The effect of the SST over the PMM region and the eastern northwestern Pacific on tropical cyclone genesis over WNP in 2018

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Typhoons in the northwest Pacific in 2018 exceeded the average for 29 occurrences, the number of landings to Japan to 5, and for the typhoon which became extreme strength it was updated with the most record and the activity was active. In the ENSO phase, during the most active period of the typhoon (from June to November), the ENSO phase was still in a neutral state. Therefore, PMM is focused recently. Previous studies have pointed out that this positive PMM favors TC activities in the northwest Pacific (e.g. Zhang et al. 2016). Looking at the PMM index from 1948 to 2018, there was positive PMM in 2018.

The purpose of this research is to focus on the monthly SST variation such as ENSO and PMM and to evaluate the Potential of the 2018 typhoon activity. We also focus on the PMM and the SST over the eastern of northwest Pacific, and investigate how they affect the 2018 typhoon activity.

For the above purpose, we conducted perpetual experiments in which boundary conditions were fixed from July to October, respectively, using a non-hydrostatic model NICAM. The horizontal resolution was 56 km. Comparing the experimental result of SLP with JRA-55, although the position of the maximum value of the high pressure in July is misaligned, the position and overhang of the high pressure does not dif9fer greatly in each month, and perpetual experiments also reproduce the reality well. Both reanalysis and perpetual experiments have more typhoons in July and August than in September and October. Also, the occurrence position of the typhoon occurs more frequently in the eastern side of the northwestern Pacific in order of July, August, September. The same tendency was observed. Such differences in active areas of typhoon activity had an effect on the monsoon trough.

Key words: Tropical cyclone, Pacific Meridional Mode, NICAM

References

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