

*A dynamic perspective of a link between of hurricane Olga (2001) and extreme synoptic event with torrential rains in Israel*

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Evolution of the synoptic processes that took place over the area from North Atlantic to Europe and the Mediterranean region during the time period from November 25 till December 5 2001 is analyzed. The period was characterized by the development of Hurricane Olga on November 26 and an unusually intense rainy event in Israel on December 4-5. The synoptic mechanisms responsible for the long-distance process are investigated from the potential vorticity (PV) perspective based on the results of trajectory calculations and dynamic tropopause patterns calculated based on the reanalysis data as well as those from a mesoscale model simulation of the eastern Mediterranean weather event. The synoptic process resulted from the intensification of the upper-troposphere polar and subtropical jet streams as a result of acceleration of a coherent tropopause disturbance due to Olga's formation. The strengthening of subtropical jet led to the formation of a Red Sea Trough system over the eastern Mediterranean. Eastward drift of the tropopause disturbance with the air flow from the area of the hurricane to West Scandinavia led to formation of a PV-streamer system there. The displacing over West Europe to the Alpine and then southeastern Mediterranean regions PV-streamer determined the weather developments there and finally lead to the transformation of the Red Sea Trough into the Cyprus Low system. Intense transport of moist air masses by the two synoptic systems from the atmosphere over the Atlantic and Arabian Seas, followed by the latent heat release processes determined the precipitation intensity during the case. Acknowledgments: The research was supported by German-Israeli research grant (GLOWA - Jordan River) from the Israeli Ministry of Science and Technology; and the German Bundesministerium fuer Bildung und Forschung (BMBF)