Characterization of extreme rain events and assessment of Regional Climate Models in Morocco

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# Abstract

At a global scale, more than half of the costliest disasters are weather related and our planet is facing more devastating extreme events mainly those related to rain. In Morocco, the floods between the 21st and the 25th November 2014 in the south of the country had caused the death of 32 people. In Casablanca, the flood of the 29th-30th November 2010 had caused enormous human and material losses. In the province of Settat, the flood of the 23th and 24th December 2001 have caused the death of eight people and flooded several industrial units and Douars in the region, adding to many other tragedies in the flood areas. Also in Ourika, the floods of the 17th August 1995 had caused more than 230 deaths, 500 missing, 200 damaged cars and other property damage. Thus, there is a real need for understanding and anticipating weather extreme events mainly those related to intense rains, that may leads the way in risk assessment and development of mitigation strategies.

The aim of this work is to characterize the frequency and the trends of rain extreme events and to assess simulations of regional climate models for these extreme events in the watersheds of Tensift and Bouregreg (Morocco), during the last decades. First, the work analyzes the observed trends in daily rainfall time series, than it identifies rare, very rare and exceptional rain events, using percentile sampling thresholds, and studies the trends of their frequency. Finally it evaluates an ensemble of regional climate models from the European project ENSEMBLES, with regard to the found trends in order to recognize models that best describe observed rain regime, in the studied catchments.

***Key Words: Rain extreme event; Percentile thresholds, Regional Climate Model, Trend, Frequency, Bouregreg, Tensift.***

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