Geophysical Research Abstracts,
Vol. 10, EGU2008-A-06119, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-06119
EGU General Assembly 2008

A preliminary approach for coupling radar rainfall data into a distributed hydrological model

A. Atencia (1), M.C. Llasat (1), L. Mediero (3), L. Garrote (2), M. Ceperuelo (1), and M. Barnolas (1)

(1) Group of Analysis of Adverse Meteorological Situations (GAMA), Department of Astronomy and Meteorology, University of Barcelona, Spain. (2) Department of Civil Engineering: Hydraulics and Energetics, Technical University of Madrid, Spain. (3) Department of Hydrology, Centre for Hydrographic Studies of CEDEX, Spain (atencia@am.ub.es / Fax: +34 93-4021133 / Phone: 34934039231)

The performance of hydrological models is usually constrained by the rainfall surface data they use. Such input data could be provided by rain gauge networks and deterministic or even probabilistic models. These types of data usually present serious disadvantages, because surface rainfall networks with an appropriate resolution for accurate hydrological models are rare and it is not easy to implement a meteorological model due to data and computational requirements. Remote sensing techniques such as radar or satellite data can help to solve this problem, thanks to indirect rainfall estimations at higher spatial and temporal resolution. In this work, a composed radar data from three C band radar data, with a 6 minutal temporal and 2x2 km spatial resolutions, provided by the Catalan National Meteorological Service, is used to feed the hydrological distributed model. Different Z-R relations are applied out depending on a previous distinction between convective and stratiform rainfall regions. Therefore a Window Probabilistic Matching Method (WPMM) is applied to both, convective and stratiform pixels to improve the observed rainfall sub-estimation in Z-R relations applied in Catalonia. Then rainfall data is introduced into a hydrological distributed model, RIBS (Real-time Interactive Basin Simulator). It is a topography-based rainfall-runoff model which can be used for real-time flood forecasting in midsize and large basins. The approach is validated by comparing model results with real values of stream flow measurement stations.