International Session (Oral) | Symbol A (Atmospheric, Ocean, and Environmental Sciences) | A-AS Atmospheric Sciences, Meteorology & Atmospheric Environment

[A-AS01_30PM1]Extreme Weather in Cities

Convener:*Masayuki Maki(ERCDP, Kagoshima University), Jun Matsumoto(Deaprtment of Geography, Tokyo Metropolitan University), Yoshinori Shoji(The Second Laboratory of Meteorological Satellite and Observation System Research Department, Meteorological Research Institute), Tsuyoshi Nakatani(National Research Institute for Earth Science and Disaster Prevention), Chair:Masayuki Maki(ERCDP, Kagoshima University)

Wed. Apr 30, 2014 2:15 PM - 3:45 PM 423 (4F)

It is recognized that large cities with a population of several million people are inherently vulnerable to extreme weathers such as torrential rain, lightning, strong wind, giant typhoon, and heat wave. It is argued that the occurrence of extreme weather phenomena tends to increase due to the climatic change. Cooperating with domestic and international academic scientists, the session will focus on the mechanism of extreme weather, its monitoring and prediction methods, effects of urbanization on hazards, and social experiments on resilient cities.

3:00 PM - 3:15 PM

[AAS01-P03_PG]An Ensemble Nowcasting of Rainfall over the Kanto Region, Japan

3-min talk in an oral session

*Shakti P.C.[1], Ryohei MISUMI[1], Tsuyoshi NAKATANI[1], Masayuki MAKI[2], Alan SEED[3] (1.National Research Institute for Earth Science and Disaster Prevention(NIED), Tsukuba, Japan, 2.Kagoshima University, Kagoshima, Japan, 3.Bureau of Meteorology, Melbourne, Australia)

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Every year weather-related disasters: extreme rainfall, landslides and flooding destroy livelihoods and damage economics somewhere on the planet. Recently, number of flash flooding is believed to be increasing specially in urban areas. It has being a great challenge to forecast flood warning and urban drainage management. Nowcasting of rainfall (very short-range forecasting) is an important tool to minimize or manage all these weather-related disasters since precipitation is the main input. Common practice to forecast heavy precipitation for hydrological application varies from 0-6 hr and there are different kinds of nowcasting based on different method. Nowcasting of rainfall comprises the detailed description of the current weather along with forecasts obtained by extrapolation for a different time period ahead. In this study, we focus on ensemble nowcasting of rainfall. It refers to the fact that many forecasts are produced, with the rainfall areas moving at slightly different speeds, and with the small rainfall features represented by slightly different random statistics. By comparing these different nowcasting of rainfall, the forecaster can decide how likely a particular weather event will be. It gives a much better idea of what weather events may occur at a particular time. Short Term Ensemble Prediction System (STEPS), one of the most advanced Quantitative Precipitation Forecast (QPF) systems currently available is considered for nowcasting of rainfall. Japan Meteorological Agency (JMA) and X-band multi-parameter (MP) radar data were considered to produce an ensemble nowcasting of rainfall. First, JMA radar rainfall data of Kanto region was fixed to check the performance of STEPS. Skill scores showed that STEPS can give a good forecast for less than one hour. However, more uncertainties can be seen during the starting and ending of rain event. High resolution of data (MP data) also used in the STEPS under the default condition. Overall, an ensemble nowcasting of rainfall seems close with real time data, which could be interesting to use them in hydrological model.