



INTERUNIVERSITY PHD COURSE
“SUSTAINABLE LAND MANAGEMENT”
Cycle XXXVI

PhD Student:	Marianna Leone
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Title of the Research	
Project	Defining ecological flow in Mediterranean rivers
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Summary of the Research Project

Altered flow regimes, due to anthropogenic pressures and climate change, negatively impacting the quality of river ecosystems. In order to reduce these impacts, it is necessary to define the flow regime known as Ecological Flows. (EFs). The present research project aim focus on setting methodology to define EF in river basins with temporary watercourses characterized by limited availability of hydrological, ecological and sediment transport data by analysing different hydrological and hydraulic methods. The research will be developed through the case study of Locone stream, one of the main tributaries of the Ofanto River, which is intercepted by an artificial reservoir. The Soil and Water assessment Tool (SWAT) model will be used to simulate daily flow rates under natural conditions. These data will be used to evaluate the indicators of hydrological alteration representative of the semi-arid conditions of the basin in order to define a new methodology by modifying the Range of Variability Approach method ad hoc. A HEC RAS hydraulic model will be applied following SWAT to predict the depth of the water and the flow rate of a river segment downstream of the reservoir and to evaluate the effects of changes in the hydraulic regime on environmental characteristics.

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De Girolamo A.M., Barca E., Pappagallo G., Lo Porto A. (2017) *Simulating ecologically relevant hydrological indicators in a temporary river system*- Agricultural Water Management 180; pp 194-204.