REAL TIME HYDROLOGIC ALERT SYSTEM FOR MENDOZA (ARGENTINA) NATIONAL AND INTERNATIONAL TECHNOLOGY TRANSFER

Pedros Carlos Fernandez*

*Instituto Nacional del Agua y del Ambiente
Mendoza (Argentina)

Investigator Principal del Conicet

ISPRS Commission VI - Working Group 3

ABSTRACT:

Mendoza City located in central western Argentina, at south latitude of 33°, and its surrounding urban industrial and agricultural lands, with more than 700,000 inhabitants, is the country's fourth-largest metropolitan area.

The area is located in the arid piedmont of the Preandean mountains and is subject to flash floods produced by thunderstorms, during spring and summer. The spatial variability of precipitation over the urban area is difficult to describe with point measurements. In an area of about 625 square kilometers, 25 transmitter-equipped real-time stations situated at strategic locations feed continuous and automatic rainfall and water-level data into computers located at INCyTH head-quarters in downtown Mendoza. IHS software provides the necessary information to develop warning and to support an important database that is the source of data for several research and engineering studies in the region.

The remote station network was developed using event-reporting technology and operates on a real-time basis with VHF radio (line-of-sight) transmitters. Radio links are made directly with the central site stations or with the aid of a repeater. Because of the short time of concentration of the watersheds (between 0.5 and 2 hours), the ALERT system operates in cooperation with a Mendoza government radar station that sends "pre - alert" information on radar echoes, their locations, vertical development and probable displacement paths.

There are 25 precipitation sensors, one water-level sensor and one weather station. Besides these automated sensors, there are 4 water-level gauges (manually operated) with permanent operator and ratio communication with the central station.

The area is formed by seven flash-flood river systems. Five of them discharge to the same canal. In the center of the area, a pilot research watershed of 5 Km^2 exists, with a very dense precipitation network (one per square kilometer) and one stream - gauge with a specially constructed V-weir calibrated in a physical model. This is an area of important data collection for these studies of arid-zone mountain hydrology.

The main part of the telemetry network was built from 1983 to 1986 and the warning system has been in operation since 1985 from October to April each year. It is joint effort of the National Institute of Water Science and Technology (Andean Regional Center) and the provincial government through their local agencies – Direccion de Hidraulica and Defensa Civil – Their goal is to provide Mendoza City and surrounding areas with a nonstructural system for reducing potential losses caused by flash floods, but the main goal is the transfer of technology for the implementation of real time hydrologic systems in Argentina and Latin America and the important data bank for research purposes.