[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

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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-P10]The Study on the Interaction between Talim Typhoon and Atmospheric River

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Keywords:Atmopheric River, Tailm Typhoon, Guchol Typhoon, Southwest Airflow

The phenomenon of atmospheric rivers can send vapor hundreds or even thousands of kilometers, which in turn can generate large amounts of precipitation in areas affected by the atmosphere. In the past, such phenomena were rare in the west coast of the United States and in East Asia. In our analysis, we found that the typhoon outer circulation in 2012 increased the strength of the southwest airflow and caused a long-distance vapor transmission similar to that of the "atmospheric river", causing heavy rainfall in the southwestern part of Taiwan. The typhoon outer circulation which interacted with the southwest airflow was very obvious.

Through the research, it was found that due to the existence of the dual typhoon vortexes which attracted each other, the merger phenomenon caused by the typhoon movement between "Tailm" and " Guchol", the mechanism of vapor transmission over long distances can make the atmospheric river originating from the South China Sea. In addition, we used the WRF mode to simulate the dynamic and thermal processes that affected the interaction between energy and vapor transport during the development of Tyler and Guchol typhoon with southwest airflow have a good performance.