



Atmospheric profiles during Dust days

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The vertical profiles of temperature, wind components, and humidity, for days with Saharan dust intrusions to Israel and with no dust were compared and analyzed.

Three datasets, all for the 49-yr period of 1958-2006, were used: the daily dust observations at Tel Aviv, Israel, including about 1000 dust-days; the Eastern Mediterranean daily surface synoptic classification; the vertical data over the Eastern Mediterranean grid-point closest to Tel-Aviv at 32.5N 35E based on the NCEP/NCAR reanalysis. The meteorological parameters were averaged over the 49 year period by season, pressure level, synoptic-type, and dust and no-dust days.

Prominent differences between dust and no-dust days were found for relative humidity and wind components during fall, winter and spring at 700, 600, and 500 hPa levels.

Relative humidity was found to be higher during dust episodes. In Israel high RH at these levels is associated with precipitation. Absolute vertical velocity (Ω) values were higher on dust days than on days with no dust. Southerly and westerly components of wind were found to have higher values during dust days. It was found that for most synoptic systems, temperature below the 700-hPa level was equal or higher during dust days. Thus, during dust days the lower troposphere is unstable.