**Cluster analysis of over the western North Pacific Tropical Cyclone Tracks**

**using the Self Organizing Map**

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**Abstract**

The western North Pacific (WNP) Tropical Cyclones (TCs) are well known that its activities are controlled by various large-scale dynamics. However, complicated mixed TCs confuse understanding its characteristics. For easily understanding over the WNP TCs properties, in this study, we can hypothesize that according to the shape of TC tracks are influenced by different large-scale dynamics. To prove this hypothesis, we undertake the clustering analysis of interpolated TC tracks using a neural network-based data classifying algorithm called self-organizing map (SOM). A False discovery rate (FDR) method is used to objectively determine an optimum cluster number. For 620 TC tracks over the WNP from June-October during 1979-2010, the five clusters for TC tracks are selected. Each pattern is characterized by land falling regions: near South and Ease China, East Asia, and off-shore of Japan. In addition, each pattern shows distinctive features in its traveling distance, lifetime, intensity (mean minimum sea level pressure), and genesis location. The results of this paper is revealed that the five cluster patterns are statistically associated with large-scale dynamics such as variability of Madden-Julian Oscillation (MJO), El Niño-Southern Oscillation (ENSO), and western Pacific subtropical high (WPSH).