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Analysis of trend existence in monthly precipitation in Sicily

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The global climate change has had important effects on various environmental variables including rainfall in many country around the world. Changes in precipitation regime directly affect water resources management, agriculture, hydrology and ecosystems. For this reason it is important to investigate the changes in the spatial and temporal rainfall pattern in order to improve water management strategy. In this study a non parametric statistical method (Mann-Kendall MK rank correlation method) is employed in order to verify the existence of trend in annual, seasonal and monthly rainfall and the distribution of the rainfall during the year (i.e. annual no rainfall days). The MK test is applied to about 230 raingauge stations in Sicily, Italy after a series of procedures finalized to the estimation of missing records and to the verification of data consistency. In order to understand the regional pattern of precipitation in Sicily, the detected trends are spatially interpolated using spatial analysis techniques like cluster analysis and geostatistical interpolatorsin GIS environment. The results show the coexistence of different zones characterized by opposite trend and the existence of a spatial pattern.