

# **The influences of ISO modulation on Tropical cyclone activity to the Philippines**

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## **Abstract**

This study demonstrates that the 30-60-day intraseasonal oscillation (ISO) systematically affect tropical cyclones (TCs) originating from the western North Pacific (WNP) to affect the Philippines. During the convective ISO phases, TCs affecting the Philippines (TCs-PH) via a westward-northwestward (W-NW) path are mainly modulated by a zonally-extended anomalous cyclone across the Philippines. During June-October (JJASO), the WNP TCs follow anomalous easterly/southeasterly flows in the northern section of an anomalous cyclone toward the northern (southern) sector of the Philippines when the cyclonic center situates north (south) of 15oN. During the non-convective ISO phases, TC movement toward the Philippines is influenced by anomalous easterly/southeasterly flows in the southern section of an anomalous anticyclone over the northwestern WNP. Over the 120o-140oE zone, these anomalous flows expanding southward to regions south (north) of 15oN result in TC tracks toward the southern (northern) sector of the Philippines. For both the convective and non-convective phases, ISO modulations on TCs with a W-NW path into the southern sector of the Philippines exhibit similar processes between JJASO and November-December (ND). TCs-PH turning northward during JJASO mainly follow anomalous southeasterly flows in the northeastern part of an anomalous cyclone stretching northwestward from the Philippines toward Taiwan during the convective phases. During the non-convective phases, TCs-PH move from the Philippines toward an anomalous cyclone extending from Taiwan to southeastern China to result in a northward track. .

Key words : Tropical cyclone, The Philippines, Intraseasonal oscillation modulation