

International Symposium on Geo-information for Disaster Management (Gi4DM)

Remote Sensing And Geo-Information For Environmental Emergencies

<http://www.gi4dm-2010.org/index.php>

February 2-4, 2010, Torino Italy

Early Flood Warning for African river basins

Vera Thiemi(1), Florian Pappenberger(2), Ad de Roo(1), Jutta Thielen(1)

(1) European Commission Joint Research Centre, Ispra (IT)

(2) European Centre for Medium Range Weather Forecasts, Reading (UK)

Early flood warnings are essential for the effective planning, coordination and realization of prevention, protection and mitigation measures in order to reduce socio-economical losses caused by extreme events. In Europe, the European Flood Alert System (EFAS) has been developed for large to medium-size river basins, achieving early flood warnings with lead times of 3-10 days. This is based on probabilistic weather forecasts, the exceedance of alert thresholds and the persistence of this signal. The methodologies have been tested for different events and time scales in mid-latitude basins in Europe.

At present, the transferability of the EFAS-methodologies to equatorial African basins is investigated. As a first African pilot study, the setting up and testing of an early flood warning system using the EFAS-methodologies is ongoing for the Juba-Shabelle river basin covering parts of Ethiopia, Somalia and Kenya. A variety of different meteorological data sources, such as ERA-40, CHARM, ERA-interim and RFE data have been used for the calibration and validation of grid-based hydrological flood forecasting system. Meteorological ensemble re-forecast data, using the current operational ECMWF model, provided hindcasts for the historic flood events in 1977 and 1981. The first results show that the flood events were detected successfully in more than 85 % of all cases, with a high accuracy in terms of timing (4-5 days of lead time) and magnitude. This provides much potential for a pan-African flood early warning system, which is envisaged to be established within a few years.