



Global Flood Awareness System

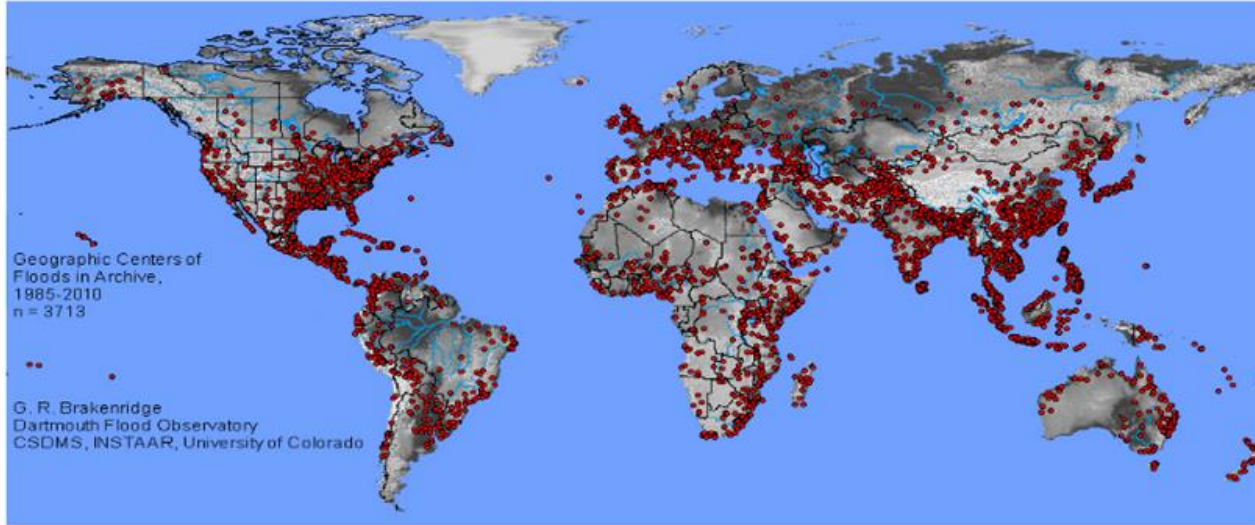
Ignite talk – Global Flood Partnership 2017

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Why GloFAS?



Geographic Centers of floods in the FloodArchive GIS file, 1985-2010

In Europe flood risk info & warnings save hundreds of lives and avoid billions of disaster losses per year

The potential for similar benefits for developing and less developed countries is estimated between 4 and 71 billion USD per year.





Efficient flood risk management



- Awareness about the risk of flooding
- Appropriate legal & administrative frameworks
- Economic investments
- Expertise knowledge
- Data

Unfortunately, some or all factors are still missing in many regions around the world



Image: Moby@flickr



How?

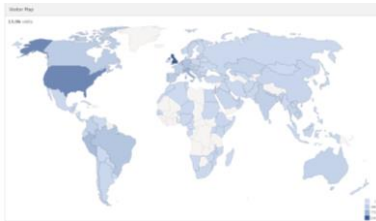


World-wide comparable information

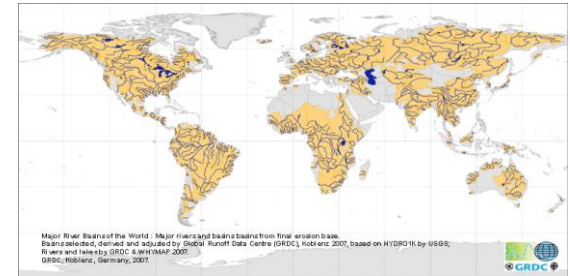
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08/09/2016													2	6	10	14	16	18	16	12				
09/09/2016												2	10	22	27	35	47	51	59	43	59	47		
10/09/2016											2	2	10	18	27	29	41	47	59	65	61	41		
11/09/2016												6	12	16	20	20	25	31	37	43	35	25		
12/09/2016												4	14	24	37	47	59	65	73	75	84	76	57	



Knowledge transfer & exchange



Improved data sharing





How?



Early warning for preparation aid assistance



World-wide comparable information

Complement National/regional services

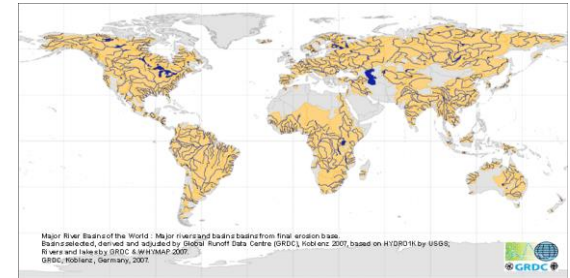
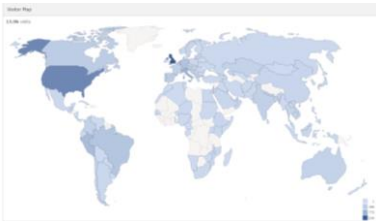
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Knowledge transfer & exchange

Support international organisations

Improved data sharing





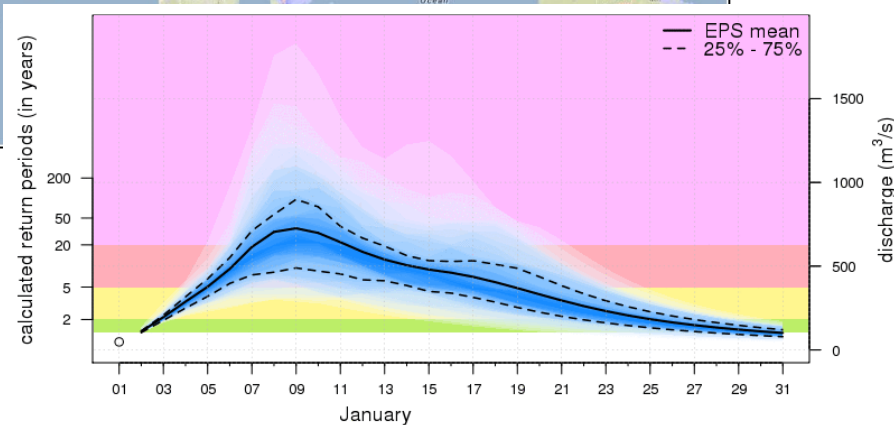
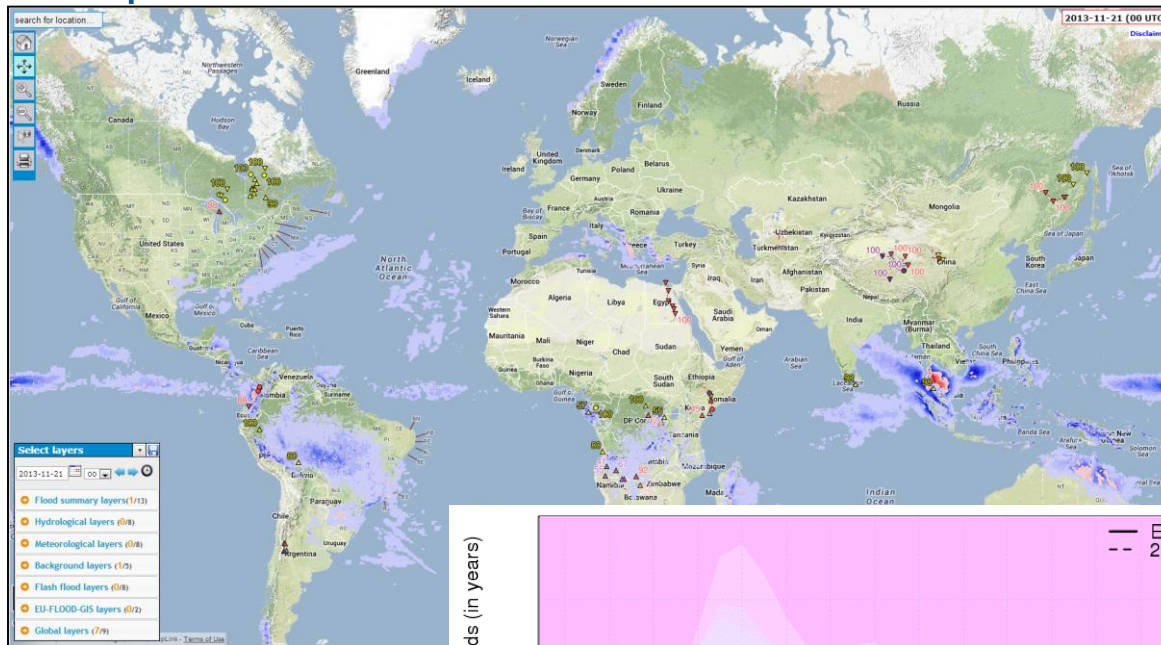
What?



Global-scale ensemble-based flood forecasting system

A collaboration product between the JRC and ECMWF

Pre-operational since 2011



Forecast frequency:
Updated daily

Forecast lead time:
Up to 30 days

Forecast variable:
River Flow

Forecast type:
Probabilistic

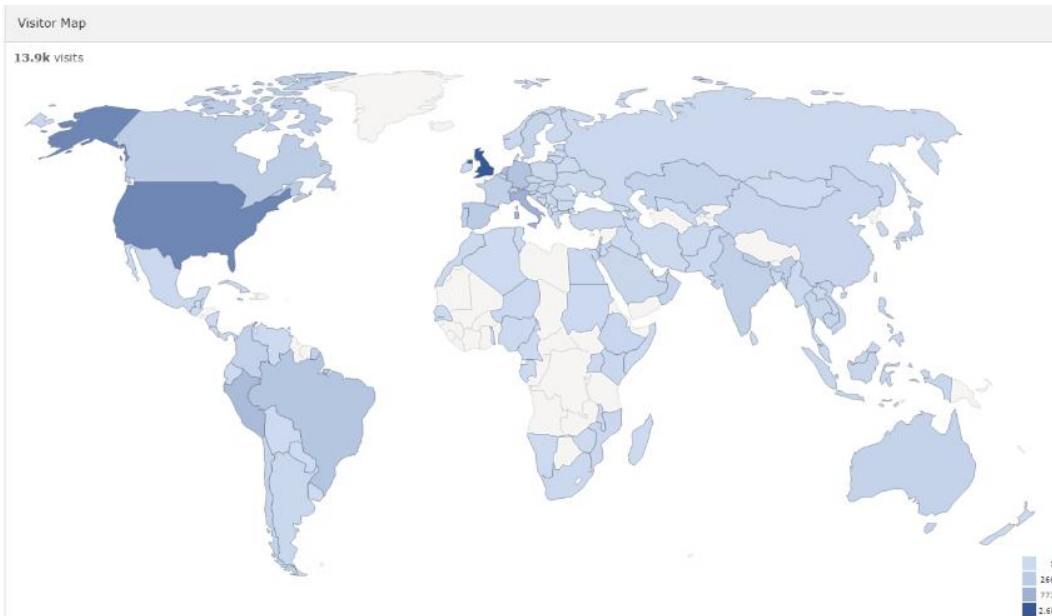
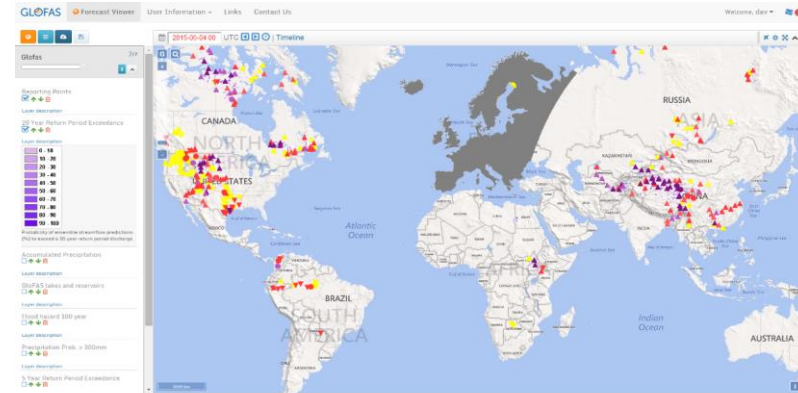
Forecast resolution:
Daily and 0.1 degree



Who?



- GloFAS has >1000 registered users from:
 - Public authorities
 - NGOs
 - Private sector
 - Academic/training/research institutions

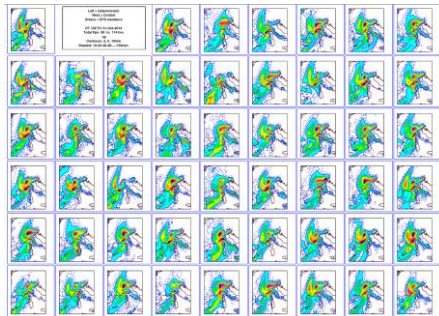




How does GloFAS work?

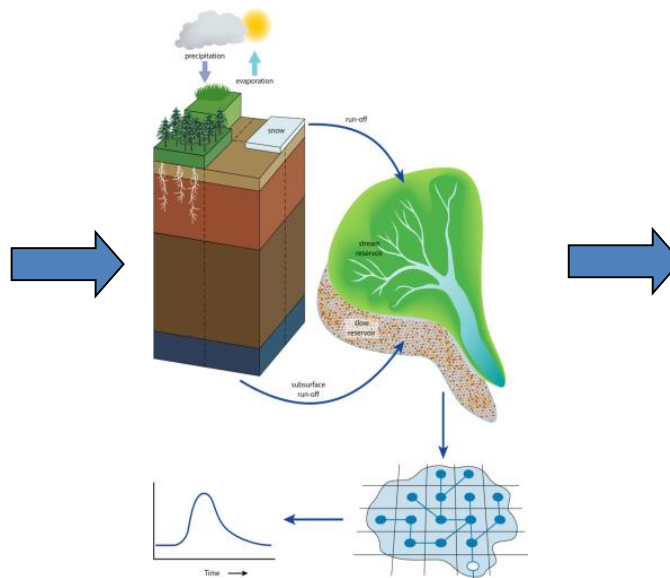


Meteorological forecasts



Global ensemble forecasts (ECMWF)
~18km

Hydrological model



HTESSEL (ECMWF)
+
LISFLOOD (JRC)
~10km

Outputs



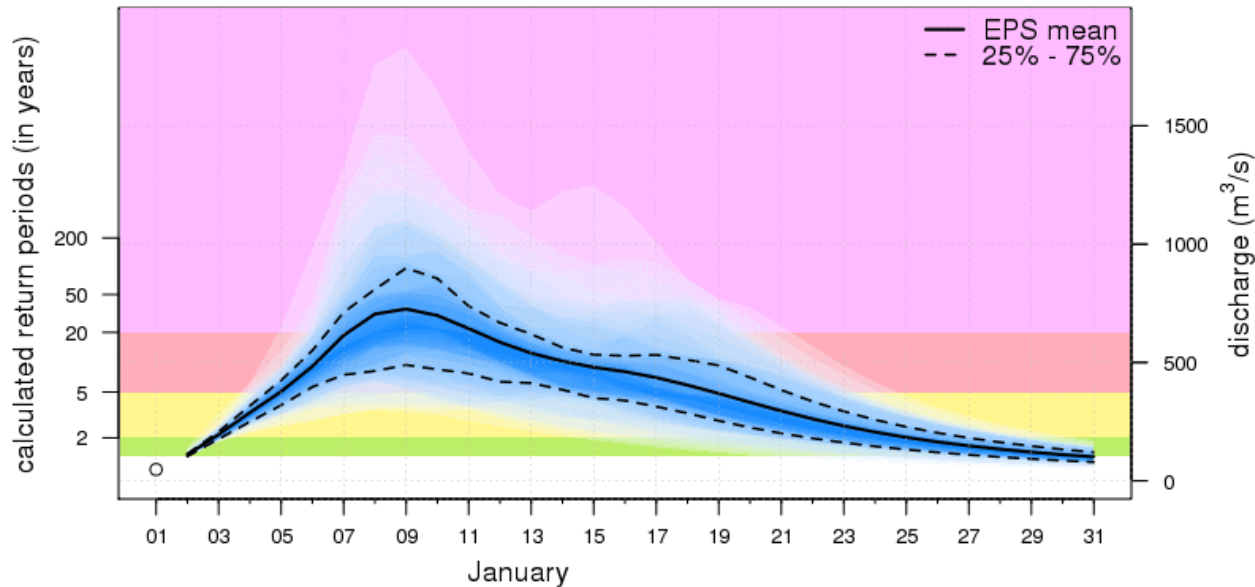
River discharge up to
30 days on 0.1 degree
Probabilistic forecasts



How does GloFAS work?



Model climatology to derive return period statistics



- Approach eliminates systematic bias
 - Easily understandable
 - Can be more easily linked to national levels
 - Better link to potential flood impact
- Shading indicates return period exceeded:
- < 2 year (green)
 - > 2 year (yellow)
 - > 5 year (red)
 - > 20 year (purple)



GloFAS in action: forecast-based financing



Nov 2015: GloFAS triggers pre-disaster humanitarian action in Uganda

The screenshot shows the website of the Red Cross/Red Crescent Climate Centre. The main headline reads: "'Humanitarian history' made as Uganda Red Cross launches forecast-based financing for real". The article is dated 15/11/2015. Below the headline is a photograph of several people, including a Red Cross volunteer, loading yellow jerrycans onto the back of a truck. The sidebar on the right contains several resource links: 'How to help', 'Follow us', 'Latest' (with a 'SEASONAL FORECASTS' link), 'IRI/IFRC HELPDESK', 'CLIMATE TRAINING KIT', 'play our climate GAMES', 'Library PARTNERS FOR RESILIENCE', and 'view our'.

“... The teams distributed two jerrycans, two bars of soap, and a month’s supply of water purification tablets to 370 households in the villages of Okoboi, Omatai, Apedu and Akulonyo,”



GloFAS in action: forecast-based financing



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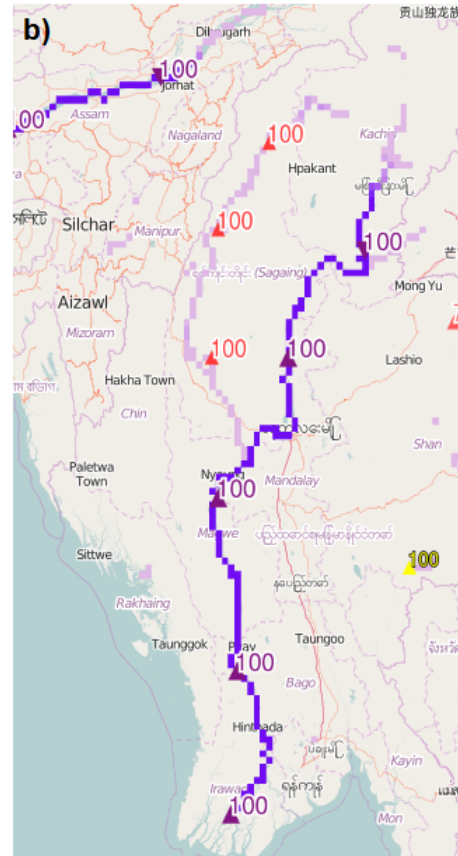
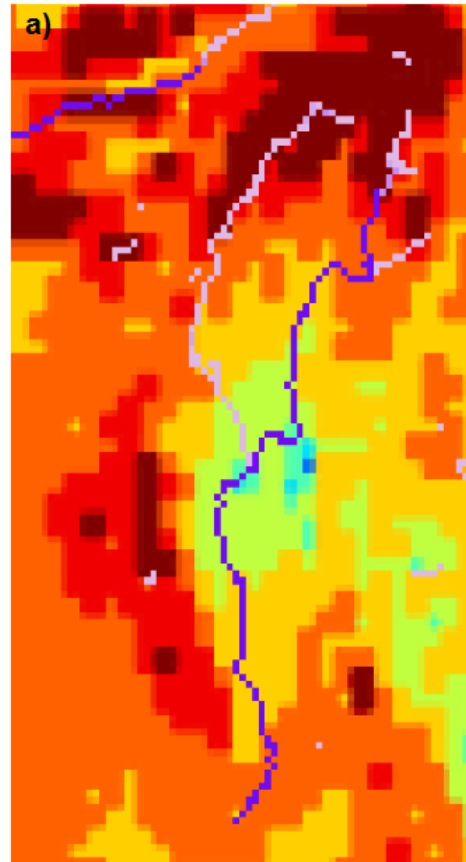


“... The teams distributed two jerrycans, two bars of soap, and a month’s supply of water purification tablets to 370 households in the villages of Okoboi, Omatai, Apedu and Akulonyo,”

“... In 2007, we were taken unawares by the flooding,” a resident said, “but this time we are happy the Red Cross is coming in earlier.”



GloFAS in action: Information to ERCC



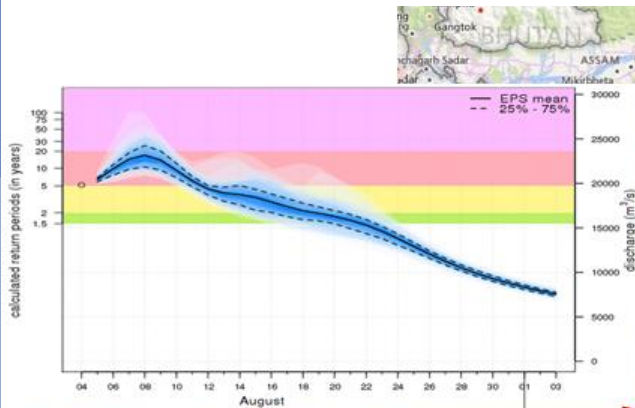
“.... Heavy seasonal rainfall caused significant floods across 12 out of the 14 states in Myanmar, affecting 20% of the population, resulting in several deaths and displacing more than one million people.” [NNDMC, 2015].



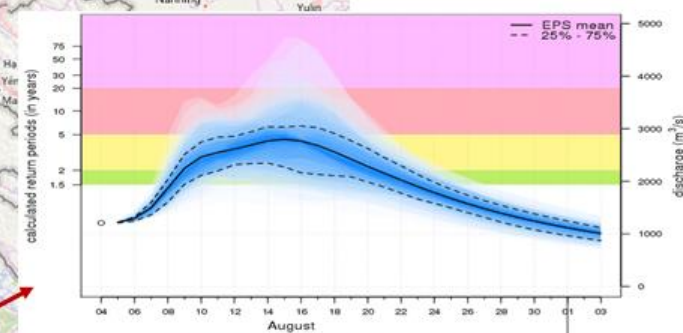
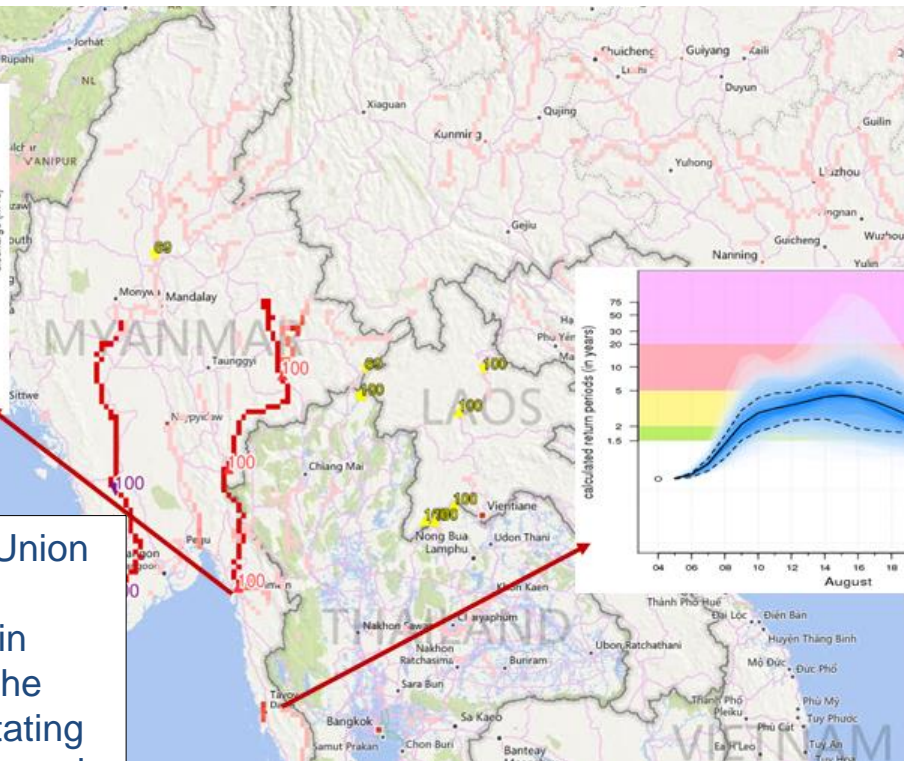
GloFAS in action: information to ERCC



- Daily reports to ERCC based on GloFAS forecasts & shared with local authorities
- Defining areas for satellite rapid mapping



GloFAS forecast for the Thanlyin River at Mawlamyine (river outlet)



GloFAS forecast for the Tanintharyi River at Mergui

On 31 July, the President of the Union of Myanmar issued a statement declaring natural disaster zones in Chin and Rakhine states and in the Sagaing and Magway regions, stating “the following regions which are hugely affected by natural disasters.



Capacity building – Peru Jan 2016



- Collaboration with 'Forecast-based Financing' Pilot Project team, Peruvian Red Cross Office
- Flood Forecasting in North Peru is high priority because of El Niño
- Capacity building & GloFAS training with SENAMHI hydrologists, Peruvian meteorological and hydrological agency
- Setting up Standard Operating Procedures for actions based on a forecast
- GloFAS forecasts will be used as a trigger for early action from the Red Cross in Bajo Piura, a highly vulnerable district on the River Piura





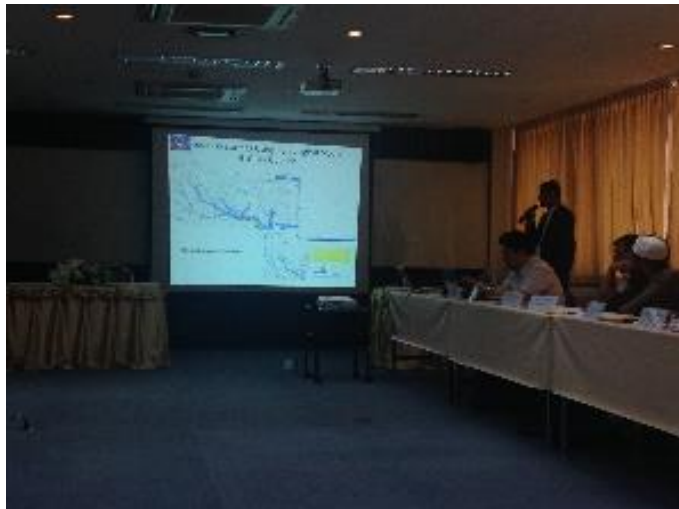
Capacity building – Thailand Oct 2016



- Regional training of hydrologists and meteorologists organised by RIMES and UN-ESCAP
- To enhance capacity for flood forecasting in transboundary river basins
- Participants: Bangladesh, Bhutan, Nepal, India and China (& Pakistan via Skype)
- Organisations: RIMES, UN-ESCAP, World Bank, Mekong River Commission and ICHARM



Participants and organisers of the training workshop 3-7 October 2016, Thailand



Mr. Binod Parajuli discusses how GloFAS forecasts were successfully used to forecast a severe flood event in Nepal this monsoon season.

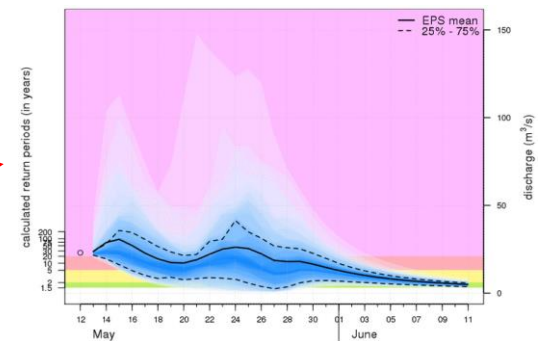
- Successful use of GloFAS by RIMES during Monsoon 2016
- Local evaluation of GloFAS by RIMES



Collaborate with GloFAS?



- Users/partners can register to access and analyse forecasts and warnings
- Getting data : Real time GloFAS forecast (up to 30 days, 51 ensemble members); Reforecasts (hindcasts) from 1st April 2008 to present; netcdf format; rivers > 1500 km² through ECMWF ftp server on request
- Giving data: historic time series (calibration), real-time discharge (more reporting points)



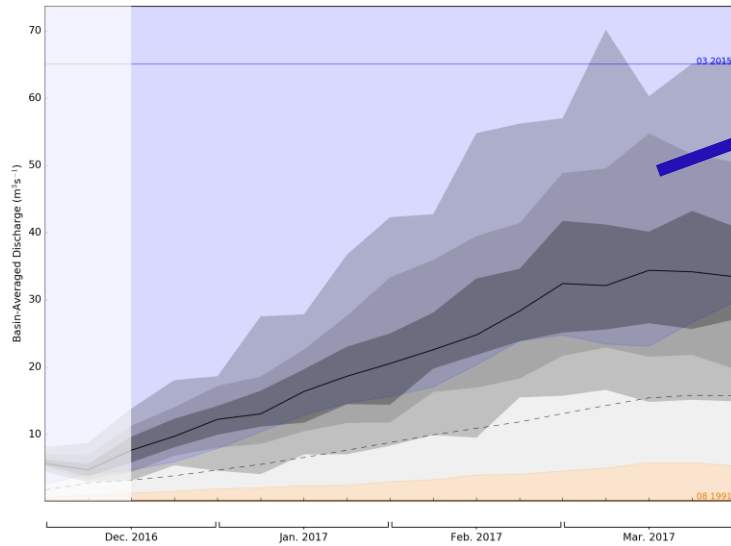
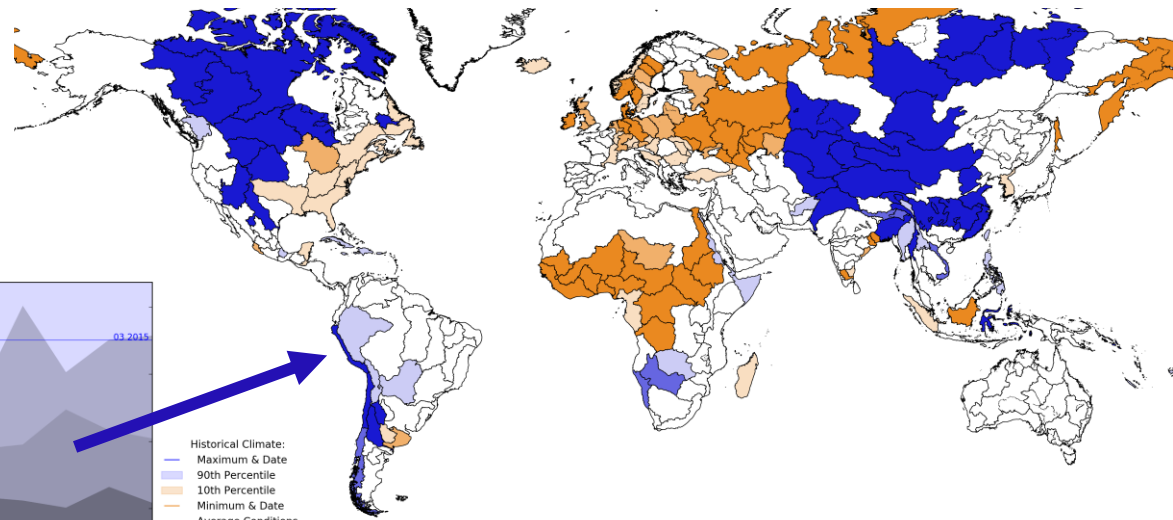


- Devastating flooding in Peru early 2017
 - Caused by a “coastal El Niño” – high SSTs in the eastern Pacific
 - 567,551 affected, 72,115 displaced
 - 62 dead, 12 missing, 170 injured
 - 110,094 homes affected; 9,018 destroyed, 8257 uninhabitable
 - 1,231 km main roads destroyed
 - (INDECI, via Floodlist.com)





Soon to be released - GloFAS-Seasonal



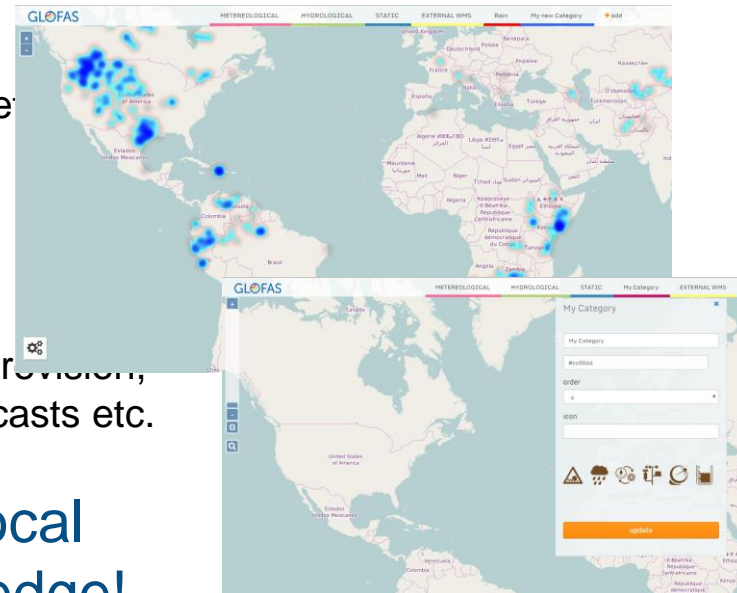
- Historical Climate:
 - Maximum & Date
 - 90th Percentile
 - 10th Percentile
 - Minimum & Date
 - Average Conditions
- Forecast:
 - Median
 - 25-75th Percentile
 - 10-90th Percentile
 - 0-100th Percentile



GloFAS development

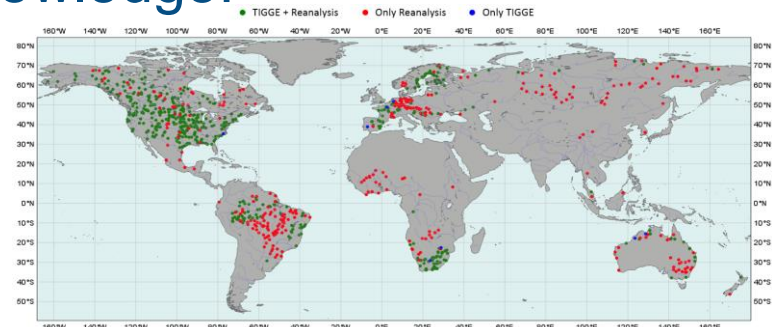


- Fully operational by end of 2017 as part of the Copernicus EMS
- Continuous model improvements
 - e.g. calibration, new static maps, resolution increase, etc.
- Web interface developments
- Increase the usability and local relevance
 - e.g. through model calibration, user feedback, better provision, data dissemination capabilities, river level/ flood extent forecasts etc.



To achieve we need **collaboration** with local centers/partners for data and local knowledge!

Some current examples: Red Cross (Uganda, Peru, Togo), CEMADEN (Brazil), (Nepal), etc.





More on GloFAS



- <http://www.globalfloods.eu>
- Visit our Market Booth



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GLOFAS

Global Flood Awareness System