Monitoring of tropical cyclone formation, growth and dissipation by using SAPHIR sensor

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ABSTRACT. A critical study of origin and development of Tropical Cyclone (TC) and its intensity over the Arabian Sea and Bay of Bengal is carried out. Evaluation of TC growth and dissipation helps in understanding the physical properties of earth surface such as land surface emissivity and ocean surface temperature. In this paper a study of (i) Genesis, growth/development of TC intensity and (ii) Critical analysis of variations in measurement by different wavelengths of Sondeur Atmosphérique du Profil d’Humidité Intertropicale par Radiométrie (SAPHIR) microwave sounder sensors on-board Megha-Tropiques satellite. A cyclonic storm, Ashobaa cyclone observed in the Arabian Sea during June 2015 and its impact on Indian subcontinent is made by using the SAPHIR Brightness Temperature (TB) patterns at 183+/-11.0 GHz. In addition a comparative evaluation of the capabilities of all six channels of SAPHIR in measuring TC development and its intensity variations. Further evaluation of capabilities of TB measured by SAPHIR sounder made in our study confirms that orbit position of Megha-Tropiques satellite mission will enable to obtain comparatively more frequent sampling (4-6 times) that is useful for monitoring tropical cyclone genesis to dissipation and its effects on land.

Key words – Tropical cyclone, Brightness temperature, T-Number, SAPHIR, Ashobaa cyclone.