Spatial and temporal distribution of heavy rainfall during 9-10 September 2015 in East Kanto region, Japan

*Shakti P.C.[1], Tsuyoshi Nakatani[1], Ryohei Misumi[1], Koyuru Iwanami[1], Masayuki Maki[2], Takeshi Maesaka[1], Kohin Hirano[1]

1.Storm, Flood and Landslide Research Unit, Department of Monitoring and Forecasting Research, National Research Institute for Earth Science and Disaster prevention (NIED), 2.ERCDP, Kagoshima University

East Kanto region of Japan experienced a record heavy rainfall on 09-10 September 2015, caused severe damage of life and properties. Rainfall amount of this event was recorded by Automated Meteorological Data Acquisition System (AMeDAS) rain gauges at every 10 minute time interval. The maximum 24-hrs rainfall (0600 UTC 09 Sept 2015 to 0600 UTC 10 Sept 2015) was reached about 500 mm in some part of the Tochigi prefecture. Estimated rainfall rate from Japan Meteorological Agency (JMA) C-band radar and X-band polarimetric Radar Information Network (XRAIN) are also available for the event at different scale. Spatial and temporal resolution of JMA radar data are 1000-m and 5-min and for XRAIN radar, it is 250-m and 1-min. Both estimated radar rainfall data were compared with rain gauge data to examine their performance.
Based on 24-hrs total rainfall, JMA and XRAIN radar display different rainfall distribution especially in the case of higher rain intensities. Both radar data do not show the dependency of rainfall with respect to elevation for this case. In higher rainfall zone of the event, JMA radar rainfall is overestimated. XRAIN radar reflects some underestimation especially over mountain region, but it provides close rainfall with rain gauge data in the rest part of the Kanto region. XRAIN also shows remarkable variation of rainfall with respect to time but, it is almost not possible to get such information from the JMA radar because of its coarse spatial and temporal resolution observation.

Keywords: Radar rainfall, Heavy rainfall, Spatial and temporal variation, Frequency distribution, Rain gauge