



The Topology of Cyclones Related with Rain Events in Crete Island, Greece

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The topology of cyclones triggering rain events for the case study of Crete island is examined, for different parameters of analysis. The varying parameters concern different rain scenarios, seasonality, historical and projection data as well as different realizations of the EC-EARTH model. The data of 70 gauging stations all over Crete are evaluated, along with the cyclones from ERA-Interim reanalysis data and different realizations of EC-EARTH model data for the historical period 1979-2010. Cyclones and cyclone tracks identification is established with the use of Melbourne algorithm on Mean Sea Level Pressure (MSLP) field. Gridded probability maps of the cyclones in the European region are estimated according to the selected scenario. The various probability maps are compared to identify differences in the climatology of cyclones triggering rain in different cases. The study of the topological differences in cyclones gives insight to the way the organization of cyclones changes due to seasonality or different rain scenarios. Also, an evaluation of the EC-EARTH model is possible in order to examine the cyclones behavior in future projections.