[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-AS Atmospheric Sciences, Meteorology & Atmospheric Environment

[A-AS01]High performance computing for next generation weather, climate, and environmental sciences

convener:Hiromu Seko(Meteorological Research Institute), Chihiro Kodama(Japan Agency for Marine-Earth Science and Technology), Masayuki Takigawa(独立行政法人海洋研究開発機構, 共同), Takemasa Miyoshi(RIKEN Advanced Institute for Computational Science)
Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

A lot of advanced simulation studies are being conducted by high performance supercomputers such as K computer, Earth Simulator in various fields including meteorology. The high performance supercomputers enables us to conduct numerical simulations and data assimilation of observation big-data (huge high-density and high-frequency data) with an order of magnitude higher resolutions and ensemble numbers than those with previous supercomputers. In addition, the post-K computer will be available as a successor of K, and studies for the post-K computer was started. At the Atmospheric Science session co-organized by the Meteorological Society of Japan, we comprehensively pick up this topic in the Atmospheric and Hydrospheric Sciences Session of this 2018 Union Meeting that enables to comprise the atmospheric, oceanic and land sciences. This session aims to promote recent studies related to the issues on high performance computing in weather, climate, and environmental studies using the K computer and other supercomputers, and to enhance discussions on future directions of numerical simulations in meteorology.

[AAS01-P10]Assimilation of Rapid-Scan Atmospheric Motion Vector of Himawari-8 to Improve the Rainfall Forecast of the Northern Kyushu Heavy Rainfall

*Hiromu Seko[1,3], Masaru Kunii[2], Kazuki Shimoji[2] (1.Meteorological Research Institute, 2.Japan Meteorological Agency, 3.Japan Agency for Marine-Earth Science and Technology)
Keywords:Data assimilation, Rapid-Scan Atmospheric Motion Vector, Heavy Rainfall

Heavy rainfall that caused the landslides and floods over the northern Kyushu was generated on 5 July 2017. One of generation factors of this heavy rainfall was the continuous supply of humid air by the low-level airflow from the East China Sea. Because the horizontal wind affects the humid air supply, it is expected to be the useful assimilation data to improve the rainfall forecast. We used the atmospheric motion vector that was obtained from cloud images of Himawari-8 by tracing the positions of clouds. Because the observation interval of Himawari-8 is as short as 2.5 minutes, the high-frequent and dense horizontal winds (RS-AMV) can be obtained from the high-frequent cloud images.

In this study, the impact of RS-AMV on the heavy rainfall was investigated with Local Ensemble Transform Kalman Filter (LETKF). In this heavy rainfall case, westerly flow was intensified by the assimilation of RS-AMV, and the maximum of the predicted rainfall became closer to the observed one.