



Investigating the connection between Indian monsoon and the wind regime of Eastern Mediterranean during the summer period

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During summer, strong northerly winds prevail in the lower troposphere up to 850 hPa over the Aegean Sea, namely “Etesians”, which are induced by the combination of a high pressure system over southeastern Europe (extended Azores anticyclone – Balkan anticyclone) and the Pakistan heat low. The objective of this study is to investigate the impact of Indian Summer Monsoon (ISM) on this wind regime, employing the ERA-40 Reanalysis gridded datasets over the examined area and a predefined monsoon index (All-India Rainfall Index- ‘AIRI’) for the boreal summer (June-September) and for a 44-year period (1958-2001). Correlation analysis and Rotated Principal Component Analysis (RPCA) are performed to statistically investigate the circulation signature associated with the ISM. RPCA is employed in order to identify physically meaningful spatial patterns which are further examined for their correlation with the AIRI. For the case of the 850 hPa meridional wind, the Etesian pattern produced from the RPCA was the one exhibiting the highest correlation with AIRI, advocating for the connection of the ISM and the Etesians. Furthermore, an attempt is made to compare the spectral characteristics of the AIRI during the boreal summers with the ones of meridional and zonal wind for selected grid points using Empirical Mode Decomposition and Hilbert Transform (Hilbert-Huang Transform).

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