the Neretva in Bosnia and Herzegovina, the Mandal in southern Norway, the Meuse in Netherlands, the Danube in Romania, the Elbe in Germany, the Oder and Vistula in Poland and the Neman in Belarus.

Stations in the Dnieper basin in Ukraine and Belarus, in the Danube river basin in Serbia, Romania, Hungary, Austria, Croatia and Czech Republic, together with stations in the Oder river basin in Poland, mainly registered values lower than the 10% quantile. We can also find stations showing values below 10% in isolated stations in the Ebro (Spain), Elbe (Germany and Czech Republic), Vistula (Poland), Maritsa (Bulgaria), Rhine (Germany) and Thames (UK) river basins.

Contrastingly, stations that recorded discharge values above the 90% quantile are mostly located in river basins the Nordic countries, as well as in western and northwestern Danube river basin in Germany, Austria and Slovakia, and Ebro, Llobregat and Ter river basins in Spain. To a minor extent, other stations also exceeding the 90% quantile occurred in the Swiss southern Rhine river basin and basins in the British Isles. Values above the 90% quantile were also registered in isolated stations in Meuse river basin in Belgium and Daugava river basin in Latvia.

# March 2020

For March, the highest number of stations that exceeded their lowest threshold level was in the Rhine river basin in Germany, the Po river basin in Italy, Slovakia and Ukraine in northern Danube and Bosnia and Herzegovina as well as Serbia in southern Danube. Some stations with exceedances occurred in southern

Sweden, northern Oder river basin in Poland and Minho river basin in Spain. In addition to the previous ones, we also find isolated stations exceeding the lowest threshold level in the rivers Vistula and Neman in Belarus, Vélez and Guadalhorce in sourthern Spain, Neretva in Bosnia and Herzegovina, Dniester and Don in Ukraine, Danube in Germany, Slovenia and Romania, and Hiyon in Israel.

Stations in the Dnieper basin in Ukraine and Belarus, in the Oder river basin in Poland together with stations in the Danube river basin in Romania, Serbia, Hungary, Bulgaria, Austria, Czech Republic and Germany, mainly registered values lower than the 10% quantile. We can also find stations showing values below 10% in isolated stations in the Vistula (Poland), Elbe (Germany), Ebro (Spain), Rhine (Germany), Glomma (Norway) and Thames (UK) river basins.

Contrastingly, stations that recorded discharge values above the 90% quantile are mostly located in river basins in the Nordic countries, Ebro and Llobregat river basins in northeastern Spain and Ireland. To a minor extent, other stations also exceeding the 90% quantile occurred in the Swiss southern Rhine river basin, basins in England and the Danube river basin in Austria and Slovakia. Values above the 90% quantile were also registered in isolated stations in the Meuse (Belgium), Dnieper (Ukraine), Rhine (Germany) and La Garonne (France) river basins.

#### Verification

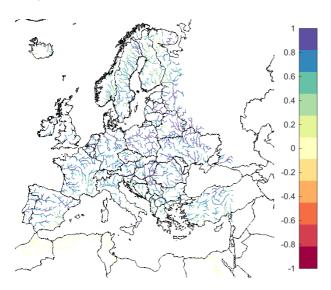


Figure 1. EFAS CRPSS at lead-time 1 day for the February-March 2020 period, for catchments >2000km2. The reference score is persistence of using previous day's forecast.

Figure 1 and Figure 2 shows the EFAS headline score, the Continuous Ranked Probability Skill Score (CRPSS) for lead times 1 and 5 days for the February to November period across the EFAS domain for catchments larger than 2000km². A CRPSS of 1 indicates perfect skill, 0 indicates that the performance is equal to that of the reference, and any value <0 (shown in orangered on the maps) indicates the skill is worse than the reference. The reference score is using yesterday's forecast as today's forecast.

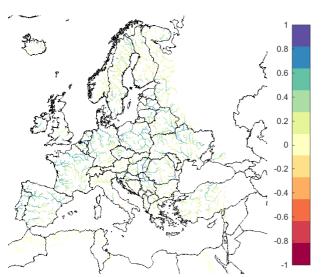


Figure 2. EFAS CRPSS at lead-time 5 days for the February-March 2020 period, for catchments >2000km2. The reference score is persistence of using previous day's forecast.

These maps indicate that across much of Europe for forecasts are more skilful than persistence at both lead times. Regions shown in blue are those where EFAS forecasts are more skilful than persistence, with darker shading indicating better performance.

The skill of the forecast was quite good, and is similar compared to the same period last year (Figure 3). The scores for 2019 are very good considering the wet autumn in large parts of Europe whereas the unusual dry summer last year affected the results and gave very positive scores. An interannual variability of the scores is to be expected.

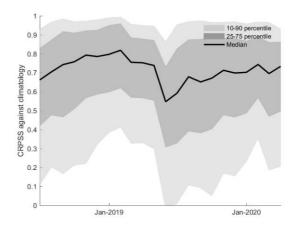


Figure 3. Monthly means of CRPSS the for lead-time 5 days for all the major river points in Europe with ECMWF ENS as forcing. Reference forecast was climatology. The skill is largest during the winter months, when there is less variation in the flow in large parts of Europe.

## **Publications**

Lavers, D.A.; Ramos, M.-H.; Magnusson, L.; Pechlivanidis, I.; Klein, B.; Prudhomme, C.; Arnal, L.; Crochemore, L.; Van Den Hurk, B.; Weerts, A.H.; Harrigan, S.; Cloke, H.L.; Richardson, D.S.; Pappenberger, F. A Vision for Hydrological Prediction. *Atmosphere* **2020**, *11*, 237.

Wu, W, Emerton, R, Duan, Q, Wood, AW, Wetterhall, F, Robertson, DE. Ensemble flood forecasting: Current status and future opportunities. *WIREs Water*. 2020;e1432. https://doi.org/10.1002/wat2.1432

# **ARTICLES**

# EFAS training for Slovenia

by EFAS Dissemination Centre

Training for the Slovenian Environment Agency (ARSO) took place in Ljubljana, Slovenia at the Environment Agency on 5-6 February 2020. It was held by Richard Alpfjord Wylde and Jasper Stam from the EFAS Dissemination Centre. In total 20 participants attended the training, 18 staff from the Environment Agency of which 9 from the operational forecasting department, and 9 working on related hydrological activities. Also 2 participants from the EFAS partner - Meteorological and hydrological service of Croatia joined the training. The majority of those working within the forecasting department had previous experience using EFAS, but for many it was their first experience using the system. The workshop was arranged at the request of Andrej Golob, who is the EFAS technical contact at the Slovenian Environment Agency (ARSO).

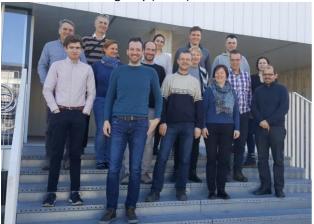


Figure 4. Participants from the Slovenian Environment Agency, Croatian Meteorological and Hydrological service and the EFAS Dissemination Centre.

The objective of the mission was to:

- gain an insight into existing hydrological forecasting operations at the Slovenian Environment Agency and understand the existing role of EFAS.
- introduce EFAS, in terms of both its operational and technical structures, to the duty officers and wider hydrological staff at the Slovenian Environment Agency.
- provide hands-on examples with the EFAS-IS, specifically though the use of case studies from recent flooding events in Slovenia.

- introduce recent EFAS developments and coming changes to the EFAS system, including the new 6h calibration.
- provide information on the notification feedback process.

# **Summary of activities**

The Director of the Meteorology and Hydrology Office, Mr. Klemen Bergant, provided an overview of the key responsibilities and activities that are performed within the hydrological forecasting department at ARSO. The importance of EFAS, both in terms of the added value provided to Slovenia's national forecasting capability but also in terms of knowledge transfer, was stressed. A tour of the operational forecasting centre was also provided. Slovenia has since 2010 developed a network of MIKE models that provide hourly discharge hydrographs across all catchments, and form the basis of their national warning system (see below). The role of EFAS was also discussed, particularly in relation to the prediction of flash flooding in mountainous catchments.



Figure 5. Introduction to Slovenia's national hydrological forecasting system.

Next, an introductory presentation of EFAS was led by the Dissemination centre, giving the participants a wide overview of EFAS, introducing the different EFAS centres and structure of the partner network, as well as giving more technical details on the LISFLOOD hydrological model, flash flood modelling and the EFAS notification criteria.

The most significant discussions — and areas where EFAS can provide the most added value in Slovenia — focussed on the use of ensemble-based forecasting and flash flood modelling. Many of the participants were not familiar with the use of ensembles, or with the way in which they are presented in EFAS, and therefore a detailed description was provided during the first day's presentation and later revisited during

the case study examples. It was commented by participants that the use of ensembles from EFAS could become a very useful addition to the information that is already available from the national forecasting system in Slovenia. In terms of flash flood modelling, it was stressed that EFAS flash flood notifications and ERIC model outputs are already used to assist in decision making during flash flood situations, particularly in mountainous areas. A request was made for the land-slide susceptibility information to be updated and more formally linked to the ERIC indicator, rather than being based upon static maps of landslide risk.



Figure 6. 2018 flash flood in Slovenia.

Hands-on sessions focussed on flooding events from December 2017 and October 2018. During the 2017 event, no notifications from EFAS were issued, but signals with lower probabilities were still present in both the full hydrological simulation (reporting points) and the ERIC flash flood model. In the case of the latter, had the new (lower) threshold criteria been applied in 2017 then flash flood notifications would have been issued. In general, it was felt that the new flash flood criteria are more appropriate and useful for capturing these events in Slovenia. The 2018 event was more clearly forecasted, and both formal and flash flood notifications were issued. The use of these two events demonstrated the added value and skill that EFAS provides, but also more critically the importance of checking the LISFLOOD simulations even when notifications are not issued.

Finally, the availability of EFAS data via the MARS and CDS archives was discussed and many of the participants were interested in being able to incorporate these data into their own work. Similarly, the EFAS-IS WMS capabilities were seen as an important and positive improvement.

# UK and Ireland Floods, February 2020

by Richard Davies, *floodlist* 

Storms Ciara and Dennis brought heavy rainfall to parts of UK and Ireland during February 2020, causing rivers to reach record levels in parts of England. The UK's Met Office said February 2020 was the wettest February on record and the fifth wettest month ever recorded in the UK. Met Éireann said the provisional rainfall totals for the period 01 to 24 February were 225% of Ireland's average. Floods affected parts of Ireland, particularly in areas of the Shannon basin, Northern Ireland, and Scotland. However, parts of South Wales, and the regions of West Midlands, North West and Yorkshire in England, were particularly badly affected. The Environment Agency in England said 3,431 properties were flooded during February, with over 80,000 others successfully protected by flood defences. The insured property market loss is estimated at around GBP 300 million (EUR 344 million), making the February 2020 floods the costliest flood event in the UK since the winter floods of December 2015, which cost the industry GBP 1.1 billion (EUR1.26 billion) at the time.

# **Storm Ciara**

Areas of England's Lake District recorded more than 150 mm of rain in a 24-hour period to 09 February following the passage of Storm Ciara (also known as Sabine). Levels of the Calder, Ribble and Irwell rivers jumped to highest or second highest on record. Flooding affected parts of Todmorden and Hebden Bridge in the Calder Valley, West Yorkshire. Flood rescues were carried out in Appleby in Cumbria and in the Ribble Valley and areas around Blackpool, Lancashire. Meanwhile the overflowing River Irwell prompted some evacuations in Greater Manchester. On 09 February, the River Calder at Horbury, Wakefield, reached 4.10 metres and the River Ribble at Low Moor near Clitheroe reached 4.6 metres – both record highs.

#### **Storm Denis**

With ground still saturated, Storm Dennis hit parts of UK on 15 February. Two people reportedly died as a result of flooding and 2 others in rough seas and high winds. The UK's Met Office said that Crai Reservoir in Powys, South Wales, recorded 157.6 mm of rain in 48 hours to 16 February. Rivers in Wales and England's West Midlands broke their banks, prompting evacuations and leaving some communities cut off. The Taff river reached record highs of 5.324 metres at Upper

Boat Bridge near Pontypridd, South Wales, on 16 February. A record high number of flood warnings or alerts (594) were issued in England. The River Teme near Tenbury Wells in Worcestershire reached 5.9 metres on 16 February, well above flood stage of 4.55 metres.



Figure 7. Flooding in Worcester, England, after Storm Dennis, February 2020.



Figure 8. Floods in Tenbury after rain from Storm Dennis, February 2020.

# **Late February**

Rivers remained high in the West Midlands in England during late February, with further evacuations reported. Flooding was also reported in parts of East Yorkshire, where the River Aire at nearby Chapel Haddlesey reached near record levels of 3.42 metres on 25 February (flood stage is 1.34 metres). Flooding continued in the area into early March.

# **Acknowledgements**

The following partner institutes and contributors are gratefully acknowledged for their contribution:

- DG GROW Copernicus and DG ECHO for funding the EFAS Project
- All data providers including meteorological data providers, hydrological services & weather forecasting centres
- The EFAS Operational Centres
- Richard Davies, Floodlist.com

**Cover image:** Flood rescue in Blackpool, Lancashire, Northern England, after heavy rain from Storm Ciara, 09 February 2020. Credit: South Shore Fire Station Lancashire

# **Appendix - figures**

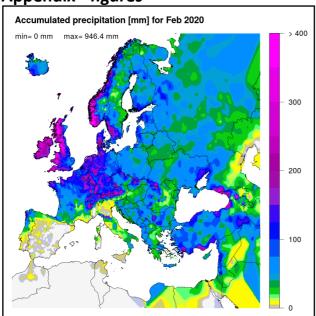


Figure 9. Accumulated precipitation [mm] for February 2020.

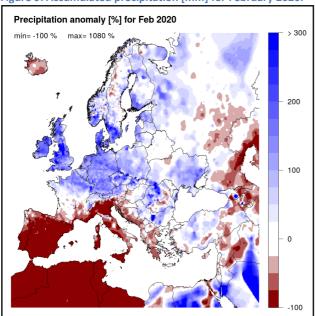


Figure 10. Precipitation anomaly [%] for February 2020, relative to a long-term average (1990-2013). Blue (red) denotes wetter (drier) conditions than normal.

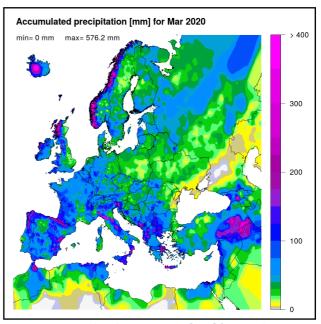


Figure 11. Accumulated precipitation [mm] for March 2020.

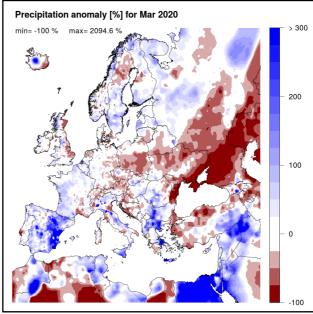


Figure 12. Precipitation anomaly [%] for March 2020, relative to a long-term average (1990-2013). Blue (red) denotes wetter (drier) conditions than normal.

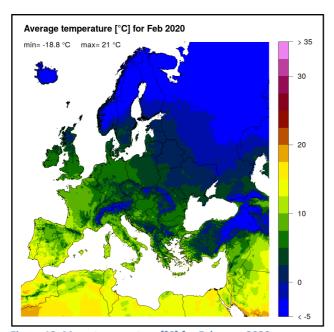


Figure 13. Mean temperature [°C] for February 2020.

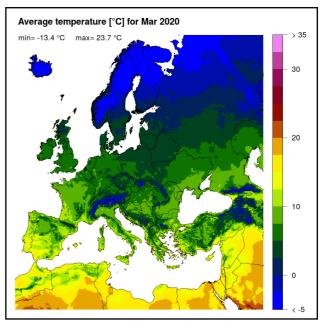


Figure 15. Mean temperature [°C] for March 2020.

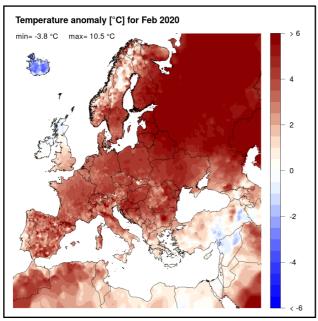


Figure 14. Temperature anomaly [°C] for February 2020, relative to a long-term average (1990-2013). Blue (red) denotes colder (warmer) temperatures than normal.

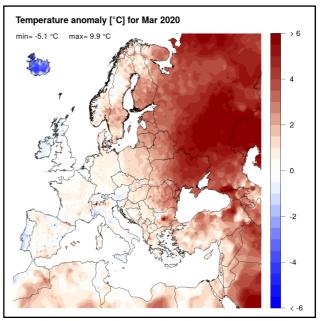


Figure 16. Temperature anomaly [°C] for March 2020, relative to a long-term average (1990-2013). Blue (red) denotes colder (warmer) temperatures than normal.

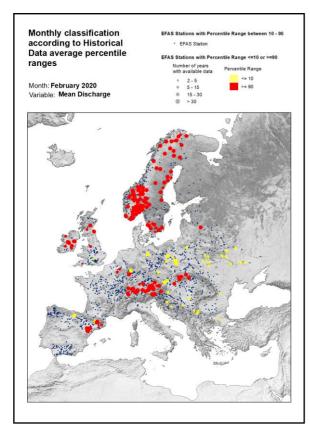


Figure 17. Monthly discharge anomalies February 2020.

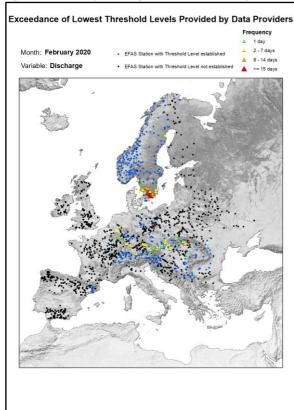


Figure 18. Lowest alert level exceedance for February 2020.

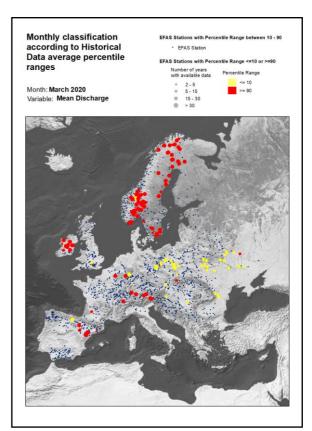


Figure 19. Monthly discharge anomalies March 2020.

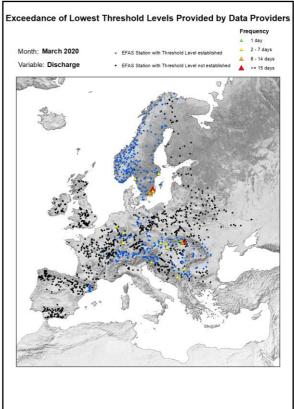
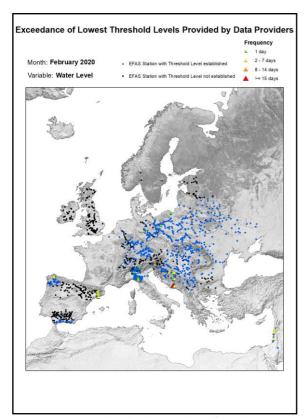


Figure 20. Lowest alert level exceedance for March 2020.





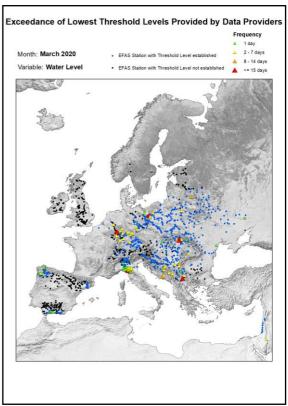


Figure 22. Lowest threshold exceedance for March 2020.

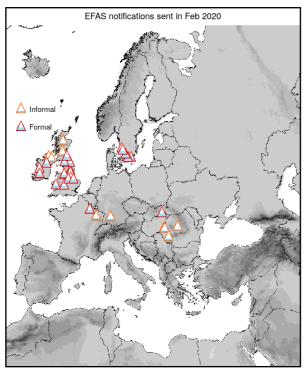


Figure 23. EFAS flood notifications sent for February.

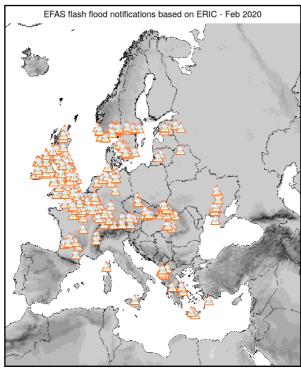


Figure 24. Flash flood notifications sent for February.

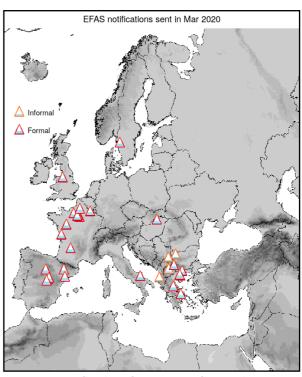


Figure 25. EFAS flood notifications sent for March 2020.

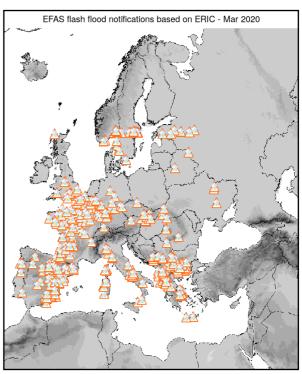


Figure 26. Flash flood notifications sent for March 2020.

# **Appendix - tables**

Table 1. EFAS flood notifications sent in February - March 2020

Туре	Forecast date	Issue date		River	Country
Informal	01/02/2020 00UTC	01/02/2020	3	Mures	Romania
Formal	01/02/2020 12UTC	02/02/2020	2	Aisne	France
Informal	02/02/2020 12UTC	03/02/2020	3	Crisul Negru	Hungary
Informal	02/02/2020 12UTC	03/02/2020	3	Crisul Negru	Romania
Informal	02/02/2020 12UTC	03/02/2020	1	Tamis	Romania
Informal	03/02/2020 00UTC	03/02/2020	1	Meurthe	France
Informal	03/02/2020 00UTC	03/02/2020	1	Neckar	Germany
Formal	03/02/2020 12UTC	04/02/2020	0	Hornad	Slovakia
Formal	06/02/2020 12UTC	07/02/2020	3	Mersey	United Kingdom
Formal	08/02/2020 12UTC	09/02/2020	2	Mrrumsn	Sweden
Formal	09/02/2020 00UTC	09/02/2020	1	Ouse	United Kingdom
Formal	09/02/2020 00UTC	09/02/2020	1	Tyne	United Kingdom
Formal	09/02/2020 00UTC	09/02/2020	1	Eden	United Kingdom
Formal	11/02/2020 12UTC	12/02/2020	5	Viskan	Sweden
Formal	12/02/2020 00UTC	12/02/2020	5	Helge	Sweden
Formal	12/02/2020 00UTC	12/02/2020	5	Lagan	Sweden
Formal	12/02/2020 12UTC	13/02/2020	3	Trent	United Kingdom
Formal	13/02/2020 12UTC	14/02/2020	3	Atran	Sweden
Formal	13/02/2020 12UTC	14/02/2020	2	Tywi	United Kingdom
Formal	14/02/2020 00UTC	14/02/2020	2	Tweed	United Kingdom
Informal	16/02/2020 12UTC	17/02/2020	0	Forth	United Kingdom
Formal	18/02/2020 00UTC	18/02/2020	3	Robe	Ireland
Formal	19/02/2020 12UTC	20/02/2020	0	Ouse	United Kingdom
Formal	20/02/2020 00UTC	20/02/2020	3	Shannon	Ireland
Informal	20/02/2020 12UTC	21/02/2020	2	Ness	United Kingdom
Formal	20/02/2020 12UTC	21/02/2020	1	Mersey	United Kingdom
Informal	21/02/2020 00UTC	21/02/2020	1	Foyle	Ireland
Informal	21/02/2020 00UTC	21/02/2020	2	Lower Bann	United Kingdom
Formal	21/02/2020 12UTC	22/02/2020	2	Severn	United Kingdom
Formal	21/02/2020 12UTC	22/02/2020	2	Trent	United Kingdom
Formal	23/02/2020 00UTC	23/02/2020	0	Trent	United Kingdom
Formal	23/02/2020 12UTC	24/02/2020	1	Erne	United Kingdom
Formal	23/02/2020 12UTC	24/02/2020	1	Witham	United Kingdom
Informal	27/02/2020 12UTC	28/02/2020	0	Derwent	United Kingdom
Formal	27/02/2020 12UTC	28/02/2020	0	Shannon	Ireland
Formal	01/03/2020 00UTC	01/03/2020	2	Slana	Hungary
Informal	29/02/2020 12UTC	01/03/2020	1	Marne	France
Formal	03/03/2020 00UTC	03/03/2020	3	Oise	France
Formal	03/03/2020 00UTC	03/03/2020	3	Eure	France
Formal	03/03/2020 00UTC	03/03/2020	1	Marne	France
Formal	03/03/2020 12UTC	04/03/2020	2	Loire	France
Formal	04/03/2020 00UTC	04/03/2020	2	Svre niortaise	France
Formal	04/03/2020 00UTC	04/03/2020	3	Seine	France
Formal	04/03/2020 12UTC	05/03/2020	4	Dordogne	France
Formal	04/03/2020 12UTC	05/03/2020	3	Mersey	United Kingdom
Informal	04/03/2020 12UTC	05/03/2020	2	Shkumbini	Albania

Formal	04/03/2020 12UTC	05/03/2020	2	Somme	France
Formal	05/03/2020 00UTC	05/03/2020	7	Meuse	France
Formal	06/03/2020 12UTC	07/03/2020	2	Nestos	Greece
Informal	07/03/2020 00UTC	07/03/2020	1	Pcinja	N. Macedonia
Formal	07/03/2020 00UTC	07/03/2020	2	Strimonas	Greece
Informal	07/03/2020 12UTC	08/03/2020	1	Nisava	Serbia
Informal	09/03/2020 00UTC	09/03/2020	0	Ogosta	Bulgaria
Formal	09/03/2020 00UTC	09/03/2020	0	Loire	France
Formal	12/03/2020 12UTC	13/03/2020	0	Nestos	Greece
Formal	13/03/2020 12UTC	14/03/2020	2	Struma	Bulgaria
Formal	13/03/2020 12UTC	14/03/2020	2	Strimonas	Greece
Informal	13/03/2020 12UTC	14/03/2020	1	Nisava	Serbia
Formal	17/03/2020 12UTC	18/03/2020	0	Duero	Spain
Formal	17/03/2020 12UTC	18/03/2020	0	Tajo	Spain
Formal	17/03/2020 12UTC	18/03/2020	1	Tajo	Spain
Formal	17/03/2020 12UTC	18/03/2020	1	Gllego	Spain
Formal	20/03/2020 12UTC	21/03/2020	4	Ebro	Spain
Formal	22/03/2020 12UTC	23/03/2020	4	Pineios	Greece
Formal	23/03/2020 12UTC	24/03/2020	3	Kifisos	Greece
Formal	24/03/2020 00UTC	24/03/2020	2	Candelaro	Italy
Formal	25/03/2020 12UTC	26/03/2020	2	Gota	Sweden
Formal	27/03/2020 12UTC	28/03/2020	4	Tajo	Spain

<sup>\*</sup> Lead time [days] to the first forecasted exceedance of the 5-year simulated discharge threshold.

Table 2. EFAS flash flood notifications sent in February - March 2020

Туре	Forecast date	Issue date	Lead time	Region	Country
Flash Flood	31/01/2020 12UTC	01/02/2020	78	Cluj	Romania
Flash Flood	31/01/2020 12UTC	01/02/2020	78	Bihor	Romania
Flash Flood	31/01/2020 12UTC	01/02/2020	60	Maramures	Romania
Flash Flood	31/01/2020 12UTC	01/02/2020	78	Alba	Romania
Flash Flood	31/01/2020 12UTC	01/02/2020	60	Transcarpathia	Ukraine
Flash Flood	01/02/2020 00UTC	01/02/2020	60	Oberosterreich	Austria
Flash Flood	01/02/2020 00UTC	01/02/2020	60	Bratislavsky kraj	Slovakia
Flash Flood	01/02/2020 12UTC	02/02/2020	48	Freiburg	Germany
Flash Flood	01/02/2020 12UTC	02/02/2020	42	Vosges	France
Flash Flood	01/02/2020 12UTC	02/02/2020	48	Tirol	Austria
Flash Flood	01/02/2020 12UTC	02/02/2020	36	Savoie	France
Flash Flood	01/02/2020 12UTC	02/02/2020	36	Haute-Savoie	France
Flash Flood	01/02/2020 12UTC	02/02/2020	48	Schwaben	Germany
Flash Flood	01/02/2020 12UTC	02/02/2020	48	Steiermark	Austria
Flash Flood	01/02/2020 12UTC	02/02/2020	60	Niederosterreich	Austria
Flash Flood	02/02/2020 00UTC	02/02/2020	48	Moselle	France
Flash Flood	02/02/2020 00UTC	02/02/2020	48	Stuttgart	Germany
Flash Flood	02/02/2020 00UTC	02/02/2020	42	Tubingen	Germany
Flash Flood	02/02/2020 00UTC	02/02/2020	48	Niederbayern	Germany
Flash Flood	02/02/2020 00UTC	02/02/2020	42	Meurthe-et-Moselle	France
Flash Flood	02/02/2020 00UTC	02/02/2020	48	Saarland	Germany
Flash Flood	02/02/2020 00UTC	02/02/2020	48	Aisne	France
Flash Flood	02/02/2020 00UTC	02/02/2020	48	Seine-et-Marne	France
Flash Flood	02/02/2020 00UTC	02/02/2020	48	Oise	France

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Flash Flood	02/02/2020 12UTC	03/02/2020	48	Transcarpathia	Ukraine
Flash Flood	02/02/2020 12UTC	03/02/2020	48	Banskobystricky kraj	Slovakia
Flash Flood	02/02/2020 12UTC	03/02/2020	48	Kosicky kraj	Slovakia
Flash Flood	02/02/2020 12UTC	03/02/2020	48	Trenciansky kraj	Slovakia
Flash Flood	02/02/2020 12UTC	03/02/2020	30	Oberbayern	Germany
Flash Flood	02/02/2020 12UTC	03/02/2020	36	Bas-Rhin	France
Flash Flood	02/02/2020 12UTC	03/02/2020	30	Karlsruhe	Germany
Flash Flood	03/02/2020 00UTC	03/02/2020	24	Meuse	France
Flash Flood	03/02/2020 00UTC	03/02/2020	36	Eszak-Magyarorszag	Hungary
Flash Flood	03/02/2020 00UTC	03/02/2020	48	Tirane	Albania
Flash Flood	03/02/2020 00UTC	03/02/2020	48	Elbasan	Albania
Flash Flood	03/02/2020 00UTC	03/02/2020	48	Korce	Albania
Flash Flood	03/02/2020 00UTC	03/02/2020	48	Tirane	Albania
Flash Flood	03/02/2020 00UTC	03/02/2020	48	Elbasan	Albania
Flash Flood	03/02/2020 00UTC	03/02/2020	48	Jugozapaden	N. Macedonia
Flash Flood	03/02/2020 00UTC	03/02/2020	24	Ardennes	France
Flash Flood	03/02/2020 00UTC	03/02/2020	24	Nord	France
Flash Flood	03/02/2020 00UTC	03/02/2020	48	Korce	Albania
Flash Flood	03/02/2020 12UTC	04/02/2020	48	Dnipropetrovs'k	Ukraine
Flash Flood	03/02/2020 12UTC	04/02/2020	24	Eszak-Alfold	Hungary
Flash Flood	03/02/2020 12UTC	04/02/2020	54	Kherson	Ukraine
Flash Flood	03/02/2020 12UTC	04/02/2020	18	Nitriansky kraj	Slovakia
Flash Flood	03/02/2020 12UTC	04/02/2020	24	Kosicky kraj	Slovakia
Flash Flood	03/02/2020 12UTC	04/02/2020	24	Zlinsky kraj	Czech Republic
Flash Flood	04/02/2020 00UTC	04/02/2020	18	Transcarpathia	Ukraine
Flash Flood	04/02/2020 00UTC	04/02/2020	24	Kosicky kraj	Slovakia
Flash Flood	04/02/2020 00UTC	04/02/2020	24	Presovsky kraj	Slovakia
Flash Flood	04/02/2020 00UTC	04/02/2020	48	Mykolayiv	Ukraine
Flash Flood	04/02/2020 00UTC	04/02/2020	24	Elbasan	Albania
Flash Flood	04/02/2020 00UTC	04/02/2020	24	Korce	Albania
Flash Flood	04/02/2020 000TC	04/02/2020	24	Bihor	Romania
Flash Flood	04/02/2020 12UTC	05/02/2020	36	Sicilia	Italy
Flash Flood	05/02/2020 12UTC	06/02/2020	24	Kherson	Ukraine
Flash Flood	05/02/2020 12UTC	06/02/2020	48	Kriti	Greece
Flash Flood	05/02/2020 12UTC	06/02/2020	24	Crimea	Ukraine
Flash Flood			60	Border	Ireland
Flash Flood	07/02/2020 00UTC 07/02/2020 00UTC	07/02/2020	60	Midland	Ireland
Flash Flood		07/02/2020		Northern Ireland	
	07/02/2020 00UTC 07/02/2020 00UTC	07/02/2020	60	Eastern Scotland	United Kingdom
Flash Flood		07/02/2020	60		United Kingdom
Flash Flood	07/02/2020 00UTC	07/02/2020	60	West Central Scotland	United Kingdom
Flash Flood	07/02/2020 00UTC	07/02/2020	60	Southern Scotland	United Kingdom
Flash Flood	07/02/2020 00UTC	07/02/2020	60	Cumbria	United Kingdom
Flash Flood	07/02/2020 00UTC	07/02/2020	60	South Yorkshire	United Kingdom
Flash Flood	07/02/2020 00UTC	07/02/2020	60	Shropshire and Stafford-	United Kingdom
Flash Flood	07/02/2020 00UTC	07/02/2020	54	West	Ireland
Flash Flood	07/02/2020 00UTC	07/02/2020	60	North Yorkshire	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Ostfold	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Gloucestershire, Wiltshire	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Aust-Agder	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Vest-Agder	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Orebro lan	Sweden

	07/02/2020 12/170	00/02/2020	72	Vastus Catalanda lan	C
Flash Flood Flash Flood	07/02/2020 12UTC 07/02/2020 12UTC	08/02/2020 08/02/2020	72 54	Vastra Gotalands lan	Sweden
Flash Flood		08/02/2020	54 54	Vest-Agder	Norway
	07/02/2020 12UTC			Rogaland	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Vestfold	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Telemark	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Buskerud	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Aust-Agder	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Akershus	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Hordaland	Norway
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Surrey, East and West Sus-	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Bedfordshire and Hertford-	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Essex	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Leicestershire, Rutland and	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	54	Derbyshire and Notting-	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	54	East Anglia	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	48	Lancashire	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	48	Tees Valley and Durham	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	48	Northumberland and Tyne	United Kingdom
Flash Flood	07/02/2020 12UTC	08/02/2020	48	North Yorkshire	<b>United Kingdom</b>
Flash Flood	07/02/2020 12UTC	08/02/2020	72	Skane lan	Sweden
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Kronobergs lan	Sweden
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Hallands lan	Sweden
Flash Flood	07/02/2020 12UTC	08/02/2020	60	Varmlands lan	Sweden
Flash Flood	08/02/2020 00UTC	08/02/2020	60	Jonkopings lan	Sweden
Flash Flood	08/02/2020 00UTC	08/02/2020	54	Trier	Germany
Flash Flood	08/02/2020 00UTC	08/02/2020	54	Moselle	France
Flash Flood	08/02/2020 00UTC	08/02/2020	54	Luxembourg	Luxembourg
Flash Flood	08/02/2020 00UTC	08/02/2020	48	Eure-et-Loir	France
Flash Flood	08/02/2020 00UTC	08/02/2020	54	Saarland	Germany
Flash Flood	08/02/2020 00UTC	08/02/2020	54	Meuse	France
Flash Flood	08/02/2020 00UTC	08/02/2020	42	South-East	Ireland
Flash Flood	08/02/2020 00UTC	08/02/2020	60	Seine-Maritime	France
Flash Flood	08/02/2020 00UTC	08/02/2020	48	Rogaland	Norway
Flash Flood	08/02/2020 00UTC	08/02/2020	60	Ardennes	France
Flash Flood	08/02/2020 000TC	08/02/2020	48	Kalmar lan	Sweden
Flash Flood	08/02/2020 000TC	08/02/2020	54	Nord	France
Flash Flood	08/02/2020 000TC	08/02/2020	60	Stockholms lan	Sweden
Flash Flood	08/02/2020 000TC	08/02/2020	60	Oise	France
Flash Flood	08/02/2020 000TC 08/02/2020 00UTC	08/02/2020	36	Highlands and Islands	United Kingdom
Flash Flood	08/02/2020 000TC 08/02/2020 00UTC	08/02/2020	48	South-West	Ireland
Flash Flood			30		
	08/02/2020 12UTC 08/02/2020 12UTC	09/02/2020		Essex	United Kingdom
Flash Flood		09/02/2020	48	Schleswig-Holstein	Germany
Flash Flood	08/02/2020 12UTC	09/02/2020	48	Hamburg	Germany
Flash Flood	08/02/2020 12UTC	09/02/2020	36	Mid-West	Ireland
Flash Flood	08/02/2020 12UTC	09/02/2020	54	Prov. Luxembourg (BE)	Belgium
Flash Flood	08/02/2020 12UTC	09/02/2020	48	Siauliu apskritis	Lithuania
Flash Flood	08/02/2020 12UTC	09/02/2020	54	Somme	France
Flash Flood	08/02/2020 12UTC	09/02/2020	30	West Wales and The Val-	United Kingdom
Flash Flood	08/02/2020 12UTC	09/02/2020	54	Eure	France
Flash Flood	08/02/2020 12UTC	09/02/2020	36	Leicestershire, Rutland and	United Kingdom
Flash Flood	08/02/2020 12UTC	09/02/2020	60	Vosges	France

Flash Flood	08/02/2020 12UTC	09/02/2020	54	Oise	France
Flash Flood	09/02/2020 00UTC	09/02/2020	24	Luneburg	Germany
Flash Flood	09/02/2020 00UTC	09/02/2020	24	Weser-Ems	Germany
Flash Flood	09/02/2020 00UTC	09/02/2020	24	Blekinge lan	Sweden
Flash Flood	09/02/2020 00UTC	09/02/2020	36	Mecklenburg-Vor-	Germany
Flash Flood	09/02/2020 00UTC	09/02/2020	30	Schleswig-Holstein	Germany
Flash Flood	09/02/2020 00UTC	09/02/2020	36	Bremen	Germany
Flash Flood	09/02/2020 000TC	09/02/2020	30	Taurages apskritis	Lithuania
Flash Flood	09/02/2020 000TC	09/02/2020	60	Bihor	Romania
Flash Flood	09/02/2020 000TC	09/02/2020	24	Overijssel	Netherlands
Flash Flood	09/02/2020 12UTC	10/02/2020	24	Dolnoslaskie	Poland
Flash Flood	09/02/2020 12UTC	10/02/2020	42	Highlands and Islands	United Kingdom
Flash Flood	09/02/2020 12UTC	10/02/2020	54	Southern Scotland	United Kingdom
Flash Flood	10/02/2020 00UTC	10/02/2020	18	Kralovehradecky kraj	Czech Republic
Flash Flood	10/02/2020 000 TC 10/02/2020 12UTC	11/02/2020	30	Southern Scotland	United Kingdom
Flash Flood	10/02/2020 12UTC	11/02/2020	24	Highlands and Islands	United Kingdom
Flash Flood	12/02/2020 12UTC	13/02/2020	54	Elbasan	Albania
Flash Flood	13/02/2020 120TC 13/02/2020 00UTC	13/02/2020	42	Diber	Albania
Flash Flood	13/02/2020 000TC 13/02/2020 00UTC	13/02/2020	42 48	Sterea Ellada	Greece
Flash Flood	13/02/2020 000 TC 13/02/2020 12UTC	14/02/2020	<del>4</del> 6	Notio Aigaio	Greece
Flash Flood	13/02/2020 12UTC	14/02/2020	48	Kriti	Greece
Flash Flood	13/02/2020 12UTC	14/02/2020	48	Sterea Ellada	
Flash Flood		14/02/2020	48 60	Vastra Gotalands lan	Greece Sweden
	14/02/2020 00UTC	•			
Flash Flood	14/02/2020 00UTC	14/02/2020	60 60	Rogaland Hallands lan	Norway Sweden
Flash Flood	14/02/2020 00UTC	14/02/2020	54		
Flash Flood	14/02/2020 00UTC	14/02/2020		South Yorkshire	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	60	Vest-Agder	Norway
Flash Flood	14/02/2020 00UTC	14/02/2020	60	Bedfordshire and Hertford-	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	60 54	Telemark	Norway
Flash Flood	14/02/2020 00UTC	14/02/2020	54	Tees Valley and Durham	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	54	West Wales and The Val-	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	60	East Anglia	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	54	East Wales	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	54	East Yorkshire and North-	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	60	Vestfold	Norway
Flash Flood	14/02/2020 00UTC	14/02/2020	54	Gloucestershire, Wiltshire	United Kingdom
Flash Flood	14/02/2020 00UTC	14/02/2020	60	Aust-Agder	Norway
Flash Flood	14/02/2020 00UTC	14/02/2020	54	Ostfold	Norway
Flash Flood	14/02/2020 00UTC	14/02/2020	54	Herefordshire, Worcester-	United Kingdom
Flash Flood	14/02/2020 12UTC	15/02/2020	48	Buskerud	Norway
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Orebro lan	Sweden
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Sodermanlands lan	Sweden
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Varmlands lan	Sweden
Flash Flood	14/02/2020 12UTC	15/02/2020	48	Berkshire, Buckingham-	United Kingdom
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Manche	France
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Akershus	Norway
Flash Flood	14/02/2020 12UTC	15/02/2020	60	Nord	France
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Pas-de-Calais	France
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Vastmanlands lan	Sweden
Flash Flood	14/02/2020 12UTC	15/02/2020	48	Hampshire and Isle of	United Kingdom
Flash Flood	14/02/2020 12UTC	15/02/2020	24	West	Ireland

Flash Flood	14/02/2020 12UTC	15/02/2020	60	Kronobergs lan	Sweden
Flash Flood	14/02/2020 12UTC	15/02/2020	60	Skane lan	Sweden
Flash Flood	14/02/2020 12UTC	15/02/2020	54	Kent	United Kingdom
Flash Flood	14/02/2020 12UTC	15/02/2020	60	Jonkopings lan	Sweden
Flash Flood	14/02/2020 12UTC	15/02/2020	42	Devon	United Kingdom
Flash Flood	15/02/2020 1201C 15/02/2020 00UTC	15/02/2020	42 18		
				Highlands and Islands	United Kingdom
Flash Flood	15/02/2020 00UTC	15/02/2020	60	Kesk-Eesti	Estonia
Flash Flood	15/02/2020 00UTC	15/02/2020	60	Laane-Eesti	Estonia
Flash Flood	15/02/2020 00UTC	15/02/2020	60	Louna-Eesti	Estonia
Flash Flood	15/02/2020 00UTC	15/02/2020	18	Eastern Scotland	United Kingdom
Flash Flood	15/02/2020 00UTC	15/02/2020	48	Seine-et-Marne	France
Flash Flood	15/02/2020 00UTC	15/02/2020	48	Orne	France
Flash Flood	15/02/2020 00UTC	15/02/2020	48	Aisne	France
Flash Flood	15/02/2020 00UTC	15/02/2020	42	Seine-Maritime	France
Flash Flood	15/02/2020 00UTC	15/02/2020	48	Eure	France
Flash Flood	15/02/2020 00UTC	15/02/2020	48	Oise	France
Flash Flood	15/02/2020 00UTC	15/02/2020	48	Yvelines	France
Flash Flood	18/02/2020 12UTC	19/02/2020	60	Hallands lan	Sweden
Flash Flood	18/02/2020 12UTC	19/02/2020	60	Akershus	Norway
Flash Flood	18/02/2020 12UTC	19/02/2020	60	Vastra Gotalands lan	Sweden
Flash Flood	18/02/2020 12UTC	19/02/2020	48	Cumbria	United Kingdom
Flash Flood	18/02/2020 12UTC	19/02/2020	60	Sterea Ellada	Greece
Flash Flood	18/02/2020 12UTC	19/02/2020	60	Varmlands lan	Sweden
Flash Flood	18/02/2020 12UTC	19/02/2020	42	West	Ireland
Flash Flood	18/02/2020 12UTC	19/02/2020	60	Ostfold	Norway
Flash Flood	19/02/2020 00UTC	19/02/2020	48	Attiki	Greece
Flash Flood	19/02/2020 12UTC	20/02/2020	60	Border	Ireland
Flash Flood	20/02/2020 00UTC	20/02/2020	48	Highlands and Islands	United Kingdom
Flash Flood	20/02/2020 00UTC	20/02/2020	54	Shropshire and Stafford-	<b>United Kingdom</b>
Flash Flood	20/02/2020 00UTC	20/02/2020	54	Rogaland	Norway
Flash Flood	20/02/2020 00UTC	20/02/2020	54	East Wales	<b>United Kingdom</b>
Flash Flood	20/02/2020 00UTC	20/02/2020	54	Lancashire	<b>United Kingdom</b>
Flash Flood	20/02/2020 12UTC	21/02/2020	54	Kesk-Eesti	Estonia
Flash Flood	20/02/2020 12UTC	21/02/2020	54	Laane-Eesti	Estonia
Flash Flood	20/02/2020 12UTC	21/02/2020	42	North Yorkshire	United Kingdom
Flash Flood	20/02/2020 12UTC	21/02/2020	54	Louna-Eesti	Estonia
Flash Flood	20/02/2020 12UTC	21/02/2020	24	Kriti	Greece
Flash Flood	21/02/2020 00UTC	21/02/2020	36	Vastra Gotalands lan	Sweden
Flash Flood	21/02/2020 00UTC	21/02/2020	36	Sterea Ellada	Greece
Flash Flood	21/02/2020 00UTC	21/02/2020	36	Jonkopings lan	Sweden
Flash Flood	21/02/2020 00UTC	21/02/2020	24	West	Ireland
Flash Flood	21/02/2020 00UTC	21/02/2020	36	Hallands lan	Sweden
Flash Flood	21/02/2020 12UTC	22/02/2020	54	Unterfranken	Germany
Flash Flood	21/02/2020 12UTC	22/02/2020	42	Shropshire and Stafford-	United Kingdom
Flash Flood	21/02/2020 12UTC	22/02/2020	48	Leicestershire, Rutland and	United Kingdom
Flash Flood	21/02/2020 12UTC	22/02/2020	54	Sachsen-Anhalt	Germany
Flash Flood	21/02/2020 12UTC	22/02/2020	54	Prov. Limburg (BE)	Belgium
Flash Flood	21/02/2020 12UTC	22/02/2020	48	Oberosterreich	Austria
Flash Flood	21/02/2020 12UTC	22/02/2020	54	Prov. Liege	Belgium
Flash Flood	21/02/2020 12UTC	22/02/2020	54	Koln	Germany
Flash Flood	21/02/2020 12UTC	22/02/2020	60	Banskobystricky kraj	Slovakia
1 10311 1 1000	21,02,2020 12010	22/02/2020	50	ballokobystricky kraj	Siovakia

Flash Flood	21/02/2020 12UTC	22/02/2020	42	Pskov	Russian Federa-
Flash Flood	21/02/2020 12UTC	22/02/2020	54	Limburg (NL)	Netherlands
Flash Flood	21/02/2020 12UTC	22/02/2020	54	Kralovehradecky kraj	Czech Republic
Flash Flood	21/02/2020 12UTC	22/02/2020	36	Novgorod	Russian Federa-
Flash Flood	22/02/2020 00UTC	22/02/2020	54	Midland	Ireland
Flash Flood	22/02/2020 00UTC	22/02/2020	24	Rogaland	Norway
Flash Flood	22/02/2020 00UTC	22/02/2020	30	Cheshire	United Kingdom
Flash Flood	22/02/2020 00UTC	22/02/2020	30	Herefordshire, Worcester-	United Kingdom
Flash Flood	22/02/2020 00UTC	22/02/2020	54	Dublin	Ireland
Flash Flood	22/02/2020 00UTC	22/02/2020	54	Mid-East	Ireland
Flash Flood	22/02/2020 00UTC	22/02/2020	54	South-East	Ireland
Flash Flood	22/02/2020 00UTC	22/02/2020	66	Poltava	Ukraine
Flash Flood	22/02/2020 00UTC	22/02/2020	66	Kherson	Ukraine
Flash Flood	22/02/2020 00UTC	22/02/2020	60	Dnipropetrovs'k	Ukraine
Flash Flood	22/02/2020 12UTC	23/02/2020	42	Northern Ireland	United Kingdom
Flash Flood	22/02/2020 12UTC	23/02/2020	42	West	Ireland
Flash Flood	23/02/2020 00UTC	23/02/2020	30	Mid-West	Ireland
Flash Flood	23/02/2020 00UTC	23/02/2020	30	Border	Ireland
Flash Flood	23/02/2020 00UTC	23/02/2020	36	Cumbria	United Kingdom
Flash Flood	23/02/2020 00UTC	23/02/2020	36	Lancashire	United Kingdom
Flash Flood	23/02/2020 00UTC	23/02/2020	36	South Yorkshire	United Kingdom
Flash Flood	23/02/2020 00UTC	23/02/2020	36	West Wales and The Val-	United Kingdom
Flash Flood	23/02/2020 12UTC	24/02/2020	24	East Wales	United Kingdom
Flash Flood	23/02/2020 12UTC	24/02/2020	24	Derbyshire and Notting-	United Kingdom
Flash Flood	23/02/2020 12UTC	24/02/2020	24	Lincolnshire	United Kingdom
Flash Flood	23/02/2020 12UTC	24/02/2020	42	Highlands and Islands	United Kingdom
Flash Flood	23/02/2020 12UTC	24/02/2020	24	North Yorkshire	<b>United Kingdom</b>
Flash Flood	24/02/2020 00UTC	24/02/2020	24	Luneburg	Germany
Flash Flood	24/02/2020 00UTC	24/02/2020	48	Kronobergs lan	Sweden
Flash Flood	24/02/2020 00UTC	24/02/2020	48	Skane lan	Sweden
Flash Flood	24/02/2020 12UTC	25/02/2020	48	Presovsky kraj	Slovakia
Flash Flood	24/02/2020 12UTC	25/02/2020	54	Trenciansky kraj	Slovakia
Flash Flood	24/02/2020 12UTC	25/02/2020	48	Transcarpathia	Ukraine
Flash Flood	25/02/2020 00UTC	25/02/2020	54	Bihor	Romania
Flash Flood	25/02/2020 12UTC	26/02/2020	60	Dordogne	France
Flash Flood	25/02/2020 12UTC	26/02/2020	54	Correze	France
Flash Flood	25/02/2020 12UTC	26/02/2020	48	Yonne	France
Flash Flood	25/02/2020 12UTC	26/02/2020	54	Lot	France
Flash Flood	25/02/2020 12UTC	26/02/2020	48	Seine-et-Marne	France
Flash Flood	25/02/2020 12UTC	26/02/2020	54	Aveyron	France
Flash Flood	25/02/2020 12UTC	26/02/2020	24	Podkarpackie	Poland
Flash Flood	25/02/2020 12UTC	26/02/2020	48	Nievre	France
Flash Flood	25/02/2020 12UTC	26/02/2020	60	Corse-du-Sud	France
Flash Flood	26/02/2020 00UTC	26/02/2020	36	Oise	France
Flash Flood	26/02/2020 00UTC	26/02/2020	36	Eure	France
Flash Flood	26/02/2020 00UTC	26/02/2020	36	Marne	France
Flash Flood	26/02/2020 00UTC	26/02/2020	36	Somme	France
Flash Flood	26/02/2020 12UTC	27/02/2020	24	Seine-Maritime	France
Flash Flood	26/02/2020 12UTC	27/02/2020	24	Gironde	France
Flash Flood	26/02/2020 12UTC	27/02/2020	24	Meuse	France
Flash Flood	26/02/2020 12UTC	27/02/2020	42	Dnipropetrovs'k	Ukraine
	-,, <b></b>	_:, -=, -==		· F. · - F - 2. · 2. ·	- ::: =::::=

	26 /02 /2020 42LITG	27/02/2020	2.4	VC+	Dalama
Flash Flood	26/02/2020 12UTC	27/02/2020	24	Vitsyebsk	Belarus
Flash Flood	26/02/2020 12UTC	27/02/2020	24	Dordogne	France
Flash Flood	26/02/2020 12UTC	27/02/2020	24	Ardennes	France
Flash Flood	26/02/2020 12UTC	27/02/2020	30	Tarn	France
Flash Flood	27/02/2020 00UTC	27/02/2020	54	East Wales	United Kingdom
Flash Flood	27/02/2020 00UTC	27/02/2020	54	Cumbria	United Kingdom
Flash Flood	27/02/2020 00UTC	27/02/2020	54	Highlands and Islands	United Kingdom
Flash Flood	27/02/2020 00UTC	27/02/2020	54	West Wales and The Val-	United Kingdom
Flash Flood	27/02/2020 00UTC	27/02/2020	54	Southern Scotland	United Kingdom
Flash Flood	27/02/2020 12UTC	28/02/2020	48	Highlands and Islands	United Kingdom
Flash Flood	27/02/2020 12UTC	28/02/2020	60	Vestfold	Norway
Flash Flood	27/02/2020 12UTC	28/02/2020	42	Mecklenburg-Vor-	Germany
Flash Flood	29/02/2020 12UTC	01/03/2020	60	Abruzzo	Italy
Flash Flood	29/02/2020 12UTC	01/03/2020	48	Jaen	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	48	Valladolid	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	30	Seine-Maritime	France
Flash Flood	29/02/2020 12UTC	01/03/2020	42	Regiao de Coimbra	Portugal
Flash Flood	29/02/2020 12UTC	01/03/2020	30	Prov. Hainaut	Belgium
Flash Flood	29/02/2020 12UTC	01/03/2020	42	Teruel	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	48	Segovia	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	42	Val-d'Oise	France
Flash Flood	29/02/2020 12UTC	01/03/2020	42	La Rioja	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	60	Lazio	Italy
Flash Flood	29/02/2020 12UTC	01/03/2020	54	Soria	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	24	Calvados	France
Flash Flood	29/02/2020 12UTC	01/03/2020	54	Haute-Corse	France
Flash Flood	29/02/2020 12UTC	01/03/2020	60	Toscana	Italy
Flash Flood	29/02/2020 12UTC	01/03/2020	24	Ille-et-Vilaine	France
Flash Flood	29/02/2020 12UTC	01/03/2020	48	Granada	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	54	Corse-du-Sud	France
Flash Flood	29/02/2020 12UTC	01/03/2020	48	Albacete	Spain
Flash Flood	29/02/2020 12UTC	01/03/2020	24	Mayenne	France
Flash Flood	29/02/2020 12UTC	01/03/2020	54	Liguria	Italy
Flash Flood	29/02/2020 12UTC	01/03/2020	30	Aisne	France
Flash Flood	29/02/2020 12UTC	01/03/2020	60	Sardegna	Italy
Flash Flood	01/03/2020 00UTC	01/03/2020	18	Essonne	France
Flash Flood	01/03/2020 000TC	01/03/2020	18	Ardennes	France
Flash Flood	01/03/2020 000TC	01/03/2020	30	Loir-et-Cher	France
Flash Flood	01/03/2020 000TC 01/03/2020 00UTC	01/03/2020	30	Bratislavsky kraj	Slovakia
Flash Flood	01/03/2020 000TC 01/03/2020 00UTC	01/03/2020	24	Ave	Portugal
Flash Flood	01/03/2020 000TC 01/03/2020 00UTC	01/03/2020	30	Zilinsky kraj	Slovakia
Flash Flood	01/03/2020 000TC 01/03/2020 00UTC	01/03/2020	30	Huesca	Spain
Flash Flood	01/03/2020 000TC 01/03/2020 00UTC	01/03/2020	30		Czech Republic
Flash Flood	01/03/2020 000TC 01/03/2020 00UTC		30	Zlinsky kraj Lleida	•
		01/03/2020			Spain
Flash Flood	01/03/2020 00UTC	01/03/2020	24	Zamora	Spain
Flash Flood	01/03/2020 00UTC	01/03/2020	24	Leon	Spain
Flash Flood	01/03/2020 00UTC	01/03/2020	78	Skane lan	Sweden
Flash Flood	01/03/2020 00UTC	01/03/2020	48	Molise	Italy
Flash Flood	01/03/2020 00UTC	01/03/2020	30	Charente-Maritime	France
Flash Flood	01/03/2020 00UTC	01/03/2020	48	Campania	Italy
Flash Flood	01/03/2020 00UTC	01/03/2020	42	Lombardia	Italy

Flash Flood	01/03/2020 00UTC	01/03/2020	24	Area Metropolitana do	Portugal
Flash Flood	01/03/2020 00UTC	01/03/2020	30	Sarthe	France
Flash Flood	01/03/2020 00UTC	01/03/2020	42	Emilia-Romagna	Italy
Flash Flood	01/03/2020 00UTC	01/03/2020	54	Piemonte	Italy
Flash Flood	01/03/2020 00UTC	01/03/2020	30	Loiret	France
Flash Flood	01/03/2020 00UTC	01/03/2020	18	Seine-et-Marne	France
Flash Flood	01/03/2020 00UTC	01/03/2020	18	Marne	France
Flash Flood	01/03/2020 12UTC	02/03/2020	54	Kralovehradecky kraj	Czech Republic
Flash Flood	01/03/2020 12UTC	02/03/2020	48	Crna Gora	Montenegro
Flash Flood	01/03/2020 12UTC	02/03/2020	48	Repuplika Srpska	Montenegro
Flash Flood	01/03/2020 12UTC	02/03/2020	30	Zaragoza	Spain
Flash Flood	01/03/2020 12UTC	02/03/2020	24	Bihor	Romania
Flash Flood	02/03/2020 00UTC	02/03/2020	48	Berat	Albania
Flash Flood	02/03/2020 000TC 02/03/2020 00UTC	02/03/2020	48	Jugozapaden	N. Macedonia
Flash Flood	02/03/2020 000TC 02/03/2020 00UTC	02/03/2020	48	Gjirokaster	Albania
Flash Flood			48	•	
	02/03/2020 00UTC	02/03/2020		Dytiki Makedonia	Greece
Flash Flood	02/03/2020 00UTC	02/03/2020	48	Korce	Albania
Flash Flood	02/03/2020 00UTC	02/03/2020	48	Elbasan	Albania
Flash Flood	02/03/2020 00UTC	02/03/2020	66	Sodermanlands lan	Sweden
Flash Flood	02/03/2020 00UTC	02/03/2020	42	Repuplika Srpska	Bosnia And Her-
Flash Flood	02/03/2020 00UTC	02/03/2020	48	Ipeiros	Greece
Flash Flood	02/03/2020 00UTC	02/03/2020	48	Jug	Albania
Flash Flood	02/03/2020 00UTC	02/03/2020	66	Stockholms lan	Sweden
Flash Flood	02/03/2020 12UTC	03/03/2020	54	Podkarpackie	Poland
Flash Flood	02/03/2020 12UTC	03/03/2020	60	Blagoevgrad	Bulgaria
Flash Flood	02/03/2020 12UTC	03/03/2020	54	Kosicky kraj	Slovakia
Flash Flood	02/03/2020 12UTC	03/03/2020	54	Anatoliki Makedonia,	Greece
Flash Flood	02/03/2020 12UTC	03/03/2020	54	Presovsky kraj	Slovakia
Flash Flood	02/03/2020 12UTC	03/03/2020	48	Severoistocen	N. Macedonia
Flash Flood	02/03/2020 12UTC	03/03/2020	48	Orebro lan	Sweden
Flash Flood	02/03/2020 12UTC	03/03/2020	60	Kyustendil	Bulgaria
Flash Flood	02/03/2020 12UTC	03/03/2020	54	Uppsala lan	Sweden
Flash Flood	02/03/2020 12UTC	03/03/2020	48	Vastmanlands lan	Sweden
Flash Flood	02/03/2020 12UTC	03/03/2020	54	Transcarpathia	Ukraine
Flash Flood	03/03/2020 00UTC	03/03/2020	24	Sardegna	Italy
Flash Flood	03/03/2020 00UTC	03/03/2020	60	Eure	France
Flash Flood	03/03/2020 00UTC	03/03/2020	72	Nievre	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Loiret	France
Flash Flood	03/03/2020 00UTC	03/03/2020	72	Aube	France
Flash Flood	03/03/2020 00UTC	03/03/2020	72	Saone-et-Loire	France
Flash Flood	03/03/2020 00UTC	03/03/2020	18	Tarn-et-Garonne	France
Flash Flood	03/03/2020 000TC	03/03/2020	66	Marne	France
Flash Flood	03/03/2020 000TC 03/03/2020 00UTC	03/03/2020	72	Marne	France
Flash Flood	03/03/2020 000TC 03/03/2020 00UTC	03/03/2020	72 72	Meuse	France
Flash Flood			60	Yvelines	
	03/03/2020 00UTC	03/03/2020			France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Correze	France
Flash Flood	03/03/2020 00UTC	03/03/2020	72	Somme	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Seine-et-Marne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	48	Laane-Eesti	Estonia
Flash Flood	03/03/2020 00UTC	03/03/2020	60	Charente-Maritime	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Loir-et-Cher	France

Flash Flood	03/03/2020 00UTC	03/03/2020	60	Dordogne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	60	Seine-Maritime	France
Flash Flood	03/03/2020 00UTC	03/03/2020	36	Caras-Severin	Romania
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Seine-et-Marne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Eure-et-Loir	France
Flash Flood	03/03/2020 00UTC	03/03/2020	54	Pskov	Russian Federa-
Flash Flood	03/03/2020 00UTC	03/03/2020	60	Novgorod	Russian Federa-
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Essonne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Yvelines	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Cher	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Oise	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Orne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Indre	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Lot	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Sarthe	France
Flash Flood	03/03/2020 00UTC	03/03/2020	60	Indre-et-Loire	France
Flash Flood	03/03/2020 00UTC	03/03/2020	24	Tirane	Albania
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Aisne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	30	Thessalia	Greece
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Vienne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	60	Val-d'Oise	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Yonne	France
Flash Flood	03/03/2020 00UTC	03/03/2020	66	Haute-Vienne	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Manche	France
Flash Flood	03/03/2020 12UTC	04/03/2020	60	Kent	United Kingdom
Flash Flood	03/03/2020 12UTC	04/03/2020	66	Prov. West-Vlaanderen	Belgium
Flash Flood	03/03/2020 12UTC	04/03/2020	66	Luxembourg	Luxembourg
Flash Flood	03/03/2020 12UTC	04/03/2020	66	Prov. Hainaut	Belgium
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Saarland	Germany
Flash Flood	03/03/2020 12UTC	04/03/2020	66	Trier	Germany
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Moselle	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Saarland	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Bas-Rhin	France
Flash Flood	03/03/2020 12UTC	04/03/2020	66	Ardennes	France
Flash Flood	03/03/2020 12UTC	04/03/2020	66	Nord	France
Flash Flood	03/03/2020 12UTC	04/03/2020	66	Nord	France
Flash Flood	03/03/2020 12UTC	04/03/2020	60	Pas-de-Calais	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Mayenne	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Loire-Atlantique	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Cotes-dArmor	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Ille-et-Vilaine	France
Flash Flood	03/03/2020 12UTC	04/03/2020	60	Calvados	France
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Lot	France
Flash Flood	03/03/2020 12UTC	04/03/2020	60	Toscana	Italy
Flash Flood	03/03/2020 12UTC	04/03/2020	24	Eszak-Alfold	Hungary
Flash Flood	03/03/2020 12UTC	04/03/2020	30	Bihor	Romania
Flash Flood	03/03/2020 12UTC	04/03/2020	48	Minsk	Belarus
Flash Flood	03/03/2020 12UTC	04/03/2020	72	Tver'	Russian Federa-
Flash Flood	03/03/2020 12UTC	04/03/2020	24	Varmlands lan	Sweden
Flash Flood	03/03/2020 12UTC	04/03/2020	24 24	Sterea Ellada	Greece
Flash Flood		04/03/2020	24 24		
1718511 F1000	03/03/2020 12UTC	04/03/2020	24	Attiki	Greece

Flash Flood	03/03/2020 12UTC	04/03/2020	30	Kentriki Makedonia	Greece
Flash Flood	03/03/2020 12UTC	04/03/2020	24	Poloski	N. Macedonia
Flash Flood	03/03/2020 12UTC	04/03/2020	60	Hampshire and Isle of	United Kingdom
Flash Flood	03/03/2020 12UTC	04/03/2020	54	Freiburg	Germany
Flash Flood	04/03/2020 1201C	04/03/2020	42	Outer London - South	United Kingdom
Flash Flood	04/03/2020 000TC 04/03/2020 00UTC	04/03/2020	42 48	Haute-Corse	France
Flash Flood	04/03/2020 00UTC	04/03/2020	24	Sofia (stolitsa)	Bulgaria
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Outer London - East and	United Kingdom
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Ain	France
Flash Flood	04/03/2020 00UTC	04/03/2020	54	Molise	Italy
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Unterfranken	Germany
Flash Flood	04/03/2020 00UTC	04/03/2020	60	Smolensk	Russian Federa-
Flash Flood	04/03/2020 00UTC	04/03/2020	54	Koblenz	Germany
Flash Flood	04/03/2020 00UTC	04/03/2020	30	Finistere	France
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Karlsruhe	Germany
Flash Flood	04/03/2020 00UTC	04/03/2020	30	Maine-et-Loire	France
Flash Flood	04/03/2020 00UTC	04/03/2020	30	Morbihan	France
Flash Flood	04/03/2020 00UTC	04/03/2020	54	East Anglia	United Kingdom
Flash Flood	04/03/2020 00UTC	04/03/2020	48	Corse-du-Sud	France
Flash Flood	04/03/2020 00UTC	04/03/2020	36	Louna-Eesti	Estonia
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Inner London - West	United Kingdom
Flash Flood	04/03/2020 00UTC	04/03/2020	60	Campania	Italy
Flash Flood	04/03/2020 00UTC	04/03/2020	48	Dorset and Somerset	United Kingdom
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Haute-Marne	France
Flash Flood	04/03/2020 00UTC	04/03/2020	54	Essex	United Kingdom
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Surrey, East and West Sus-	United Kingdom
Flash Flood	04/03/2020 00UTC	04/03/2020	18	Sofia	Bulgaria
Flash Flood	04/03/2020 00UTC	04/03/2020	42	Stuttgart	Germany
Flash Flood	04/03/2020 00UTC	04/03/2020	18	Region Juzne i Istocne	Serbia
Flash Flood	04/03/2020 00UTC	04/03/2020	18	Pernik	Bulgaria
Flash Flood	04/03/2020 00UTC	04/03/2020	54	Outer London - East and	<b>United Kingdom</b>
Flash Flood	04/03/2020 00UTC	04/03/2020	36	Arges	Romania
Flash Flood	04/03/2020 12UTC	05/03/2020	60	Banskobystricky kraj	Slovakia
Flash Flood	04/03/2020 12UTC	05/03/2020	66	Pyrenees-Atlantiques	France
Flash Flood	04/03/2020 12UTC	05/03/2020	54	Trenciansky kraj	Slovakia
Flash Flood	04/03/2020 12UTC	05/03/2020	42	Prov. Namur	Belgium
Flash Flood	04/03/2020 12UTC	05/03/2020	48	Trnavsky kraj	Slovakia
Flash Flood	04/03/2020 12UTC	05/03/2020	42	Prov. Liege	Belgium
Flash Flood	04/03/2020 12UTC	05/03/2020	48	Nitriansky kraj	Slovakia
Flash Flood	04/03/2020 12UTC	05/03/2020	42	Limburg (NL)	Netherlands
Flash Flood	04/03/2020 12UTC	05/03/2020	48	Zlinsky kraj	Czech Republic
Flash Flood	04/03/2020 12UTC	05/03/2020	42	Prov. Limburg (BE)	Belgium
Flash Flood	05/03/2020 00UTC	05/03/2020	60	Gjirokaster	Albania
Flash Flood	05/03/2020 00UTC	05/03/2020	60	Korce	Albania
Flash Flood	05/03/2020 00UTC	05/03/2020	60	Sardegna	Italy
Flash Flood	05/03/2020 00UTC	05/03/2020	60	Jugozapaden	N. Macedonia
Flash Flood	05/03/2020 000TC	05/03/2020	30	Oberosterreich	Austria
Flash Flood	05/03/2020 000TC	05/03/2020	60	Vlore	Albania
Flash Flood	05/03/2020 000 TC 05/03/2020 12UTC	06/03/2020	42	Elbasan	Albania
Flash Flood	05/03/2020 12UTC	06/03/2020	60	Severoistocen	N. Macedonia
Flash Flood	05/03/2020 12UTC	06/03/2020	36		
riasii riood	05/05/2020 12010	00/03/2020	50	Dytiki Makedonia	Greece

Flash Flood	05/03/2020 12UTC	06/03/2020	24	Zeeland	Netherlands
Flash Flood	05/03/2020 12UTC	06/03/2020	60	Region Juzne i Istocne	Republic Of Ser-
Flash Flood	05/03/2020 12UTC	06/03/2020	60	Sofia	Bulgaria
Flash Flood	05/03/2020 12UTC	06/03/2020	54	Lezhe	Albania
Flash Flood	05/03/2020 12UTC	06/03/2020	42	Durres	Albania
Flash Flood	05/03/2020 12UTC	06/03/2020	36	Diber	Albania
Flash Flood	05/03/2020 12UTC	06/03/2020	42	Berat	Albania
Flash Flood	05/03/2020 12UTC	06/03/2020	42	Pelagoniski	N. Macedonia
Flash Flood	05/03/2020 12UTC	06/03/2020	36	Zaragoza	Spain
Flash Flood	05/03/2020 12UTC	06/03/2020	36	Ipeiros	Greece
Flash Flood	05/03/2020 12UTC	06/03/2020	42	Navarra	Spain
Flash Flood	06/03/2020 00UTC	06/03/2020	48	Kosovska Mitrovica	Kosovo*
Flash Flood	06/03/2020 00UTC	06/03/2020	48	Region Sumadije i Zapadne	Serbia
Flash Flood	06/03/2020 12UTC	07/03/2020	24	Skopski	N. Macedonia
Flash Flood	06/03/2020 12UTC	07/03/2020	42	Pernik	Bulgaria
Flash Flood	06/03/2020 12UTC	07/03/2020	24	Poloski	N. Macedonia
Flash Flood	06/03/2020 12UTC	07/03/2020	24	Tirane	Albania
Flash Flood	06/03/2020 12UTC	07/03/2020	42	Kyustendil	Bulgaria
Flash Flood	06/03/2020 12UTC	07/03/2020	24	Fier	Albania
Flash Flood	06/03/2020 12UTC	07/03/2020	42	Sofia	Bulgaria
Flash Flood	07/03/2020 00UTC	07/03/2020	54	Anatoliki Makedonia,	Greece
Flash Flood	07/03/2020 00UTC	07/03/2020	60	Blagoevgrad	Bulgaria
Flash Flood	07/03/2020 00UTC	07/03/2020	60	Kentriki Makedonia	Greece
Flash Flood	07/03/2020 00UTC	07/03/2020	60	Sterea Ellada	Greece
Flash Flood	07/03/2020 00UTC	07/03/2020	18	Thessalia	Greece
Flash Flood	07/03/2020 00UTC	07/03/2020	60	Plovdiv	Bulgaria
Flash Flood	07/03/2020 12UTC	08/03/2020	54	Kardzhali	Bulgaria
Flash Flood	07/03/2020 12UTC	08/03/2020	6	Dytiki Makedonia	Greece
Flash Flood	07/03/2020 12UTC	08/03/2020	48	, Kriti	Greece
Flash Flood	07/03/2020 12UTC	08/03/2020	6	Ipeiros	Greece
Flash Flood	07/03/2020 12UTC	08/03/2020	54	Attiki	Greece
Flash Flood	07/03/2020 12UTC	08/03/2020	48	Smolyan	Bulgaria
Flash Flood	08/03/2020 00UTC	08/03/2020	24	Akershus	Norway
Flash Flood	08/03/2020 00UTC	08/03/2020	42	Pazardzhik	, Bulgaria
Flash Flood	08/03/2020 00UTC	08/03/2020	18	Ostfold	Norway
Flash Flood	08/03/2020 12UTC	09/03/2020	54	Darmstadt	Germany
Flash Flood	08/03/2020 12UTC	09/03/2020	54	Oberfranken	Germany
Flash Flood	08/03/2020 12UTC	09/03/2020	54	Stuttgart	Germany
Flash Flood	08/03/2020 12UTC	09/03/2020	78	Stockholms lan	Sweden
Flash Flood	08/03/2020 12UTC	09/03/2020	60	Hallands lan	Sweden
Flash Flood	08/03/2020 12UTC	09/03/2020	72	Sodermanlands lan	Sweden
Flash Flood	09/03/2020 00UTC	09/03/2020	36	Koblenz	Germany
Flash Flood	09/03/2020 00UTC	09/03/2020	54	Hannover	Germany
Flash Flood	09/03/2020 00UTC	09/03/2020	42	Karlsruhe	Germany
Flash Flood	09/03/2020 00UTC	09/03/2020	48	Vastra Gotalands lan	Sweden
Flash Flood	09/03/2020 12UTC	10/03/2020	42	Thuringen	Germany
Flash Flood	09/03/2020 12UTC	10/03/2020	18	Pas-de-Calais	France
Flash Flood	09/03/2020 12UTC	10/03/2020	24	Marne	France
Flash Flood	09/03/2020 12UTC	10/03/2020	18	Nord	France
Flash Flood	09/03/2020 12UTC	10/03/2020	18	Aisne	France
Flash Flood	09/03/2020 12UTC	10/03/2020	24	Derbyshire and Notting-	United Kingdom
1 10311 1 1000	55/05/2020 12010	10,03,2020	4	Delbyshine and Notting-	omica kinguom

Flash Flood	09/03/2020 12UTC	10/03/2020	18	Prov. West-Vlaanderen	Belgium
Flash Flood	09/03/2020 12UTC	10/03/2020	30	Hallands lan	Sweden
Flash Flood	09/03/2020 12UTC	10/03/2020	24	Shropshire and Stafford-	United Kingdom
Flash Flood	10/03/2020 00UTC	10/03/2020	36	Karlovarsky kraj	Czech Republic
Flash Flood	10/03/2020 00UTC	10/03/2020	36	Koln	Germany
Flash Flood	10/03/2020 00UTC	10/03/2020	36	Chemnitz	Germany
Flash Flood	10/03/2020 12UTC	11/03/2020	24	Thuringen	Germany
Flash Flood	11/03/2020 12UTC	12/03/2020	30	Sodermanlands lan	Sweden
Flash Flood	12/03/2020 00UTC	12/03/2020	54	Poltava	Ukraine
Flash Flood	12/03/2020 00UTC	12/03/2020	54	Kharkiv	Ukraine
Flash Flood	12/03/2020 00UTC	12/03/2020	60	Dnipropetrovs'k	Ukraine
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Gironde	France
Flash Flood	13/03/2020 12UTC	14/03/2020	48	Dytiki Makedonia	Greece
Flash Flood	13/03/2020 12UTC	14/03/2020	78	La Rioja	Spain
Flash Flood	13/03/2020 12UTC	14/03/2020	48	Korce	Albania
Flash Flood	13/03/2020 12UTC	14/03/2020	54	Ipeiros	Greece
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Pyrenees-Atlantiques	France
Flash Flood	13/03/2020 12UTC	14/03/2020	48	Blagoevgrad	Bulgaria
Flash Flood	13/03/2020 12UTC	14/03/2020	90	Castellon / Castello	Spain
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Landes	France
Flash Flood	13/03/2020 12UTC	14/03/2020	54	Kyustendil	Bulgaria
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Ostfold	Norway
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Aust-Agder	Norway
Flash Flood	13/03/2020 12UTC	14/03/2020	66	Dordogne	France
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Severoistocen	N. Macedonia
Flash Flood	13/03/2020 12UTC	14/03/2020	48	Pelagoniski	N. Macedonia
Flash Flood	13/03/2020 12UTC	14/03/2020	54	Region Juzne i Istocne	Serbia
Flash Flood	13/03/2020 12UTC	14/03/2020	54	Pernik	Bulgaria
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Kentriki Makedonia	Greece
Flash Flood	13/03/2020 12UTC	14/03/2020	42	Jugozapaden	N. Macedonia
Flash Flood	13/03/2020 12UTC	14/03/2020	90	Tarragona	Spain
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Vest-Agder	Norway
Flash Flood	13/03/2020 12UTC	14/03/2020	84	Guadalajara	Spain
Flash Flood	13/03/2020 12UTC	14/03/2020	84	Lleida	Spain
Flash Flood	13/03/2020 12UTC	14/03/2020	54	Sofia (stolitsa)	Bulgaria
Flash Flood	13/03/2020 12UTC	14/03/2020	42	Diber	Albania
Flash Flood	13/03/2020 12UTC	14/03/2020	60	Zaragoza	Spain
Flash Flood	13/03/2020 12UTC	14/03/2020	66	Lot-et-Garonne	France
Flash Flood	13/03/2020 12UTC	14/03/2020	78	Soria	Spain
Flash Flood	14/03/2020 00UTC	14/03/2020	48	Varmlands lan	Sweden
Flash Flood	14/03/2020 00UTC	14/03/2020	48	Akershus	Norway
Flash Flood	14/03/2020 00UTC	14/03/2020	48	Vastra Gotalands lan	Sweden
Flash Flood	14/03/2020 12UTC	15/03/2020	60	Teruel	Spain
Flash Flood	14/03/2020 12UTC	15/03/2020	60	Barcelona	Spain
Flash Flood	14/03/2020 12UTC	15/03/2020	60	Girona	Spain
Flash Flood	17/03/2020 120TC	17/03/2020	60	Novgorod	Russian Federa-
Flash Flood	17/03/2020 000TC 17/03/2020 12UTC	18/03/2020	24	Sodermanlands lan	Sweden
Flash Flood	19/03/2020 12UTC	20/03/2020	60	Alicante / Alacant	Spain
Flash Flood	19/03/2020 12UTC	20/03/2020	60	Albacete	Spain
Flash Flood	19/03/2020 12UTC	20/03/2020	36	Huelva	Spain
Flash Flood	19/03/2020 12UTC	20/03/2020	60	Murcia	Spain
11000	13,03,2020 12010	20,03,2020	55		Spani

Flash Flood	19/03/2020 12UTC	20/03/2020	60	Zaragoza	Spain
Flash Flood	19/03/2020 12UTC	20/03/2020	60	Cuenca	Spain
Flash Flood	20/03/2020 00UTC	20/03/2020	60	Castellon / Castello	Spain
Flash Flood	20/03/2020 00UTC	20/03/2020	54	Valencia / Valencia	Spain
Flash Flood	20/03/2020 12UTC	21/03/2020	48	Dnipropetrovs'k	Ukraine
Flash Flood	21/03/2020 00UTC	21/03/2020	48	Dytiki Makedonia	Greece
Flash Flood	21/03/2020 00UTC	21/03/2020	42	Jugozapaden	N. Macedonia
Flash Flood	21/03/2020 00UTC	21/03/2020	60	Teruel	Spain
Flash Flood	21/03/2020 00UTC	21/03/2020	18	Banskobystricky kraj	Slovakia
Flash Flood	21/03/2020 00UTC	21/03/2020	42	Guadalajara	Spain
Flash Flood	21/03/2020 00UTC	21/03/2020	48	Diber	Albania
Flash Flood	21/03/2020 00UTC	21/03/2020	60	Tarragona	Spain
Flash Flood	21/03/2020 00UTC	21/03/2020	48	Korce	Albania
Flash Flood	21/03/2020 00UTC	21/03/2020	48	Plovdiv	Bulgaria
Flash Flood	21/03/2020 00UTC	21/03/2020	48	Blagoevgrad	Bulgaria
Flash Flood	21/03/2020 00UTC	21/03/2020	42	Ipeiros	Greece
Flash Flood	21/03/2020 00UTC	21/03/2020	48	Pelagoniski	N. Macedonia
Flash Flood	21/03/2020 12UTC	22/03/2020	54	Navarra	Spain
Flash Flood	21/03/2020 12UTC	22/03/2020	48	Castellon / Castello	Spain
Flash Flood	22/03/2020 00UTC	22/03/2020	24	Pazardzhik	Bulgaria
Flash Flood	22/03/2020 00UTC	22/03/2020	60	Highlands and Islands	United Kingdom
Flash Flood	22/03/2020 000TC 22/03/2020 00UTC	22/03/2020	24	Smolyan	Bulgaria
Flash Flood	22/03/2020 000TC 22/03/2020 12UTC	23/03/2020	54	Almeria	Spain
Flash Flood	23/03/2020 120TC 23/03/2020 00UTC	23/03/2020	48	Haskovo	•
Flash Flood		23/03/2020	48 18		Bulgaria Greece
	23/03/2020 00UTC		48	lpeiros	
Flash Flood	24/03/2020 00UTC	24/03/2020		Dytiki Makedonia	Greece
Flash Flood	24/03/2020 00UTC	24/03/2020	72 72	Molise	Italy
Flash Flood	24/03/2020 00UTC	24/03/2020	72 72	Sterea Ellada	Greece
Flash Flood	24/03/2020 00UTC	24/03/2020	72	Basilicata	Italy
Flash Flood	24/03/2020 00UTC	24/03/2020	84	Thessalia	Greece
Flash Flood	24/03/2020 00UTC	24/03/2020	48	Korce	Albania
Flash Flood	24/03/2020 00UTC	24/03/2020	54	Kriti	Greece
Flash Flood	24/03/2020 00UTC	24/03/2020	54	Calabria	Italy
Flash Flood	24/03/2020 00UTC	24/03/2020	48	Sicilia	Italy
Flash Flood	24/03/2020 12UTC	25/03/2020	66	Marche	Italy
Flash Flood	24/03/2020 12UTC	25/03/2020	60	Pelagoniski	N. Macedonia
Flash Flood	24/03/2020 12UTC	25/03/2020	60	Abruzzo	Italy
Flash Flood	25/03/2020 00UTC	25/03/2020	60	Attiki	Greece
Flash Flood	25/03/2020 00UTC	25/03/2020	60	Jugozapaden	N. Macedonia
Flash Flood	26/03/2020 00UTC	26/03/2020	54	Murcia	Spain
Flash Flood	26/03/2020 00UTC	26/03/2020	60	Valencia / Valencia	Spain
Flash Flood	26/03/2020 00UTC	26/03/2020	36	Sardegna	Italy
Flash Flood	26/03/2020 00UTC	26/03/2020	54	Albacete	Spain
Flash Flood	26/03/2020 00UTC	26/03/2020	60	Albacete	Spain
Flash Flood	26/03/2020 12UTC	27/03/2020	24	Dytiki Makedonia	Greece
Flash Flood	27/03/2020 00UTC	27/03/2020	36	Kentriki Makedonia	Greece
Flash Flood	27/03/2020 12UTC	28/03/2020	6	Pelagoniski	N. Macedonia
Flash Flood	28/03/2020 12UTC	29/03/2020	48	Girona	Spain
Flash Flood	29/03/2020 00UTC	29/03/2020	60	Murcia	Spain
Flash Flood	29/03/2020 00UTC	29/03/2020	60	Albacete	Spain
Flash Flood	29/03/2020 12UTC	30/03/2020	60	Toledo	Spain

Flash Flood	29/03/2020 12UTC	30/03/2020	48	Alicante / Alacant	Spain
Flash Flood	29/03/2020 12UTC	30/03/2020	48	Granada	Spain
Flash Flood	29/03/2020 12UTC	30/03/2020	54	Jaen	Spain
Flash Flood	29/03/2020 12UTC	30/03/2020	60	Castellon / Castello	Spain
Flash Flood	29/03/2020 12UTC	30/03/2020	54	Cuenca	Spain
Flash Flood	30/03/2020 00UTC	30/03/2020	60	Pelagoniski	N. Macedonia
Flash Flood	30/03/2020 00UTC	30/03/2020	60	Zaragoza	Spain
Flash Flood	30/03/2020 00UTC	30/03/2020	42	Ciudad Real	Spain
Flash Flood	30/03/2020 00UTC	30/03/2020	60	Navarra	Spain
Flash Flood	30/03/2020 00UTC	30/03/2020	60	Soria	Spain
Flash Flood	30/03/2020 00UTC	30/03/2020	48	Teruel	Spain
Flash Flood	30/03/2020 00UTC	30/03/2020	60	Dytiki Makedonia	Greece
Flash Flood	30/03/2020 00UTC	30/03/2020	36	Valencia / Valencia	Spain
Flash Flood	30/03/2020 00UTC	30/03/2020	60	Jugozapaden	N. Macedonia
Flash Flood	30/03/2020 00UTC	30/03/2020	48	Diber	Albania
Flash Flood	30/03/2020 00UTC	30/03/2020	48	Blagoevgrad	Bulgaria

<sup>\*</sup> Lead time [hours] to the forecasted peak of the event

The European Flood Awareness System (EFAS) produces European overviews of ongoing and forecasted floods up to 10 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 GROW 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 SOOLOGIC) 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.

# **Contact details:**

European Centre for Medium-Range Weather Forecasts (ECMWF) Shinfield Park, Reading, RG2 9AX, UK

Tel: +44-118-9499-303 Fax: +44-118-9869-450 Email: comp@efas.eu

www.efas.eu www.ecmwf.int