



Creation of Cyclonicity Indices in 500hPa level over Southern Iran and Climatological Responses in Shiraz and Kerman

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Circulation indices are non-advection type of atmospheric circulations describing the type and intensity of the pressure systems at the synoptic maps, usually averaged spatially and over time. Monthly averages of 500hPa maps over southern Iran in 1951-2003 period, prepared by CDC published by NOAA, subjected to regional circulation model centered in both Shiraz and Kerman points. Upper Cyclonicity Indices (UCI) defined as the impact of trough system pattern over the area. Criteria for obtaining the indices are curvature and gradient of contours reflecting type and intensity of the circulations. Created series of UCI for each centered point with 636 samples ranges from -2 to +2, estimated with less than 5% error. They are valid over the considerable parts of Southern Iran about 400,000 km². By UCI, the status of circulation patterns in winter and summer well describe synoptic climatology of the area. Obtaining results for climatological responses show that UCI better fit with temperature (coefficient of determination: R² are 0.56 for Shiraz and 0.60 for Kerman) than precipitation (R² are the same: 0.27). ANOVA analysis demonstrated well regressions at 5% level. It seems that for better coverage of Southern Iran and surrounding margins, the cities of Ahwaz in the west and Zahedan in the east should be considered under study. These 4 points may smooth the continuity principles in climatology over Southern Iran.