

Abstract Submitted
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Modeling Radiation Fog¹ SREENIVAS K R², RAFIUDDIN MOHAMMAD³, JNCASR, Bangalore — Predicting the fog-onset, its growth and dissipation helps in managing airports and other modes of transport. After sunset, occurrence of fog requires moist air, low wind and clear-sky conditions. Under these circumstances radiative heat transfer plays a vital role in the NBL. Locally, initiation of fog happens when the air temperature falls below the dew-point. Thus, to predict the onset of fog at a given location, one has to compute evolution of vertical temperature profile. Earlier, our group has shown that the presence of aerosols and vertical variation in their number density determines the radiative-cooling and hence development of vertical temperature profile¹. Aerosols, through radiation in the window-band, provides an efficient path for air layers to lose heat to the cold, upper atmosphere. This process creates cooler air layer between warmer ground and upper air layers and resulting temperature profile facilitate the initiation of fog. Our results clearly indicates that accounting for the presence of aerosols and their radiative-transfer is important in modeling micro-meteorological process of fog formation and its evolution. . [1] Field and laboratory experiments on aerosol-induced cooling in the nocturnal boundary layer. Q.J.R.Meteorol.Soc. 140.678 2014, 151-169.

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