

AMSR-E data now used in the Japan Meteorological Agency's global numerical weather prediction model.

The Japan Meteorological Agency has begun to use satellite microwave radiometer data including AMSR-E, called microwave data below,¹ in objective analysis² of its global numerical prediction model. AMSR-E data has been used in the Japan Meteorological Agency's³ Meso-Scale Model that is used to predict small-scale weather phenomena since November 17, 2004 and has contributed to improving the accuracy of predicting heavy rain.

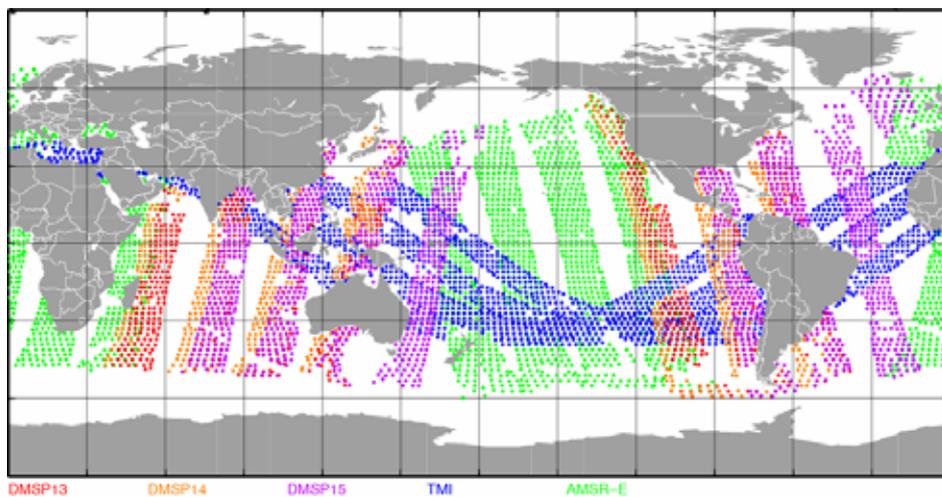


Fig. 1 Example of microwave data distribution

Green: Aqua. Blue: TRMM. Red: DMSP 13. Orange: DMSP 14. Purple: DMSP 15.

Figure 1 presents an example of the distribution of microwave data used in an objective analysis. This indicates that AMSR-E covers the area of the sea that other satellites can't. It is thus necessary for AMSR-E data to cover global oceans.

Microwave data provides water vapor information mainly about the lower level of the atmosphere⁴ to the numerical prediction model. Microwave data provides a large

1. The Japan Meteorological Agency has also begun to use the data of TMI on TRMM and SSM/I on the military satellite of the United States DMSP (DMSP 13, 14, and 15 are now operating) in addition to AMSR-E on Aqua.

2. To run a numerical prediction, it is necessary for all points in the model to be given the atmospheric conditions (called initial values) such as temperature, wind vector, and amount of water vapor at a certain time (from the homepage of the Japan Meteorological Agency).

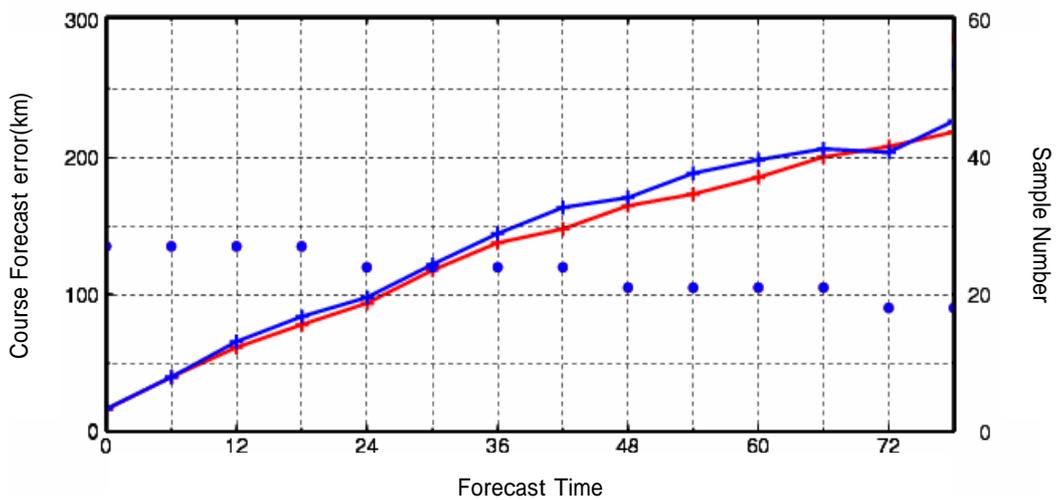
3. For details, please refer to the following.
<http://www.kishou.go.jp/know/whitep/1-3-1.html> (in Japanese)

4. Less than 2km above the surface.

amount of water vapor information to the model, especially on the sea where water vapor observation of the lower level of the atmosphere was lacking. It was confirmed that both the distribution of water vapor in the lower level of the atmosphere and the accuracy of forecasting typhoon centers are improved.

Figure 2 plots the forecast time (horizontal line) versus course forecast error of the typhoon center (left vertical line). The red line represents the forecast results with microwave data, and the blue line, that without such data. The blue dots indicate the sample numbers used (right vertical line).

The red line is below the blue line at almost all forecast times, indicating that the typhoon center is forecast more accurately with microwave data than without it.



Microwave radiometer AMSR-E on Earth-observation satellite Aqua has operated for four years since its launch on May 4, 2002 and is still operating. Figures 1 and 2 were provided by the Japan Meteorological Agency.