

Ishiyama, T, M. Satoh and Y. Yamada, 2022: Possible roles of the sea surface temperature warming of the Pacific Meridional Mode and the Indian Ocean warming on tropical cyclone genesis over the North Pacific for the super El Niño in 2015. *J. Meteor. Soc. Japan*, **100**, 767-782.

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Plain Language Summary: Focusing on the 2015 Super El Niño, this study reveals the possible role of sea surface temperature (SST) warming over the Pacific meridional mode (PMM) region and the Indian Ocean on tropical cyclogenesis (TCG) in the North Pacific. The global nonhydrostatic model results show that, under conditions of El Niño forcing, warming SSTs associated with the PMM decrease TCG in the western North Pacific and increase TCG in the eastern North Pacific. The Indian Ocean SST warming also decreases TCG in the western North Pacific.

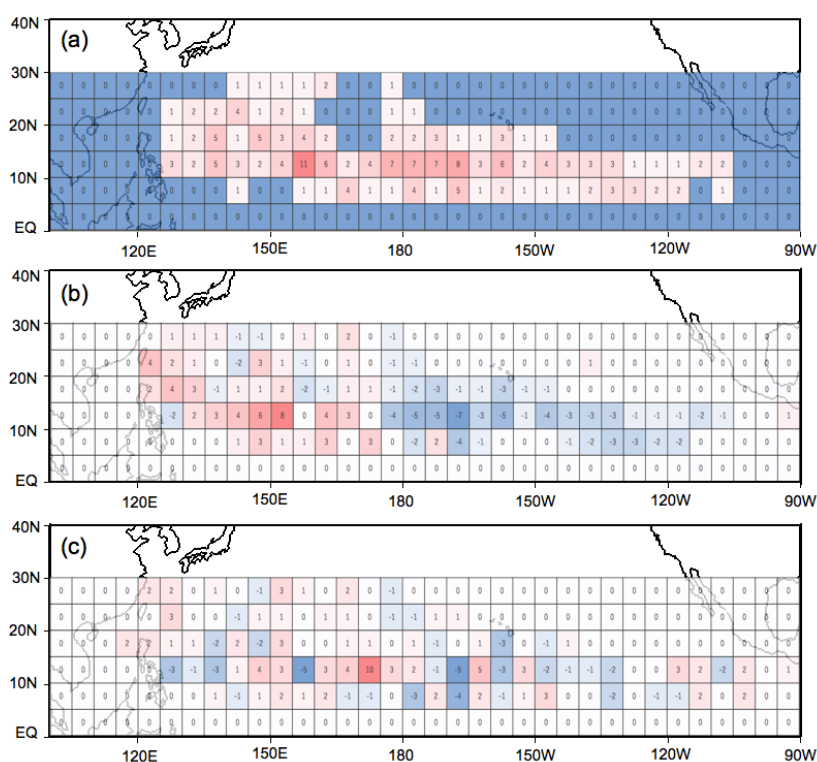


Figure. Distribution of the number of TCG in (a) July 2015 perpetual experiment. (b) Changes in TCG if the SST warming over the PMM region is suppressed. (c) Changes in TCG if the Indian Ocean SST warming is suppressed. The number of TCG is counted in boxes of 5 degrees square.

- We use the global non-hydrostatic model (NICAM) to conduct perpetual experiments by integrating for 30 months to obtain a climatological condition of July 2015.
- Under the July 2015 SST condition, if the SST warming with PMM is suppressed, the monsoon trough in the western North Pacific (WNP) and vertical wind shear over the eastern North Pacific (ENP) become stronger, causing increased TCG in WNP and decreased TCG in ENP.
- Suppression of IO SST warming leads to a stronger monsoon trough and more TCG in WNP.