

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

[A-AS03]Advances in Tropical Cyclone Research: Past, Present, and Future

convener: Masuo Nakano (JAMSTEC Japan Agency for Marine-Earth Science and Technology), Akiyoshi Wada (Typhoon Research Department Meteorological Research Institute), Sachie Kanada (名古屋大学宇宙地球環境研究所, 共同), Kosuke Ito (University of the Ryukyus)

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Tropical cyclones (TCs) often bring torrential rainfall, gale, storm surge, and high surf that sometimes cause tremendous disasters. Therefore, understanding such phenomena associated with translation, intensity change, and precipitation of TCs and their accurate forecasts are important in the earth and planetary science. In addition, changes in the number and intensity of TCs due to global climate changes have been extensively studied by various approaches such as data rescue, data analyses, and climate modelling. Especially in 2017, Typhoon Talim made landfall on all of four major islands of Japan first ever since 1951 and Typhoon Noru had a strange track. In the Northern Atlantic, Hurricanes Harvey, Irma and Maria caused tremendous damage in U.S.

Advances in innovative observations such as Himawari-8,9, unmanned drone, meteorological aircraft reconnaissance and supercomputers such as the earth simulator and K-computer have led to novel development of numerical weather forecasting and understanding of the phenomena due to the improvement of numerical modelling.

In this session, we welcome papers on various aspects of TC studies. We hope that the session will provide new direction for future TC research activity.

[AAS03-P12]Estimating Extreme Wind Speed in the Typhoons that Affected the Korean Peninsula in 2015

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Keywords: Typhoon, Extreme Wind Speed

Owing to global warming, the strength of recent tropical cyclones (e.g., hurricanes, typhoons, etc.) has been gradually increasing, along with a rise in seawater temperature and heat capacity in tropical regions. In particular, hurricanes affecting the Korean peninsula are becoming stronger, along with a rapid increase in seawater temperatures around the Korean peninsula and in the west Pacific. In the last 10 years (2007-2016), approximately 35% of all damage due to natural disasters in Korea was caused by hurricanes, indicating the significant impact hurricanes have. Most damage due to hurricanes was caused either by severe rain storms or strong winds. Many studies have been conducted on damage due to severe rain storms from hurricanes, but very few have been done to estimate the associated strong winds and related damage. This study focuses on the year 2015, when four hurricanes hit the Korean peninsula and approximately 40% of total damage due to natural disasters was caused by hurricanes. The highest possible wind velocity during a hurricane on the Korean peninsula is examined, as calculated through WRF and RAM numerical modeling using RDAPS data. A wind velocity of 700 hPa was determined as the result of numerical modeling. RSMC Tokyo Typhoon Center Best Track data was also used for this study. In the distribution of highest hurricane wind velocities on the Korean peninsula in 2015, the 30-40 m/s wind velocity range comprised approximately 52%.

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