

# **Spatio-temporal variability of zooplankton standing stock in eastern Arabian Sea inferred from ADCP backscatter measurements**

Ranjan Kumar Sahu<sup>1,2</sup>, P. Amol<sup>2,3</sup>, D.V. Desai<sup>1,2</sup>, S.G. Aparna<sup>1,2</sup>, D. Shankar<sup>1,2</sup>

<sup>1</sup> CSIR-National Institute of Oceanography, Dona Paula, Goa, 403004, India (rksahu@nio.org)

<sup>2</sup> Academy of Scientific and Innovative Research (AcSIR), Ghaziabad- 201002, India

<sup>3</sup> CSIR-National Institute of Oceanography, Regional Centre, Visakhapatnam, 53007, India

## **ABSTRACT:**

We use ADCP (acoustic Doppler current profiler) backscatter measurements to map the spatio-temporal variation of zooplankton standing stock in the eastern Arabian Sea (EAS). The ADCP moorings were deployed at seven locations on the continental slope off the west coast of India; we use data from October 2017 to December 2023. The 153.3 kHz ADCP uses backscatter from sediments or organisms such as copepods, ctenophores, salps and amphipods greater than 1 cm to calculate current profile. The backscatter is obtained from echo intensity using RSSI conversion factor after doing necessary calibrations. The conversion from backscatter to biomass is based on volumetric zooplankton sampling at the respective locations. Analysis of the data over 25 – 140 m shows that the backscatter and zooplankton biomass decrease from the upper ocean (215 mg m<sup>-3</sup> biomass contour) to the lower depths. Changes are observed in the seasonal variation of the monthly climatology of zooplankton standing stock (integral of the biomass over 20 – 140 m water column) as we move to poleward along the slope in EAS. The range of variation of standing stock is lowest at Kanyakumari, followed by Okha, which lie at the southern and northern boundary of the EAS, respectively. Complementary variables are used to explain the processes leading to growth or decay of zooplankton biomass.

**Key words:** ADCP, zooplankton, backscatter, Arabian sea, biomass and standing stock