



The impact of large-scale atmospheric circulation on the occurrence of extreme wet spells over Eastern Mediterranean

C. Oikonomou, H.A. Flocas, M. Hatzaki, A. Nisantzi and D.N. Asimakopoulos
Department of Environmental Physics and Meteorology, Faculty of Physics, University of Athens, Greece (c_economou@phys.uoa.gr / Phone: +302107276850)

In this study, the relationship between large-scale atmospheric circulation over the Northern Hemisphere and extreme wet periods occurring over the Eastern Mediterranean is examined. More specifically, our aim is to investigate the possible linkage between extreme wet periods and known teleconnection patterns, such as the North Atlantic Oscillation (NAO), the North Sea-Caspian Pattern (NCP) and the Eastern Mediterranean teleconnection Pattern (EMP).

For this purpose, ERA-40 gridded daily data of geopotential height at 500 hPa and mean sea level pressure on a $2.5^\circ \times 2.5^\circ$ grid over Northern Hemisphere have been employed, covering the period 1958-2000. Also, daily precipitation datasets of 52 rain gauge stations over Eastern Mediterranean are used for the same period. Extreme wet spells are defined with the aid of the precipitation index CWD (Maximum number of consecutive wet days over a certain season of the year), while a Multivariate Statistical Method, the Singular Value Decomposition analysis (SVD), is applied in order to investigate the relationship between large-scale circulation patterns and identified precipitation extremes on a seasonal basis. Although SVD is a relatively new approach to atmospheric sciences, it is preferred in this study because of its simplicity to perform and interpret the results and its employment on real raw and unfiltered data. In addition, it requires no user-supplied parameters and appears no systematic errors.

The results indicate that there is a strong relationship between NAO and extreme wet spells during winter, while an increase in the length of extreme wet spells is also

revealed for Eastern Mediterranean, during the positive phase of EMP.

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