



A global perspective on flash flood life loss prevention through operational systems

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Continuing pressures from flash floods worldwide and from the expanding needs of the Earth's population, necessitate the continuing improvement of the effectiveness of disaster warning-response practices. The availability of global meteorological information (observations and forecasts) and of digital databases of various attributes of the land surface now allows the use of hydrologic models in an operational environment for providing numerical guidance for regional and local forecast/warning applications. The internet and the global communication networks facilitate the dissemination and use of such numerical guidance throughout the globe.

Because of inaccuracies in meteorological and global land surface data, and the limited availability of streamflow records for reliable hydrologic model calibration, uncertainty is part of the numerical guidance. This is especially so for smaller scale operational applications (such as flash flood prediction) and it must be taken into consideration in forecast/warning and emergency management practices for realizing improvements in effectiveness.

How to cope with the uncertainty in numerical guidance during operations is a significant challenge for the forecasters and emergency managers. Characterizing and conveying local forecast uncertainty to users, and assisting in the appropriate incorporation of the uncertainty in participatory decision support systems are two important challenges that the National Hydrological and Meteorological Services of the world are beginning to face.

The presentation exemplifies these issues through the discussion of a regional operational system implemented by the Hydrologic Research Center in Central America

for providing real-time flash flood guidance for warnings. Lessons derived from these applications pertain to: the required cooperation and reciprocal training of forecasters and managers; creating new operational paradigms in developing countries; developing effective approaches for validation and continuing improvement of operations; the establishment of operational requirements for sources of global forecasts and observations; and the development and education of a viable user community for warning information and products.

Background information:

(1) Central America Flash Flood Guidance (CAFFG) System:

http://www.hrc-lab.org/right_nav_widgets/realtime_caffg/index.php

(2) National Research Council 2006: *Completing the Forecast: Characterizing and Communicating Uncertainty for Better Decisions Using Weather and Climate Forecasts*. National Academies Press, Washington, D.C., 178 pp.