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A high-resolution local forecast model at the Japan Meteorological Agency, for the forecast of local severe events

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The Japan Meteorological Agency (JMA) operates a meso-scale model (MSM) of which horizontal grid spacing is 5 km. Besides, we have developed a higher-resolution local forecast model (LFM) of which horizontal grid spacing is 2 km. The LFM aims to provide more detailed information about short-term heavy rain and gust, which cause disasters, and about sudden change of wind direction and low level wind shear, which have impacts to aviation safety and air traffic management. The LFM is planned to be operational in 2011 or later.

In the development of the LFM, since 1 June 2006 we have experimented with the 300-square-km domain around Tokyo in Japan and verified daily forecasts. This experimental run forecasts for 12 hours 3-hourly (8 times a day) and focuses on local severe events as written at the beginning.

Presently, the LFM could forecast some local severe events, but on the other hand, the LFM has some problems, including the grid-scaling rainfall. To solve these problems, we are ensuring the effects of convective parameterization like the Kain-Fritch Scheme and cloud microphysics to forecast mixing ratios of water substances and number concentrations of ice crystals.

At this meeting, we will show this LFM. And, through the cases of local severe events, we will discuss about the results and the problems.