

THE USE OF SATELLITE IMAGES FOR INDICATING SEVERE WEATHER CONDITIONS OVER ETHIOPIA

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I. INTRODUCTION

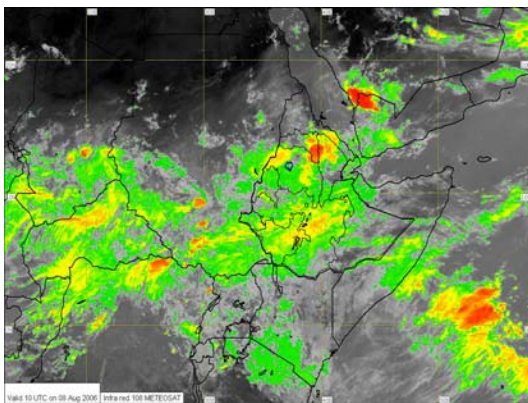
This paper examines the overall performance of METEOSAT images in monitoring and forecasting severe weather condition. The comparison is made; by retaining well-documented satellite images at different hours and station-based daily rainfall amounts.

II. PRESENTATION OF RESEARCH

With the advent of Satellites and the flowering of field experiments, lack of data is no longer the biggest obstacle to an understanding of tropical disturbances: for much of the tropics, progress may depend as much on making better use of data in hand.

Strengthening this conclusion is the progress made recently toward quantitative interpretation of satellite imagery-in particular, the inference of winds from the displacements of clouds in satellite image sequences.

According to satellite imageries' investigation, the cause for the unusual rainfall in this part of the country was found to be the approach of a disturbance from the Indian Ocean. The tropical disturbance that was generated near the Somalia coast has propagated towards our area and after 3-4 days produced such a considerable amount of rainfall during the first decade of the month. (See in the figure below)



The major causes for the weather deterioration are the persistent high over the Arabian Sea and the north Indian Ocean. At times the

combination of the southern ridge that extended from the southern Indian Ocean high, with the above synoptic systems, has contributed more severe weather to the country during the period.

The synoptic situation, that produces such significant rainfall amount, was the development of the Red Sea convergence (RSC).

The cause for more amount of rainfall was due to the intrusion of the mid-latitude disturbed weather towards our area; and the interaction that occurred between it and the tropical moist air mass. The penetration of the mid-latitude low-pressure system to lower latitude has forced the displacement of the Arabian high towards the Indian Ocean. The ideal location of the high-pressure system resulted in southeast air stream that brought quite sufficient supply of moisture laden towards our area, where later interaction was possible for the production of significant weather over most of the country.

III. RESULTS AND CONCLUSIONS

The results reveal that the METEOSAT images attain clear and good approach in forecasting severe storms that can cause widespread daily rains over the areas located at higher altitudes. These results would be further confirmed by incorporating different model outputs and actual observations. Moreover, the topographic effects of Ethiopian ragged mountains on the local rainfall patterns have found to be well replicated by the EUMETSAT stationary and animated images that are disseminated in three hours interval.

In this case the satellite picture has been found to be beneficial in located and tracking the disturbance that could not be identified by weather charts. So one has fully to make use of the satellite picture; but not to overlook its super aid in order to assess and prepare weather prediction.

In my research, I found that Satellite images have been playing a major role in showing the condition and intensity of Cyclonic storms as well as their movement. Also, timely animated Satellite images are used to demonstrate the occurrences of severe weather that can cause heavy rain. This is because, whenever cyclonic flow, convergence, or

confluence had shown to dominate the area, active weather phenomena has taken place.

IV. ACKNOWLEDGMENTS

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V. REFERENCES

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