[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 highdensity 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 coorganized 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-P08]On the assimilation of GNSS-PWV measurements in Heavy to Torrential Rain events in Davao City, Philippines

*Kristine Mae Rodriguez Carnicer^{1,3}, Rui Fernandes², Edgar Vallar¹, Maria Cecilia Galvez¹ (1.Environment and RemoTe sensing ResearcH (EARTH) Laboratory, Physics Department, De La Salle University, Philippines, 2.Space and Earth Geodetic Analysis Laboratory (SEGAL), University of Biera Interior, Portugal, 3.Ateneo de Davao University, Philippines)

Keywords:GNSS-Precipitable Water Vapor , Rain events, Atmospheric water vapor

Precipitable water vapor (PWV) measurements derived from the datasets of a single standalone GNSS receiver was conducted in Davao City, Philippines (7°4'N, 125°36'E) for the years 2013 to 2016. The primary goal of the study is to monitor the variability of the GNSS-PWV estimates during heavy to torrential rain events. Several papers have made case studies on precipitation and atmospheric water vapor and most studies have supported the existence of the positive correlation between PWV and rain. These studies implied that a better analysis of the distribution of water vapor is a key factor to better understand the initiation of precipitation and provide more accurate forecasts of such events. In the present study, time series plots were made to provide a better picture of the variability of PWV for each rain event. It can be observed that while moderate rain follows small variations in PWV, heavy to torrential rains usually follows a peak in PWV. A time lag of approximately 2-8 hours is observed between the two peaks. Intense to torrential rains would always be followed by a decrease of about 5-10 mm in PWV. In addition, a build-up of PWV is observed prior to intense to torrential rain. However, the maximum PWV value that precedes each rain event varies depending on the season and no cut-off value of PWV had been noted that predicts the occurrence of heavy to torrential rain events.