Identification and advanced warning of large hail and tornadic convective storms in the Mediterranean basin

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Tornado and large hail occur occasionally "unexpectedly" in the Mediterranean basin, most recently in Israel on 4 April 2006. The development of these storms can be detected well in advance based on the satellite signature of the unique cloud microstructure that the extremely strong updrafts produce. Cloud particle size remains small to great heights in the strong updrafts, and this can be detected in a timely fashion by satellite retrievals. The cloud top particle effective radius and temperature is detected using the METEOSAT Second Generation (MSG) geostationary satellite, which has measurement frequency of 15 minutes. The detection methodology was developed for a large data set of tornadic storms during summer over the USA, and applied successfully to several recent cases that occurred during winter over the Mediterranean basin.