GLOBAL FLOOD AWARENESS SYSTEM

Increasing preparedness for floods on global scale

Floods: global challenge - local impact
Floods and flashfloods can occur almost anywhere in the world with devastating effects for the population, environment and economy. In the last 10 years worldwide more than 50000 people died during flood and flashflood events. Their economic damage is estimated to have surpassed 200 billion US$. With a rising world population societies, agriculture and industries become more vulnerability for natural disasters.

Early warning systems
Response to extreme events that require international assistance is costly. Often provision of aid, goods and equipment is hampered by the effects of the event and affected infrastructures. It requires an enormous amount of coordination and collaboration between different authorities to use resources effectively. Early warning systems can provide authorities and international response community with sufficient time to inform relevant points of contacts, check contingencies, prepare action plan scenarios, and start monitoring the situation. In case the predictions are correct and the event captured by the monitoring systems, precious time has been gained to start preparatory measures more effectively. This is particularly important for transnational river systems where aid needs to be organised.

Joining forces for innovative solutions
The European Commission’s in house science service, the Joint Research Centre, has jointly developed with the European Centre for Medium-Range Weather Forecast (ECMWF) a prototype of a pre-operational global flood forecasting system. State of the art global weather prediction combined with hydrological expertise gained from the continental European Flood Awareness System developed by the JRC, allows to calculate the probabilities of upcoming floods on global scale 15-30 days in advance.

Example of GloFAS screenshot showing spatial overview of the the ongoing and forecast floods in Australia, Africa and northern South America on of 2012-02-01. Popup windows show forecast information at a point.
Global Flood Awareness System

What was intended as a short-term feasibility study has developed into a pre-operational system running daily flood forecasts on global scale since June 2011. The system demonstrated its potential for capturing unusual floods during the Pakistan 2010 event, the 2011 Southeast Asian floods in the Brahmaputra and Mekong, Australian floods in 2010/2011 and this year in 2012 as well as in Africa and South-America, the recent floods in Peru and Bolivía just being one example.

GloFAS forecast from 22.11.2011 zooming into the region of Thailand and Cambodia. The spatial overview illustrates high probabilities for floods in the Chao Praya and the Mekong river basins (in red river pixels with a probability of exceeding the High flood threshold). The time series show that the peak of the floods are forecast 7-14 days in advance.

Flood forecasting as decision support system

In order to support decision makers in an effective way, trans-national early warning systems such as GloFAS need to be especially designed to communicate important information in an unmistakable way not leaving room for misinterpretation of the results. Building on experience from the European Flood Awareness System (EFAS), visualisation of results in GloFAS is concise and clear for hydrological services. Further adaptations for users with different needs, e.g. aid organisations, will be investigated.

Policy support

- EU strategy for cooperation in Disaster Management with non-EU Countries, International and Regional Organisation
- Directive 2007/60/EC on the assessment and management of flood risks

Collaborations and partnerships

So far several organisations have signed up for access to GloFAS including EC Humanitarian Office (DG ECHO), Centro Nacional de Monitoramento e Alertas de Desastres Naturais (CEMADEN) of Brazil, the MEKONG River Commission, and the World Meteorological Organisation.

Strategic partnerships on scientific, technical and political level are important for the development of such complex systems if they are to be effectively used.

CONTACTS

Frank Raes
email: frank.raes@ec.europa.eu
Phone: +39 0332 789959
Fax: +39 0332 785704

Jutta Thielens-del Pozo
email: jutta.thielens@jrc.ec.europa.eu
Phone: +39 0332 785455
Fax: +39 0332 786653