

Total ozone depletion due to tropical cyclones over Indian Ocean

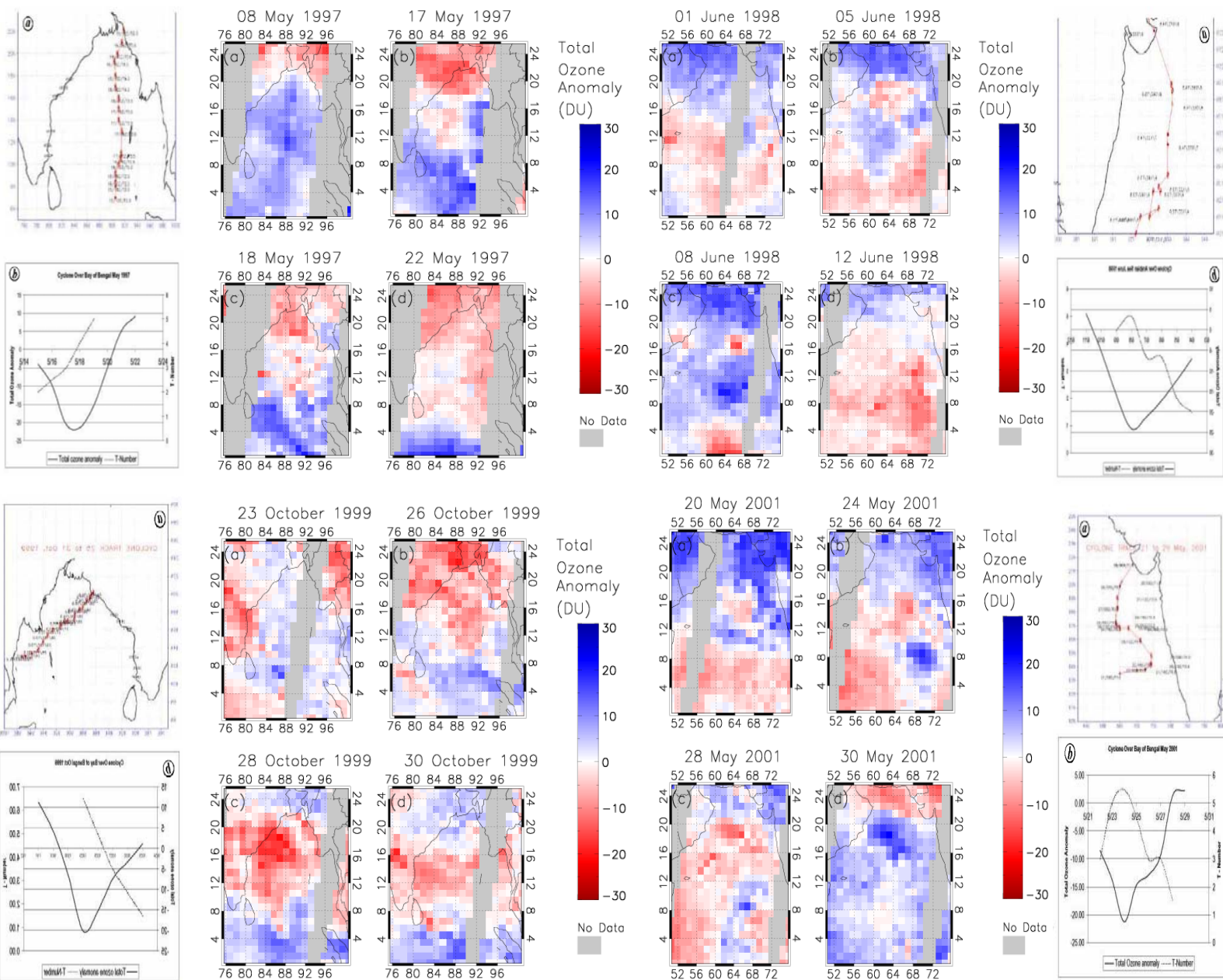
Devendra Singh and Sanjiv Nair

Department of Science and Technology

Technology Bhawan, New Mehrauli Road, New Delhi-110016

Abstract

We have analyzed the perturbations in the total ozone due to four severe Tropical Cyclones formed over Arabian Sea and Bay of Bengal. Total Ozone data derived from Total Ozone Mapping Spectrometer instrument aboard Earth Probe satellite was used for this study. The daily total ozone anomalies have been calculated for the life span of each tropical cyclone. These anomalies were observed local in character and moved with the tropical cyclone. Further, these anomalies have been found related to the intensification of the cyclonic system. In general, negative anomalies were observed to be more than 20 Dobson units at the time of maximum intensity of cyclones. The variations in daily total ozone anomalies, from development to intensification stage and then to decaying stage of each cyclone have brought out clearly the impact of tropical cyclone on the total ozone, which got depleted, considerably over the affected region.



Summary

In the presence of a tropical cyclonic storm over the Indian region, the TO budget is affected. The negative anomaly number reaches up to about 20 DU at the time of peak cyclonic intensity. The TO anomalies move with the cyclonic system and the magnitude is dependent on the intensity of the system, i.e. peak intensity was well correlated with the maximum fall in the TO. The TO anomalies were of typical dimensions and local in character. They became more marked and confined with intensification of TC. In the formation and decay stages of TC, the anomalies also spread in dimensions.