

Nayak, S., and T. Takemi, 2019: Dynamical downscaling of Typhoon Lionrock (2016) for assessing the resulting hazards under global warming. *J. Meteor. Soc. Japan*, **97**, 69-88.

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Plain Language Summary: Recent studies have revealed that typhoons will be stronger and more powerful in a future warmer climate and be a threat to lives and properties. The present study attempted to perform dynamical downscaling simulations of Typhoon Lionrock (2016) at 1-km grid resolution by using the Weather Research and Forecasting (WRF) model to discuss the track and intensity of this typhoon and associated precipitation amount in the target region after landfall in present climate and under Pseudo Global Warming (PGW) conditions.

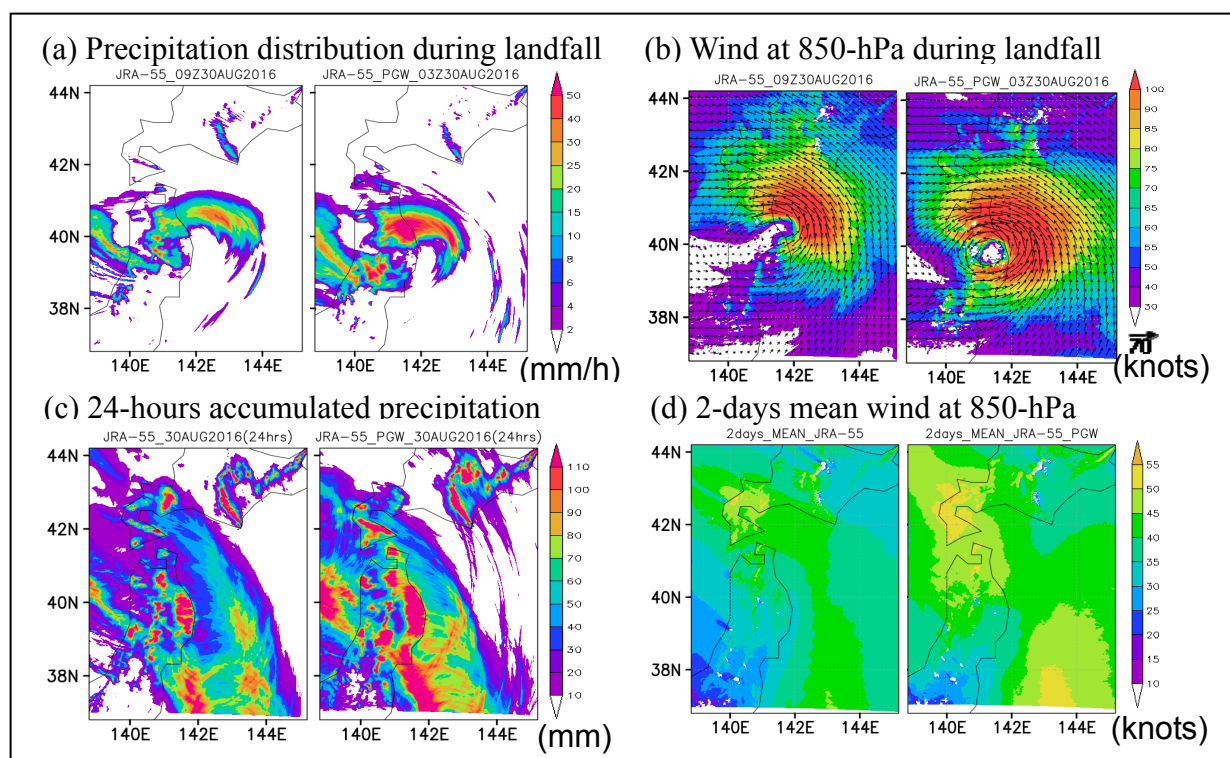


Figure 1. (a) Precipitation distribution and (b) Wind (850-hPa) during landfall of Typhoon Lionrock in present climate and under PGW conditions. (c) 24-hours (± 12 hours of landfall) accumulated precipitation and (d) Two days (29-30 Aug) mean wind at 850-hPa in present and under PGW.

- The downscaled simulations with WRF model reproduced a significant improvement in the track and intensity of the typhoon with respect to the original reanalysis datasets.
- The typhoon is projected to be stronger and more powerful under future warm climate. It is expected to produce more precipitation over Hokkaido and the entire Tohoku region in warming climate.
- The study suggests that the typhoons under PGW condition may increase the risk of flooding, damages to infrastructures, and lives staying along the typhoon track.