[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-P07]Statistical Characteristics of Rainfalls of Typhoons Affecting Taiwan and Simulations of Typhoon Nepartak (2016)

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For typhoons affecting Taiwan in the past 100 plus years (1911-2016), the tracks have been divided into 9 categories by the Central Weather Bureau. Among those categories, typhoons along the 4$^{th}$ track, coming from the Pacific Ocean, crossing South Taiwan, and moving westward or northwestward afterwards, often brought tremendous rainfalls and caused catastrophic damages in the mountainous areas or along rivers in south Taiwan, e.g., Typhoons Fanapi (2010) and Nepartak (2016). For the purpose of disaster mitigation, it is desired to know the rainfall patterns associated with the 4$^{th}$-track typhoons. Firstly, this study examined the qualitative statistical characteristics for the 4$^{th}$-track typhoons in the past 20 years. It was shown that the location of peak accumulated rainfall was in the east of Taiwan before landfall and moved to the south of Taiwan afterwards for the 4$^{th}$-track typhoons. Secondly, Typhoon Nepartak (2016) was simulated as a case study using the WRF model to examine the sensitivities of typhoon track, intensity, and rainfall pattern to microphysics schemes. Six different microphysics schemes have been tested. Among them, the Thompson aerosol-aware scheme has the closest simulated rainfall patterns and accumulated rainfall peaks compared with observations. However, the choice of microphysics schemes has little impacts on the typhoon’s track and intensity. In this paper, the impacts of microphysics schemes on rainfall patterns have been closely examined and the results will be shown and discussed in details of comparisons among different

microphysics schemes in the conference.