Automated Diagnostics of CESM Ocean Biogeochemistry

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Climate System -> Earth System

Ocean -> POP + biogeochemistry

where POP is \( f\) (parameterizations, resolution)
Previous sets of diagnostics

**NCAR POP diagnostics**
- Physics-Dynamics
- NCL-based
- Automated
- Legacy of OS

**WHOI Ecosystem diagnostics**
- Biogeochemistry
- Python-based
- Semi-automated
- Heavy-lifting by Ivan Lima
New ocean diagnostics

Physical + Biogeochemical

NCL + Python

NCAR supported

Collaborative
NCAR-WHOI Super Collection of ocean diagnostics

NCAR POP diagnostics

NWSC ocean diagnostics

WHOI Ecosystem diagnostics
CESM ocean diagnostics

Climatologies

Time Series

Comparisons
Temporal mean of a simulation: popdiag

- Modules:
  - Maps
  - Seasonal cycle
  - Depth-Latitude plots
Time series of a simulation: popdiagts

• Modules:
  – Global average
  – Basin averages
  – Regional averages
Comparison of two simulations: \texttt{popdiagdiff}

- Maps
- Seasonal cycle
- Depth-Latitude plots
Steps

1. Repository
2. Port
3. Select Modules
4. Run
5. Plots & Website
6. Repeat 3-5
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Climatologies

CESM ocean diagnostics

Time Series

NCAR POP diagnostics

Comparisons

WHOI Ecosystem diagnostics
Thanks

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