

EFAS Bulletins

Yearbook 2007

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EFAS bulletins

Yearbook 2007

- **Foreword**
- **Peer-reviewed publications submitted during 2007**
- **A quick overview of the new EFAS-IS Web Interface**
- **All EFAS bulletins of 2007**

Foreword

During 2007 some major milestones were achieved in the development of the European Flood Alert System. The number of official EFAS partners with a MoU in place rose to 24 at the end of the year with several more institutes evaluating or preparing the signature of a MoU during 2008.

One of the major milestones of EFAS during 2007 was the migration of the system to a more powerful computer cluster and the launch of a new EFAS prototype. The new prototype features a range of improvements and has been entirely re-calibrated using the large data set that has been built up in the past years also with the help of National detached experts. Comparisons with

the old EFAS calibration showed an improved forecast quality in terms of discharge quantity and peak timing.

The second major milestone during 2007 was the launch of the new web-based EFAS Information System (EFAS-IS <http://efas-is.jrc.it/>). It enables the EFAS partners to access daily the forecasts online through the internet and build up expert knowledge with EFAS results not only during crisis situations. A document describing the EFAS-IS in all its details was distributed on the launch day of the service. With the feedback we receive from our partners about this new web service we will continue to improve and increase the functionality and design of EFAS-IS.

The third milestone achieved in 2007 was the high scientific output in form of publications on EFAS results, in particular on the probabilistic skill score analysis of EFAS results for the years 2005-2006 (J. Bartholmes et al., 2008, HESSD). A complete list of the scientific publications for the year 2007 can be found below.

number of severe floods for which EFAS was reporting to MoU partners was relatively small.. An overview of the EFAS external alerts during 2007 can be found in the EFAS Bulletin 2007(6). Generally the EFAS team received positive feedback on most of the forecasts issued. However, some alerts overestimated the actual flood event or the timing of the flood peak was not correct.

From an EFAS-forecasters point of view 2007 was a relatively calm year as the

The EFAS team wishes you a happy and tranquil new year!

Peer reviewed publications submitted during 2007:

Ramos, M-H, Bartholmes, J., Thielen-del Pozo, J (2007) Development of decision support products based on ensemble forecasts in the European flood alert system, *Atmospheric Science Letters*, 8 (4), 113 -119.

Younis, J., Thielen-del Pozo, J (2008) Case study on Elbe 2006 floods, submitted to *Atmospheric Science Letters*, special issue on HEPEX.

Bogner, K., Kalas, M (2008) Post-processing of probabilistic flood forecasting, submitted to *Atmospheric Science Letters*, special issue on HEPEX.

Younis, J., Anquetin, S., Thielen, J. (2008) The benefit of high-resolution operational weather forecasts for flash flood warning, *Hydrol. Earth Syst. Sci. Discuss.*, 5, 345-377.

Thielen, J., Bartholmes, J., Ramos, M.-H., de Roo, A. (2008) The European Flood Alert System – Part 1: Concept and development, *Hydrol. Earth Syst. Sci. Discuss.*, 5, 257-287.

Bartholmes, J., Thielen, J., Ramos, M.-H., Gentilini, S. (2008) The European Flood Alert System EFAS – Part 2: Statistical skill assessment of probabilistic and deterministic operational forecasts, *Hydrol. Earth Syst. Sci. Discuss.*, 5, 289-322.

Kalas M., Ramos, M.-H. (2008) Case study on Danube 2006 floods, *J. Hydrology and Hydromechanics*, in press.

F. Pappenberger, Bartholmes, J., Thielen, J. (2007) TIGGE: Medium Range multi model weather forecast ensembles in Flood Forecasting (A Case Study), Technical Memorandum of ECMWF.

F. Pappenberger et al. (2008) New dimensions in early flood warning across the globe using meteorological Grand ensembles (submitted to *Nature Geoscience*)

A quick overview of the new EFAS-IS Web Interface

On request of the EFAS partners an online viewing facility for EFAS results has been developed. It consists of a password secured website enabling the authorized users to view the latest forecasts. The information displayed resembles very much the information that has been distributed previously with the EFAS alert reports in the past (see Figure 1). Hence, extensive flood alert reports sent to the concerned partners are now replaced with short alert emails with a brief description of the possible flooding and an indication to consult the EFAS-IS web for detailed information.

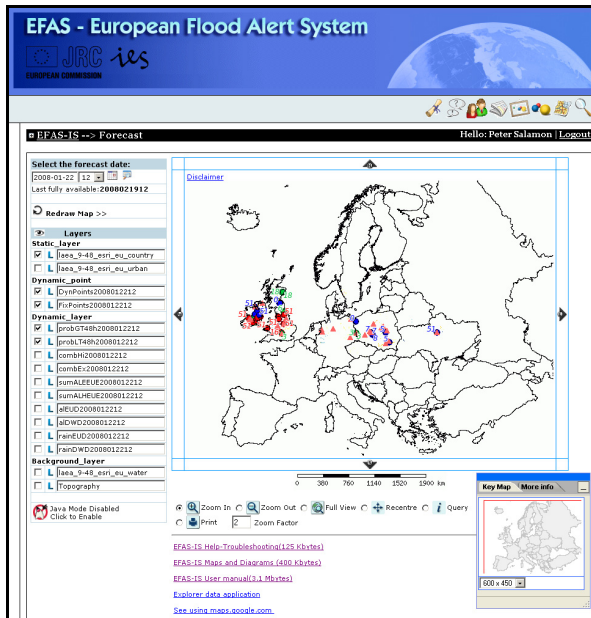


Figure 1 Screenshot of the online flood forecasting system

By choosing different layer layers the user can now get specific information about the predictions made by the different meteorological forecasts as well as get detailed time series of the development of the flood alert by clicking on the reporting points.

Furthermore, the EFAS-IS website contains an updated database of press articles (collected through the European Media Monitor) concerning floods in Europe (see Figure 2). With this tool the user will be enabled to search information about a specific flooding

defining only the time when it occurred and the river basin. The EFAS team plans also to extend this database by giving the users the possibility to upload their post-event reports about floods in their specific river basin and to include a discussion/comment forum.

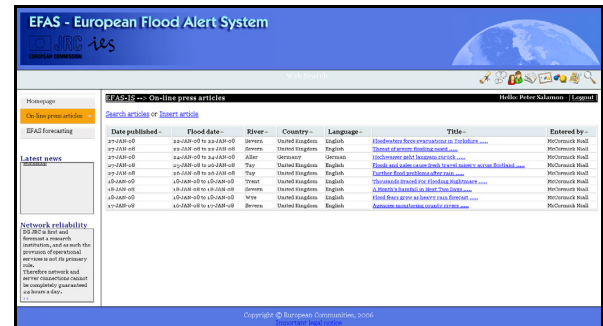


Figure 2 Screenshot of the press articles concerning floods in Europe

Finally, another important improvement with the development of the EFAS-IS system is the enhanced communication between the EFAS team and the MoU partners. EFAS-IS provides the user with the possibility to give immediately a feedback on the flood alerts by simply clicking a button and specifying the issues encountered. Furthermore, through the more direct involvement of the MoU partners by being able to check the forecasts concerning their specific river basin on a daily basis, the EFAS team expects to receive an increased number of suggestions on how to improve the overall system. Based on already received feedback the EFAS teams plans to further improve the user-friendliness and design of EFAS-IS throughout 2008.

Acknowledgements

Meteorological forecast data are provided by ECMWF and DWD. The observed meteorological data are provided by the JRC MARS Unit. The European Media Monitoring (EMM) information is provided by JRC IPSC. Thanks also to all EFAS moU partners that help through their feedback to improve the system.



EFAS bulletin
Issue 2007(1) Jan/Feb 2007

- **EFAS news**
- **Meteorological situation**
- **Simulated hydrological situation by the EFAS**
- **Case study : Flooding in Loire tributary Vienne**

EFAS news

Except for some smaller scale flooding in the UK, major floods did not occur in Europe in January and February 2007. At the end of February EFAS early warning reports were sent to the French partners because a big event was forecasted for the beginning of March. A case study regarding this forecast is presented in more detail in this Bulletin.

On the 22nd of January 2007 the 2nd EFAS user meeting took place at the JRC in Ispra. A review of EFAS results in 2006 was given, and the modifications for the new prototype that is envisaged to replace the current system in spring 2007. Part of the new prototype will be a password protected EFAS web user interface. This portal will give the EFAS partners the possibility to check EFAS forecasts themselves on a daily basis. This will help to familiarize the EFAS users with the system enabling them to build up experience and allowing them to judge the EFAS forecast situation day by

day. Instead of the previous EFAS information reports the EFAS partners will receive a brief warning statement with the request to consult the EFAS webpages.

After the call for renewal last year all except 1 partner organisation have renewed the new EFAS collaboration. An additional partner has requested to join the network in February. In total 22 hydrological services are active in the EFAS partner network

On 27-29th June 2007 the 3rd HEPEX workshop will be held at the hotel La Palma in Stresa at the Lago Maggiore, Italy. HEPEX is a large exchange platform regarding EPS research, bringing together researchers in fields of meteorology and hydrology from all over the world. For further information consult the HEPEX homepage <http://hydis8.eng.uci.edu/hepex>

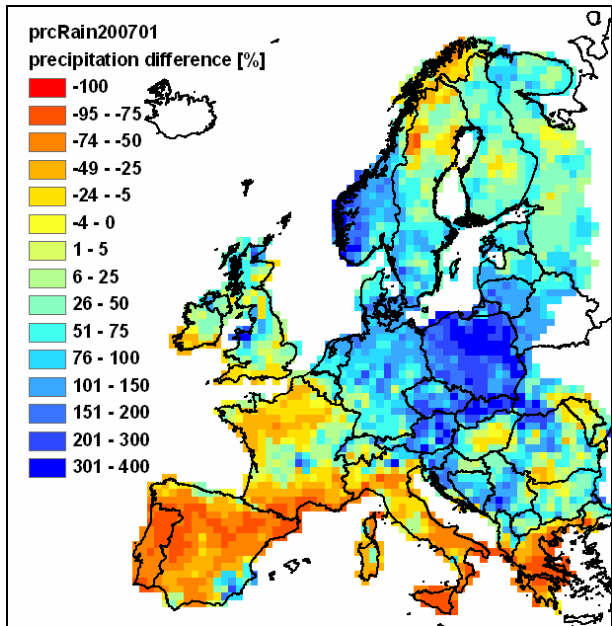


Figure 1 : Difference in precipitation [%]01 2007 in comparison to long term average (1990-2004)

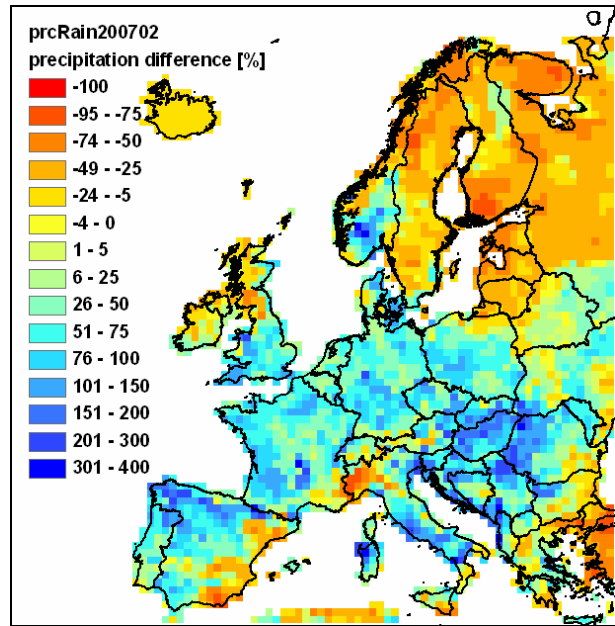


Figure 3 : Difference in precipitation [%]02 2007 in comparison to long term average (1990-2004)

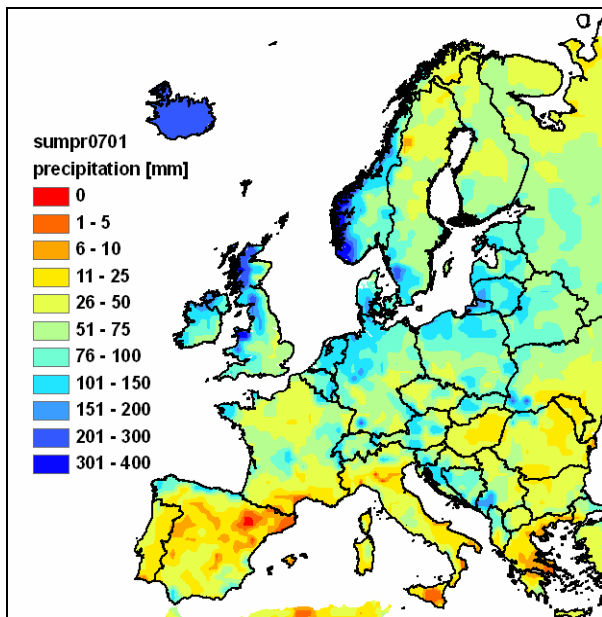


Figure 2 : Accumulated Precipitation [mm]01 2007

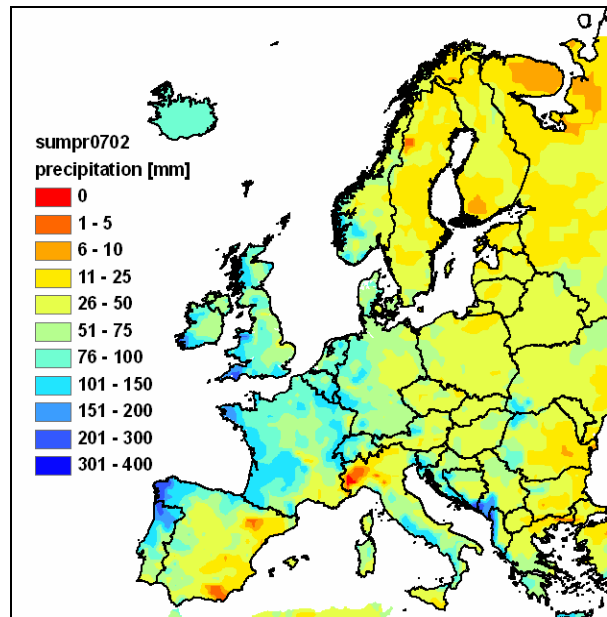


Figure 4 : Accumulated Precipitation [mm]02 2007

Meteorological situation Jan/Feb 2007

In January the North-West of Europe received more than average precipitation amounts for this month (from 1990 to 2004, observed MARS data) (see Fig.1) and precipitation amounts of up to 300mm were observed. The South of Europe and the Western Alps were comparably dry with precipitation in most places below 25mm.

In February in most of Europe more precipitation than average was observed. Only the West Alps did almost receive no rain again (see Fig. 3 and 4).

For actual soil moisture see also: <http://natural-hazards.jrc.it/>.

Simulated hydrological situation by EFAS

An overview of the threshold exceedances resulting from LISFLOOD simulations using observed meteorological data (JRC-MARS) is shown in figures 5 and 6.

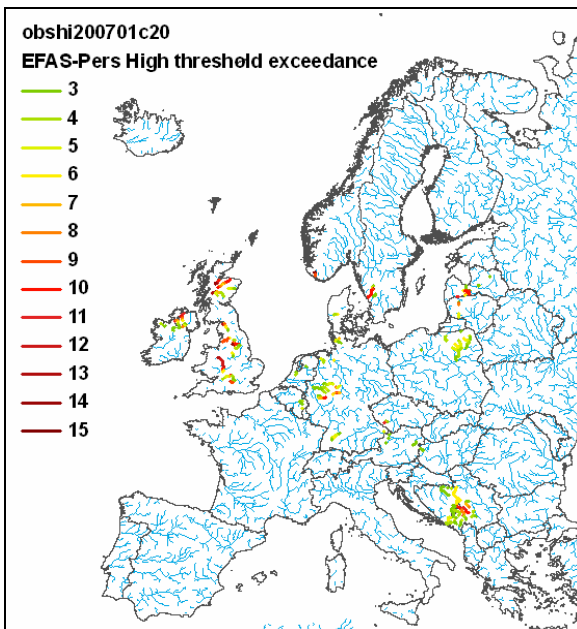


Figure 5 : EFAS high threshold exceedance (200701) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

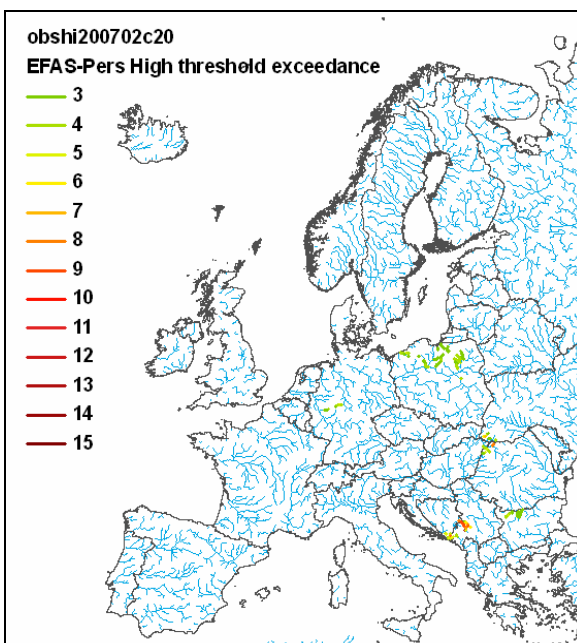


Figure 6 : EFAS high threshold exceedance (200702) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

In January flooding took place in the UK in several rivers including the Severn. EFAS has been monitoring the EFAS but because the UK is not yet a member of the EFAS official EFAS alert could be send. Feedback from the Environment Agency for England and Wales showed that leadtimes of more than 3 days were achieved by EFAS. It has to be noted, however, that the degree of uncertainty was also very high.

In February no large scale flooding was observed in Europe and the LISFLOOD simulations with observed data only reached the EFAS HAL in some river-stretches with small upstream areas (see Fig. 6).

At the end of February, starting at 26.02. EFAS reported to the French authorities the possibility of wide spread flooding starting on the 03.03.2007. These had been picked up as intermittent signal already a few days earlier.

Flooding was actually observed and was large spread especially in the Vienne, a Loire tributary with an upstream area of more than 20.000 km². Flooding or bankful conditions were also observed in other regions for which an EFAS alert was issued. Namely, in the Rhône, the Seine and the Dordogne. The EFAS forecasts turned out to be accurate in magnitude and timing.

The French EFAS partners gave very positive feedback and actually used the EFAS reports in their own forecasting process.

Fig. 7 shows the evolution of the EFAS forecasts on a daily basis as well as the beginning of the observed flooding. The colours in the boxes denote which EFAS threshold was exceeded on the respective forecast date. The blue arrow indicates from which date onwards flooding has been observed for this point in the river Vienne.

In the left part the probabilistic ECMWF forecasts are reported, showing in the boxes how many EPS members exceeded the high EFAS threshold for the respective forecast date. In the middle the DWD and on the right the ECMWF deterministic results are shown.

As can be seen in the diagrams, the first EFAS information report could have been

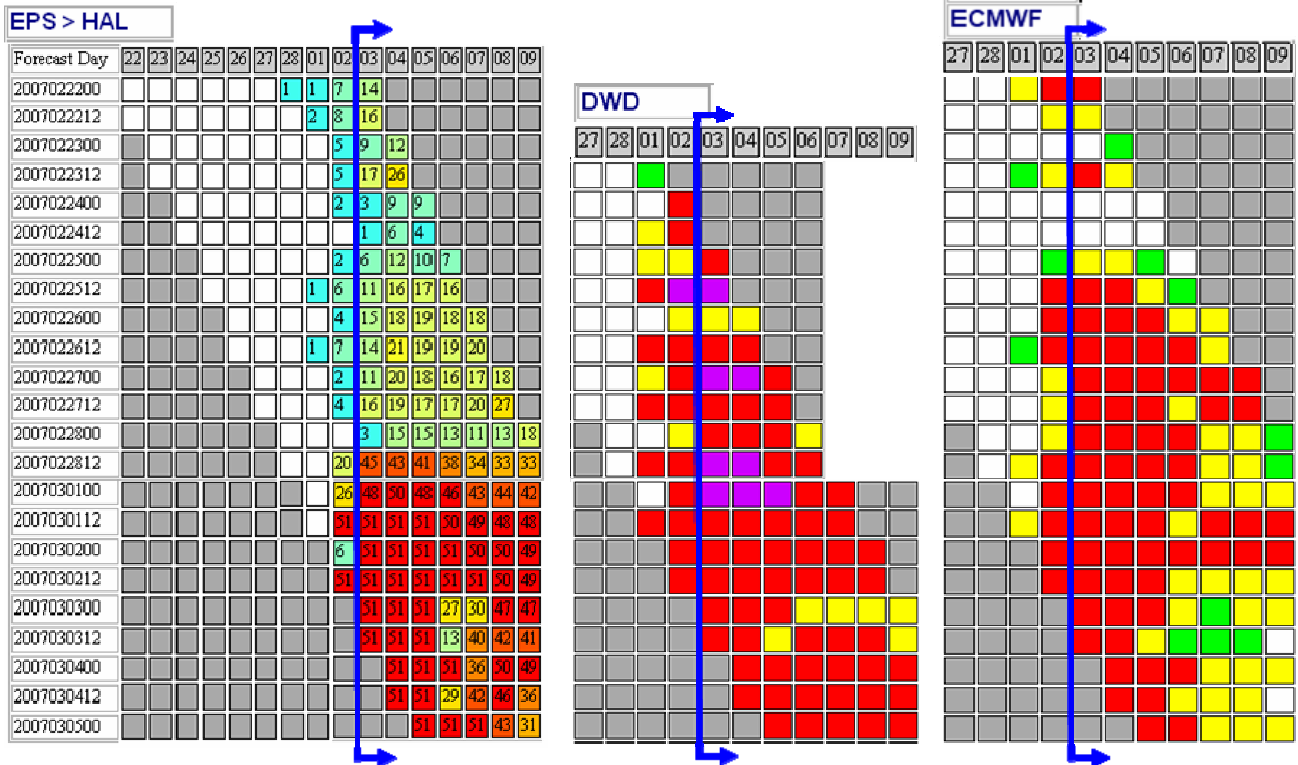


Figure 7 : EFAS historic diagram for the Vienne (ups = 20.000 km²) flooding around 20070303. On the far left the dates on which the forecast was done and on the top the date for which the forecast was valid.

sent 1 or 2 days earlier based on EPS results only. But because the number of EPS above EFAS high threshold decreased in forecasts based on the 24th, the team decided to wait for confirmation on the trend in EPS. It seemed on the 26th that the trend would continue and thus EFAS information reports were sent.

In the close future these delays can be avoided (especially at smaller lead times, were it is more crucial) through the use of the password protected EFAS portal. In this special case, for example, it would have been up to the user to decide whether or not a longer lead time at expenses of a higher false alarm rate was preferred. By using the interface EFAS users can build up their own understanding of the system, deciding themselves when to regard the forecast as worthwhile to react upon and when not.

Acknowledgements

Meteorological forecast data are provided by ECMWF and DWD. The observed meteorological data are provided by the JRC MARS Unit. The European Media Monitoring (EMM) information is provided by JRC IPSC.

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EFAS bulletin
Issue 2007(2) *Mar/Apr 2007*

- ***EFAS news***
- ***Meteorological situation***
- ***Simulated hydrological situation by the EFAS***

EFAS news

As reported already in the last Bulletin large scale flooding was forecasted by EFAS and took place in France at the beginning of March. April was very warm and dry and no flooding was reported or forecasted in Europe.

The EFAS is being migrated to a more powerful computer cluster and the new EFAS prototype will be launched soon. It features a range of improvements and has been entirely re-calibrated using the large data set that has been built up in the past years also with the help of national detached experts. A further improvement is that the EFAS-EPS will be run at a higher time resolution.

After setting up a dedicated new webserver the improved password protected external EFAS user interface will be made operational soon and results of the new prototype will be accessible on the web for EFAS MoU partners. EFAS users can then

build their own experience with the day to day EFAS forecasts and can study the best way for integrating their forecasts with the additional EFAS forecast information.

After a transition period the sending of full EFAS information reports by the EFAS team will be discontinued, as all necessary information will be available in real time through the EFAS web interface.

On **27-29th June 2007** the **3rd HEPEX workshop** will be held at the hotel La Palma in Stresa at the Lago Maggiore, Italy. HEPEX is a large exchange platform regarding EPS research, bringing together researchers in fields of meteorology and hydrology from all over the world. For further information consult the HEPEX homepage <http://hydis8.eng.uci.edu/hepex>

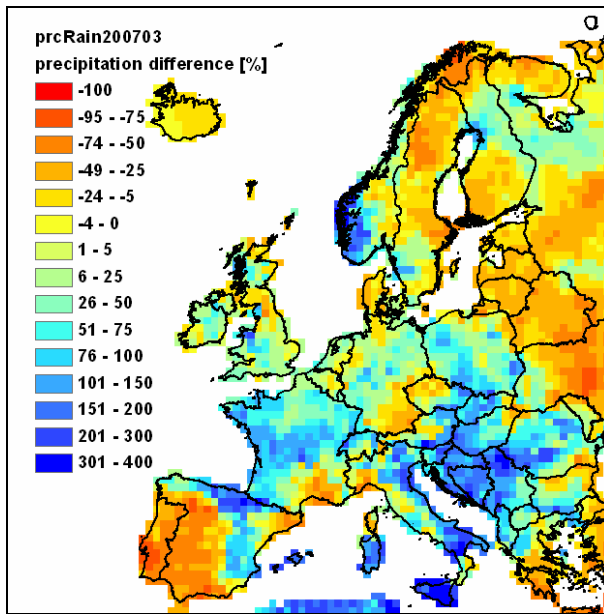


Figure 1 : Difference in precipitation [%]03 2007 in comparison to long term average (1990-2004)

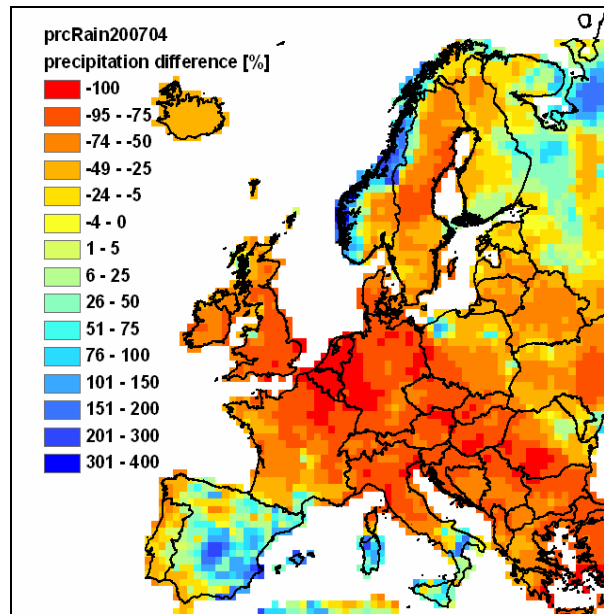


Figure 3 : Difference in precipitation [%]04 2007 in comparison to long term average (1990-2004)

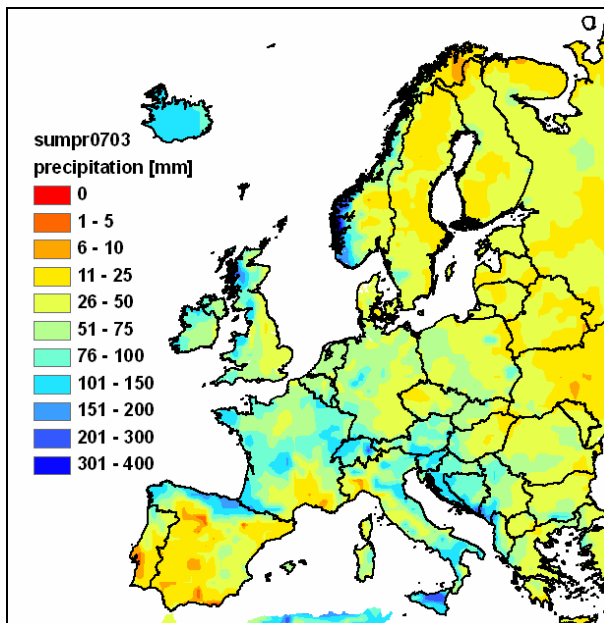


Figure 2 : Accumulated Precipitation [mm]03 2007

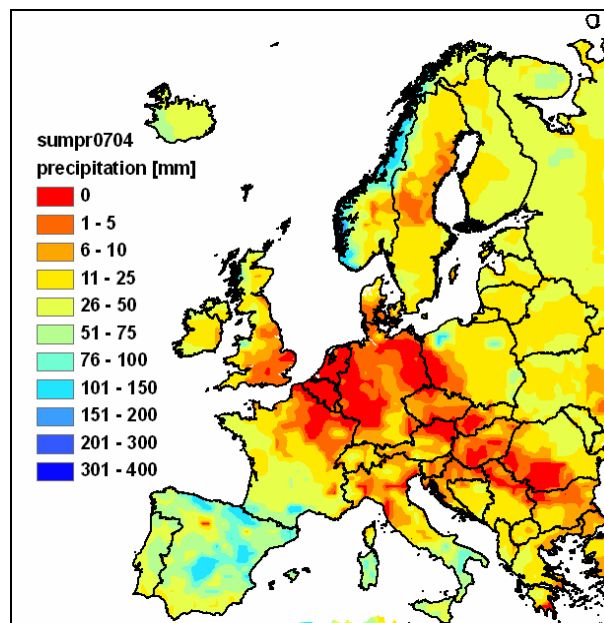


Figure 4 : Accumulated Precipitation [mm]04 2007

Meteorological situation Mar/Apr 2007

In March France, the North of Spain and the South of Italy received more than average precipitation amounts for this month (from 1990 to 2004, observed MARS data) (see Fig.1) and precipitation amounts of up to 200mm were observed (see Fig.2).

April was extremely dry and just some regions in the South of Europe precipitation amounts of more than 20 mm were observed, while most of Europe did not

receive any precipitation at all (see Fig. 3 and 4).

For actual soil moisture see also: <http://natural-hazards.jrc.it/>.

Simulated hydrological situation by EFAS

An overview of the threshold exceedances resulting from LISFLOOD simulations using observed meteorological data (JRC-MARS) is shown in figures 5 and 6.

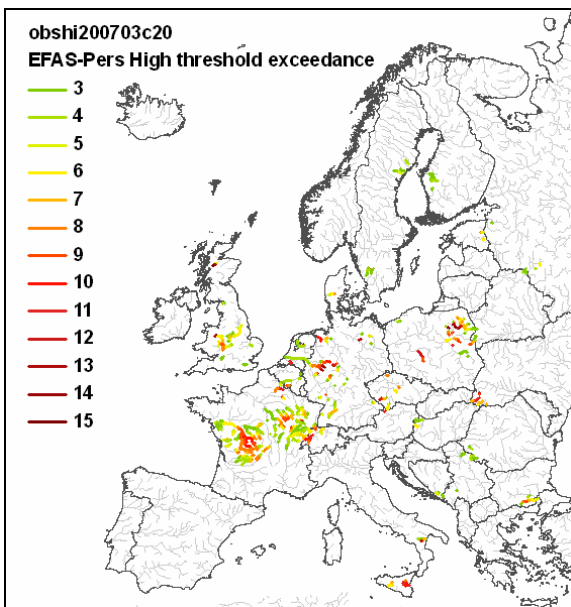


Figure 5 : EFAS high threshold exceedance (200703) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

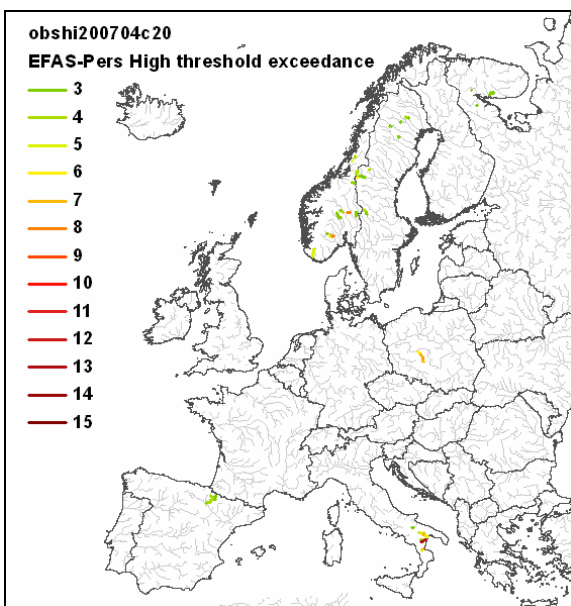


Figure 6 : EFAS high threshold exceedance (200704) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

In March large scale flooding was observed in France (especially in the Vienne, a Loire tributary with an upstream area of more than 20.000 km²) and the LISFLOOD simulations with observed data reached the EFAS HAL in several French rivers (see Fig. 5). These events had been forecasted with up to 6 days lead time and reported to the French MoU partner [see also EFAS bulletin

2007(1)]. The EFAS forecasts turned out to be accurate in magnitude and timing and were incorporated in the forecasts of the French authorities, which gave very positive feedback.

In the second half of March EFAS information reports were sent to the Romanian EFAS partners regarding several Danube tributaries (especially Ialomita and Arges) and actually large scale flooding was observed in these areas.

In April Spain received up to 150 mm of precipitation and flooding was observed in the Ebro catchment. No full EFAS information reports were sent as the EFAS forecast leadtime was in the 48 h range. However, the EFAS team informed the Ebro authorities with an informal EFAS information of a possible flood event as flood forecast for this region were quite rare in the past years. In this case EFAS forecasts with even just 2 days of leadtime were of use to the national authorities as their local forecasts detected the event with the right magnitude only hours before it happened. In the future the EFAS web interface will make it possible for the MoU partners to check also forecasts that are in this 48 h leadtime range.

Acknowledgements

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EFAS bulletin
Issue 2007(3) *May/June 2007*

- ***EFAS news***
- ***Meteorological situation***
- ***Simulated hydrological situation by the EFAS***

EFAS news

The EFAS has been migrated to a more powerful computer cluster which is up to 30% faster than the old machine, thus making forecasts available earlier during the day. Now the new EFAS prototype is run in parallel to the old operational system for some time for testing purposes. It is still running with the old time resolution. In the next months also the time resolution will be unified to 6 hourly time steps for all forecast types.

The new prototype features a range of improvements and has been entirely re-calibrated using the large data set that has been built up in the past years. Tests

showed that the new calibration together with the newly calculated thresholds lead to great quantitative improvement of calculated discharges and forecasts.

The 3rd HEPEX workshop that was announced also in previous EFAS bulletins was a great success and fostered new collaborations in the scientific community linked to Ensemble prediction. More information (also workshop specific) can be found on the HEPEX homepage <http://hydis8.eng.uci.edu/hepex>

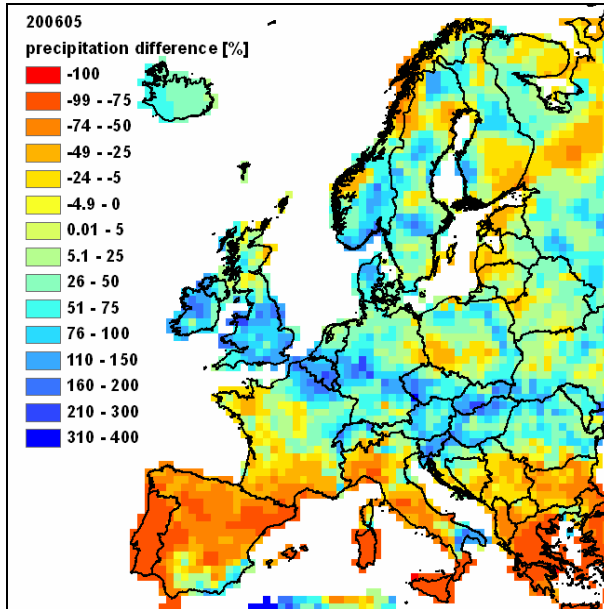


Figure 1 : Difference in precipitation [%]05 2007 in comparison to long term average (1990-2004)

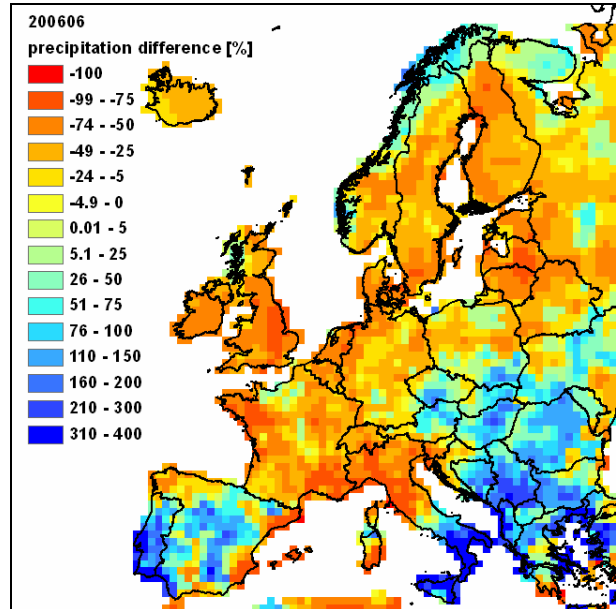


Figure 3 : Difference in precipitation [%]06 2007 in comparison to long term average (1990-2004)

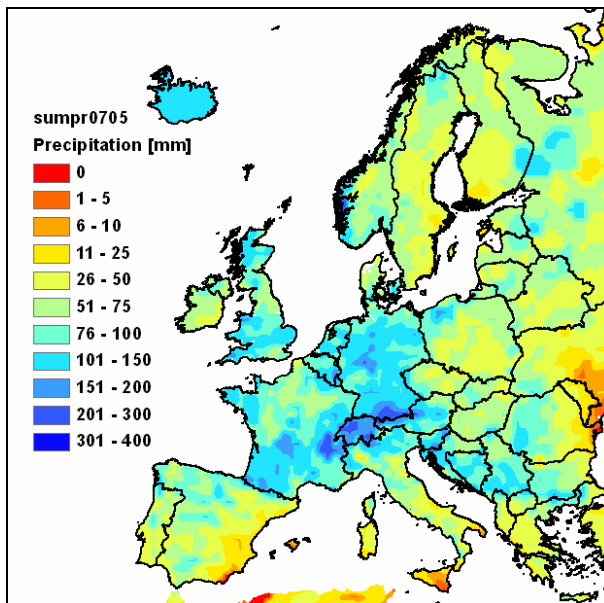


Figure 2 : Accumulated Precipitation [mm]05 2007

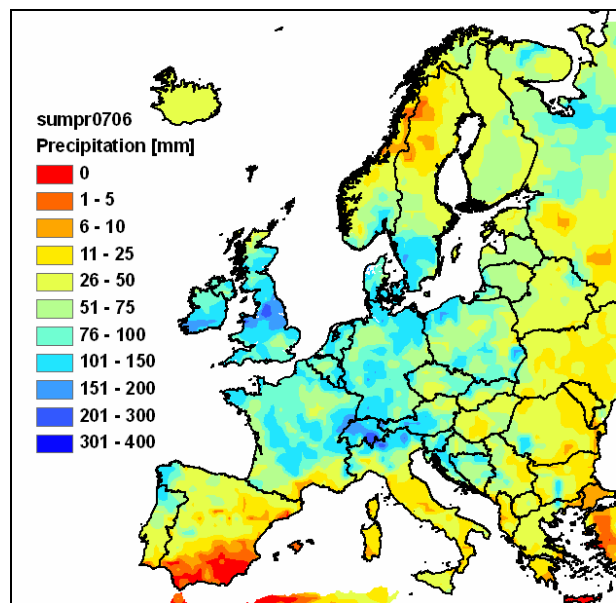


Figure 4 : Accumulated Precipitation [mm]06 2007

Meteorological situation May/Jun 2007

In May the North of Europe received more than average precipitation amounts for this month (from 1990 to 2004, observed MARS data) (see Fig.1) and precipitation amounts of up to 400mm were observed (see Fig.2). June was relatively dry and the areas that are marked blue in Fig. 3 showing higher than average precipitation have to be seen

in context with Fig.4 where it can be seen that actual precipitation amounts of more than 150 mm were only observed in few places whereas the South of Europe was quite dry with precipitation amounts less than 25mm.

For actual soil moisture see also: <http://natural-hazards.jrc.it/>.

Simulated hydrological situation by EFAS

An overview of the threshold exceedances resulting from LISFLOOD simulations using observed meteorological data (JRC-MARS) is shown in figures 5 and 6.

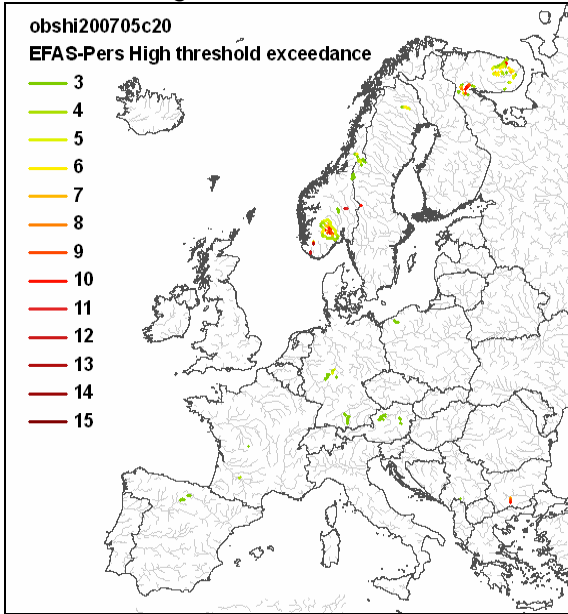


Figure 5 : EFAS high threshold exceedance (200705) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

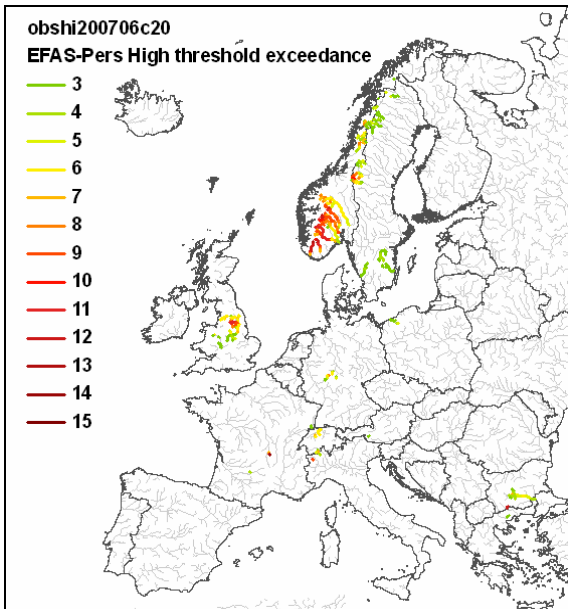


Figure 6 : EFAS high threshold exceedance (200706) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

In May no large scale flooding was simulated (see Fig. 5). In June possible flooding was simulated only in the South of

Norway and for few rivers in the UK (see Fig. 6), but following MoU rules no EFAS alerts were sent out.

Acknowledgements

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EFAS bulletin

Issue 2007(4) Jul/Aug 2007

- *EFAS news*
- *Meteorological situation*
- *Simulated hydrological situation by the EFAS*
- *Case study Rhine with new EFAS calibration*

EFAS news

The new EFAS prototype is now running pre-operationally. Comparisons with the old EFAS calibration showed an improved forecast quality in terms of discharge quantity and peak timing.

As well, the new web-based EFAS Information System (EFAS-IS) will be launched in mid October 2007. It will enable the EFAS partners to access the EFAS forecasts online through the internet. A document describing the EFAS interface in all its details will be distributed on the launch day of the service. Based on the feed back of the MoU partners, the interface will be fine tuned and at the end of the

process substitute the old procedure of getting full EFAS information reports (EIR) in the case of forecasted flood events. The users can check EFAS results on a daily basis (including weekends) and the EFAS team will only send short warnings via email in case of special events.

In July the UK was hit by severe weather which caused widespread flooding (see Fig. 5) which was predicted by EFAS with 2-3 days of leadtime. A detailed EFAS forecast analysis of this flooding episode was sent on request to the UK Environmental Agency for England and Wales.

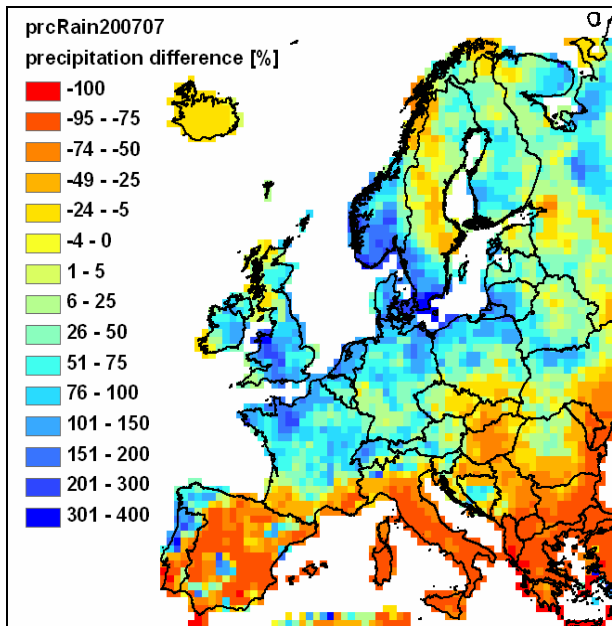


Figure 1 : Difference in precipitation [%]07 2007 in comparison to long term average (1990-2004)

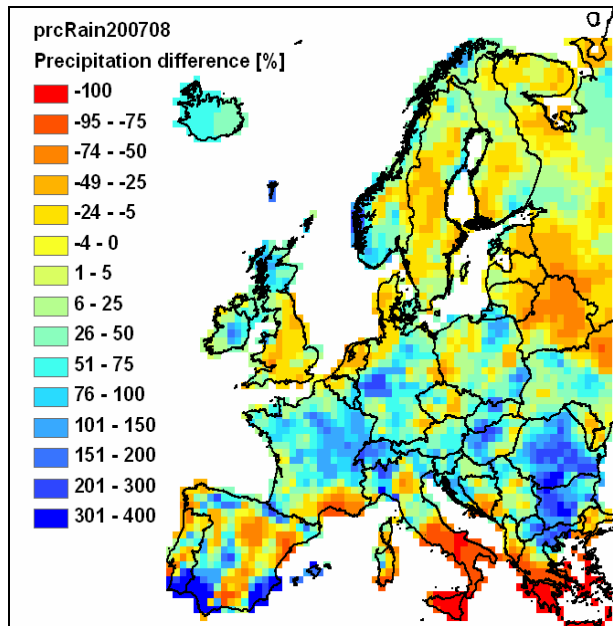


Figure 3 : Difference in precipitation [%]08 2007 in comparison to long term average (1990-2004)

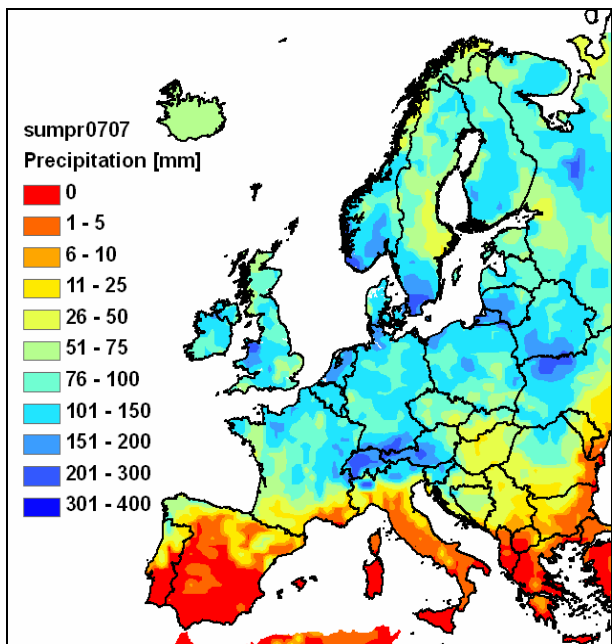


Figure 2 : Accumulated Precipitation [mm]07 2007

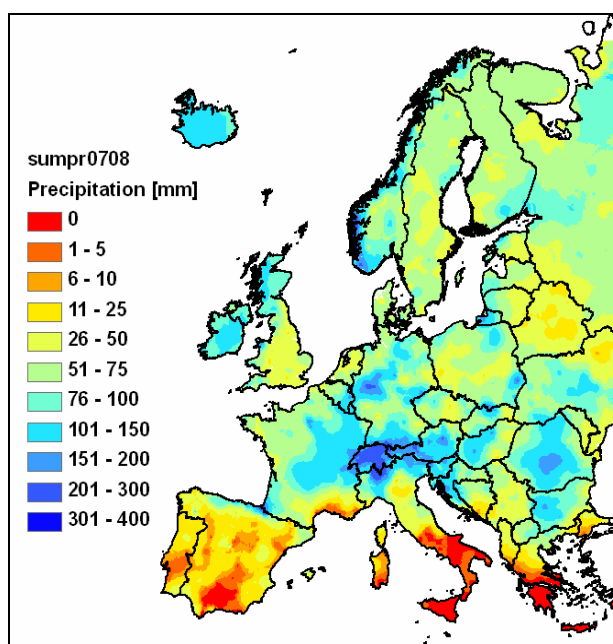


Figure 4 : Accumulated Precipitation [mm]08 2007

Meteorological situation Jul/Aug 2007

In July the northern half of Europe received more than average precipitation amounts for this month (from 1990 to 2004, observed MARS data) (see Fig.1) and precipitation amounts of up to 400mm were observed in several places (see Fig.2). In the southern half almost no precipitation was measured and most of Spain, Italy and Greece received 0mm precipitation. The pattern for

August shows (see Fig. 4) slightly more precipitation in Spain and Northern Italy and the Balkans and less in the North. In the Alps precipitation up to 350mm was observed while the South of Italy received mostly no rain at all.

For actual soil moisture see also: <http://natural-hazards.jrc.it/>.

Simulated hydrological situation by EFAS

An overview of the threshold exceedances resulting from LISFLOOD simulations using observed meteorological data (JRC-MARS) is shown in figures 5 and 6. The flooding events in UK in July and in August in Germany are clearly visible.

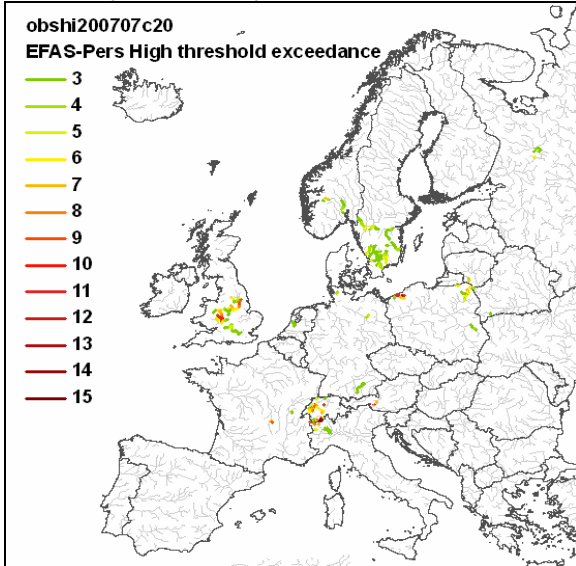


Figure 5 : EFAS high threshold exceedance (200707) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

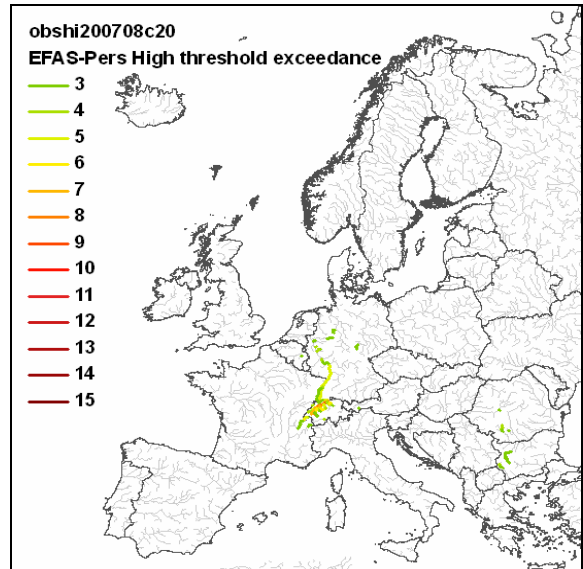


Figure 6 : EFAS high threshold exceedance (200708) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

In August EFAS information alerts were sent to the respective EFAS partners for the Rhine in Germany starting on the 06th of August. The flood peak in the middle Rhine was observed around the 11th of August. The sequence of EFAS alerts (done with the new calibration) is reported in Figure 7.

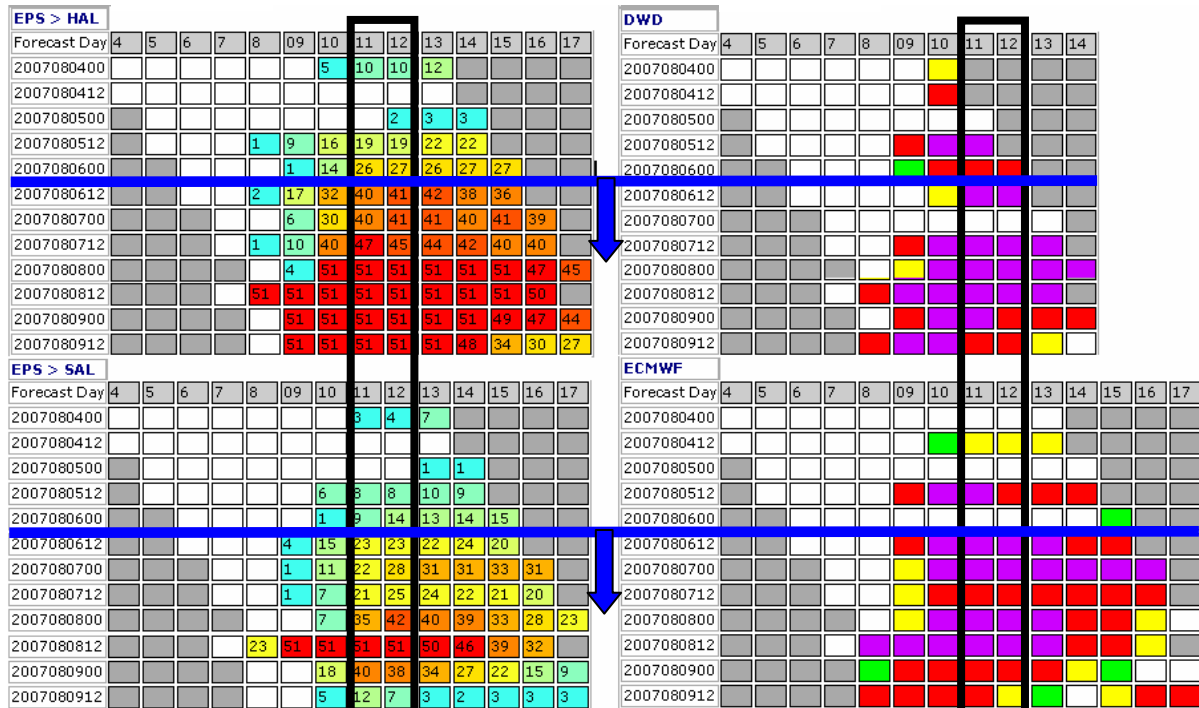


Figure 7 : Sequence of EFAS forecasts for the Rhine (after confluence with Main). The EFAS reports were send from 20070806 to the respective EFAS partners.

When sending the 3rd EFAS information report for the Rhine on the 8th of August the EFAS was predicting even the exceedance of EFAS severe alert threshold (SAL) with all 51 EPS members and all deterministic forecasts. On the following dates the forecasted severity of the situation decreased again and on the 10th of August the EFAS SAL was only exceeded for the upper Rhine.

Severe flooding was observed in Switzerland which extended down to Karlsruhe and shipping was suspended for several days over long reaches.

Acknowledgements

Meteorological forecast data are provided by ECMWF and DWD. The observed meteorological data are provided by the JRC MARS Unit. The European Media Monitoring (EMM) information is provided by JRC IPSC.

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EFAS bulletin
Issue 2007(5) Sep/Oct 2007

- **EFAS news**
- **Meteorological situation**
- **Simulated hydrological situation by the EFAS**
- **Case Study flood forecast for rivers Siret and Jiu (Romania)**

EFAS news

Since the end of October the EFAS Information System – EFAS-IS - (<http://efas-is.jrc.it/>) can be accessed through any web browser. EFAS-IS is password protected and provides real-time information on EFAS forecasts and online press articles about flood events to EFAS partners only. In the future it may contain more information and this will be discussed at the next annual EFAS meeting.

Documentation on EFAS-IS was sent out to all MoU partners. It describes the changes to the previous prototype, how to log on and how to use the EFAS-IS. Information on the quality of EFAS simulations based on

observed data for different catchments and the performance of the new EFAS during recent case studies are also annexed.

In the future, the full EFAS information reports will be replaced with short EFAS Alert Emails to the specific partners asking them to consult EFAS-IS. Furthermore a

The JRC is planning to hold the 3rd annual EFAS meeting on Monday, the 28th January 2008. The meeting is still to be confirmed and all MoU partners will receive the official invitations and agenda before Christmas.

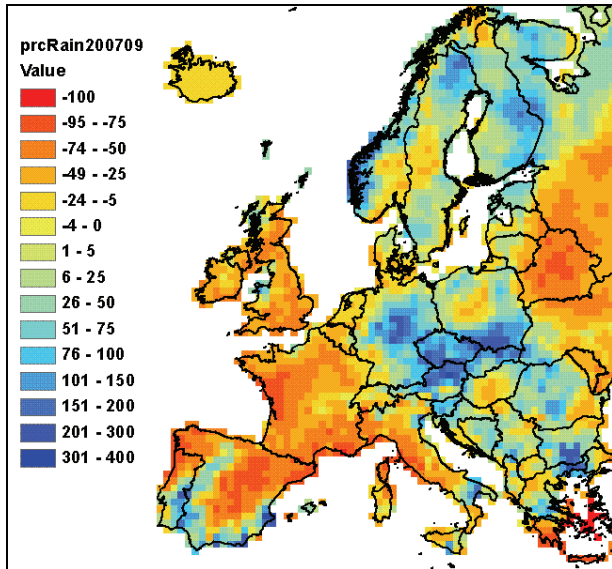


Figure 1 : Difference in precipitation [%]09 2007 in comparison to long term average (1990-2004)

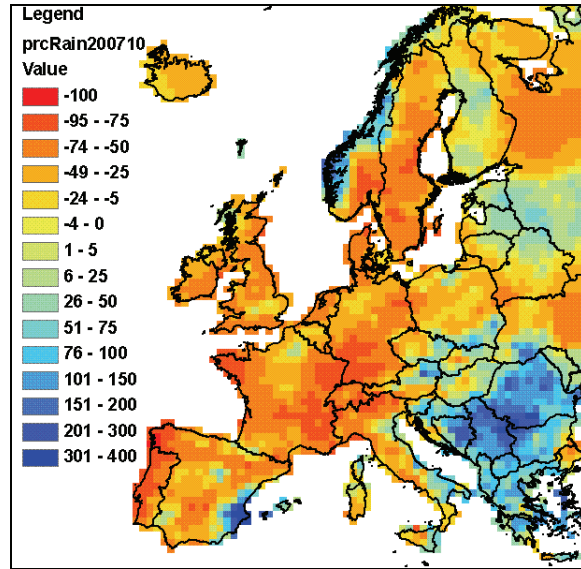


Figure 3 : Difference in precipitation [%]10 2007 in comparison to long term average (1990-2004)

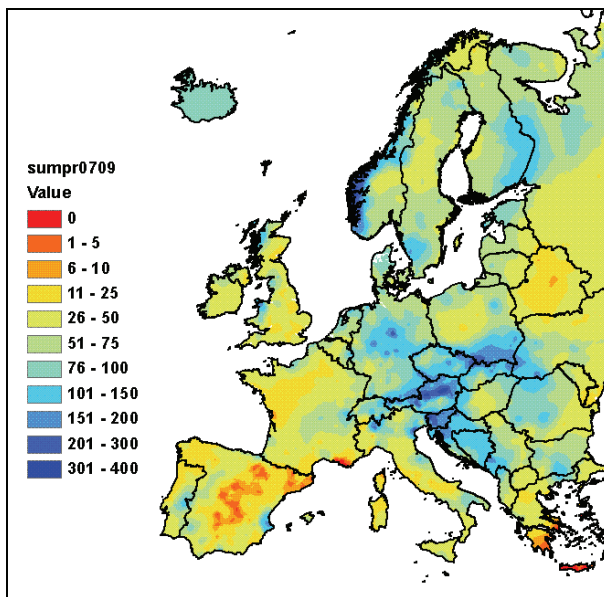


Figure 2 : Accumulated Precipitation [mm]09 2007

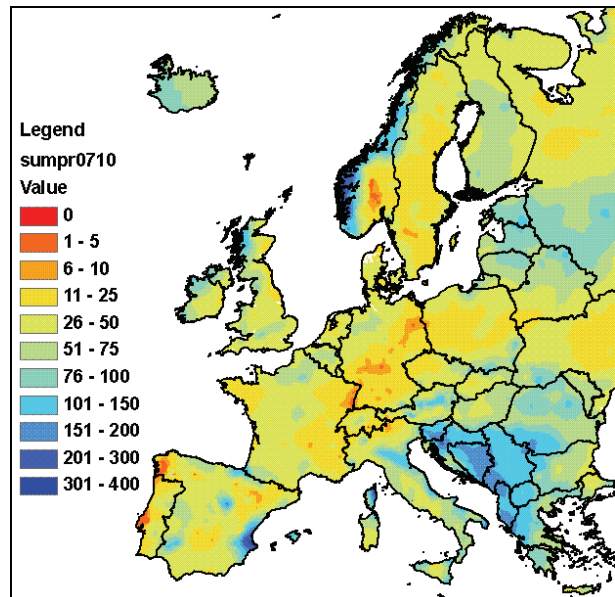


Figure 4 : Accumulated Precipitation [mm]10 2007

Meteorological situation Sep/Oct 2007

In September Central and Eastern Europe received more than average precipitation amounts for this month (from 1990 to 2004, observed MARS data) (see Fig.1) and precipitation amounts of between 300 to 400mm were observed in several places (see Fig.2). In the British Islands, France, Italy, and large parts of the Iberian Peninsula significantly less precipitation than average amounts for the same month

was observed and especially the centre of Spain received almost no rain. During October basically all of Europe received significantly less precipitation than average precipitation amounts for the same month (see Fig. 4). Only the Balkan region received more precipitation than usual with up to 200mm of observed precipitation in several places.

For actual soil moisture see also: <http://natural-hazards.jrc.it/>.

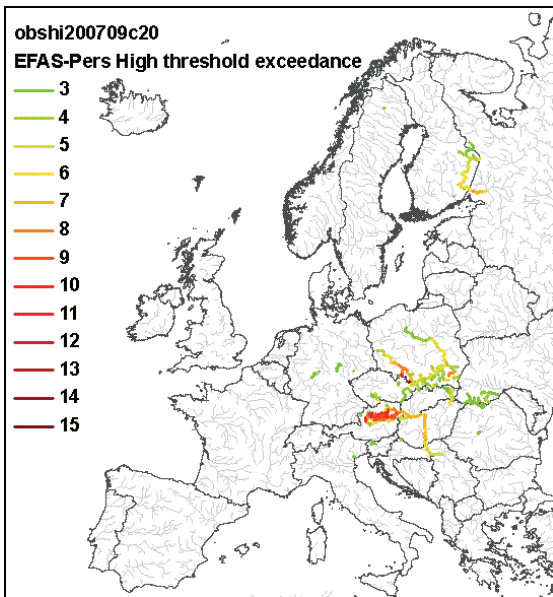


Figure 5 : EFAS high threshold exceedance (200709) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

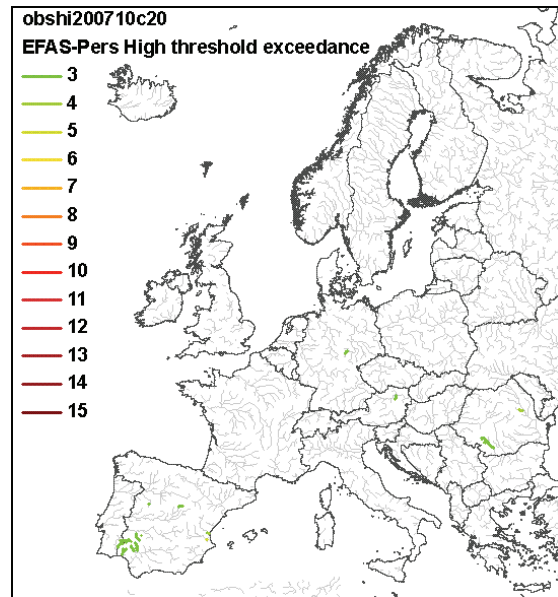


Figure 6 : EFAS high threshold exceedance (200710) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

Simulated hydrological situation by EFAS

An overview of the threshold exceedances resulting from LISFLOOD simulations using observed meteorological data (JRC-MARS) is shown in figures 5 and 6.

In September EFAS information alerts were sent to the respective EFAS partners for the Danube in Germany, Czech Republic, Slovakia, Rumania, Bulgaria, Austria, starting on the 06th of September. The flood peak for the Danube in Slovakia was predicted around the 9th of September and on the 10th for the Danube further downstream in Hungary.

In October EFAS information alerts were sent to the respective EFAS partners for the rivers Siret and the Jiu in Romania on the 20th of October. The flood peak was predicted for the 26th of October.

Case Study flood forecast for rivers Siret and Jiu (Romania)

On the 19th October the Romanian and Moldavian water authorities were contacted by email announcing that EFAS forecasts a potential flood situation. Should the situation continue to be forecasted full EFAS Information Reports would be sent. These followed from the 20th October onwards for tributaries to the Siret and Jiu. The exceedance of EFAS high levels were simulated from the 24th onwards (see Figure 7). Although the time of peaks shifted slightly during the subsequent flood forecasts the timing remained relatively stable.

In total 6 reports were sent. For the first time, however, EFAS forecasts could also be monitored by the National hydrological service through the newly launched EFAS web-interface.

Romanian water authorities reported to EFAS on the 23rd that flood warnings were transmitted for some tributaries of the Siret, Ialomita and other rivers in the SW part of the country. Overall the event was well forecasted by EFAS with leadtimes of 5-7 days depending on location.

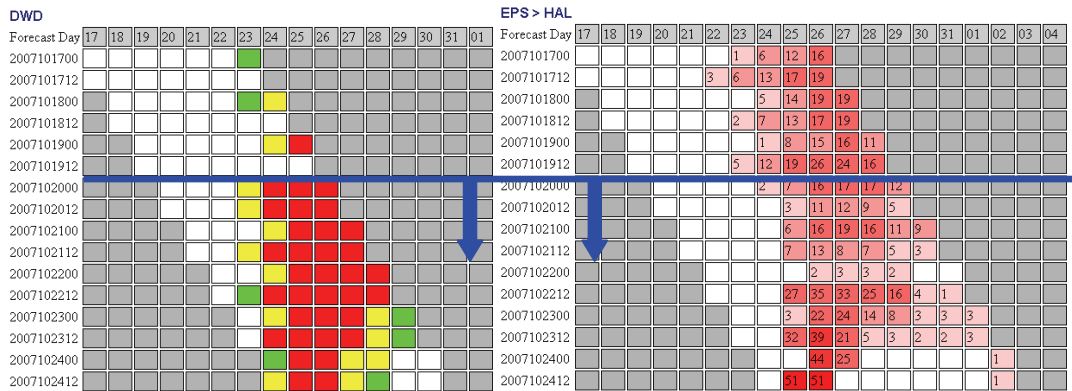


Figure 7: Sequence of the EFAS forecast for the river Siret (reporting point shortly before confluence with Danube) using DWD and the exceedance above high alert level of ECMWF EPS forecasts. EFAS reports were sent from the 20th of October onwards.

Acknowledgements

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EFAS bulletin
Issue 2007(6) Nov/Dec 2007

- *EFAS news*
- *Meteorological situation*
- *Simulated hydrological situation by the EFAS*
- *A review of EFAS alerts during 2007*

EFAS news

The third annual EFAS meeting will be held on the 29th of January 2008 in Ispra. Representatives of 26 different Institutions have registered for the meeting. The EFAS team hopes to receive their feedback on the EFAS development and performance during 2007 and on the future plans. A special emphasis will be placed on the new EFAS-IS Information system (<http://efas-is.jrc.it/>) and on the possibility to produce an

overview map of active EFAS alerts for the Civil Protection Service of the European Commission. More information about the results of the third annual EFAS meeting will be presented in the next EFAS bulletin.

An external flood alert for the Jiu and Vedeia river basins (tributaries to the Danube) was sent to the Rumanian authorities on the 16th of November with a predicted flood peak on the 20th of November.

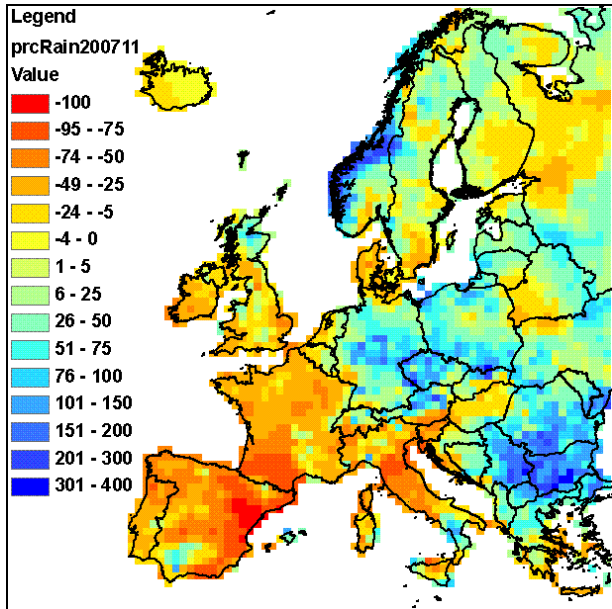


Figure 1: Difference in precipitation [%] 11 2007 in comparison to long term average (1990-2004)

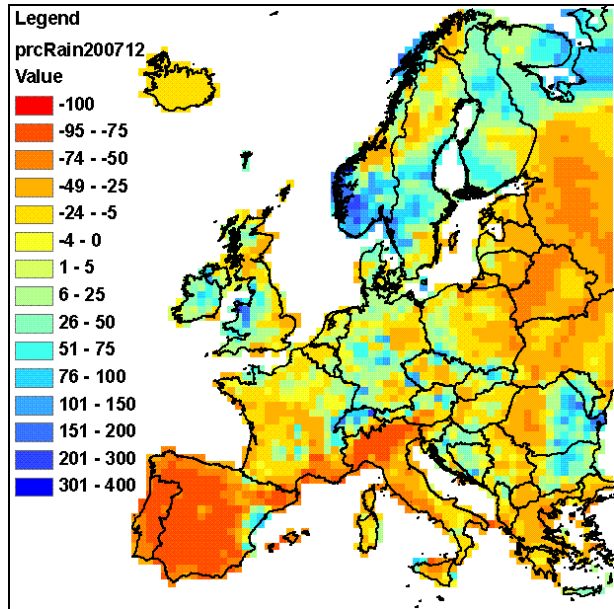


Figure 2: Difference in precipitation [%] 12 2007 in comparison to long term average (1990-2004)

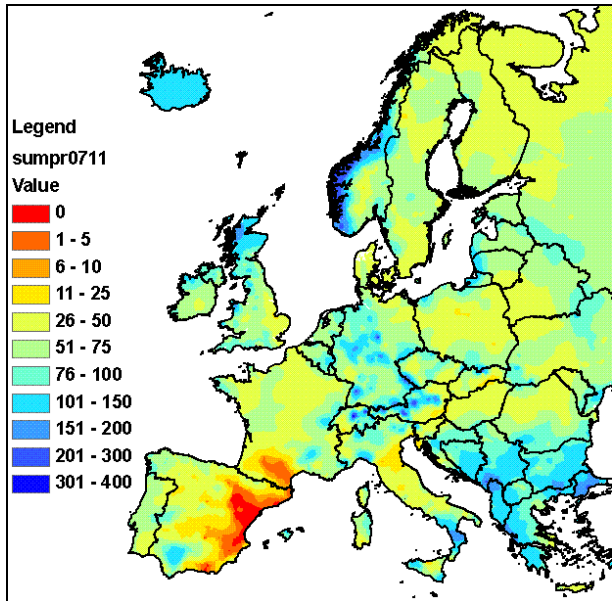


Figure 3: Accumulated Precipitation [mm] 11 2007

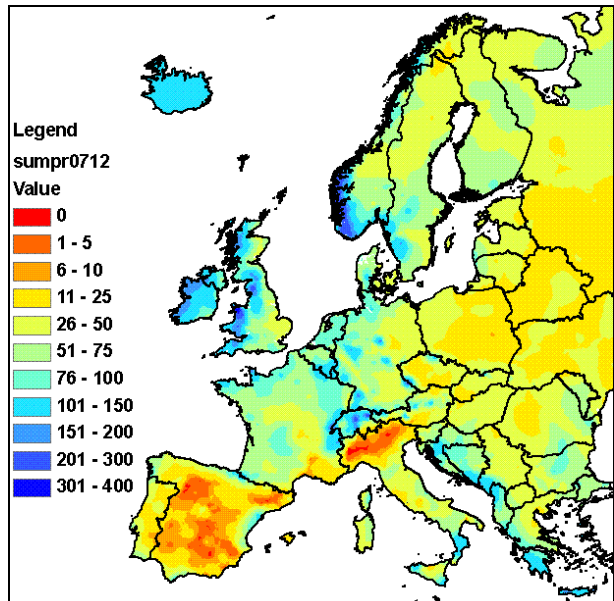


Figure 4: Accumulated Precipitation [mm] 12 2007

Meteorological situation Nov/Dec 2007

In November Central and South-Eastern Europe received more than average precipitation amounts for this month (from 1990 to 2004, observed MARS data) (see Fig.1) and precipitation amounts of up to 200mm were observed in several places (see Fig. 3). However, Spain, France, the British Islands, Italy, and large parts of Scandinavia received significantly less precipitation than average amounts for the

same month. Especially the Spanish Mediterranean coast received almost no rain during November. During December basically all of Europe received significantly less precipitation than average precipitation amounts for the same month (see Fig. 4). Only some small parts of the British Islands, Scandinavia, Germany, and Rumania received more than the average amount of precipitation for December. For actual soil

moisture see also: <http://natural-hazards.jrc.it/>.

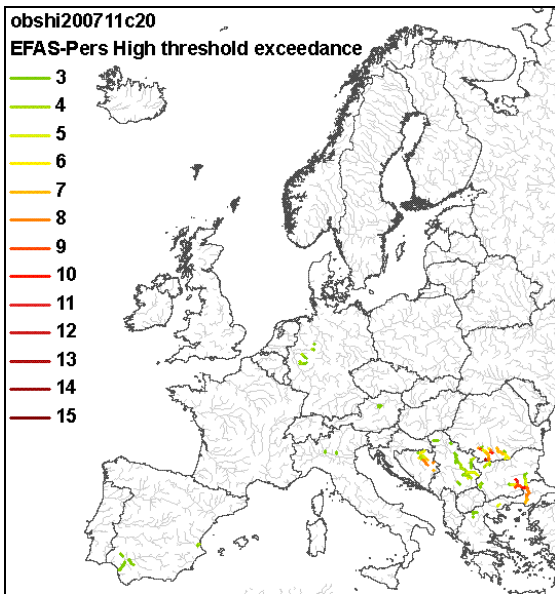


Figure 5: EFAS high threshold exceedance (200711) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

Simulated hydrological situation by EFAS

An overview of the threshold exceedances resulting from LISFLOOD simulations using observed meteorological data (JRC-MARS) is shown in Figs. 5 and 6.

Generally, significant threshold exceedances during the months of November and December were not observed. In November an external EFAS alert for the Jiu and Vedeia river basins (Danube tributaries) was sent to the respective EFAS partners in Romania, starting on the 16th of November. The flood peak for these rivers was predicted around the 20th of November. No major flooding occurred during December 2007 and hence no EFAS alerts were sent.

A review of EFAS alerts during 2007

From a flood-forecasters point of view 2007 was a relatively calm year as no severe floods occurred in Europe. Thus, the number of alerts sent out by EFAS in comparison with 2006 was comparably low (see Fig. 7). Throughout 2007 a total of 8 external alerts and 3 informal alerts (less than 3 days lead time) were sent.

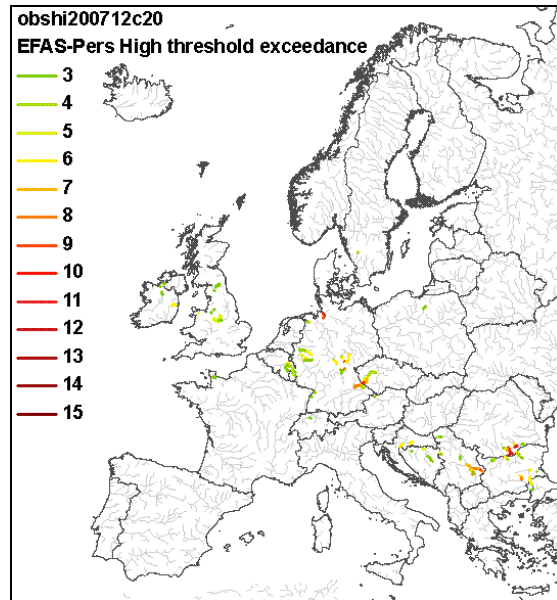


Figure 6: EFAS high threshold exceedance (200712) for LISFLOOD simulations with observed meteorological data (JRC-MARS)

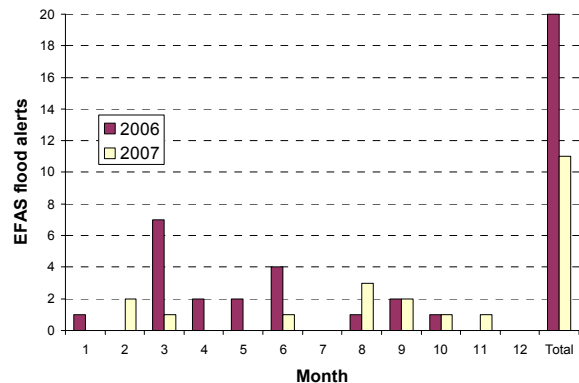


Figure 7: Number of events for which EFAS alerts (either external or informal) were sent out during 2006 and 2007.

During 2007 major floods within the river basins of our MoU partners occurred in the Rhone, Seine, and Loire basins in February as well as in the Rhine basin in August. Generally the EFAS team received positive feedback on most of the forecasts issued. However, some alerts overestimated the actual flood event or the timing of the flood peak was not correct. The EFAS team will try to improve these issues during 2008.

Acknowledgements

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Abstract

The EFAS bulletins yearbook 2007 gives an overview for the year 2007 of EFAS events, news and EFAS-performance. It gives an overview of all external EFAS alert reports in 2007 as well as a quick overview of the new EFAS-IS web service. It collects all EFAS bulletins of this year.

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