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Methodological Alternative for Monitoring Rivers and Floods Warning

LE Peña Rojas (1), AA García León (2), and I Caviedes (3)

(1) Civil Engineering Program, Universidad de Ibagué, Ibagué, Colombia (luis.pena@unibague.edu.co), (2) Teacher Industrial Engineering Program, Universidad de Ibagué, Ibagué, Colombia (andres.garcia@unibague.edu.co), (3) Research Assistant, Universidad de Ibagué, Colombia (isenover@gmail.com)

Nowadays, many Latin American and worldwide countries adopt the protocols defined by World Meteorological Organization (OMM, 1994) for the process of site selection and hydrometric stations location. There are many variables considered by OMM manuals, which are mainly qualitative and based upon empirical relations. For this reason, the decision of the location of the monitoring system should be left to the person in charge of visiting the previously selected places, on the basis of direct site observation, without the possibility of a quantitative analysis, selecting the place taking into account the main purpose which is to produce an early flood warning. This project is a methodological proposal which incorporates operation investigation techniques to the process of appropriate site selection, for the installation of hydrometric stations for monitoring and early flood warning in Colombia.

In addition, prototype for the monitoring of running waters is presented along with the methodology. It represents a low cost technological option for the accurate and reliable measuring of monitoring for developing countries

The methodology developed is a tool for deciding about the appropriate site for the installation of hydrometric stations. This is helpful in the quantification of qualitative variables through a process of incorporation of empirical and physical relations; these variables are added up and pondered by the professional in charge according to the particular case of every hydrographic basin or running water where monitoring is being performed, with the purpose of implementing early warning systems for flooding.

The methodology developed was tested in the basins of Quindío and Luisa rivers, located in Colombian Andes, specifically at Quindío and Tolima regions. These running waters are Mountain Rivers at 3100 and 2400 meters above sea level respectively. For Quindío River, four sites for the location of hydrometric stations were tested along a 44.29km distance, whilst for Luisa River there were three places along 18.77km. Tests developed proved how useful the methodology is, since it was possible to do quantitative analysis of qualitative and physical variables such as travel time to the place where population is to be warned. The versatility of proposed methodology permits the modification of the values of every variable according to particular situations in running waters.