An operational high resolution regional NWP system at JMA

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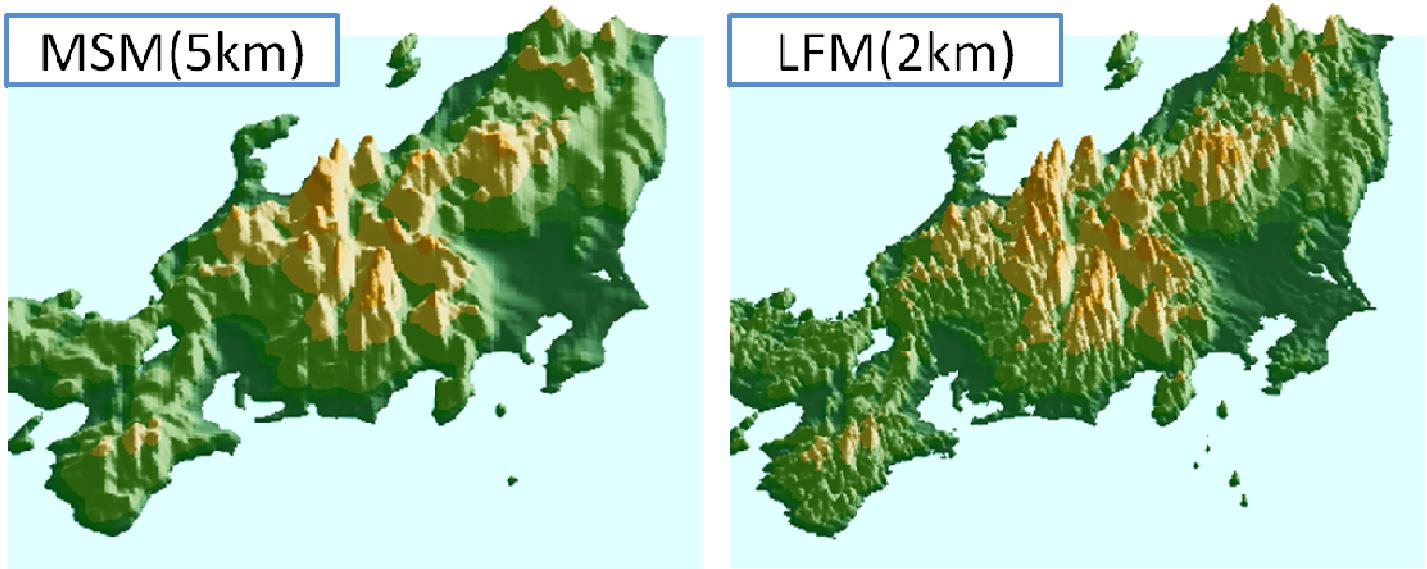
Introduction

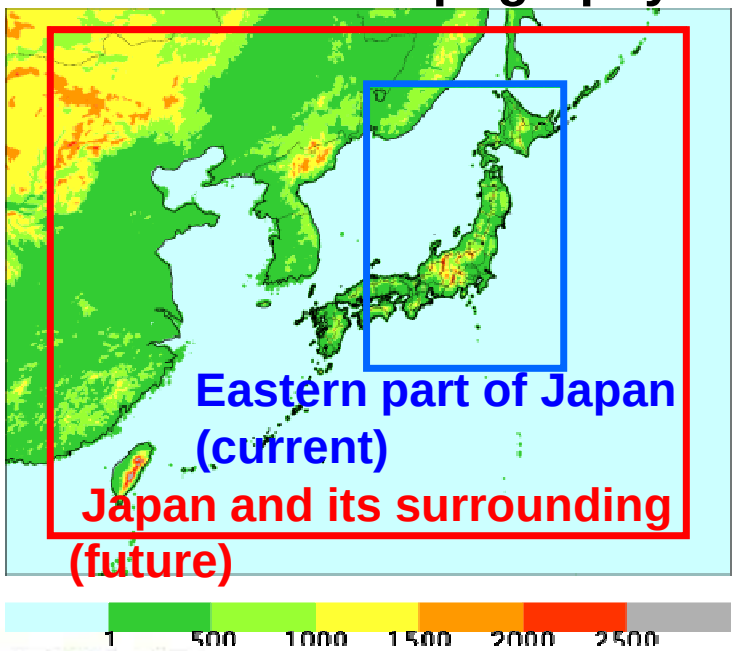
- The **supercomputer system at JMA** has been upgraded in June 2012, and now in operation.
- Taking advantage of much more computational resources, a high resolution (dx=2km) regional model (**LFM: Local Forecast Model**) has been operating since August in 2012.
- **The purpose** is providing information on aviation weather and disaster prevention.



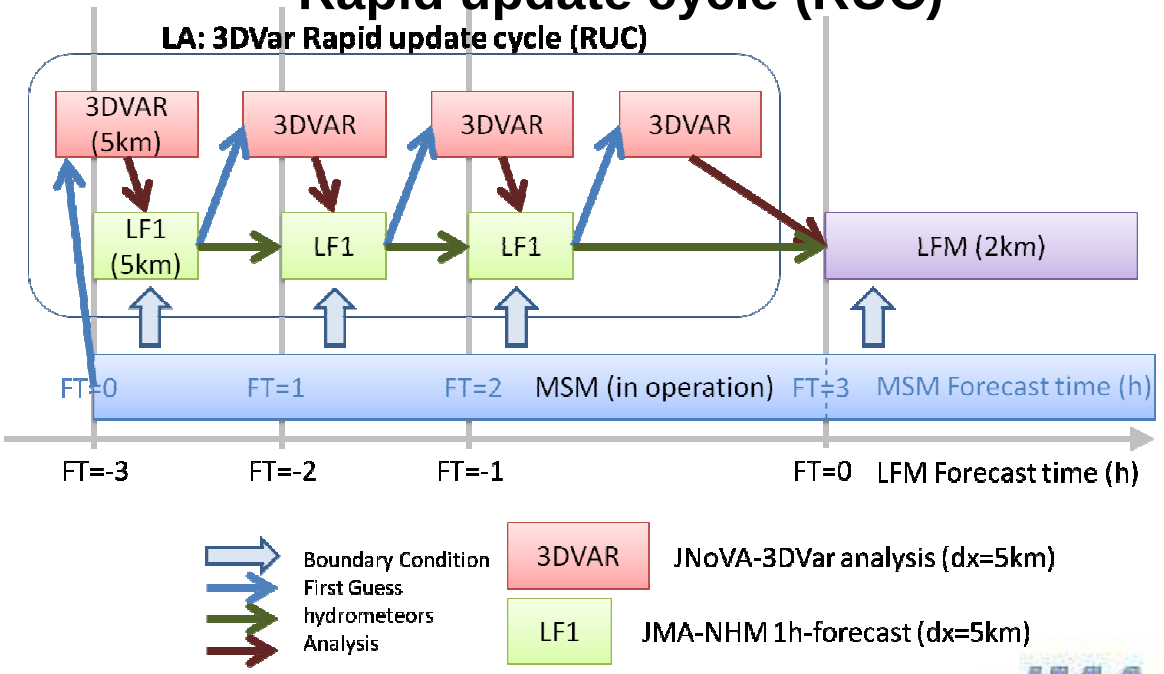
Basic design of the LFM

- **LFM** with a 2km horizontal meshes and 60 vertical layers covers the eastern part of Japan, and provides 9-hour period forecasts every 3 hours.
- The forecast domain will be expanded so that the Japanese territory and its surrounding areas can be covered and the update frequency will be enhanced to every hour in 2013.
- **Initial conditions for LFM** are generated by the RUC employing the 3D-VAR. This faster data assimilation helps the frequent updates of forecasts.

Domain and topography



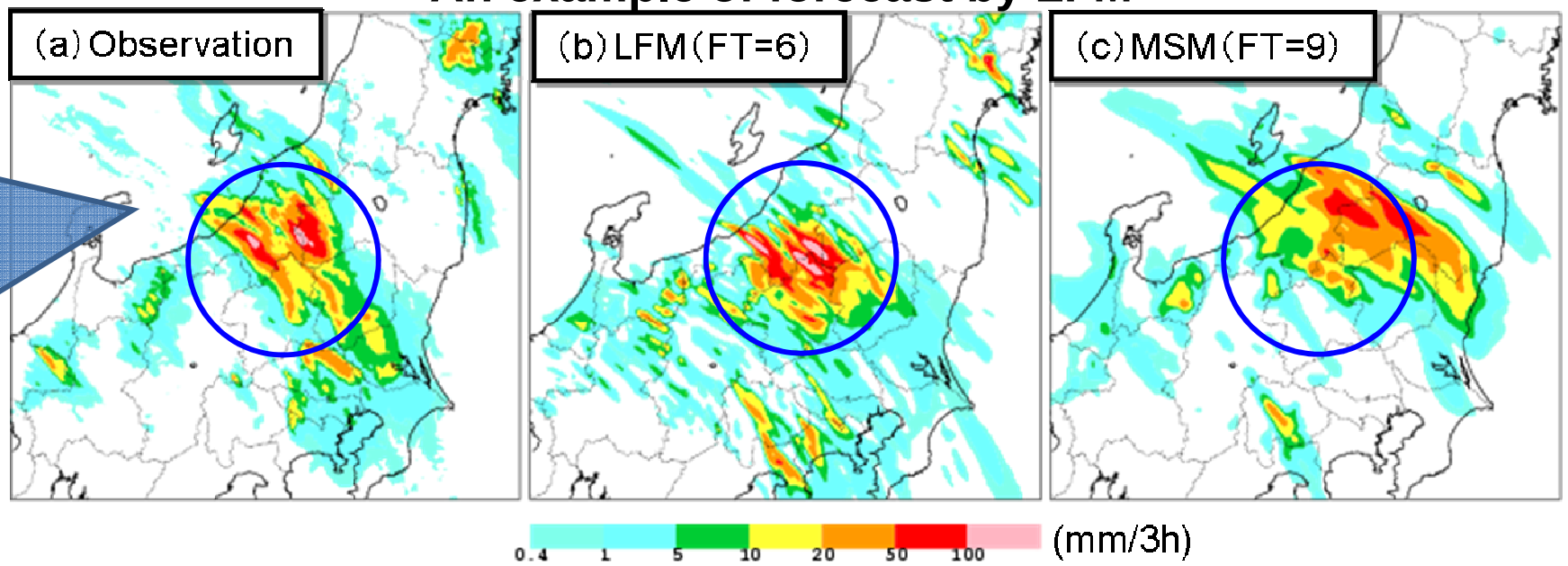
Rapid update cycle (RUC)



Advantages of the high resolution model

- One of **the advantages of higher resolution models** is that the models can represent smaller scale phenomena.
- Higher resolution models can better represent phenomena related to topography.
- High resolution makes it possible to assimilate observations of which locality is strong like temperature and wind velocity near the surface.

An example of forecast by LFM



A heavy rainfall on July 2011

The maximum daily precipitation amount ~ 1000mm

Typical example of 3 hour accumulated precipitation which LFM better predicted intensity and location of heavy rainfall than MSM.