



Potential vorticity patterns in Mediterranean hurricanes

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Two new variables have been introduced to better identify the potential vorticity (PV) anomalies due to the intrusion of dry stratospheric air from those induced by the diabatic latent heating. This new approach has been applied to the analysis of three Mediterranean tropical-like cyclones characterized by heavy precipitation patterns. Model simulations show that the interaction between an upper level PV streamer, located on the left exit of a jet stream and a middle-low level PV anomaly, induced by the convection development around the low level vortex, plays a key role in the intensification of cyclones in all cases. These anomalies, despite their strong mutual interaction, do not form a fully developed PV tower. In the mature stage, the shape of the upper level PV anomaly around the cyclone is different for each case and appears somehow dependent on the lifetime of the vortex. A first comparison with satellite-derived products seems to confirm the initial results from model simulations.