

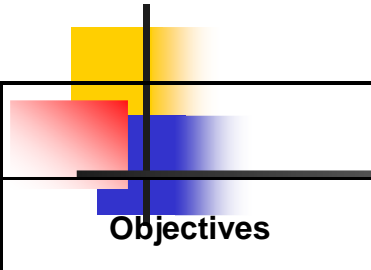


Meso Scale Model and related R & D activities at the Japan Meteorological Agency

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Current NWP models at NPD/JMA



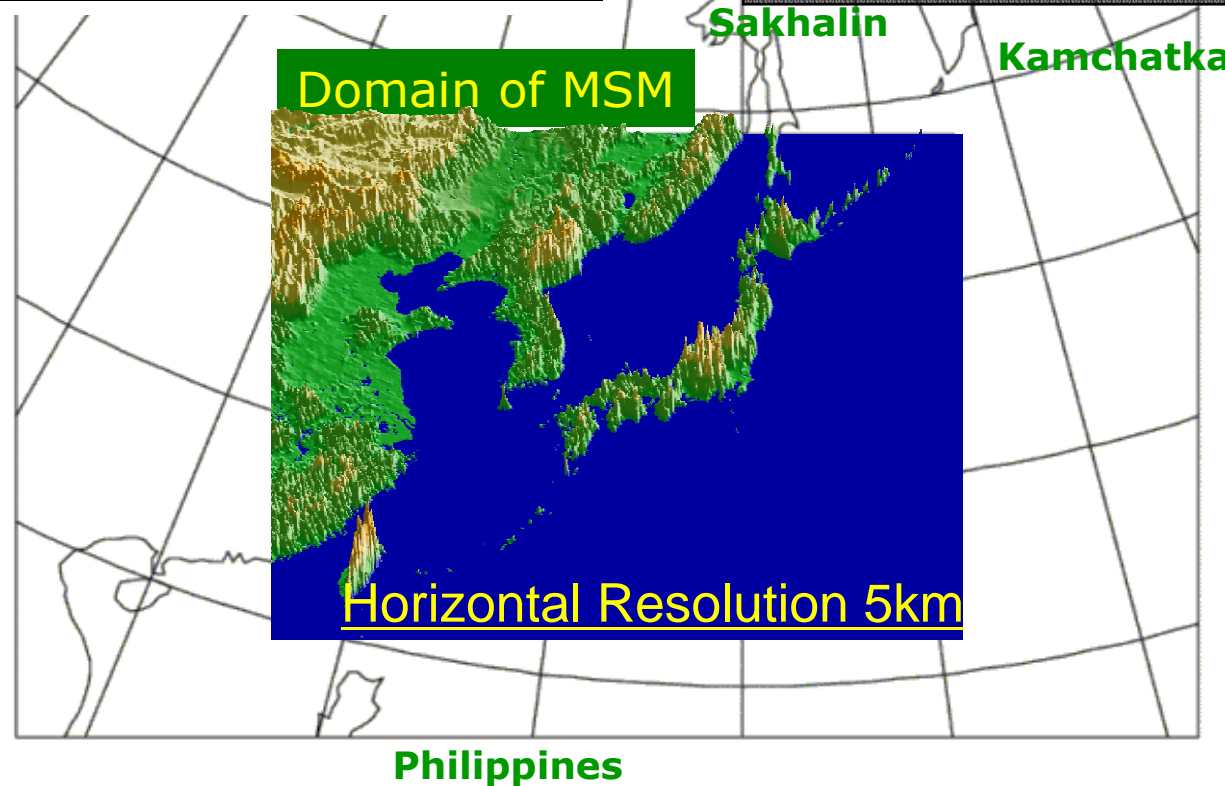
	Mesoscale Model (MSM)	Global Model (GSM)	One-Week Ensemble	Typhoon Ensemble
Objectives	Disaster prevention / Aviation Forecast	Short- and medium-range forecast	One-week forecast	Typhoon forecast
Forecast domain	Japan and its surrounding	Globe	Globe	Globe
Resolution	5km	0.1875deg (~20km)	0.5625 deg (~60km)	0.5625 deg (~60km)
Number of grid points	721x577	1920x960 TL959	640x320 TL319	640x320 TL319
Model levels	50 levels up to 21800m	60 levels up to 0.1hPa	60 levels up to 0.1hPa	60 levels up to 0.1hPa
Forecast length	15 hrs (00,06,12,18UTC) 33 hrs (03,09,15,21UTC)	216 hrs (12UTC) 84 hrs (00,06,18UTC)	216 hrs (12UTC)	84 hrs (00,06,12,18UTC)
Forecast Model	JMA-NHM (nonhydrostatic)	Global Spectral Model (hydrostatic)	Global Spectral Model (hydrostatic)	Global Spectral Model (hydrostatic)
Analysis	4D-Var	4D-Var	Global analysis with ensemble perturbation	Global analysis with ensemble perturbation
Number of ensemble members	---	---	51	11

Mesoscale NWP System : MSM

- Forecast Model : JMA-NHM (JMA Nonhydrostatic Model)
- Analysis System : Meso 4DVar

Outer Model (GSM)
Horizontal Resolution 20km

Grid points: 721 x 577
3600 x 2880km



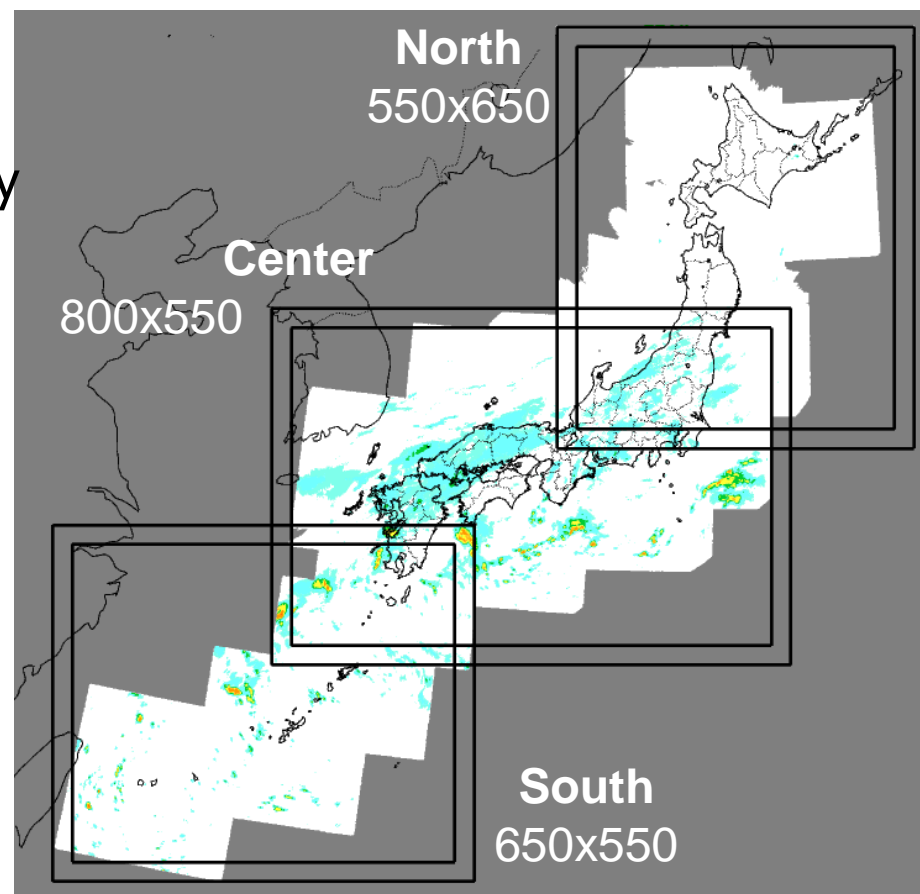
Development of the Local Forecast model (LFM)

■ Long-term goal

- Forecast model with $dx=2km$
 - Initial condition given by an hourly update cycle with 5km 3DVAR
 - Dynamical QPF
 - Aerodrome forecast
 - Disaster prevention
 - 9 hours forecast by hourly update

■ Medium-term goal

- Evaluation of the 2km model by the experimental daily run of a prototype model (currently daily run by smaller domain with $151 \times 151 \times L60$)



Case study on the precipitation forecast

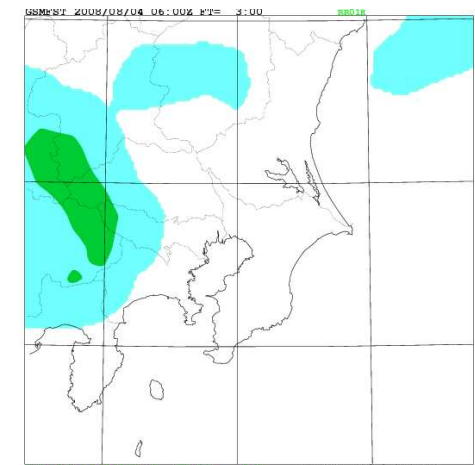
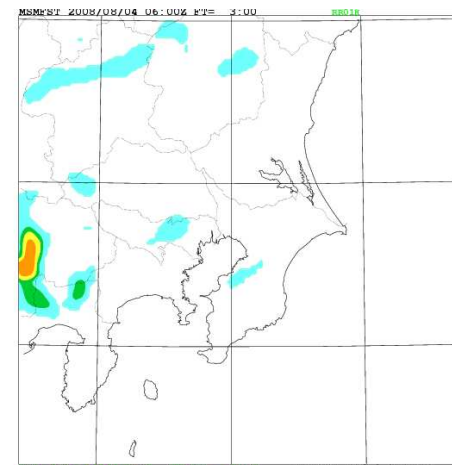
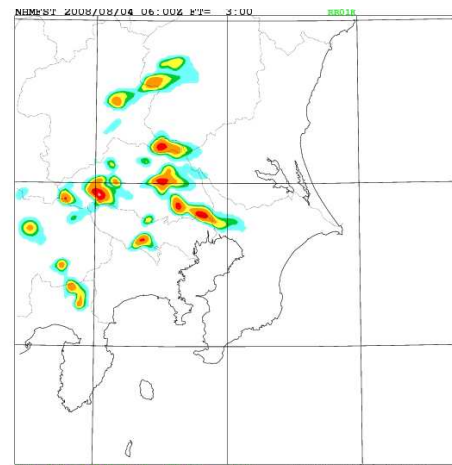
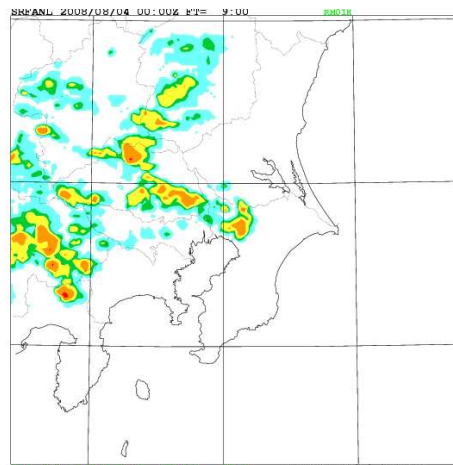
One hour precipitation at 09 UTC 09 Aug 2008

Observation

LFM (2km)

MSM (5km)

GSM (20km)



Initial time : 06 UTC 09 Aug 2008 (3 hour forecast)
Moist process of LFM : Only 3-ice cloud microphysics