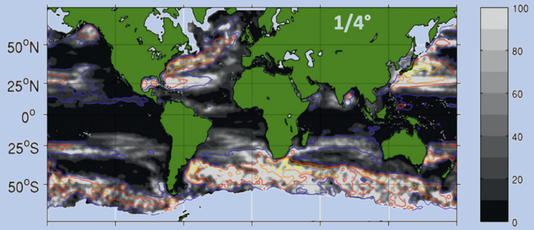
# Low Frequency Intrinsic and Forced Variability in the Eddying Ocean

Nicolas Wienders, Quentin Jamet, Bruno Deremble, William Dewar

Florida State University

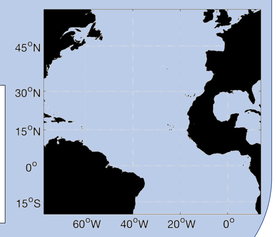
## CHAOCEAN (project)




-Overarching Motivation-
Penduff et al. (2011) ~80% of NA ocean variability is intrinsic

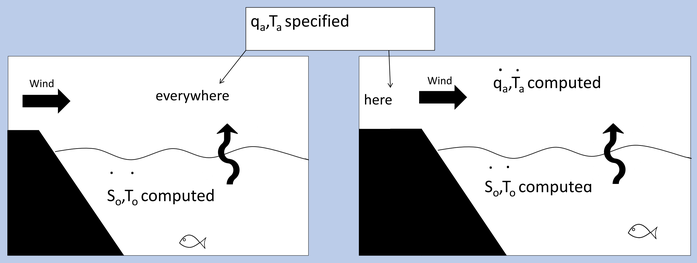
-Goal-
Categorize the variability as forced or intrinsic, local or remote

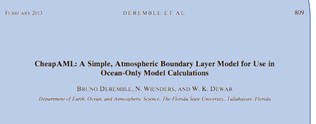
-Procedure-
Ensemble experiments
4 sets of 12 50 year experiments
Permutations of forcing and boundary conditions, climatology or full
MITgcm
CheapAML
Modifed Domain – 1/12˚




## CheapAML (tool)

-Detail-
We use CheapAML, an atmospheric Boundary layer Model
Why? To avoid suppression of SST variability

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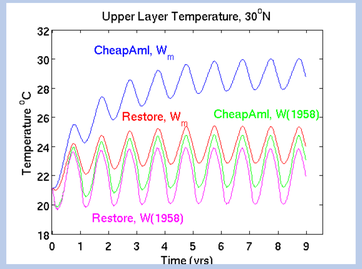
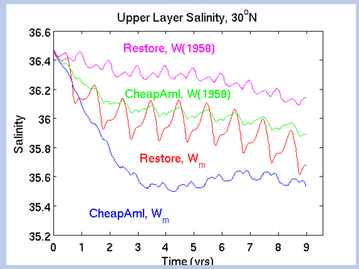
CheapAML: A Simple, Atmospheric Boundary Layer Model for Use in Ocean-Only Model Calculations

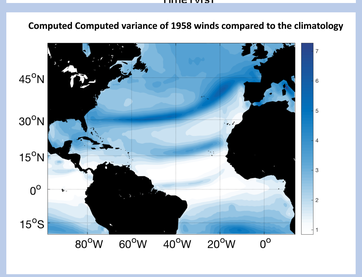
BRUNO DEREMBLE, N. WIENDERS, AND W. K. DEWAR

*Department of Earth, Ocean, and Atmospheric Science, The Florida State University, Tallahassee, Florida*

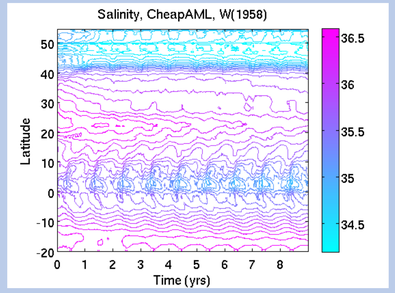
-Motivation for this Poster
Study model spin up under CheapAML

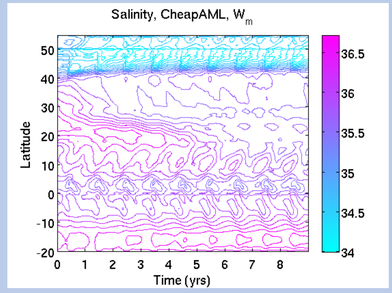


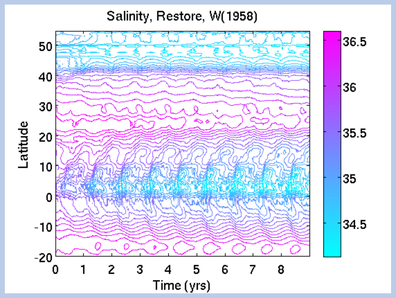



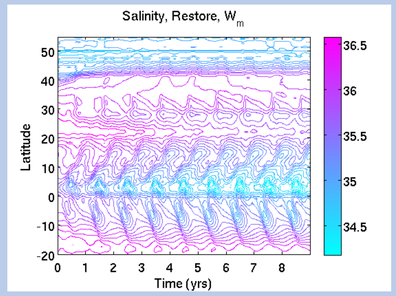




## Results




CheapAML, W (1958) : realistic winds, looping.
CheapAML, $W_m$ : climatological winds.
Restore, W (1958): climatological $T_a$ and $q_a$, realistic winds.
Restore, $W_m$: climatological $T_a$ and $q_a$, climatological winds.

## Summary

- Since a restoring method cannot be used within Chaocean we bring a different method
- CheapAML works if using real winds but not climatology (climatological winds underestimate mixing)
- Using CheapAML:
  - Observed drifts are comparable to the restoring method
  - Annual salinity cycle is in agreement with observations
- We need a new method to perform the climatologically forced ensemble members