An Operational Fog Prediction System for Delhi using the 330m Unified Model

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Abstract: We introduce NCMRWFøs high resolution (330m) Unified Model implementation targeted at fog and visibility prediction over Delhi, the õDelhi Modelö (DM). The requirement for running the DM in real-time is that Delhi is highly vulnerable to fog related issues and that low visibility conditions affect both airborne and ground transport during winter months. Enhanced orographic features at 330m resolution, in conjunction with other surface boundary conditions used by the DM, have lead to improvements in the simulation of spatio-temporal variability of visibility. During the winter season, the increased levels of pollution can have a significant impact on fog, or smog, formation. Sensitivity experiments carried out using specified aerosol mass concentrations show that the visibility predicted by the DM is highly sensitive to the presence of aerosol. The impact of the urban heat island on visibility prediction is also investigated using recent high resolution land use data from ISRO in the model.