Flood Forecasting

By GIRIRAJ AGARWAL

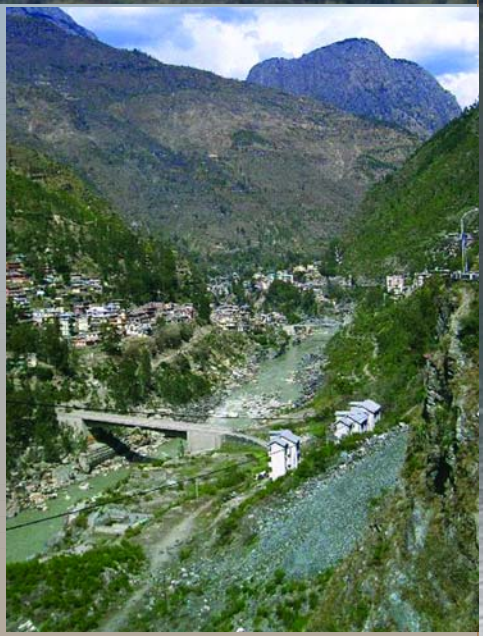
Millions of Indians lose their property, hundreds lose their lives, and India loses billions of rupees in destroyed infrastructure every year because of floods. The damage could be minimized if the timing and extent of floods could be predicted ahead of time. A U.S.-India project on disaster management has tried to address this issue by helping Indian agencies develop the capacity to forecast floods.

The U.S. Agency for International Development (USAID) provided $7.2 million over a period of five years, beginning 2003, for a disaster management support project in India which included climate forecasting systems. Reducing the consequences of cyclones and earthquakes were other elements of the project.

American and Indian scientists, engineers and researchers came together to help the Indian Meteorological Department, National Centre for Medium Range Weather Forecasting and the Central Water Commission (CWC) to improve ways of collecting data and providing early warnings of floods. The meteorological department and the center for forecasting are responsible for weather forecasts, whereas the Central Water Commission handles flood forecasting.

"More than 200 scientists and engineers were trained in the United States on climate and flood forecasting models, data collection and analysis techniques, and use of proper software," says N.M. Prusty of the International Resource Group, the agency which coordinated the USAID project. The National Oceanic and Atmospheric Administration, the U.S. Geological Survey, U.S. Forest Service and Federal Emergency Management Agency were among the U.S. partners on the project.

Courtesy NOAA/NWS



Courtesy Robert W. Jubach

Above: B. Manikiam (from left) of the Indian Space Research Organisation, U.C. Mohanty of IIT Delhi and Scott Kelly of the U.S. National Oceanic and Atmospheric Administration during a training session at the National Weather Service in Florida. Right: Rampur, situated in the Sutlej river basin, faces the risk of flash floods.

It focused specifically on the Mahanadi and Sutlej river basins as demonstration projects to show what can be achieved once correct information is gathered. "The implementation of the National Weather Service River Forecast System for the Mahanadi river basin has provided the CWC with a useful tool for providing their users with river and flood forecasts," says Robert W. Jubach, general manager with the Hydrological Research Center in San Diego, California. He was one of the U.S. experts involved in the project.

"A forecast system was also implemented for the Sutlej river basin for flash flood alerts and warnings. The system provides CWC with the capacity to detect the occurrence of a flash flood in the basin, calculate its magnitude and propagation speed and then issue appropriate warnings in order to protect lives and infrastructure," says Jubach.

Cloud bursts, failure of debris dams and sudden melting of glaciers can lead to floods within a very short time in the Sutlej basin. As flood waves move at high speed, rapid relay of information is vital.

"The approach of U.S. experts was positive and models were appropriate. Our people are now capable of using and issuing forecasts based on the National Weather Service River Forecast System," says N.M. Krishnanunni, superintending engineer with the Central Water Commission in Bhubaneswar, Orissa.