



## **Effects of global change on hydro-geomorphological hazards in Mediterranean rivers**

Jose Andres Lopez-Tarazon (1,2,3)

(1) Institute of Earth and Environmental Science University of Potsdam, Germany, (2) School of Natural Sciences and Psychology Liverpool John Moores University, England, UK, (3) University of Lleida, Environment and Soil Sciences, Lleida, Spain

Mediterranean river basins are characterized by high (often extreme) temporal variability in precipitation, and hence discharge. Mediterranean countries are considered sensitive to so-called global change, considered as the combination of climate and land use changes. All panels on climate evolution predict future scenarios of increasing frequency and magnitude of floods and extended droughts in the Mediterranean region; both floods and droughts are likely to lead to huge geomorphic adjustments of river channels so, major metamorphosis of fluvial systems is expected as a result of global change. Water resources in the Mediterranean region is subjected to rising pressures, becoming a key issue for all governments (i.e. clear imbalance between the available water resources and the increasing water demand related to increasing human population). Such pressures are likely to give rise to major ecological and economic changes and challenges that governments need to address as a matter of priority. Changes in river flow regimes associated with global change are therefore ushering in a new era, where there is a critical need to evaluate hydro-geomorphological hazard from headwaters to lowland areas (flooding can be not just a problem related to being under the water). A key question is how our understanding of these hazards associated with global change can be improved; improvement has to come from integrated research which includes all physical conditions that influence the conveyance of water and sediments, and the river's capacity (i.e. amount of sediment) and competence (i.e. channel deformation) that, in turn, will influence physical conditions of a given point in the river network. This is the framework of the present work; it is directed to develop an integrated approach which both improves our understanding of how rivers are likely to evolve as a result of global change, and addresses the associated hazards of fluvial environmental change.