EDITORIAL

Recent developments in tropical cyclone analysis using observations and high resolution models

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Affecting scores of people with seemingly insurmountable and unmanageable costs, tropical cyclones (TCs) are one of the most devastating extreme weather events. In this special issue, we highlight and summarize some of the recent studies that make use of detailed observations and high-resolution numerical models to analyze tropical cyclones from their genesis to post-landfall impacts. Focused around TC activity in the Atlantic, North Indian, and Western Pacific basins, the different papers in this issue contribute to an increased understanding of TCs and to our scientific and operational ability to predict their nature and characteristics.

Opening the issue is a comprehensive review from the India Meteorological Department operational forecasters *Mohapatra*, *Bandyopadhyay*, *and Tyagi* on TC climatology over the North Indian Ocean (NIO). The best track parameters related to the position and intensity of a TC were analyzed from the pre-1877 era to 2010. This paper provides an authoritative summary on the errors and uncertainty associated with TC tracks and intensity and offers insight into the methodology, trends, and future consideration for improved TC analysis over the NIO. Mohanty et al. extend this perspective and review storm characteristics over the Bay of Bengal and the Arabian Sea under two epochs—one until 1950 and another from 1950 onward. Their analysis of the two epochs, corresponding to a so-called past cooling period and current warming period, showed that in recent decades, there is a statistically significant increase in the number of severe cyclones, particularly over the Bay of Bengal in the post-monsoon season. The Mohanty et al. study also finds an overall increase in severe cyclones in the western Arabian Sea and southern Bay of Bengal.

From the modeling perspective, Osuri et al. reviewed the performance of the Advanced Research Weather Research and Forecasting (WRF-ARW) model over NIO. They

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