Europeans develop better flood forecasting tools

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Keeping people safe from floods is an important objective for Europeans. Scientists at Cemagref, the French research institute of science and technology for the environment, have succeeded in developing and continue to develop forecasting tools that can warn authorities and the public about potential floods, giving vulnerable zones the crucial time they need to protect themselves.

The Cemagref team has developed Government Resource Planning (GRP) software for SCHAPI, France's National Hydrometeorological and Flood Forecasting Centre, designed to forecast river flooding. The researchers say rain observations and forecasts provided by the Meteo-France network for the corresponding river basins are used in this

software. Soil humidity is also a factor considered by the software.

The experts have already tested the software in real time on several expansive [rivers](). Warnings generated by the GRP software can range from just a few hours to a few days. The length of time depends on the response time of the [river basin](). The GRP's forecasts are then fed into the national flood-warning system, which is accessible via the Ministère de l'écologie, du développement durable, des transports et du logement website.

Scientists say quantitative forecasts of flow rates become very imprecise beyond a few days. Assessing the meteorological archives for precipitation data on past conditions similar to the forecast conditions could give forecasts a boost.

Cemagref, in cooperation with the Flood Forecasting agencies, looked into past work and found that it is possible to offer a one-week flow-rate forecast for the Saône and Seine river basins by coupling the precipitation forecast with the GRP model for rainfall and flow rates.

The research institute, together with Meteo-France, also developed the AIGA (Geographic-information processing for flood alerts) system, which uses data provided by meteorological radars to calculate in real time the risks that emerge from rainfall and river flow rates over the French hydrographic network. Thanks to the AIGA system, experts can identify unsafe conditions by evaluating real-time data with information from reference databases on rainfall and flow rates. Risk maps are generated every 15 minutes with a resolution down to a square kilometre, according to the researchers. The [Flood]() Forecasting agencies also use operational maps developed by AIGA, specifically targeting the Mediterranean coast.

For mountain regions in particular, there is risk of torrential flooding,

landslides and even avalanches during the winter period. The existing meteorological radar network, found in low-lying regions, does not have the capacity to cover the mountain regions very well. Under the RHYTMME ('Hydrometeorological risks in mountain and Mediterranean regions') project a network of small, new generation radars. The project, with a budget of about EUR 10.4 million is funded mainly by Cemagref and Meteo-France, supported by the European Union with EUR 2 million.

The teams have already got two off the ground on Mont Vial and the Maurel mountain. Another two are scheduled to go online in 2013. Ultimately, the researchers hope to establish a system for local risk managers, giving them the help they need to forecast the natural hazards triggered by precipitation.

More information:
Cemagref:
www.cemagref.fr/actualites

Surveillance (raw) data from the Ministère de l'écologie, du développement durable, des transports et du lodgement:
www.vigicrues.gouv.fr

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