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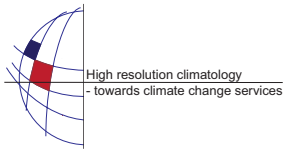

Synoptic-mesoscale analysis and numerical modeling of a tornado event on 12 February 2010 in northern Greece

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Tornadoes are furious convective weather phenomena, having increased frequency, particularly in the cool season, attributed to the higher moisture content of the atmosphere due to global warming. Tornadoes' source regions are more likely shallow waters, which are easily warmed, such as Gulf of Mexico or Mediterranean Sea.
This study analyzes the tornado event, that occurred on 12 February 2010 in Vrastera, Chalkidiki, a non urban area 45 km southeastern of Thessaloniki in northern Greece. The tornado was developed approximately between 17:15 and 18:45 UTC and characterized as F2 (Fujita Scale). The tornado caused several damages to an industrial building and an olive-tree farm.
A synoptic analysis based on the ECMWF charts is presented along with an extended dataset of satellite images, radar products and vertical pro[U+FB01]le of the atmosphere. Additionaly, the nonhydrostatic WRF-ARW atmospheric numerical model (version 3.2) was utilized in analysis and forecast mode using very high horizontal resolution (1 km x 1 km) in order to represent the ambient atmospheric conditions and examine the prediction of the event. Sensitivity experiments look into the model performance in the choice of microphysical and boundary layer parameterization schemes.