

# ITHACA WORLD-WIDE FLOOD ALERT SYSTEM: THE WEB FRAMEWORK

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### ABSTRACT:

ITHACA (Information Technology for Humanitarian Assistance, Cooperation and Action) is developing a world-wide early warning system for flood events [Albanese et alii, 2008].

The system collects rainfall data from Nasa TRMM (Tropical Rainfall Monitoring Mission) web-site every three hours, processes them and compares them to historical data series to detect an alert level for each basin. Watershed layer of HYDRO1k, developed at the U.S. Geological Survey's Centre for Earth Resources Observation and Sciences (EROS), is constituted by a territorial subdivision at different levels, increasing details from level-1 to level-6; watershed at maximum detail (level-6 basin) are used for the system. A grid-computing approach is adopted to face the heavy computational load while a web-fruition framework is planned to give the widest access to the output the system produces. The user interface shows on-going events on a map, where it is also possible to add other feeds (i.e. by GDACS - Global Disaster Alert and Coordination System). The user can zoom to the alerted countries by an interactive list, show additional information on the event and possibly an estimate of the affected population.

The framework is based on pure FOSS products and common standards, according to ITHACA internal directives and following UNGIWG (United Nations Geographic Information Working Group) recommendations that encourage interoperability and FOSS (Free and Open Source Software) tools adoption.

The framework is a development of ITHACA infrastructure for web GIS applications; it is based on MCV (Model Controller View) architectural pattern that makes it possible to isolate the logic of the application from the interface. In this way a change in one of the two parts doesn't affect the other making maintenance easier in the long term. From this point of view a controller collects, the model manipulates application data, and the view presents results to the user. Here a python-based MCV framework named Django is adopted; interfaces are built using javascript classes which some FOSS projects make available. Some OpenLayers classes are modified and combined with Ext and GeoExt libraries to increase the interaction the user can have with the interface.

Data are symbolized using common OGC (Open Geospatial Consortium) SLD (Styled Layer Descriptor) standard. Caching mechanism for WMS (Web Mapping Service) base layers are adopted.