Argo Profiling floats in the Indian Ocean

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Present Status of Argo floats in the Indian Ocean
How the growth of floats in the IO

![Graph showing the growth of floats over years for Core and Bio Argo floats.](image-url)
Float density map
Deep Argo

• The need
  – To allow closure of Regional and Global budget of Heat, Freshwater and Steric sea level on seasonal to decadal time scales
  – To enable better estimation of velocity and transport in the deep ocean
  – Provide data for ocean model and assimilation

• 5x5 deg spacing: 1200 floats in the Global Ocean
Bio Argo

• Need to augment more Bio / Biogeo Argo floats in the Indian Ocean
• To understand: Carbon uptake, OMZs and nitrate cycling, acidification, the biological carbon pump, phytoplankton communities (http:Biogeochemical-argo.org)
• Parameters
  – Dissolved Oxygen: to understand marine photosynthesis and respiration, and exchange with atmosphere
  – Chlorophyll-a: proxy of phytoplankton biomas
  – Nitrate: for understanding new production
  – Particulate backscattering: proxy for particulate carbon
  – pH, CDOM, PAR, Irradiance and transmissiometry,…
• Requirements: 1000 floats in the Global Ocean/200 floats in the Indian Ocean
Enhancement of Equatorial Indian Ocean

• Lessons learned from Argo Pilot deployment in the Equatorial Pacific (7 days cycling / 40 floats in the Equ. Pacific)
• To capture intraseasonal (kelvin wave) propagation
• Double the spatial and temporal sampling in the Equator
• By doubling, Argo is able to represent around 70-80% of the variance at ISO time scales and more than 90% of the variance for the seasonal to long term variability in the Pacific (Gasparin et al, 2015)
• It is imperative to deploy double the number of floats within few degrees of the Equator, with the objective of improving ISO to Interannual variability: MJO, Monsoon, IOD, ..
Future direction

• Sustain the Core Argo
• Need to conduct Observing System Experiment (OSE) and Observing system simulation Experiment (OSSE) to evaluate the relative importance of existing observational components and future requirements
• Gearing up for Deployment of Deep Argo
• Enhancement of Bio-Argo
• Enhancement of floats in the Indian Ocean