Development and application of eddy-resolving quasi-global ocean reanalysis product -JCOPE-FGO

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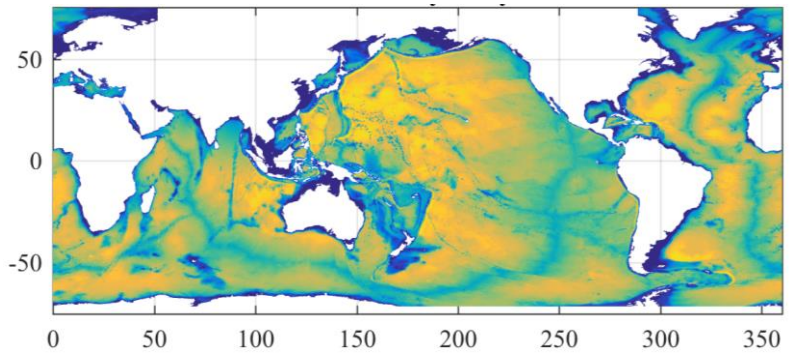
Overview of JCOPE-FGO system

Atmospheric forcing: NCEP CFS

River: JRA55do

Eddy resolving OGCM: J-POM
(Horizontal resolution: 0.1˚ x 0.1˚
44 vertical sigma layers, 75°S-75°N)

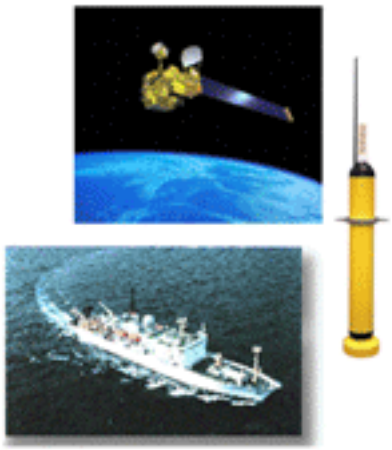


- **JCOPE-FGO (Forecasting Global Ocean)**

→Quasi-global eddy-resolving ocean reanalysis product, which is an global extension of regional JCOPE2 system
(no sea ice model/tidal forcing)

Satellite observation
SSH:CMEMS
SST:MGDSST

Temperature and salinity profiles from GTSPP



3DVAR

Same as the three-dimensional variational scheme of regional JCOPE2 system (Miyazawa et al. 2009)

Output variables

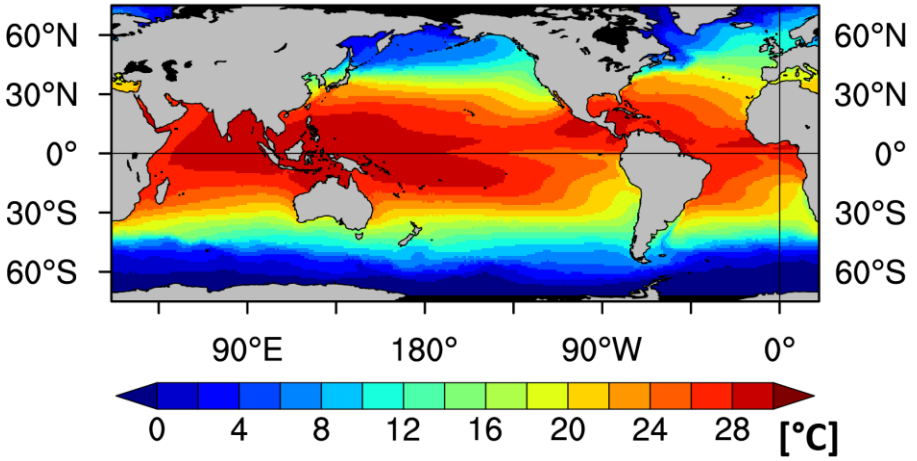
- Potential temperature, salinity, zonal/meridional/vertical velocity, and sea level height

Analysis period:

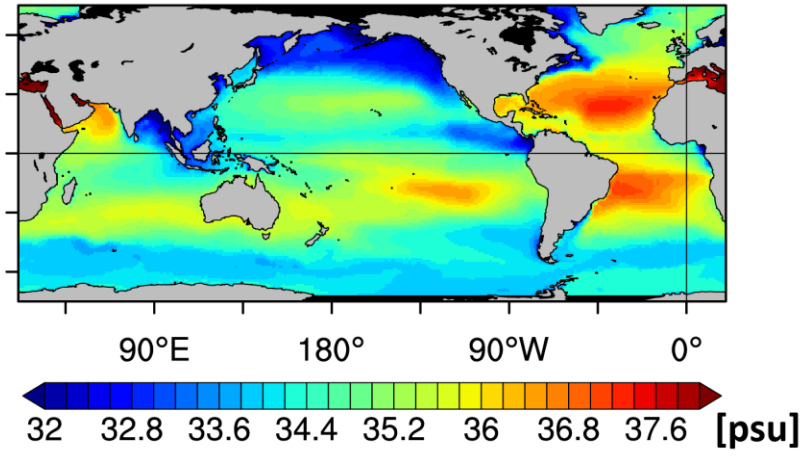
- **Jan. 1993 to present (near real time), with a daily resolution**

Oceanic fields analyzed in JCOPE-FGO~Mean state~

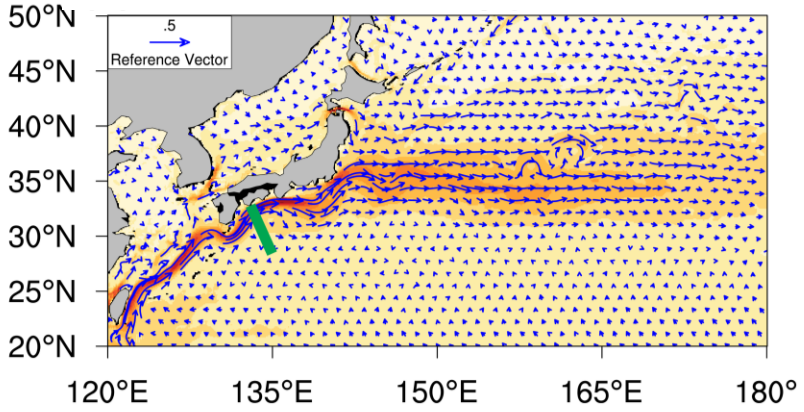
(a) Mean SST of FGO



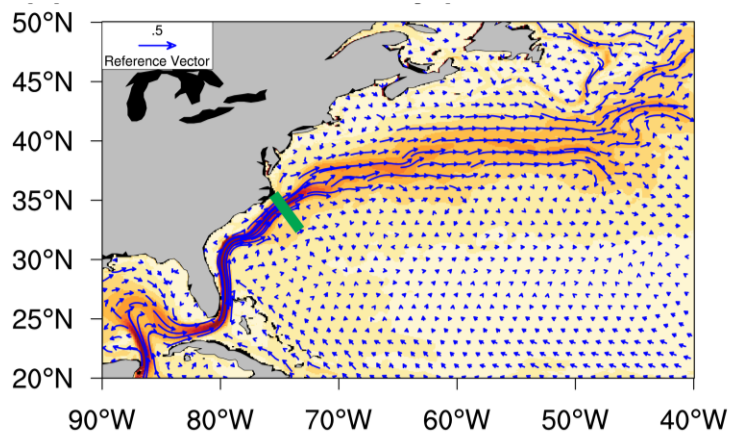
(b) Mean SSS of FGO



(c) FGO surface velocity (NW Pacific)



(d) FGO surface velocity (NW Atlantic)



- **JCOPE-FGO reasonably captures mean structure and temporal variability of temperature, salinity fields, the upper ocean circulation in the global ocean both at regional and global scales**

<u>Possible applications</u>

- Investigate dynamics and thermodynamics of ocean frontal variability
- Use as initial conditions of ocean/climate predictions