**Structures and Intensity Changes of Concentric Eyewall Typhoons from Satellite Data**

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**Abstract**

Double eyewall (or concentric eyewall) structures, often appear in strong tropical cyclones. As the strong intensity and the dramatic structure changes they have, to study their physical features and to improve the accuracy of forecasting are very important for weather monitoring, especially for coastal area.

In this work, each hourly GSMaP image was divided into 12 sections, and the locations of the inner and outer eyewalls at each satellite observation time from the locations of the local maximum precipitation in each section were identified, and the precipitation intensity for each eyewall cases were determined. Then, the concentric eyewall typhoons were classified into 2 types: replacement type and non-replacement type. The replacement type (non-replacement) cases have much (less) significant replacement features when the outer eyewalls contracts , and generally their outer eyewalls form with larger (smaller) radius and replacements take less (more ) time. More cases are needed to investigate the relationship between typhoon intensity and eyewall sizes and replacements.

**Keywords:**

Typhoon, Tropical Cyclone, Double Eyewall, Concentric Eyewall, Eyewall Replacement Cyce, GSMaP.