

[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-P13]A Study on the Highest Possible Wind Speed of Typhoons Affecting the Korean Peninsula by Abnormal Sea Surface Temperature in the West Pacific

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Keywords: Extreme Wind Speed, El Niño, La Nina

Every year, approximately 30% of all tropical cyclones in the world occur in the West Pacific, where a tropical convergence zone is located. Most typhoons affecting East Asia originate from this shore region. Moreover, abnormal sea surface temperatures have been observed throughout the world due to global warming. Alongside these phenomena, the strength of El Niño and La Nina has been increasing, which has an impact on the whole globe via sea surface temperatures in the West Pacific. El Niño refers to the phenomenon where sea surface temperatures rise higher than usual in the West Pacific, whereas La Nina is a phenomenon where sea surface temperatures decrease further than usual. The intensity of typhoons affecting the Korean peninsula may vary depending on El Niño and La Nina. This study examines the highest possible wind speeds of typhoons affecting the Korean peninsula, as caused by abnormal sea surface temperatures in the West Pacific due to El Niño and La Nina during the study period (2002-2005). Our analysis showed 21 typhoons during years characterized by El Niño during the study period. Here, the highest possible wind speed was 26.2 m/s. 14 typhoons occurred during La Nina years, with the highest possible wind speed at 24.6 m/s. In sum, the highest possible wind speed during El Niño was greater than during La Nina, presumably because sea surface temperature in the West Pacific during El Niño was also higher.

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