

HTT032-P04

Room: Convention Hall

Time: May 24 17:15-18:45

## A reconstructed record of typhoons in Japan in the late 19th century from documentary sources

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In the western North Pacific region, the threat of global warming has raised major concerns about how changes in global climate may affect typhoons. Japan is located along the typical typhoon tracks in the region and is vulnerable to these storms which annually cause damage, injury, and fatalities. However, efforts to understand the long-term behavior of typhoons are hampered by a lack of systematic records prior to the 20th century.

Using the data from a Historical Weather Database and additional historical compilations, we identified 43 possible typhoons affecting Japan during the 1880s. Of the 43, 39 could be verified using Jesuit Zi-Ka-Wei (Shanghai) Observatory descriptions and data from the Japan Imperial Meteorological Observatory. We then mapped the locations of the historical documents describing stormy weather conditions using ArcGIS. Using these data, we were able estimate some of the typhoon tracks by connecting the locations according to the dates of the historical records and to compare the tracks with those based on the Japan Imperial Meteorological Observatory weather maps. The results of this study suggest that weather description from historical documents can be used to reconstruct useful records of typhoon events and can provide data for mapping historical typhoon tracks.