

Analysis and Modeling of an Extremely Dense Fog Event in Southern Ontario

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In this study a dense fog episode, which occurred near Windsor, Ontario on 3 September 1999 is investigated. The fog patch, with a spatial scale of several kilometers, reduced visibility on a major highway to a few meters and led to a series of collisions and loss of life. Satellite imagery and surface observations are used to analyze the physics of the event and several hypotheses on the origin of the fog are presented. A series of simulations of the event with a mesoscale model (MM5) suggest that the fog formed due to convergence of land breezes developing along the shores of a lake and subsequent advection of moisture over the site of the accident. Tests indicate that the small scale of the modeled event contributes to sensitivity of the results to a broad range of factors. Sensitivity to the initial and boundary conditions, including initial soil moisture content, and parameterization of turbulence is discussed.