

# **Evaluation of ERA5 Datasets on Atmospheric Convection with Radiosonde Observation over East Coast of India**

Piyush Kumar Ojha

Jawaharlal Nehru University, New Delhi, India

## **Author list (excluding presenting author)**

Amit Kumar Mishra, Krishan Kumar

## **Abstract**

Atmospheric convection is a major source of hazardous weather in different parts of the world. India also witnesses large number of convective events especially over the coastal region because of its proximity to ocean, which is a major source of water vapour. East coast of India, particularly, experiences a number of hazardous convective events every year owing to the favourable conditions for atmospheric convection over the Bay of Bengal. ERA5 datasets have proved to be useful in the study of atmospheric convection. However, recent studies have reported there are some spatio-temporal uncertainties between the trends of atmospheric variables obtained from the observation and model based reanalysis (ERA5) datasets. In this study, we have examined the association between observation (radiosonde) and model based atmospheric variables over four stations namely Calcutta, Bhubaneswar, Visakhapatnam and Chennai on the east coast of India. Our study examines this with the radiosonde and ERA5 datasets on variables such as surface temperature, mixing ratio, wind speed, wind shear, CAPE and CIN for the period 1979 to 2021. We find that high values of correlation between observation and model datasets on surface temperature, surface mixing ratio, wind shear, wind at 850 hPa, CAPE, while relatively poor correlation is obtained for CIN and surface wind speed. Our results also show that normalized mean square error between observation and model value is more than one for CAPE, CIN, Surface Wind, Wind Shear and less than one for Surface temperature, Mixing Ratio and Wind at 850hPa.

## **Early Career Scientist**

YES, I am an early career scientist.

## **IGAC Activities**

AMIGO: Analysis of eMIssions usinG Observations

## **IGAC Regional Working Groups**

MANGO: Monsoon Asia and Oceania Networking Group