

## **Abstract**

Rapidly intensifying tropical cyclones (RI TCs), more recently defined by having a 24-hour intensity increase of more than 30 kt (15.4 m/s), have long been studied due to greater hazards associated with them compared to non-RI TCs. Recent studies determined that in the Western North Pacific (WNP), most of the historical rapid intensifications of TCs occur near the Philippines, making it one of the most vulnerable countries in the region. Yet, no focused study has analyzed the characteristics and potential impacts of these phenomena at landfall in the country. Understanding the activity and impacts of the landfalls of RI TCs in the Philippines would make future TC research give more attention to these phenomena. More importantly, this would iterate the need to further improve RI prediction in the WNP basin, wherein progress in TC intensity prediction has been minimal over the years. This study, then, proposes that the frequency of RI TC landfalls, their intensities, and distribution over the Philippines be described and compared with non-RI TCs. Additionally, their potential impacts will be analyzed using the TC power dissipation index (PDI), and their damages will be quantified using archives from the Philippine Office of Civil Defense (OCD) and the National Disaster Risk Reduction and Management Council (NDRRMC). Once RI's relevance to the country and the basin has been established, this study will then investigate the potential of infrared (IR) brightness temperature (T<sub>b</sub>) as a predictor of RI based on data in the WNP. To do this, the correlation between T<sub>b</sub> trends and the subsequent RI will be examined with the use of Himawari-8 geostationary satellite data. Finally, various thresholds of T<sub>b</sub> at different radii, time, and areal coverages will be analyzed to obtain the combination that most successfully predicts RI. By exploring the utilization of satellite data in RI prediction, better forecasts could be made for the region, and related disasters could be reduced in the future.