

High resolution simulation of heavy rainfall event with the super computer K

*Tsutao OIZUMI^{1,2}, Kazuo Saito^{2,1}, Junshi Ito², Le Duc^{1,2}

1.Japan Agency for Marine-Earth Science and Technology, 2.Meteorological Research Institute

In Japan, heavy rainfalls cause severe disaster every year. To mitigate these disasters, a collaboration between a numerical weather prediction (NWP) model and a hydrological model is very important.

Generally, many of hydrological models require precipitation data that horizontal resolutions are several 10 to 100 meter scales. On the other hand, many of NWP models employ several kilometers scales horizontal resolutions because finer resolution NWP models require huge computational resources such as the K computer. Therefore, it was difficult for hydrological models to use NWP models precipitation data directly.

The authors conducted high-resolution experiments with the Kcomputer and the Japan Meteorology Agency Non-hydrostatic model (JMA-NHM). In this study, an impact of grid spacings (up to 250 m), different model domain sizes (1600x1100 km, and 200 km square), and terrain data were tested in two heavy rain events in Izu Ohisma 2013 and Hiroshima 2014.

The results showed that 250-m resolution model with large domain showed the best performance in both of the heavy rain events. The precipitation data of the 250-m models have been provided to a debris flow research using the Hydrodebris-2D, the research may presents in a different session.

Keywords: Heavy rain, Numerical Wheater Prediction Model, the K computer