

Role of large-scale environmental variability in changing storm climate

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This paper focusses sequentially on two different aspects: (a) recent changes in observed storms, and (b) its linkages to the changes in large-scale environmental (LSE) variability. The analysis of observed storm show that in spite of an overall reduction in the Southwest Pacific (SWP) storminess over the past four decades, the number of extreme storms corresponding to the mean maximum sustained storm wind speed, has increased. At the same time, a slight reduction in the corresponding mean minimum central pressure is observed. The transition time from category 1 to 3 has also reduced substantially (by ~12 hours). Possible conditions for some of these observed behavioural change in terms of quick intensification and traveling longer distance towards south pole will be discussed.

The second aspect explores the linkages between above changes in storm indices and corresponding variability in LSE variability. The methodology uses multiple linear regression analysis to establish their relationship. This relationship is used to construct scenarios of likely change in future storminess using simulated (RCP8.5 minus historical) differences. The analysis will show how the role of some of the environmental indices when in combination can aid in modulating the Southwest Pacific change in storminess.

Keywords: Southwest Pacific, Storminess, Regression analysis