

## ***Interactive comment on “Rainfall statistics changes in Sicily” by E. Arnone et al.***

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In the study "Rainfall statistics changes in Sicily", the authors applied trend detection tests to a set of precipitation indices for 57 stations in Sicily (25 700km<sup>2</sup>). They have checked the presence of serial correlations, by analyzing the lag-1 correlation signal before performing the trend analysis. However the presence of cross-correlation may also affect the test results, by increasing the expected number of trends (Type I error, i.e. rejecting the null hypothesis when it is true). Consequently, if the precipitation indices are correlated between the different stations, it requires field significance testing. Different procedures have been developed to take into account cross-correlations in trend analysis, including the block-bootstrap (Douglas et al., 2000) or the False Discovery Rate (Wilks, 2006) methods. A review of the different methods can be found in Renard et al. (2008) and Khaliq et al. (2009).

## References:

Douglas E.M., Vogel R.M., Kroll C.N., 2000. Trends in floods and low flows in the United States: Impact of spatial correlation, *J. Hydrol.* 240, 90– 105.

Khaliq M.N., Ouarda T.B.M.J, Gachon P., Sushama L., St-Hilaire A., 2009. Identification of hydrological trends in the presence of serial and cross correlations: A review of selected methods and their application to annual flow regimes of Canadian rivers. *Journal of Hydrology* 368, 117–130.

Renard B., Lang M., Bois P., Dupeyrat A. et al., 2008. Regional methods for trend detection: Assessing field significance and regional consistency, *Water Resour. Res.* 44, W08419, doi:10.1029/2007WR006268.

Wilks D.S., 2006. On “field significance” and the false discovery rate, *J. Appl. Meteorol. Climatol.*, 45, 1181– 1189, doi:10.1175/JAM2404.1.

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