



Verification of mesoscale-model forecasts for Athens during the 2004 Summer Olympic Games

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During the Athens Olympics in the summer of 2004, NCAR operated a real-time MM5-based modeling system that provided analyses and forecasts on a variety of scales, from the area of the eastern Mediterranean down to the urban scale. The meteorological situation was challenging in that the highly complex coastline produced interacting sea and land breezes that were significantly affected by the local topography and other landscape characteristics. In particular, the model needed to properly simulate the degree to which the locally forced circulations were overwhelmed by the common synoptic-scale northerly Etesian wind. The grid increment of the inner-most grid was 1.1 km, and was capable of representing the thermal and dynamic effects of the Athens urban area. This paper reports on the performance of the operational model during the two-month period, with a special focus on the wind field. A cluster-analysis technique is used to group the synoptic regime into days in which the Etesian winds are strong and weak (allowing the sea breeze to dominate), and forecast-verification statistics are calculated separately for the two regimes. Also, sensitivity experiments are described that illustrate the sensitivity of the forecast winds to the proper specification of the urban landscape.