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Regional Circulation Effects Reflected by Cyclonicity Indices over Eastern Mediterranean Sea

M. R. Pishvaei (1), M. Lapin (2)

(1) Water Eng. Dept., College of Agriculture, Shiraz University, 71441 Shiraz, Iran, (2) Dept. of Meteorology and Climatology, FMFI, Comenius University, Mlynska dolina, 842 48 Bratislava, Slovakia,

(mrpishvaei@gmail.com / TelFax: +98 711 2286130)

ABSTRACT: Regional Circulation Model (RCM) constructed over Eastern Mediterranean Sea centered in ca 33˚N and 32˚E point. Upper Cyclonity Indices (UCI), defined as the impact of trough system over the area, elaborated from monthly averages of 500hPa maps in 1948-2003 period prepared by CDC published by NOAA. Criteria for obtaining the indices are curvature and gradient of contour lines reflecting type and intensity of the circulations. Created series of UCI with 672 samples ranging from -2 to +2, estimated to be with less than 5% error. They are valid over the considerable parts of the Eastern Mediterranean Sea and surrounding areas with a radius of about 260km from centered point. Obtaining results describe the status of synoptic climatology demonstrating the existence of trough pattern during all months of a year. This trough plays an important role for climate conditions of the surrounding areas. It is weak during November (0.38) whilst highest in June (0.93). Increasing trend of UCI from 1970's decade up to now observed for both warm and cold half year. It reflects high influence of the trough that intensify relevant synoptic climatological conditions such as involving higher dry conditions during warm half year in the Middle East. The advantage of this work is to quantify the flow chart of the 500hPa by UCI in the selected regional scale. One of applications is to understand circulation effects on the local climatological responses.