Geophysical Research Abstracts
Vol. 18, EGU2016-16131, 2016
EGU General Assembly 2016

Advances in rainfall-runoff estimation using the NRCS-CN model in a changing climate in semiarid zones in both the northern and southern hemispheres

Pablo Durán-Barroso (1), Maria João Simas Guerreiro (2), Eunice Maia De Andrade (3), and Javier González (4)

(1) University of Extremadura, Department of Construction, Spain (pduranbarroso@unex.es), (2) Universidade Fernando Pessoa, Faculdade de Ciência e Tecnologia, Porto, Portugal (mariajoao@ufp.edu.pt), (3) Universidade Federal do Ceará, Engenharia Agrícola, Fortaleza, Brazil (eandrade@ufc.br), (4) University of Castilla La Mancha, Department of Civil Engineering, Spain (javier.gonzalez@uclm.es)

Extreme events runoff is one of the most important variables in water resources management, but its quantification in semiarid watersheds is not easy, especially because of their large retention capacity. In the worldwide used NRCS Curve Number model (CN), retention capacity is conditioned by the initial abstraction parameter, for which this manuscript questions its assessment procedure. We propose a more accurate procedure to compute the initial abstractions based on previous cumulative dry days (CDD). We also analyze the combined effect of initial abstractions and climatic characteristics by analyzing CN in a dry (Walnut Gulch, US) and wet (Ceará, Brazil) semiarid environment. With this new methodology and the evolution of rainfall volumes and CDD analysis, it is possible to suggest consequences of climate change on floods forecast of extreme rainfall-runoff events in a semiarid environment.