Argo Profiling floats in the Indian Ocean

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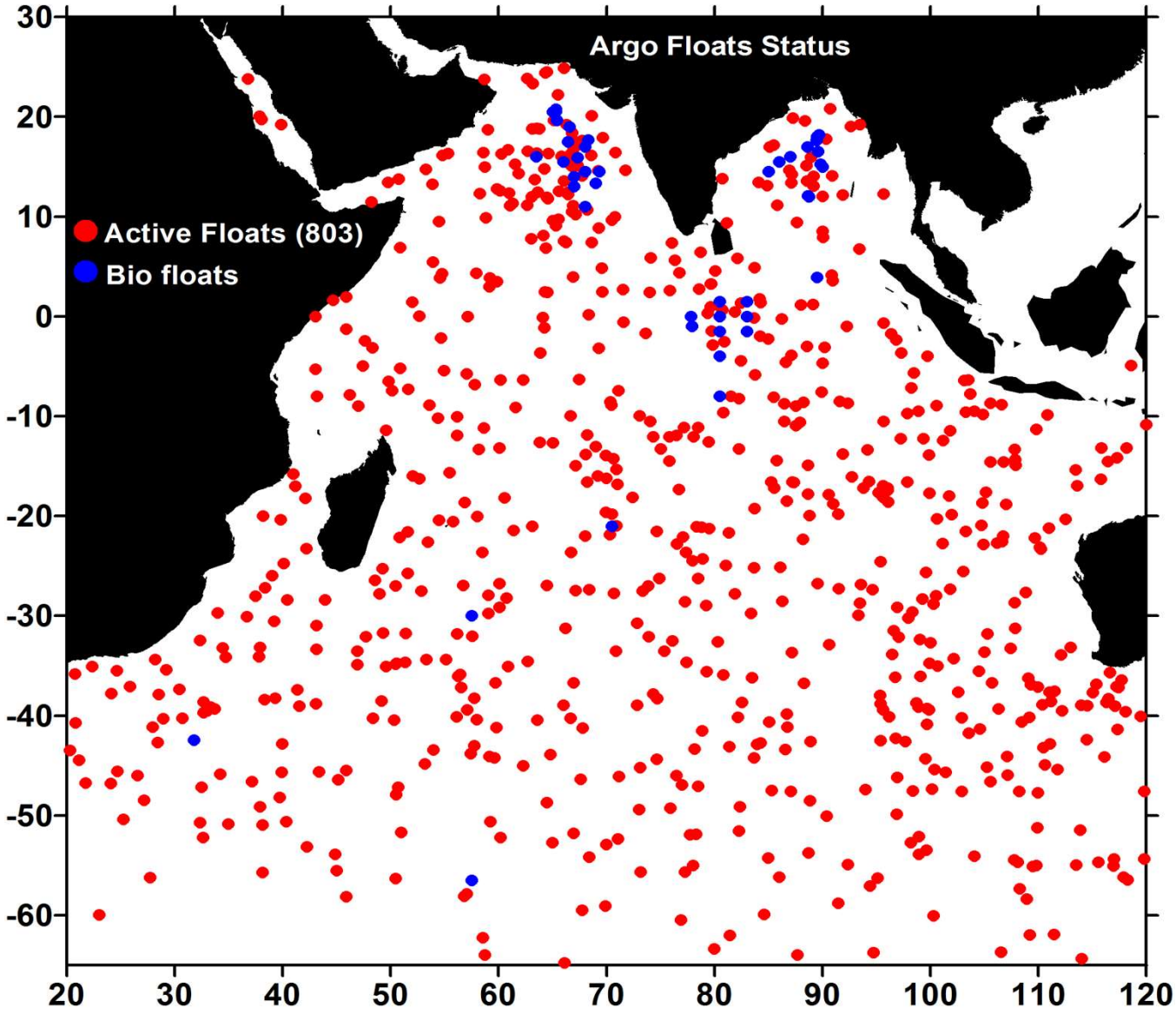
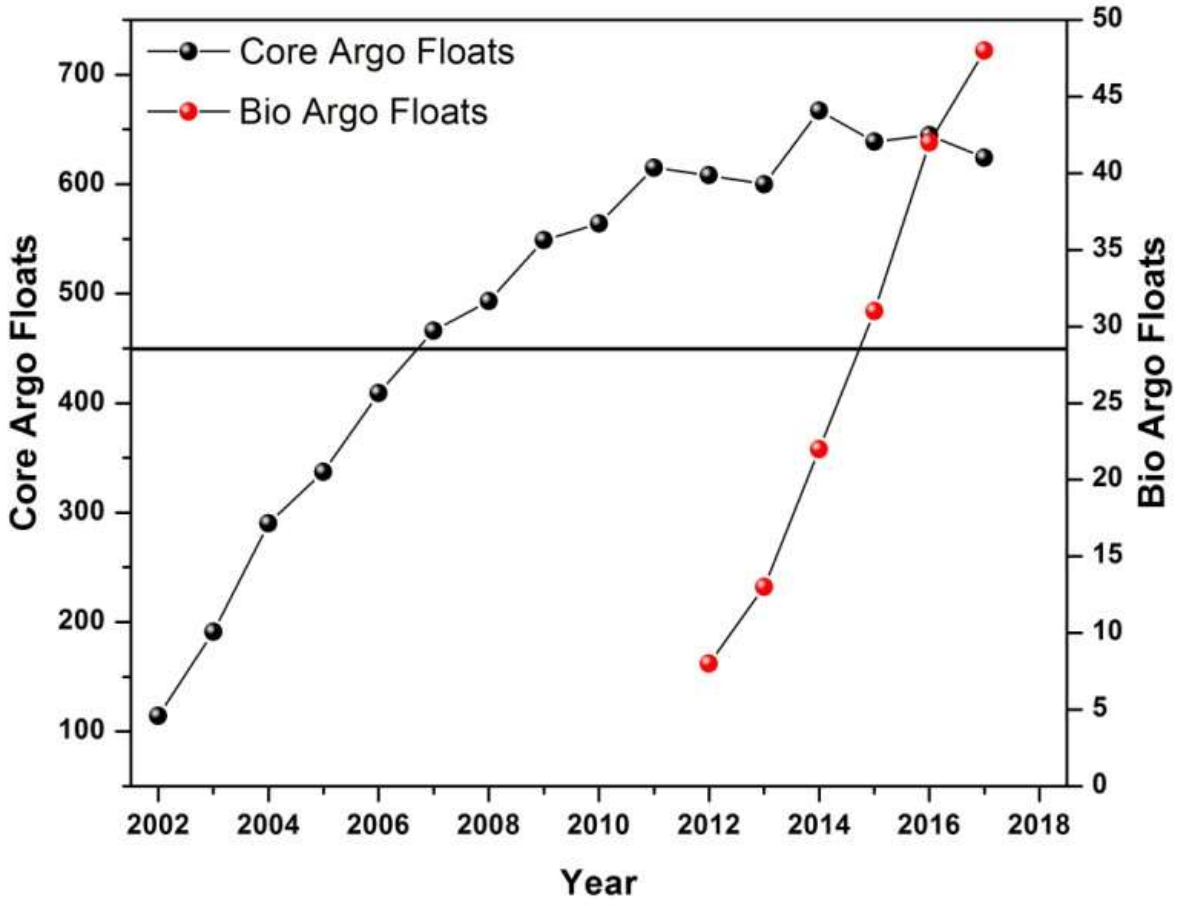
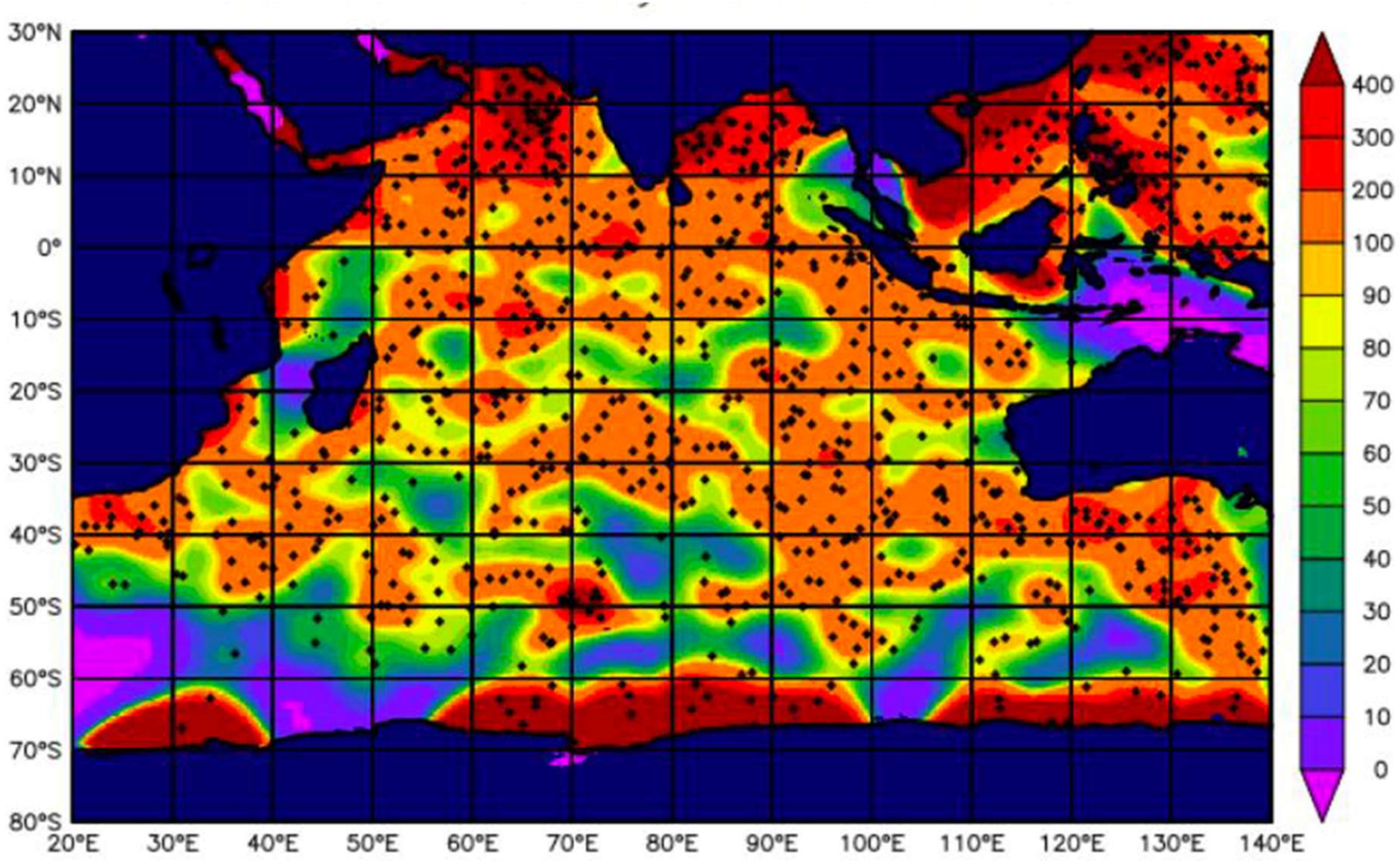
Present Status of Argo floats in the Indian Ocean



How the growth of floats in the IO



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 carban
  - 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