Geophysical Research Abstracts,
Vol. 10, EGU2008-A-12064, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-12064
EGU General Assembly 2008

Expeditive models for river water discharge evaluation

D. Mirauda (1), V. Pascale (1)

(1)Department of Environmental Engineering and Physics, Basilicata University, Potenza, Italy

The forecasting of flows in rivers represents a relevant element within the actions addressed to individualize a correct management policy concerning the water resources, connected to exigencies of prevention and defence from the environmental degradation. Recently the European directive 2000/60/CEE confirms the importance of the monitoring and control activities supporting the phases addressed to individualize the protection measures suitable to reach the "good state" of the water body. The quantitative monitoring of rivers is essential for a correct planning of the interventions in a middle and long term in relation to the control activity and environmental protection; besides it is useful to plan civil protection interventions in a short term in relation to the forecasting and prevention of flood events. In this last case a crucial element is represented by the constant updating of depth/discharge scales in control sections. This updating needs for large field activities not easily realizable both for the climatic conditions not always favourable both for the notable costs. All this encourages the development and implementation of expeditive models for water discharge evaluation in order to reduce the data acquisition time and processing without losing measurement precision. Studies of the literature (Greco & Mirauda 2002, 2004; Moramarco et al 2002, 2004, 2006 and Xia 1997), demonstrated a perfectly linear dependence between the maximum and the mean velocities in the regular and irregular cross section where the proportional coefficient is constant in all the investigated sections. In details, the knowledge of the relation between mean and maximum velocities of a cross section of river allows to concentrate the velocity measures only along the verticals where the possibility that the maximum or mean velocity of the section occurs is higher. The choice of those verticals is linked to the implementation of simple analytical methods (Moramarco et al. 2002, 2004, 2006) able to individuate the position of the maximum and mean velocity in the section investigated in different flow regimes. Such analy-

sis has been restricted to few gauged river sites located in Central Italy. The aim of this work has been to extend the analysis to river sites with different hydraulic and geometric characteristics from tested ones in Central Italy. At the purpose, different stream flow stations located along natural channels in Basilicata region, South Italy, have been used as case studies. Results were found in good agreement with observed water discharges with errors not exceeding 20%.