

Influence of Tropical Cyclone Biparjoy on Arabian Sea Mini Warm Pool: Insights from EKAMSAT Pilot Cruise

Introduction

MOTIVATION

Annually, a phenomenon known as the Southeastern Arabian Sea Mini Warm Pool (MWP) arises in the northern Indian Ocean, displaying the world's highest recorded sea surface temperatures (>30°C) during the period in which it appears. The MWP develops from March to May, and then dissipates quickly with the onset of the Summer Indian Monsoon (SIM). However, the Tropical Cyclone Biparjoy (**TCB**) traversed northwards over the Arabian Sea from June 6 to June 16, 2023 in the wake of which in-situ observations were conducted during the initial phase of the EKAMSAT Pilot 2023, which delayed the onset of the SIM.

OBJECTIVE

Link the formation of tropical cyclones to weak/strong SIM. Address how tropical cyclones, such as TCB, impact the

MWP dissolution phase & its role in the onset of the SIM.

Methods & Data

- Underway Conductivity Temperature and Depth (**UCTD**) instrument measured in-situ data via EKAMSAT pilot to capture sea temperature with depth along the Roger Revelle trajectory.
- 2023 May-June Argo float data and metadata from Global Data Assembly Centre (Argo GDAC). SEANOE. Used for describing MWP region and formation of TCB.
- NOAA Optimum Interpolation Sea Surface Temperature (**OI SST V2**) High Resolution Dataset (0.25° x 0.25°) used for spatial distribution of sea surface temperatures across ocean basin during MWP dissipation and ISM season.
- Tropical Cyclone Heat Potential serves as a metric for quantifying the heat stored in the upper ocean layer and functions as a proxy indicator for the potential intensification of tropical cyclones.

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