An approach to study stages of Super Cyclonic Storm of Orissa (1999) and Very Severe Cyclonic Storm (1998) using INSAT IR data

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Abstract

An attempt has been made to study different phases namely initiation , maturity , weakening and dissipation of a super cyclonic storm during 26-30 October 1999 and very severe cyclonic storm during 18-23 November 1998. A very deep convective region associated with it using three hourly digitized INSAT IR data. The cloud top temperatures derived from grey scale values of three hourly IR data are utilized to isolate regions of moderate to intense convection along with its spatial and temporal structure. It is seen that digitized IR data resolves the intensification and weakening of the systems satisfactorily. 24 hour accumulated very heavy rainfall of 426 mm and 195 mm reported at 03UTC of 30 October 1999 over Bhubneshwar (20^0N/85^0E) and Balasore (21^0N/86^0E) stations respectively and heavy rainfall (> 5 cm) over other stations are also explained by this data analysis. Similarly 24 hour accumulated very heavy rainfall is recoded at 0300 UTC of 22 November 1998 over West Bengal [Calcutta(60 mm), Contai(95 mm), Krishnanagar(25 mm) and Midnapore(16 mm)].

Thus this study reveals that digitized IR data is able to capture the spatial and temporal evolution of intense convection reasonably well. This further suggests that the IR data can be used to validate high resolution mesoscale model products like heavy precipitation over data sparse region.

References

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