



Diagnosis of rainfall occurrence with the evaluation of Cyclone Probability Maps over Eastern Mediterranean

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The association of cyclone pathways over eastern Mediterranean and rainfall occurrence of various intensity for the island of Crete resulted to diagnostic probability maps. A 30-year period (1979-2011) of ERA-Interim reanalysis dataset is used to identify the cyclone position and tracks with the aid of Melbourne University scheme. For the same time period, rain records from 69 daily gauging stations over Crete are considered for the analysis. Eastern Mediterranean region is divided in distinct cells of 0.5x0.5 grid resolution for each of which the probability of a rain event triggered by a cyclone passage is estimated. The association of cyclone positioning with rain occurrence is evaluated concerning the distance of the cyclone center from the area of interest. Rain events are classified in three intensity categories related to the daily rain accumulation. Probability maps are evaluated with Monte Carlo-10fold cross-validation for potential forecasting purposes. Results shows that intense rain events over Crete are more likely triggered from southern cyclonic systems. The evaluation of cyclone-rainfall probability maps showed very good performance of sensitivity and specificity statistical measures reaching from 60% to 80%. According to these results the use of cyclone-rainfall probability maps could give valuable information in combination with other forecasting products.