

MLE Parameterization in CCSM and Competition

Baylor Fox-Kemper
CIRES/CU-Boulder
and

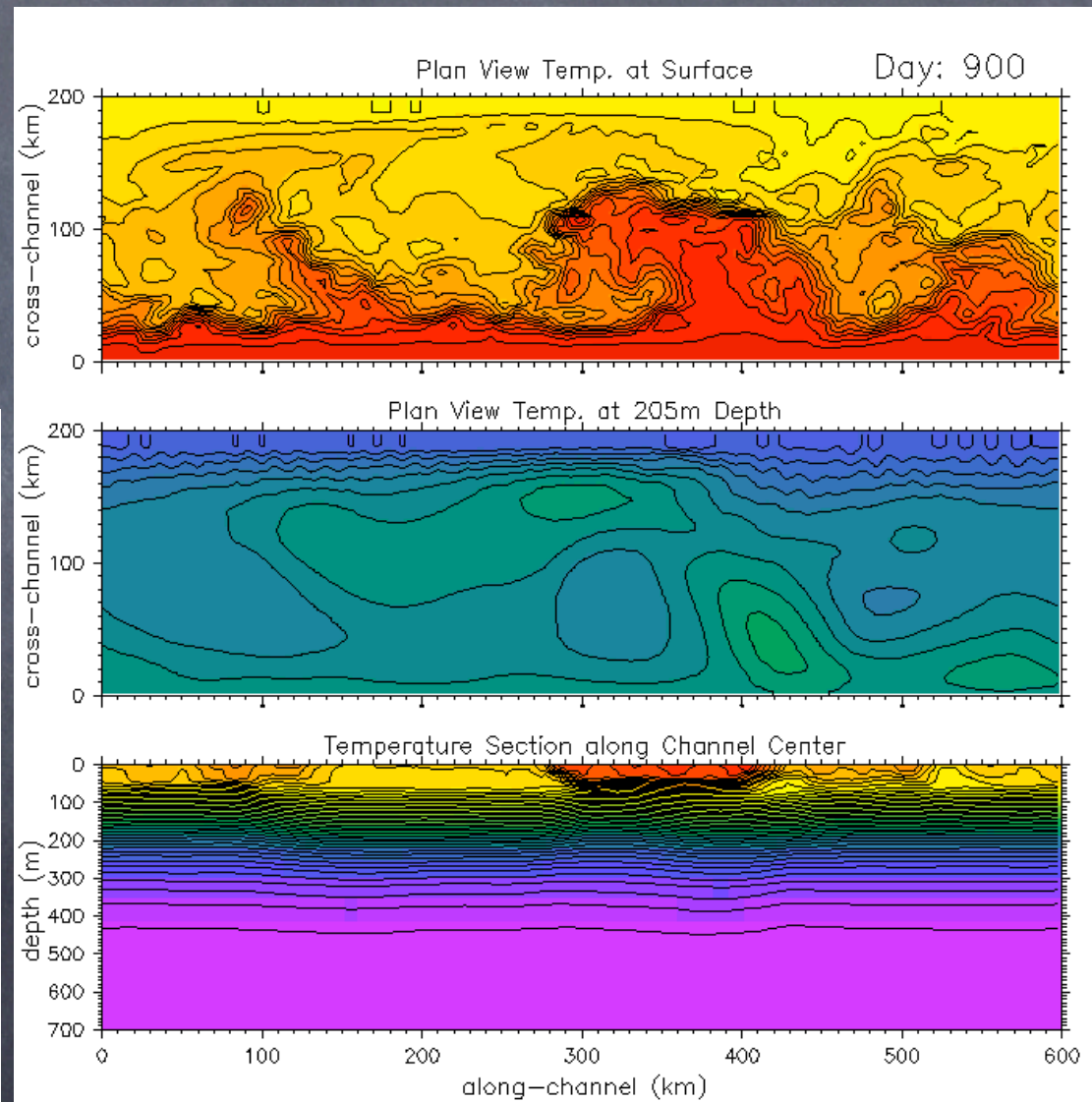
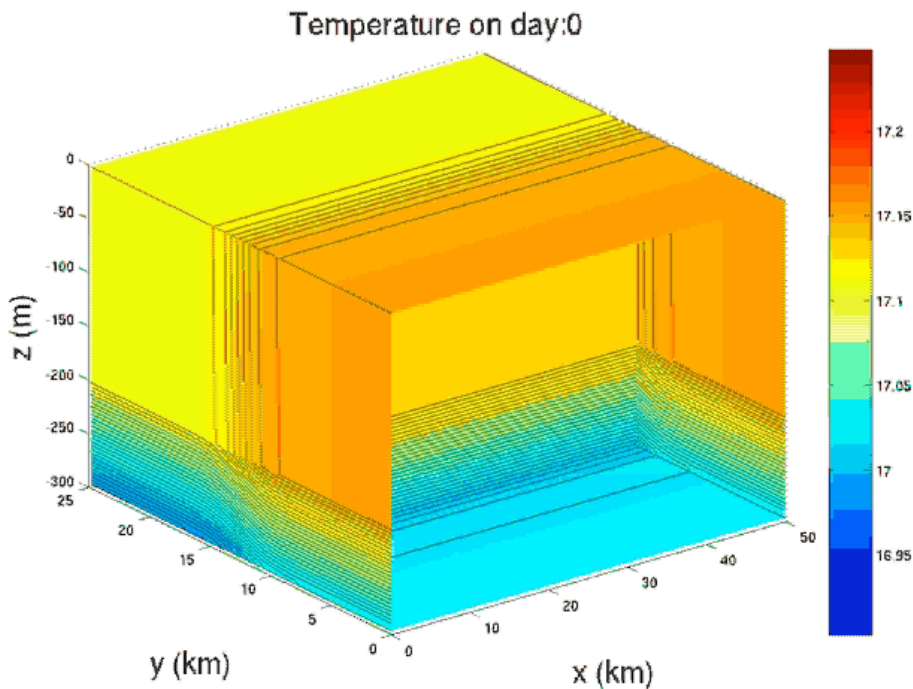
G. Danabasoglu, R. Ferrari, R. Hallberg, S.
Griffies, S. Peacock

13th CCSM Meeting--OMWG Session

Thurs. 6/19/08 11:40-Lunch

Recall MLE Param.

$$\Psi = \frac{C_e H^2 \mu(z)}{|f|} \nabla \bar{b} \times \hat{z}$$



MLE Param. is now in testing in:

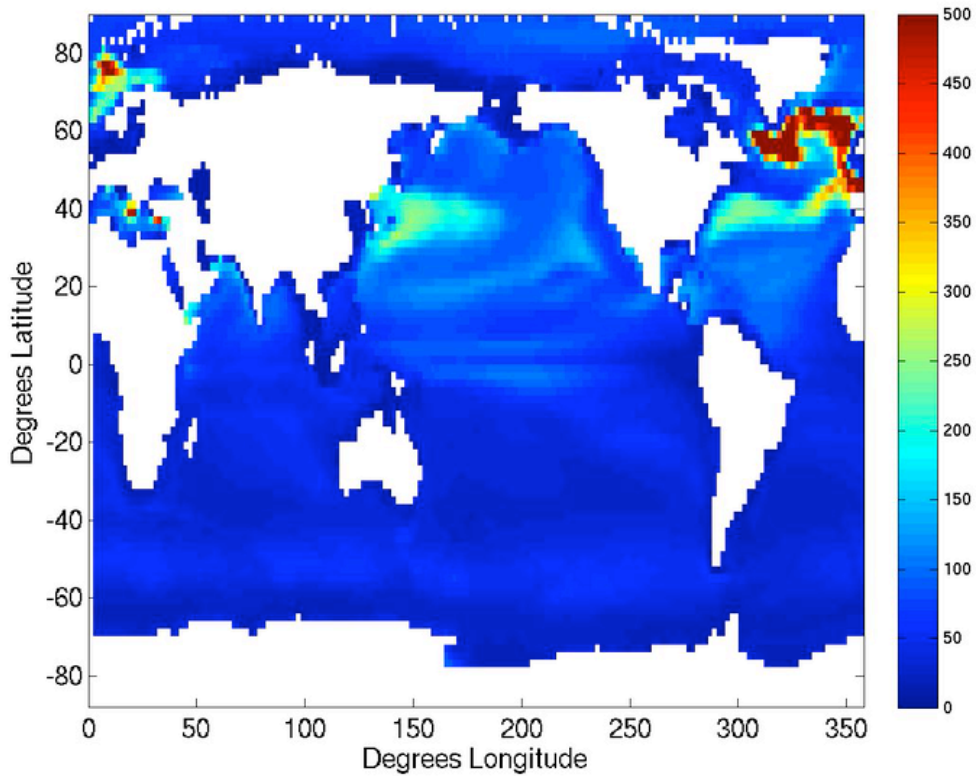
Models

- CCSM/POP
- CM/MOM
- CM/GOLD
- MITgcm

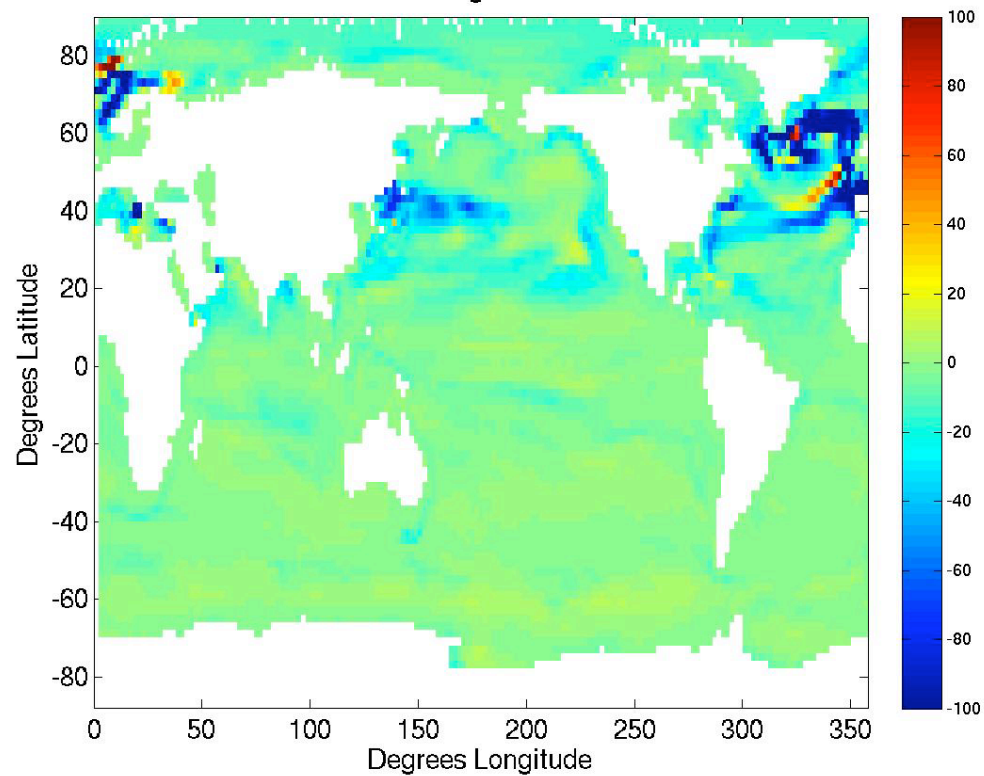
Results

- Reduced ML Depth
- Reduced MLD Bias
- Modest CFC changes, some bias reduction
- Reasonable changes to circulation
- Stable, Minimal Cost

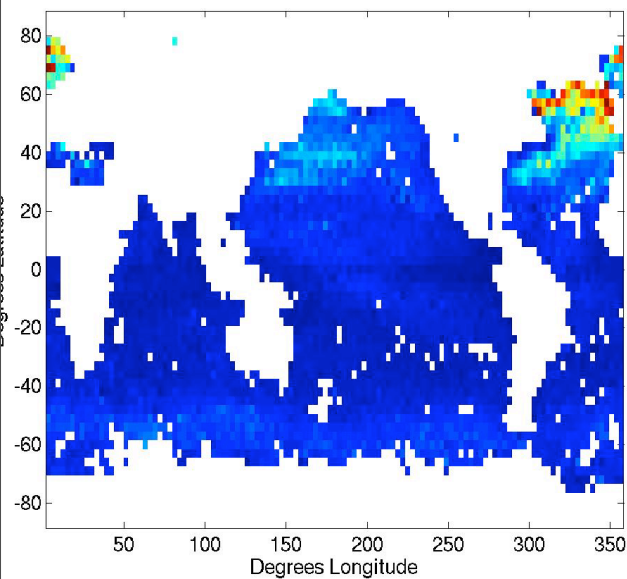
CCSM Control MLD JFM



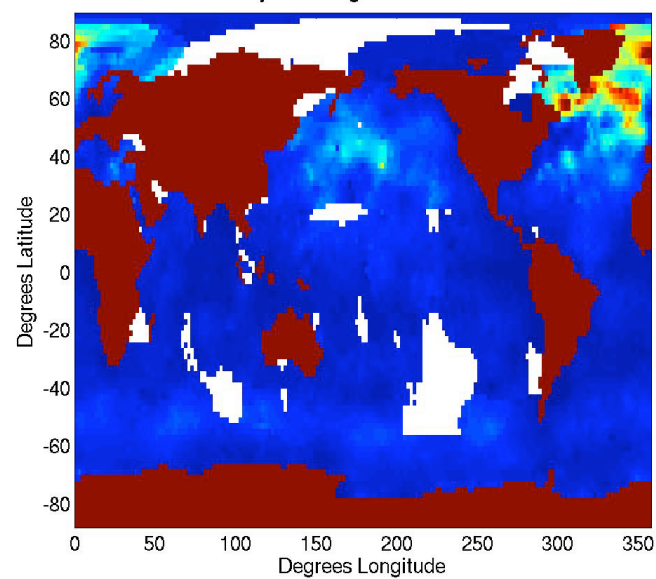
CCSM MLD change due to MLE JFM



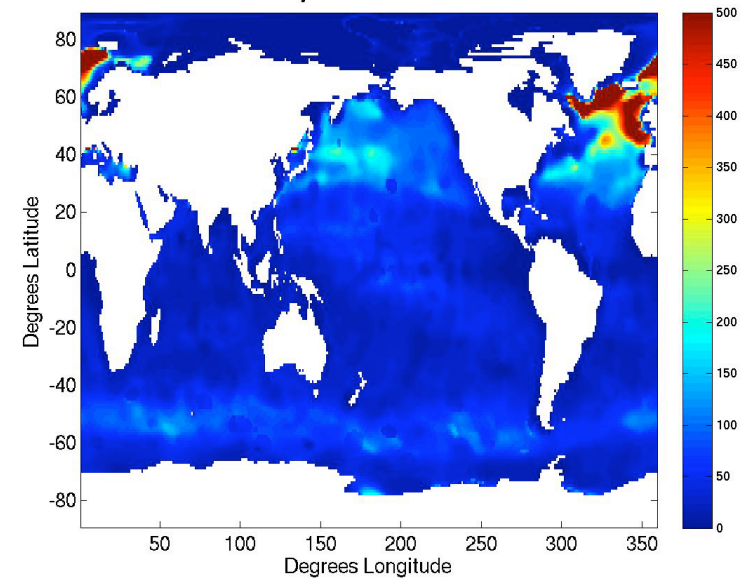
ARGO MLD JFM



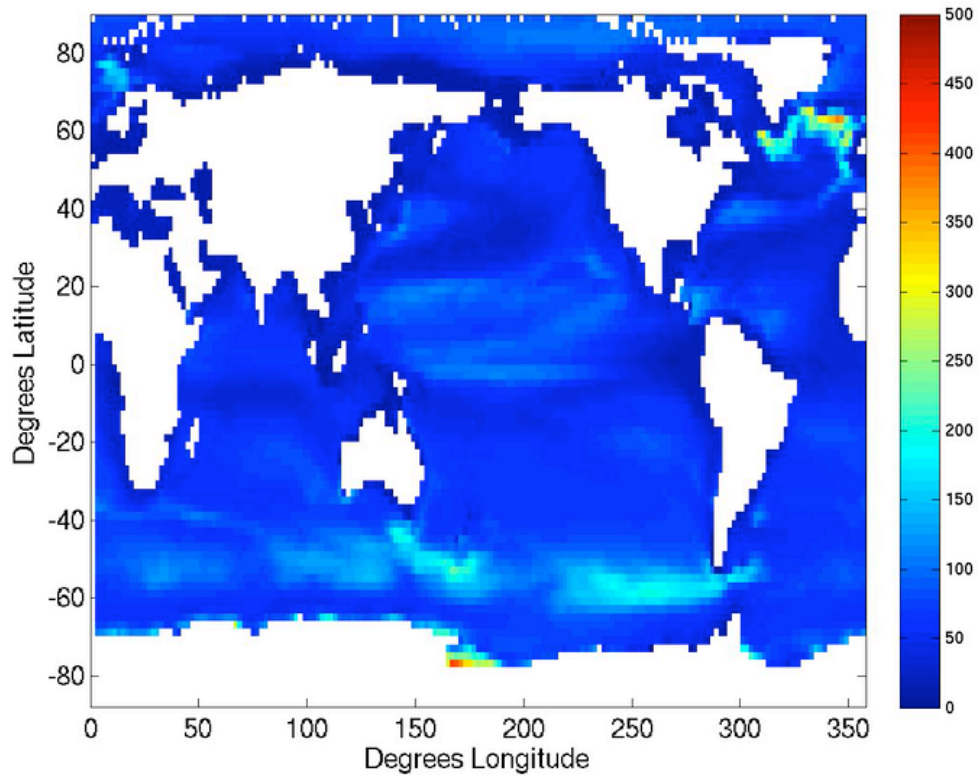
de Boyer-Montegut et al. MLD JFM



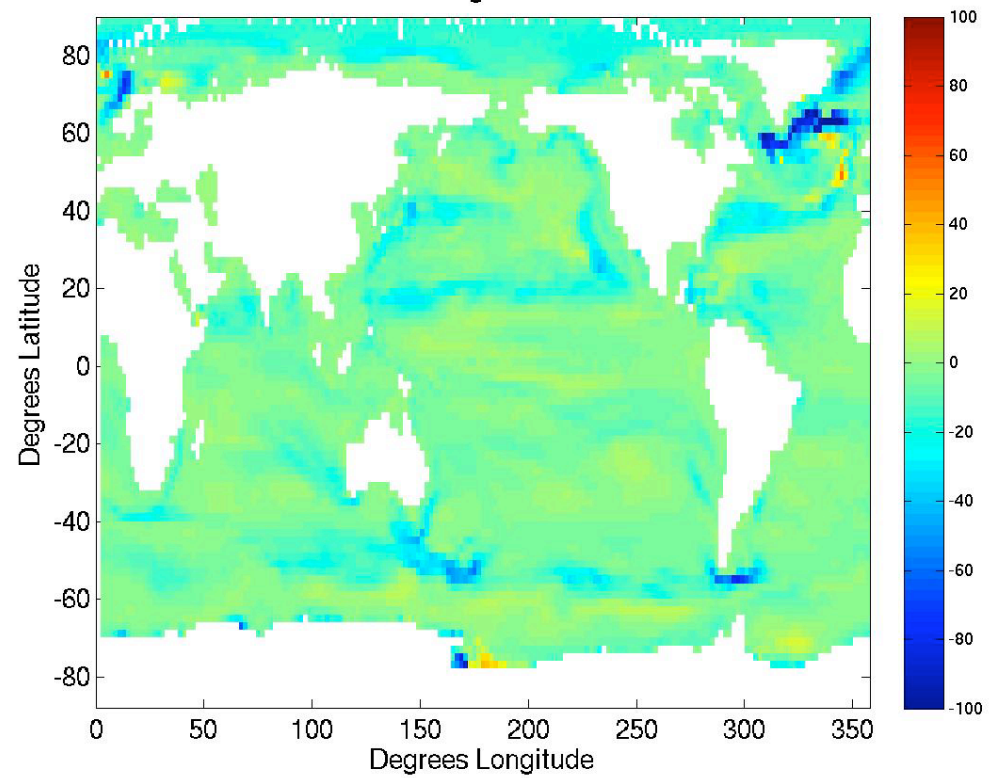
Monterey and Levitus MLD JFM



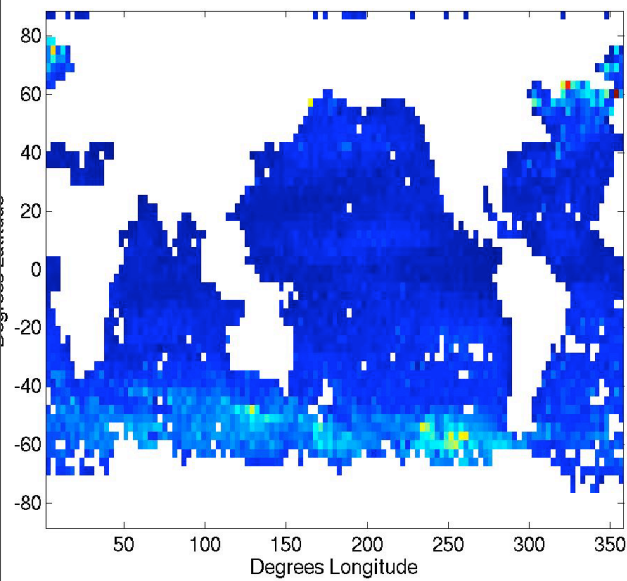
CCSM Control MLD AMJ



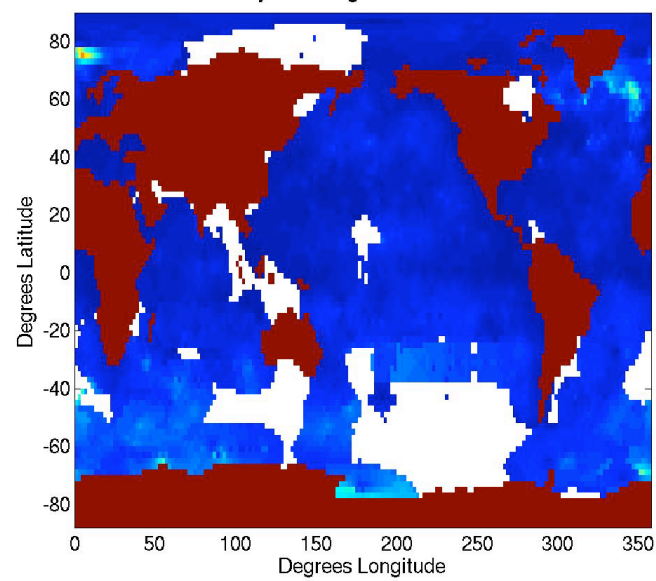
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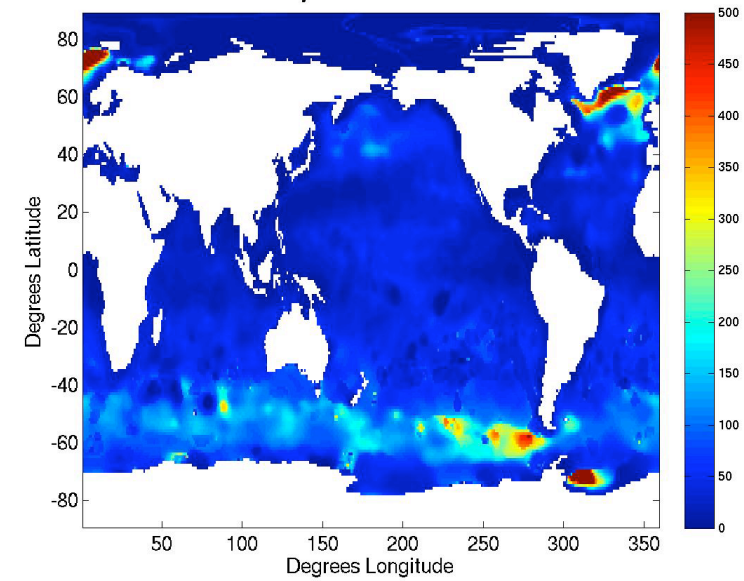
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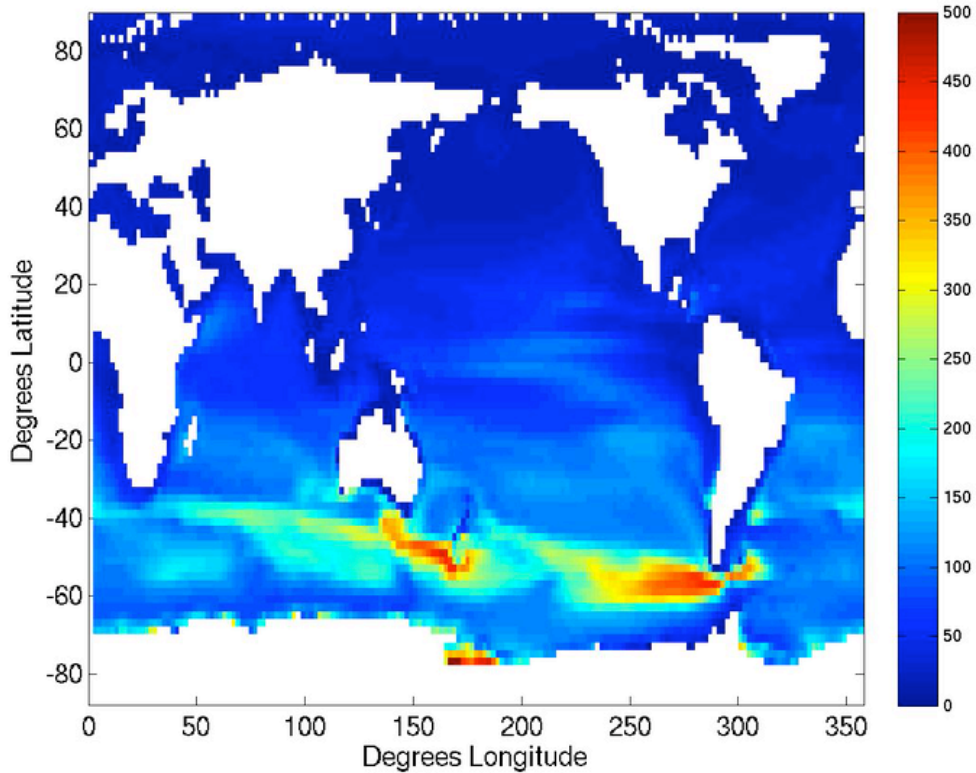
de Boyer-Montegut et al. MLD AMJ



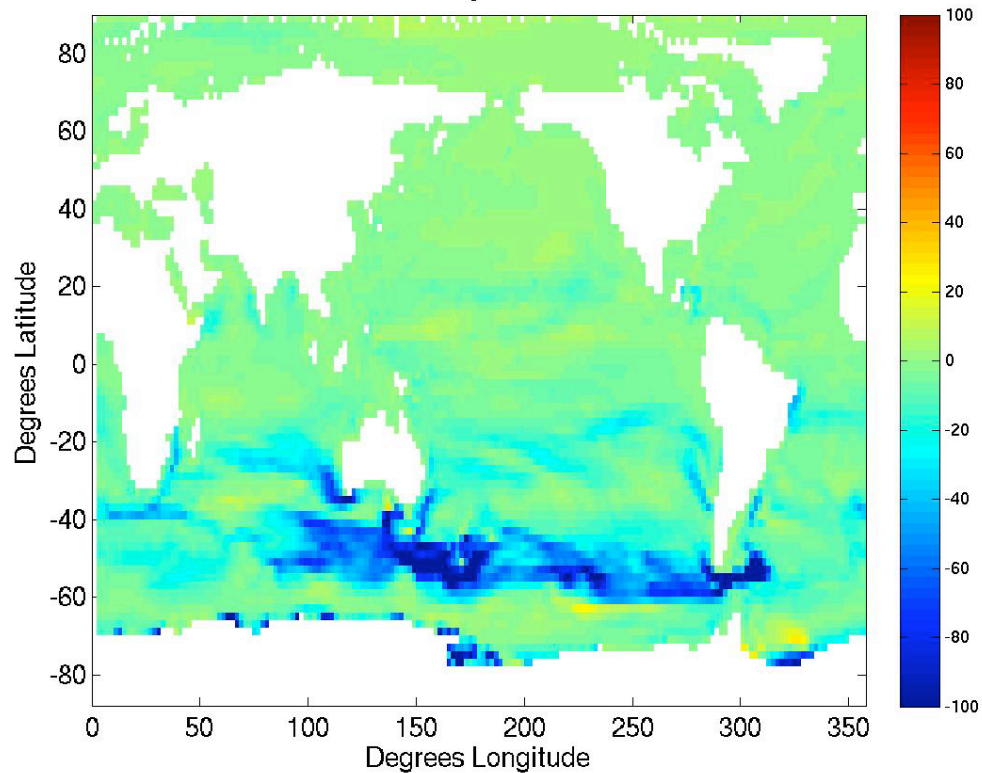
Monterey and Levitus MLD AMJ



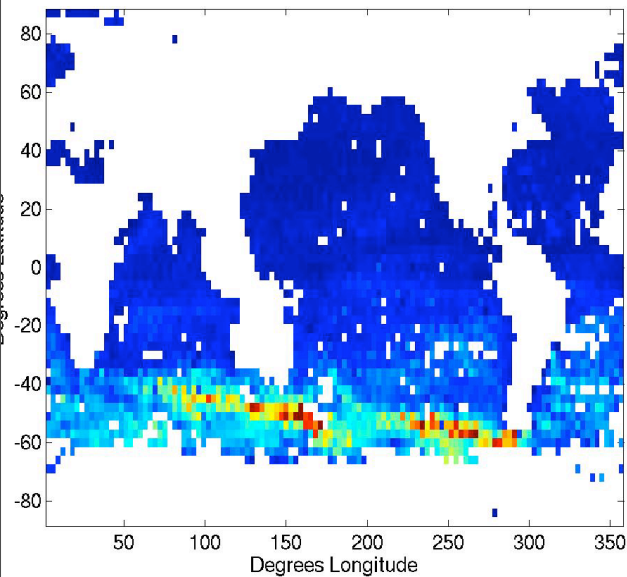
CCSM Control MLD JAS



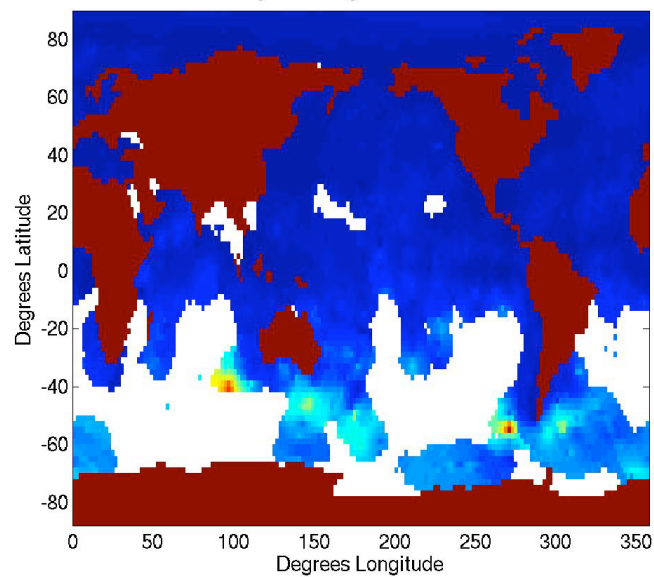
CCSM MLD change due to MLE JAS



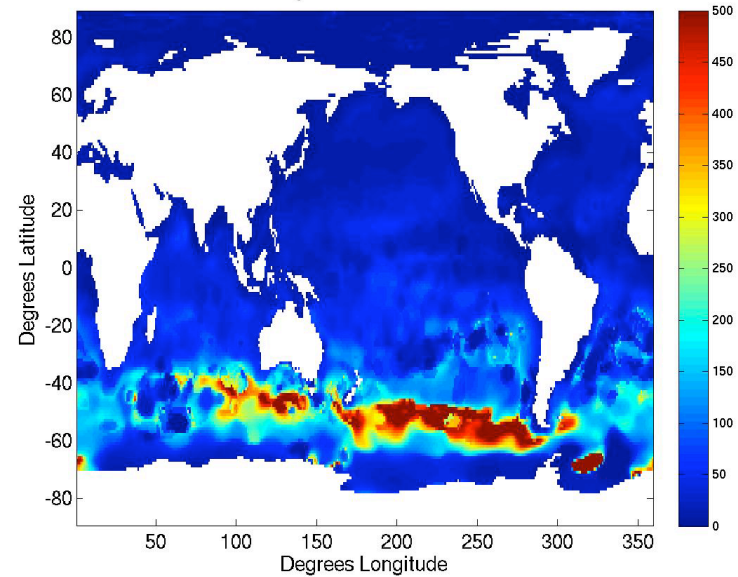
ARGO MLD JAS



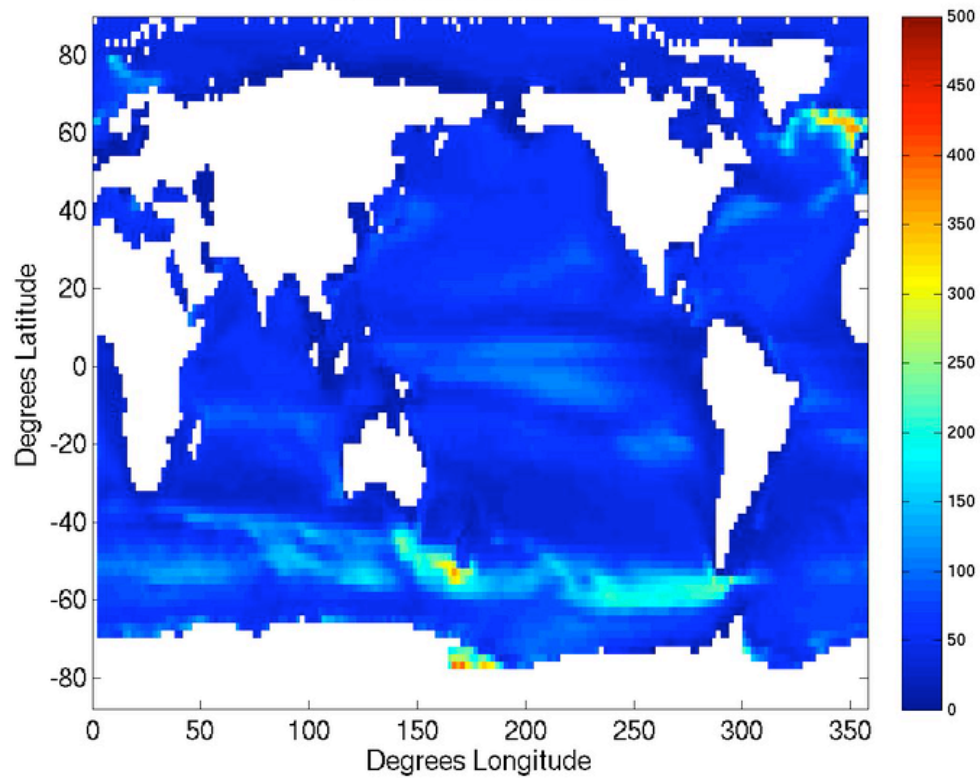
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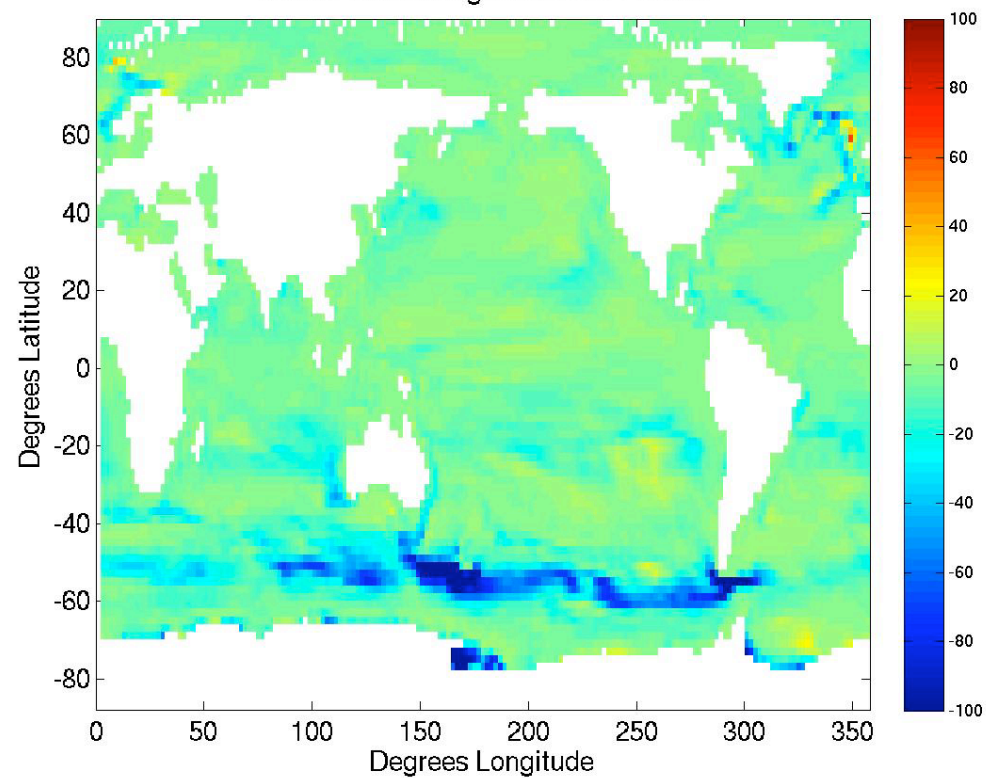
Monterey and Levitus MLD JAS



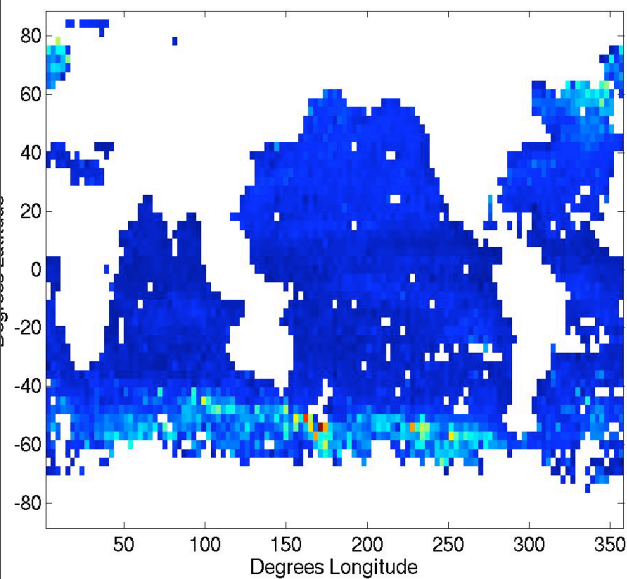
CCSM Control MLD OND



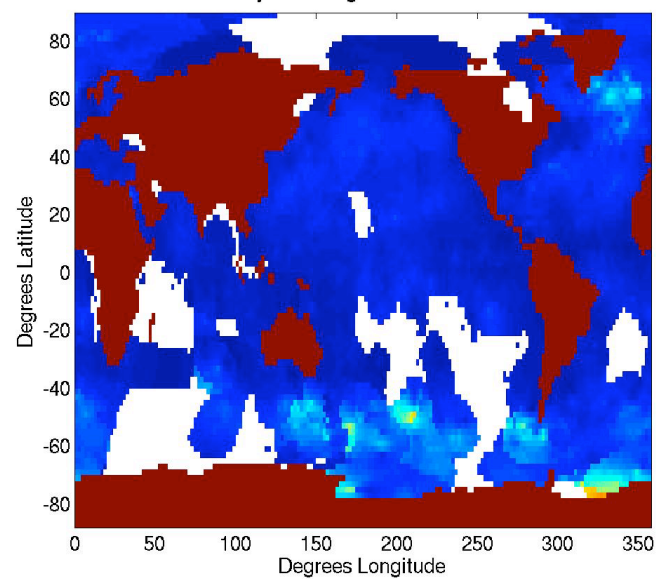
CCSM MLD change due to MLE OND



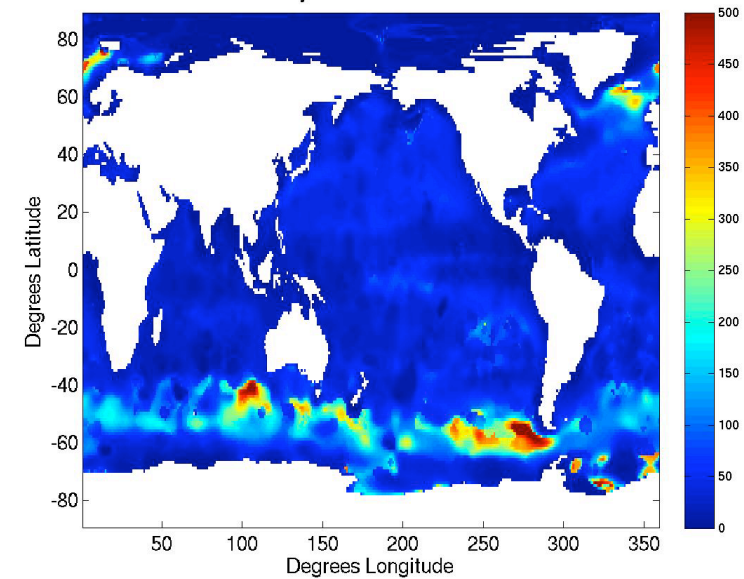
ARGO MLD OND



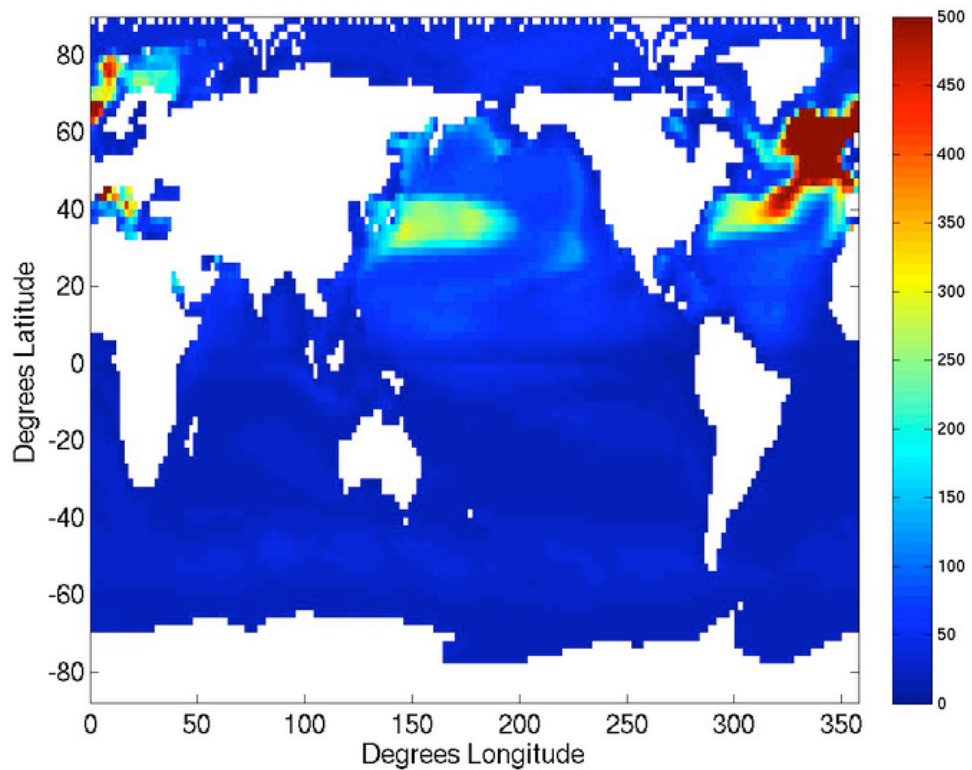
de Boyer-Montegut et al. MLD OND



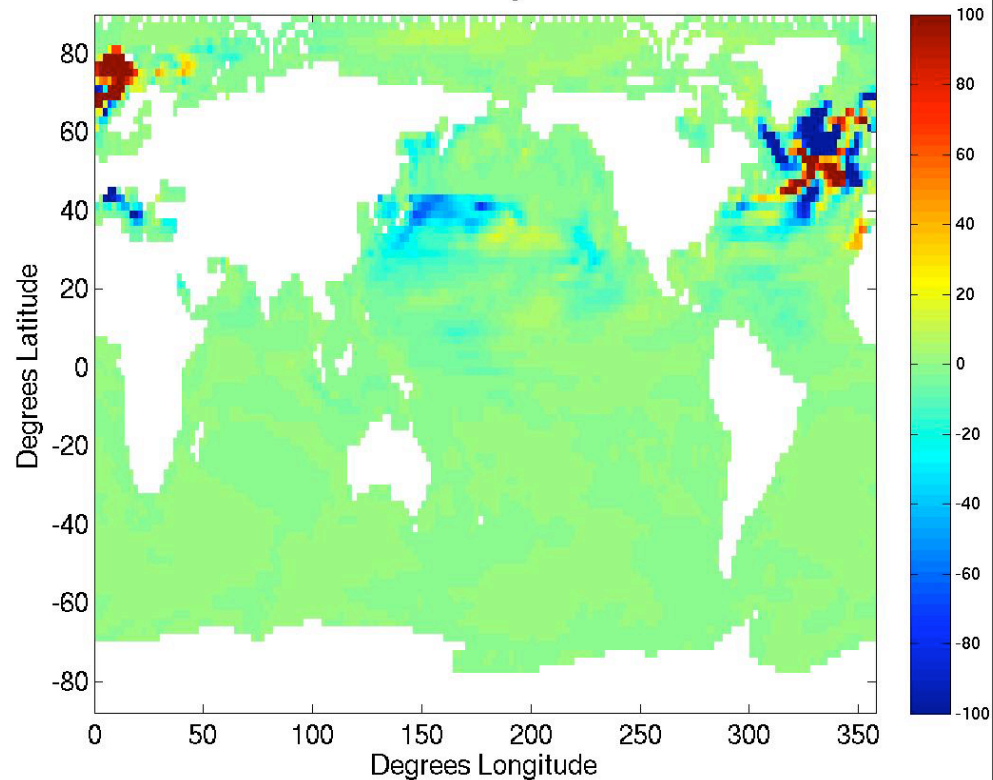
Monterey and Levitus MLD OND



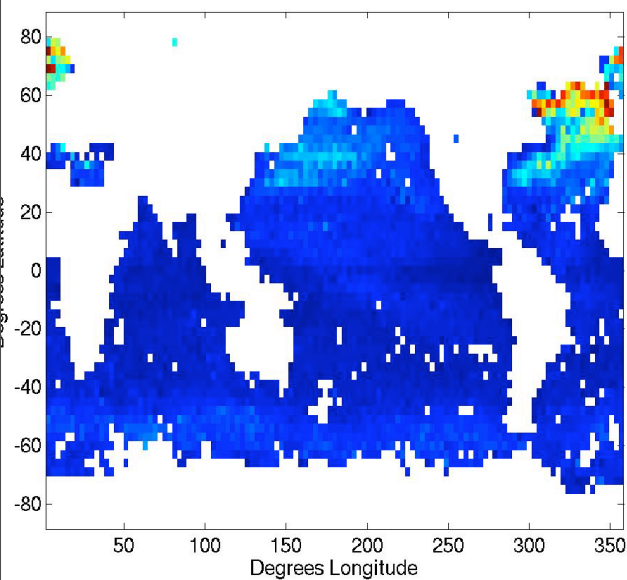
MOM/CM2.2 Control MLD JFM



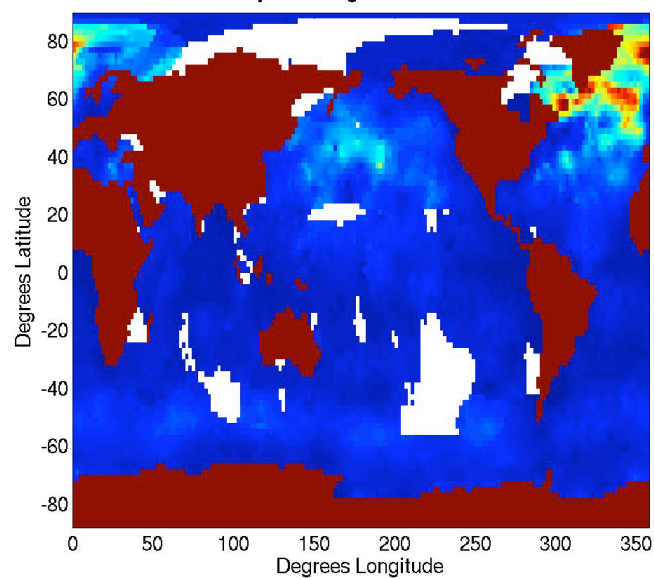
MOM/CM2.2 MLD change due to MLE JFM



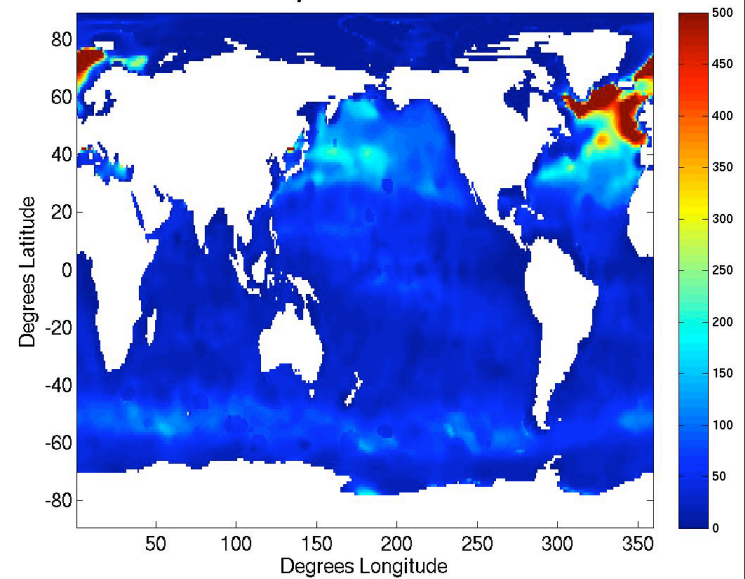
ARGO MLD JFM



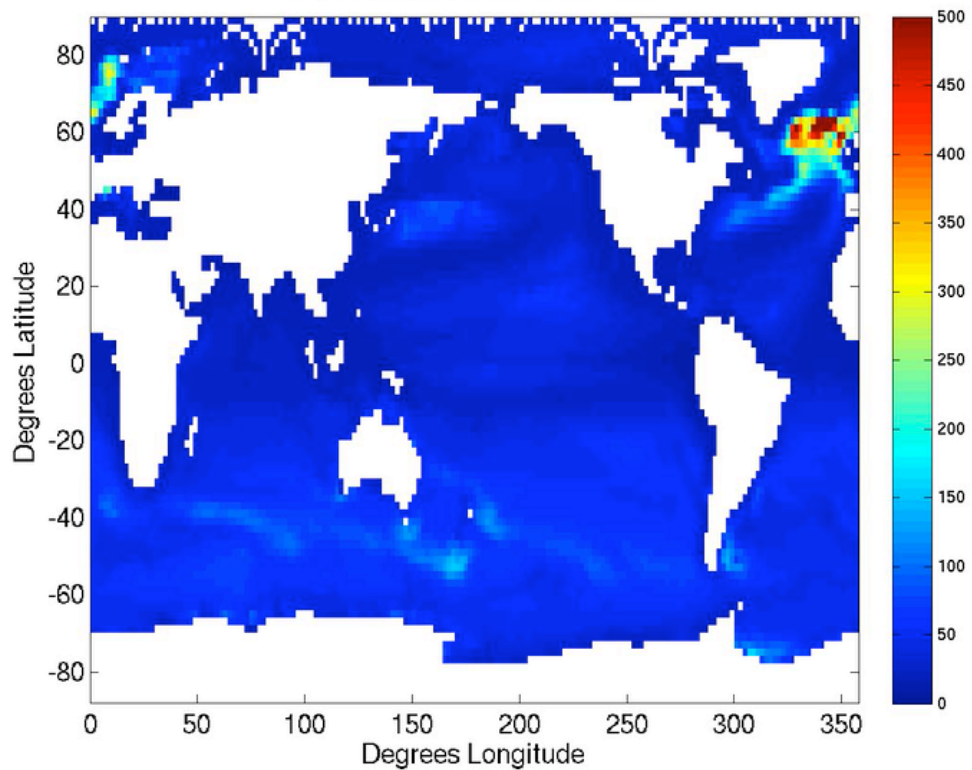
de Boyer-Montegut et al. MLD JFM



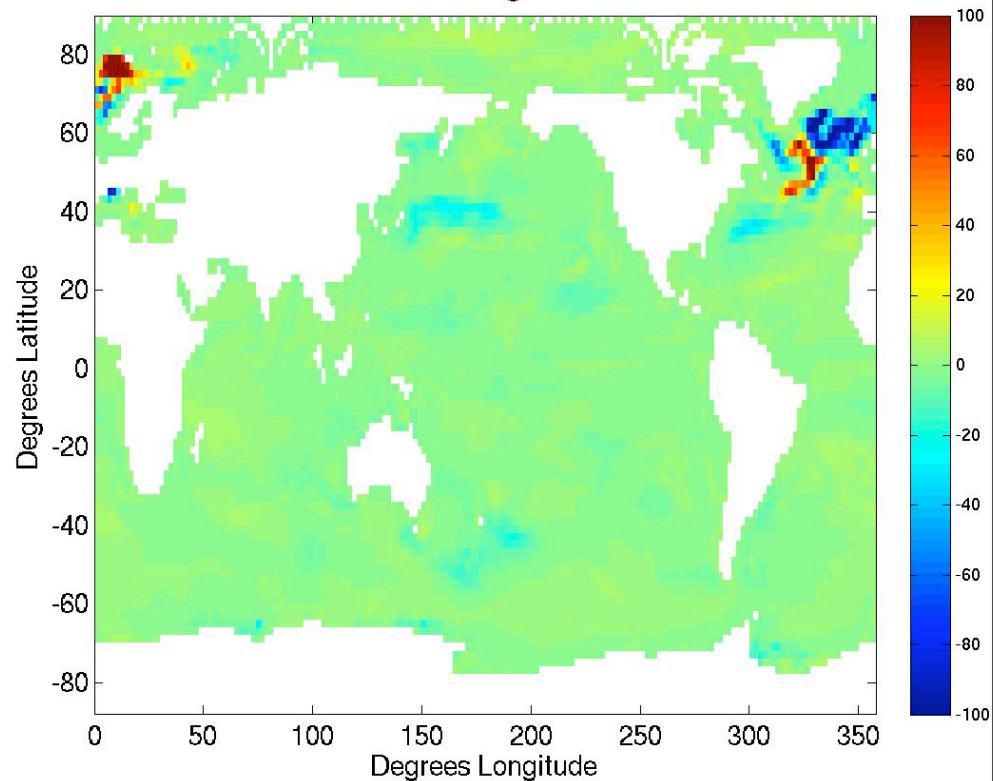
Monterey and Levitus MLD JFM



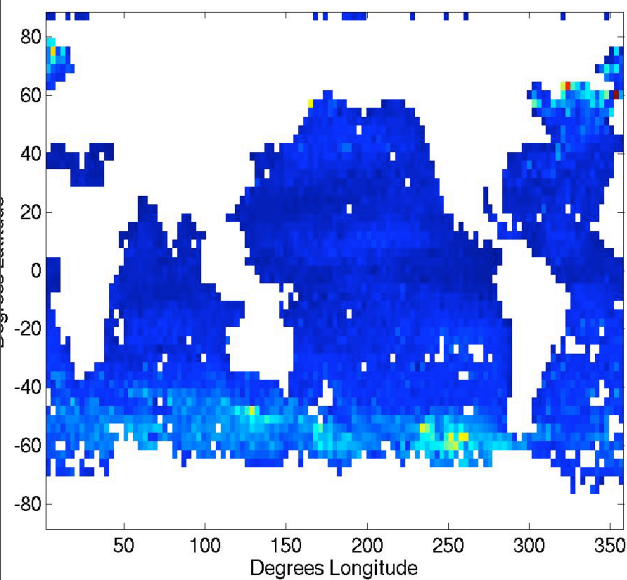
MOM/CM2.2 Control MLD AMJ



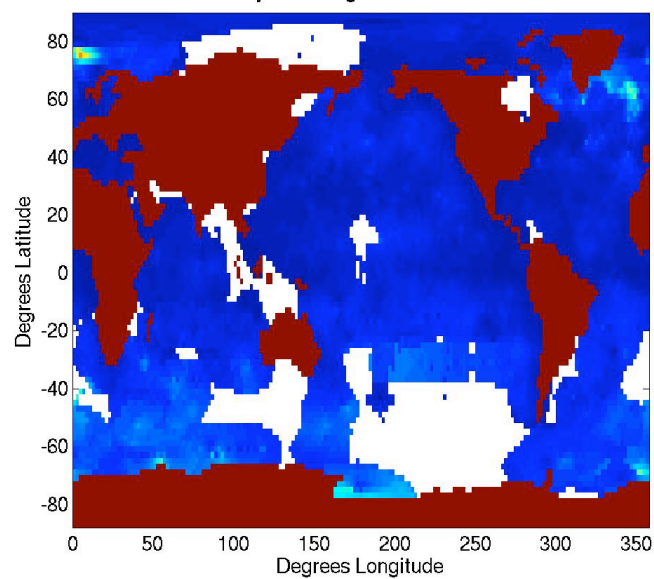
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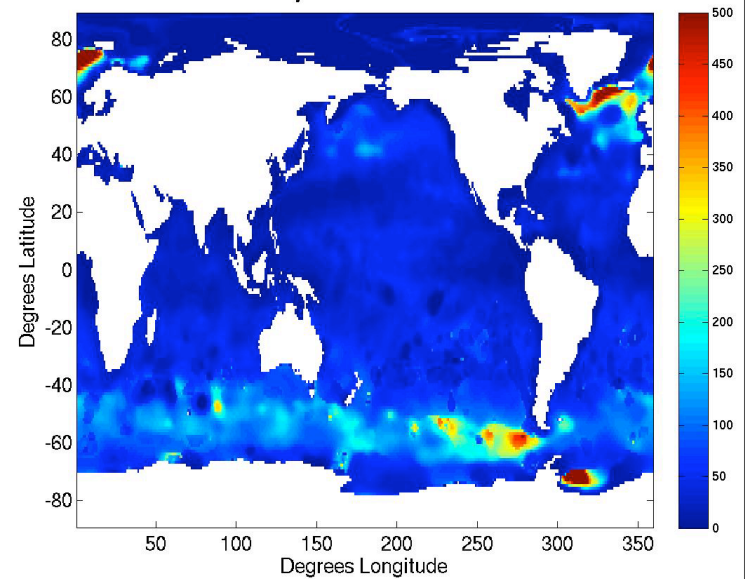
ARGO MLD AMJ



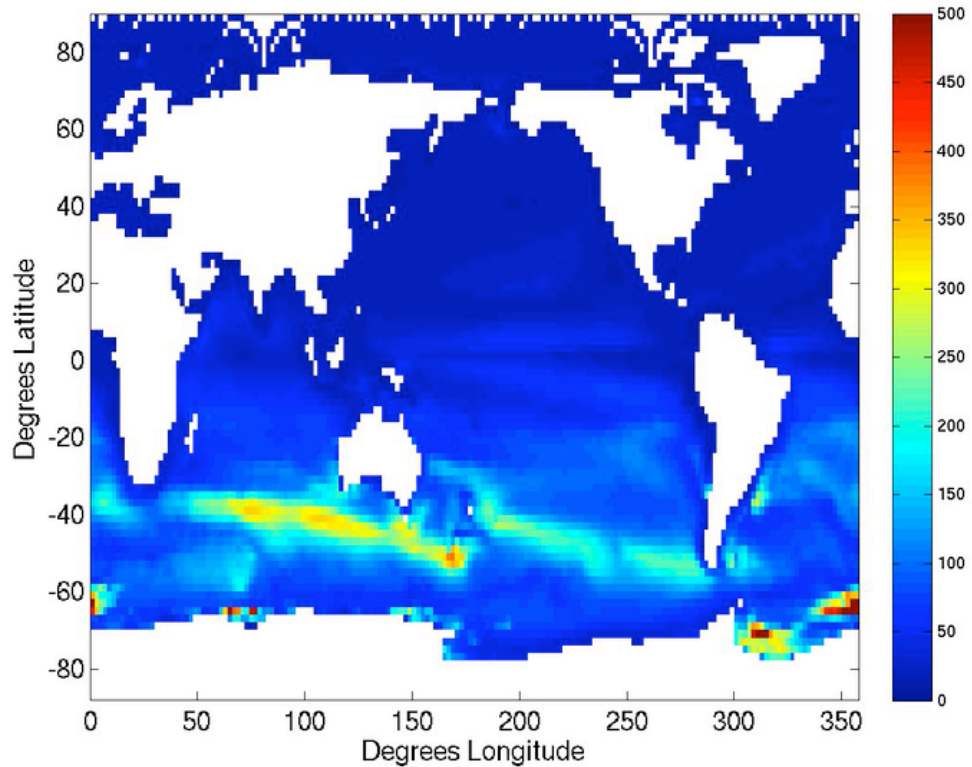
de Boyer-Montegut et al. MLD AMJ



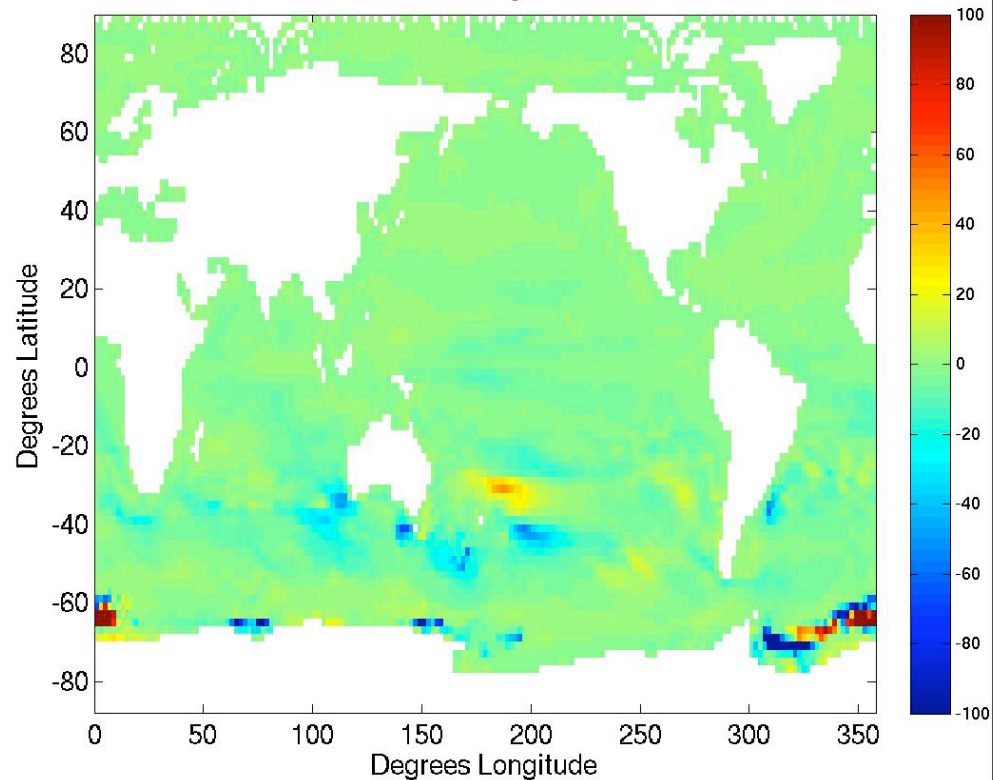
Monterey and Levitus MLD AMJ



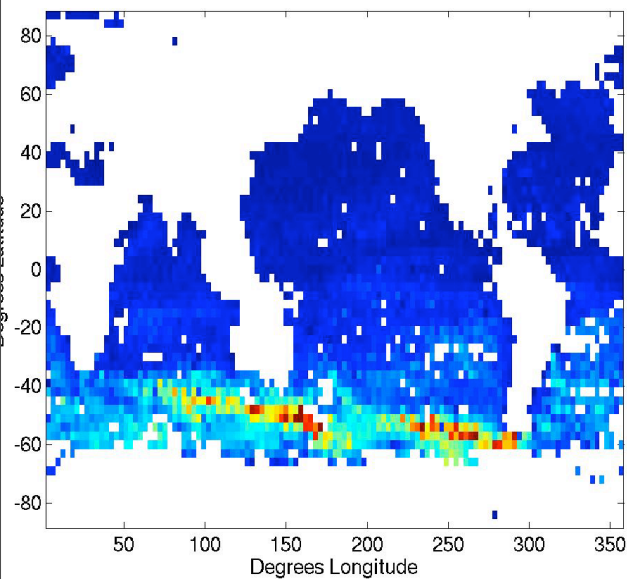
MOM/CM2.2 Control MLD JAS



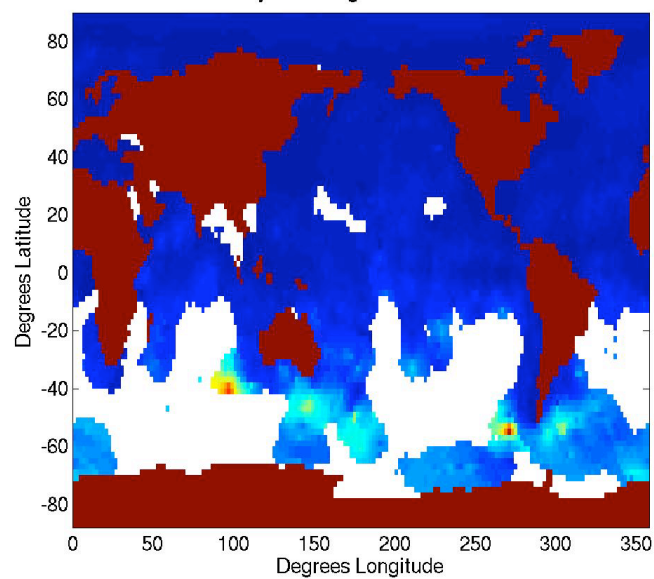
MOM/CM2.2 MLD change due to MLE JAS



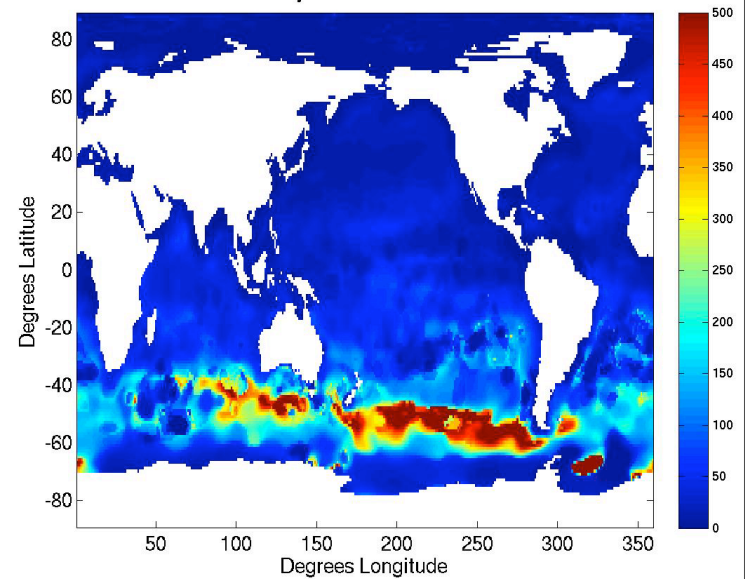
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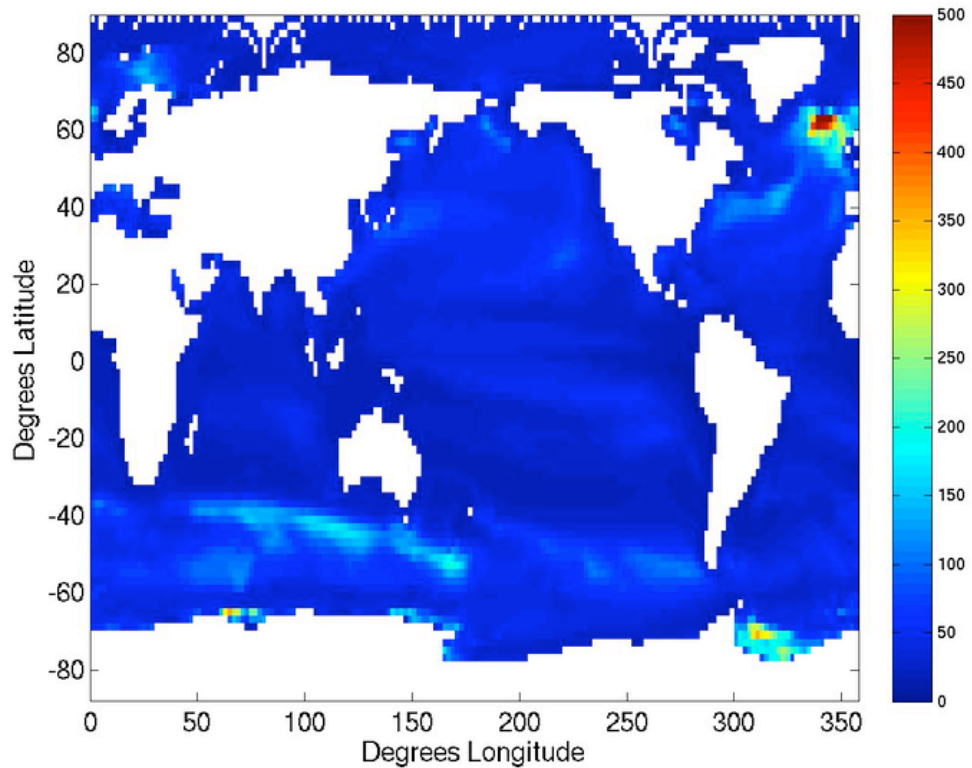
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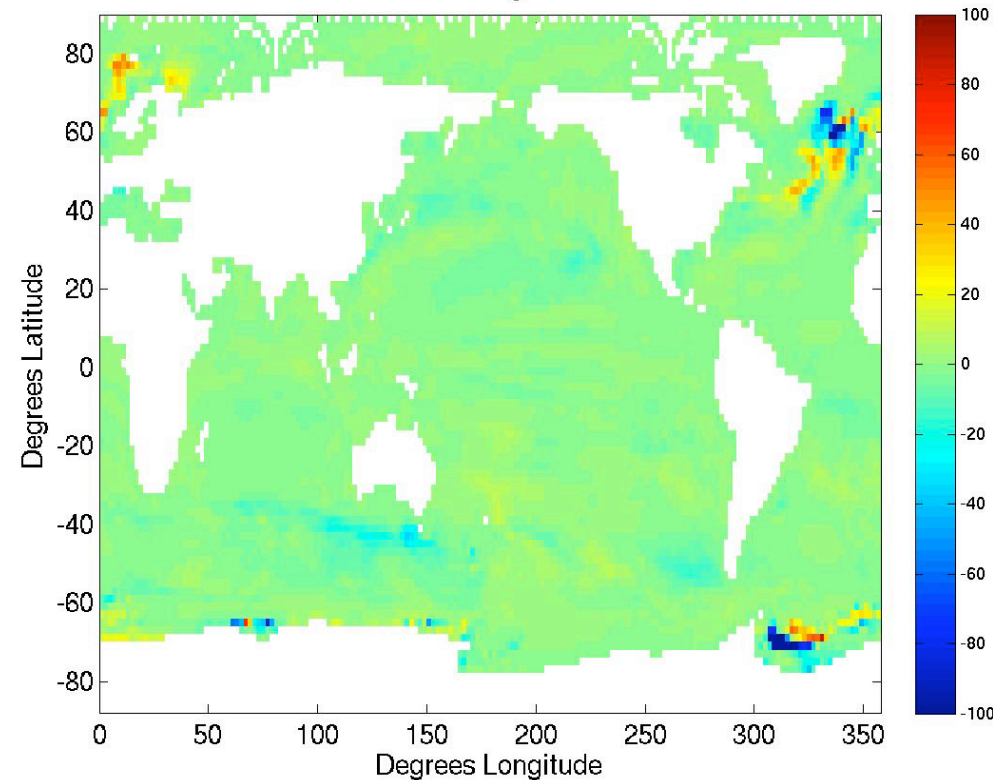
Monterey and Levitus MLD JAS



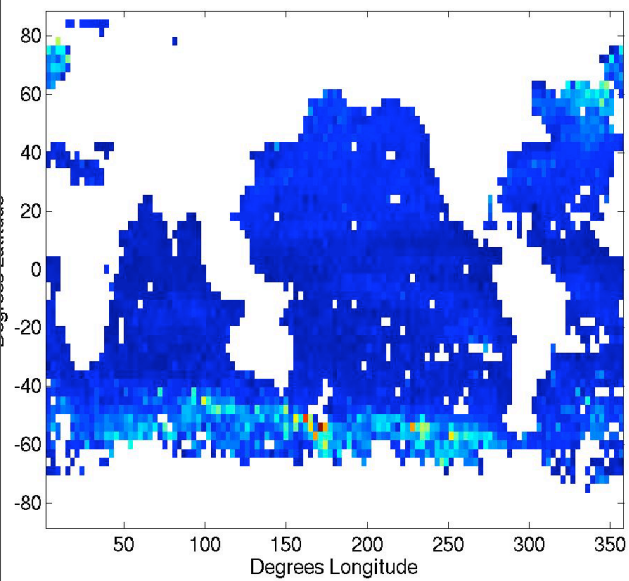
MOM/CM2.2 Control MLD OND



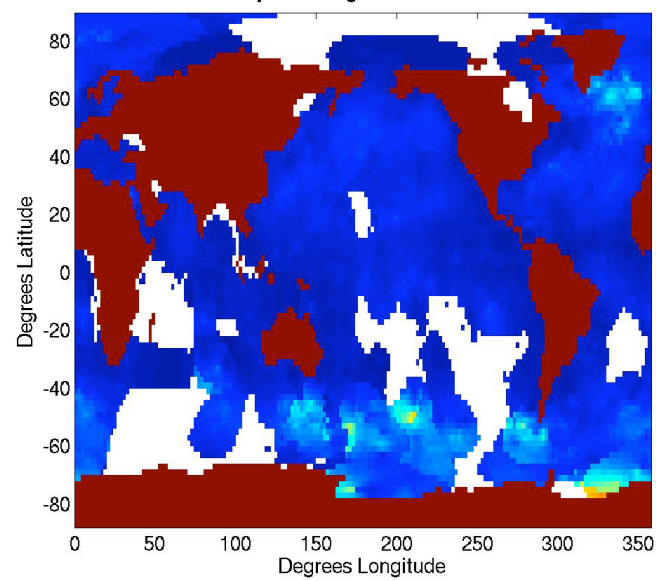
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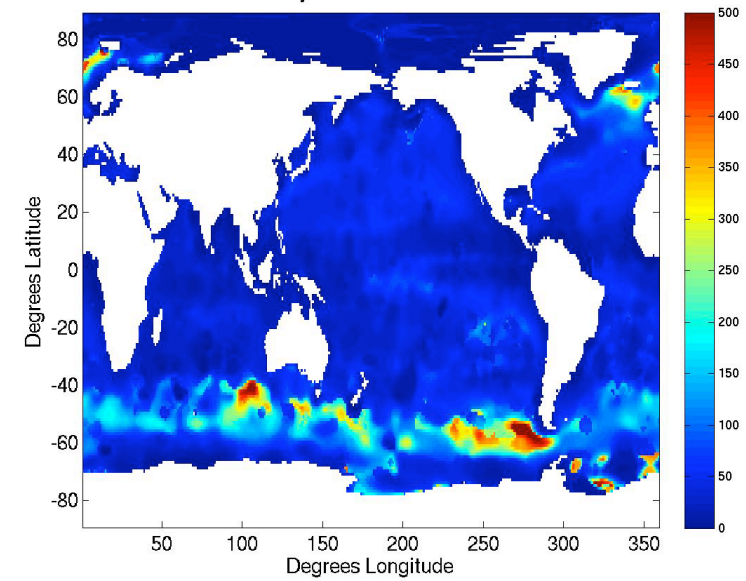
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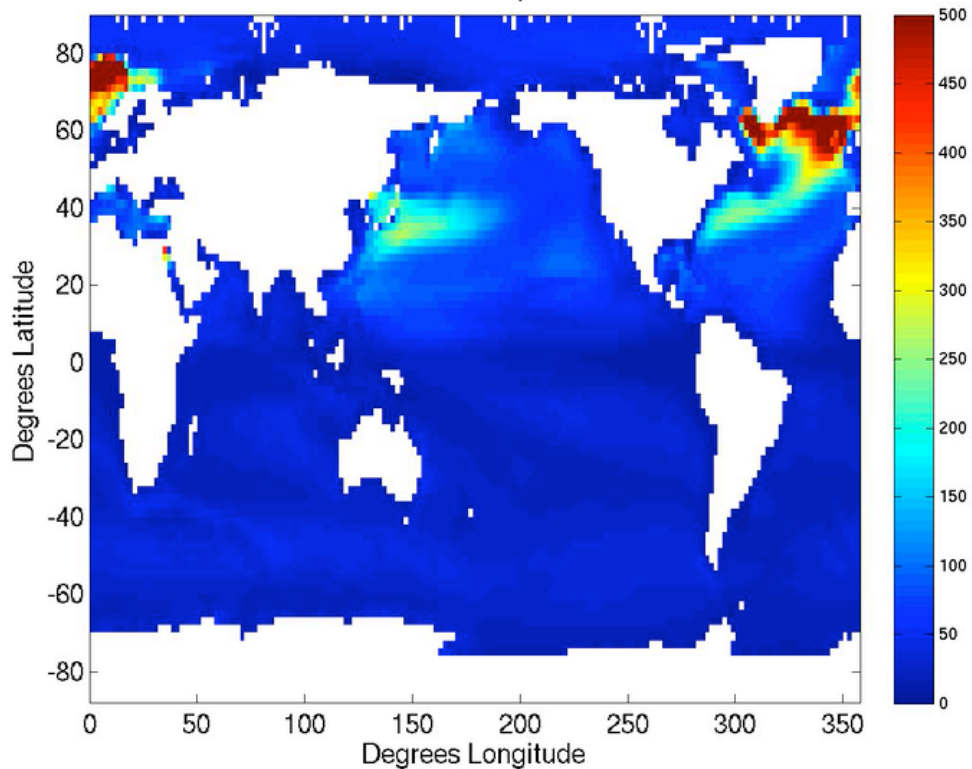
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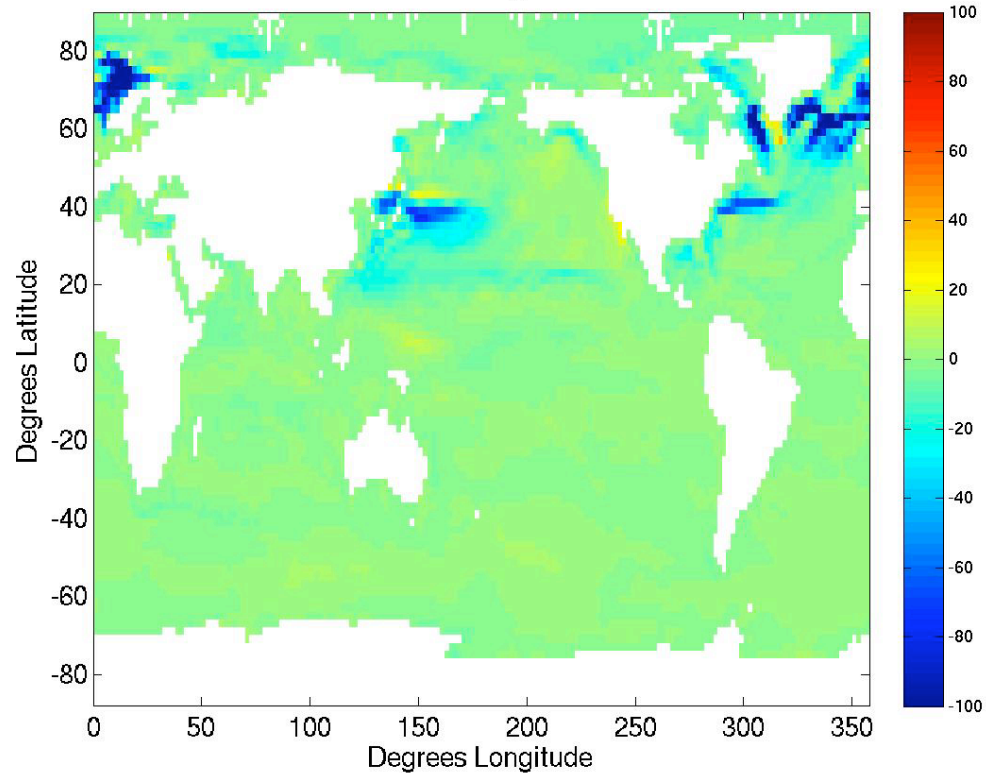
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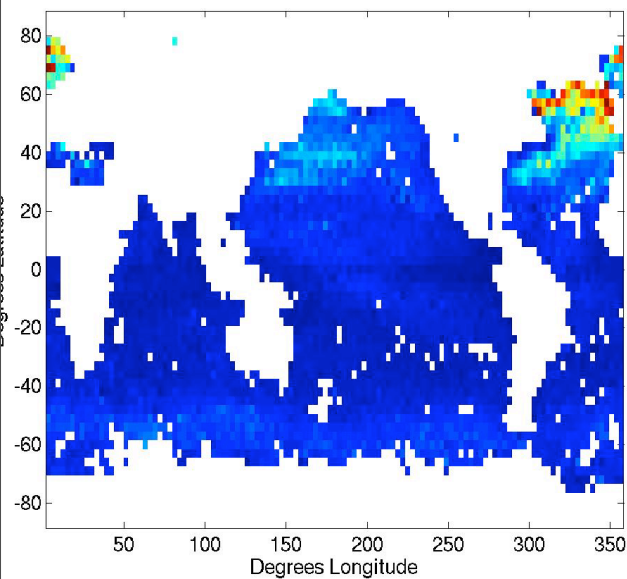
GOLD/CM2.2 with MLE param. BLT JFM



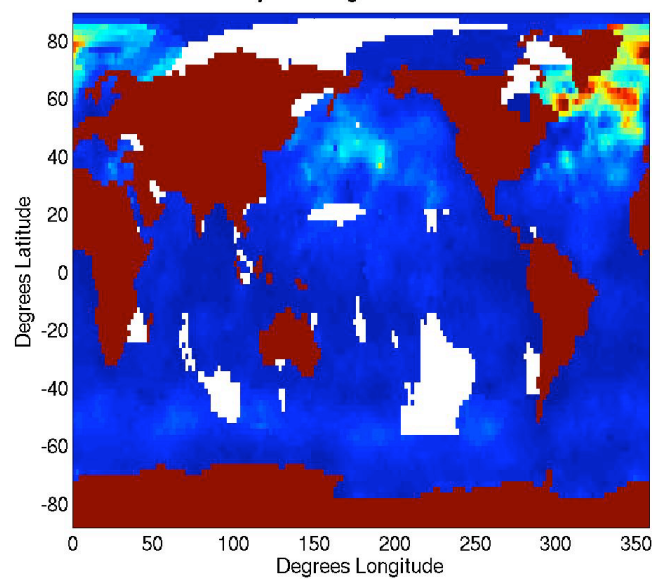
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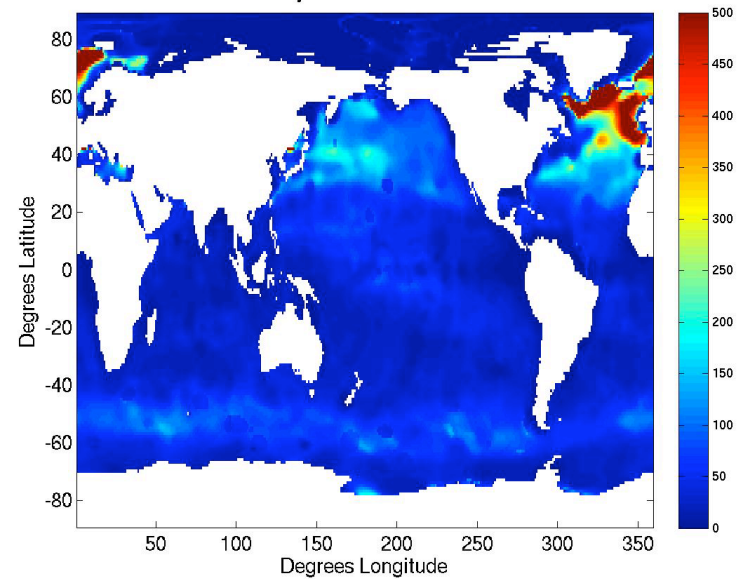
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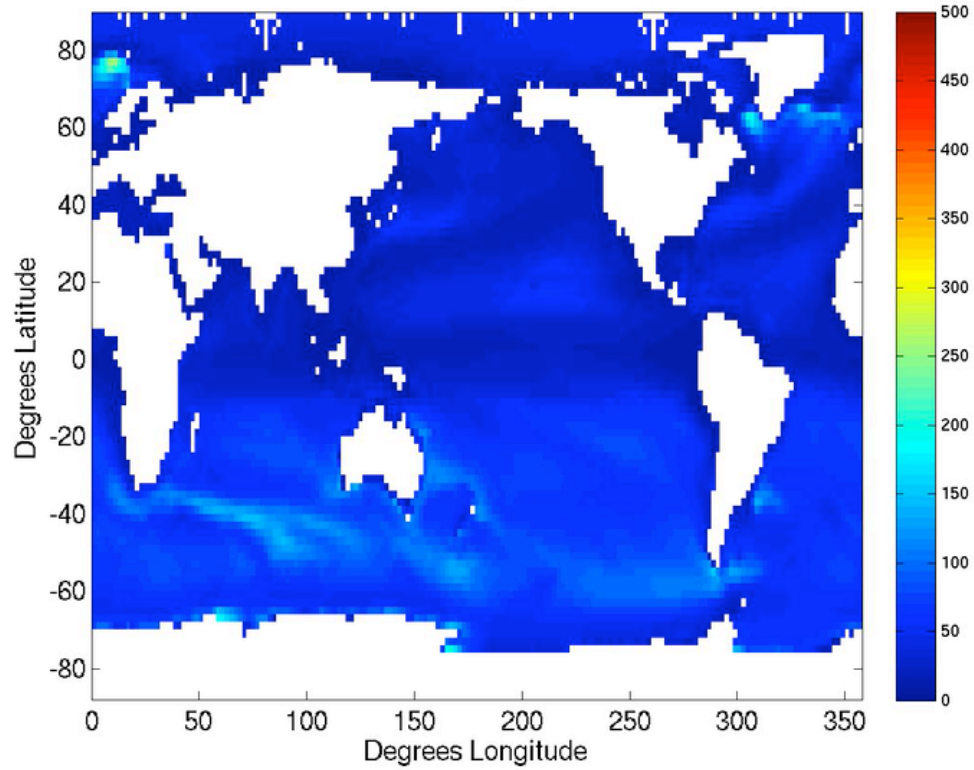
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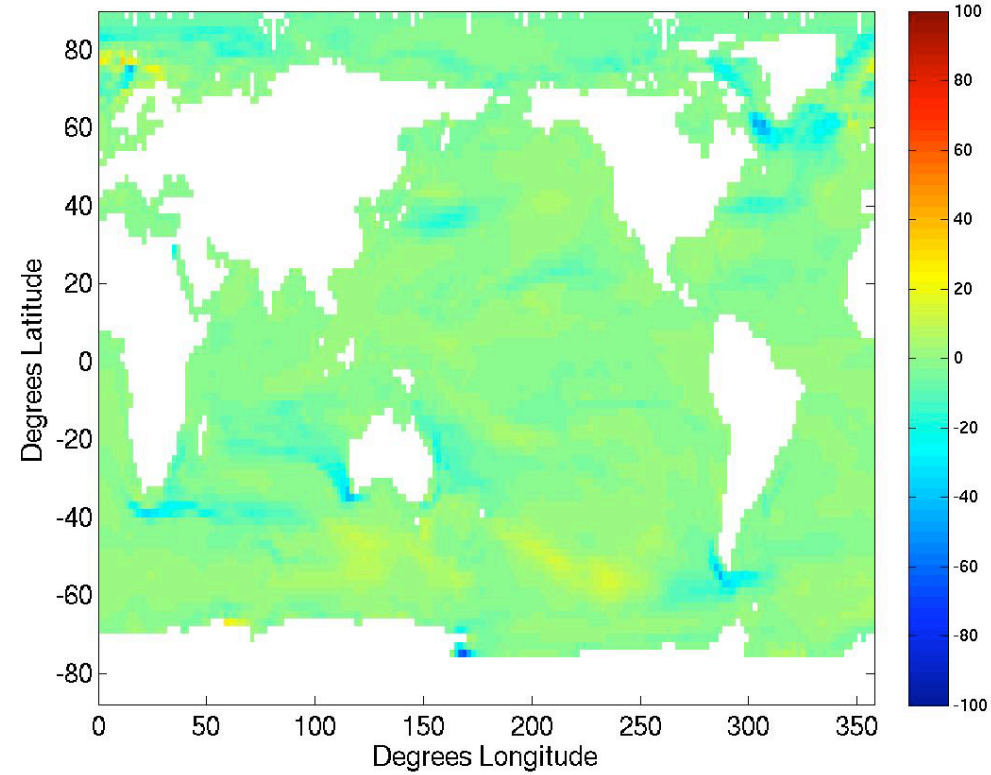
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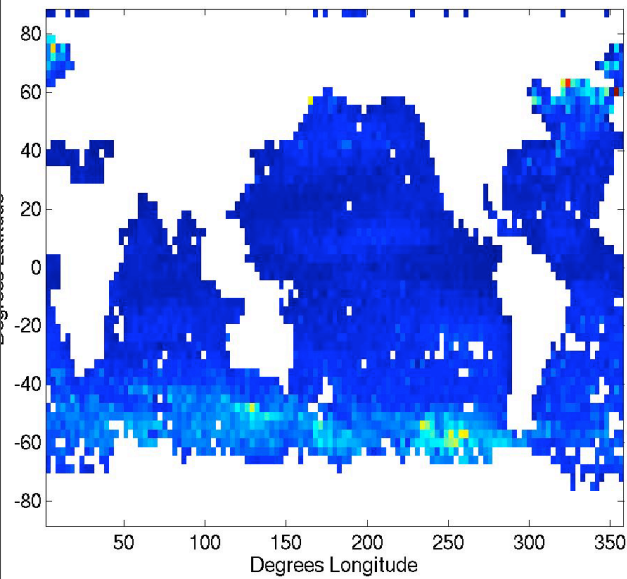
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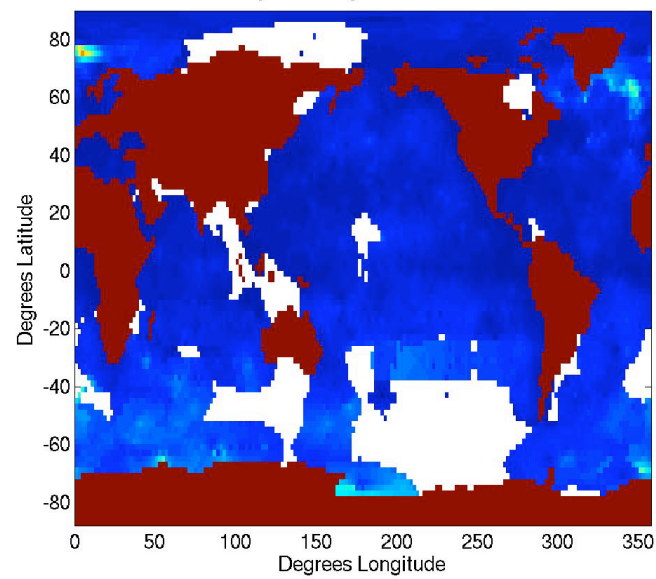
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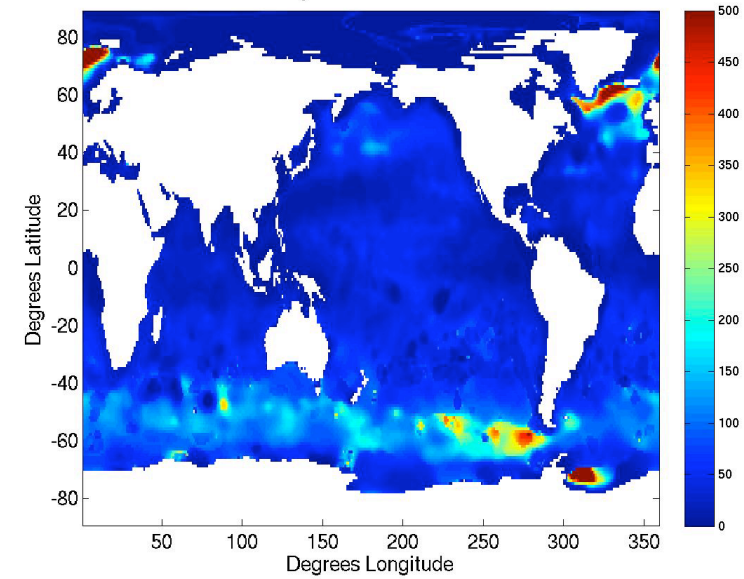
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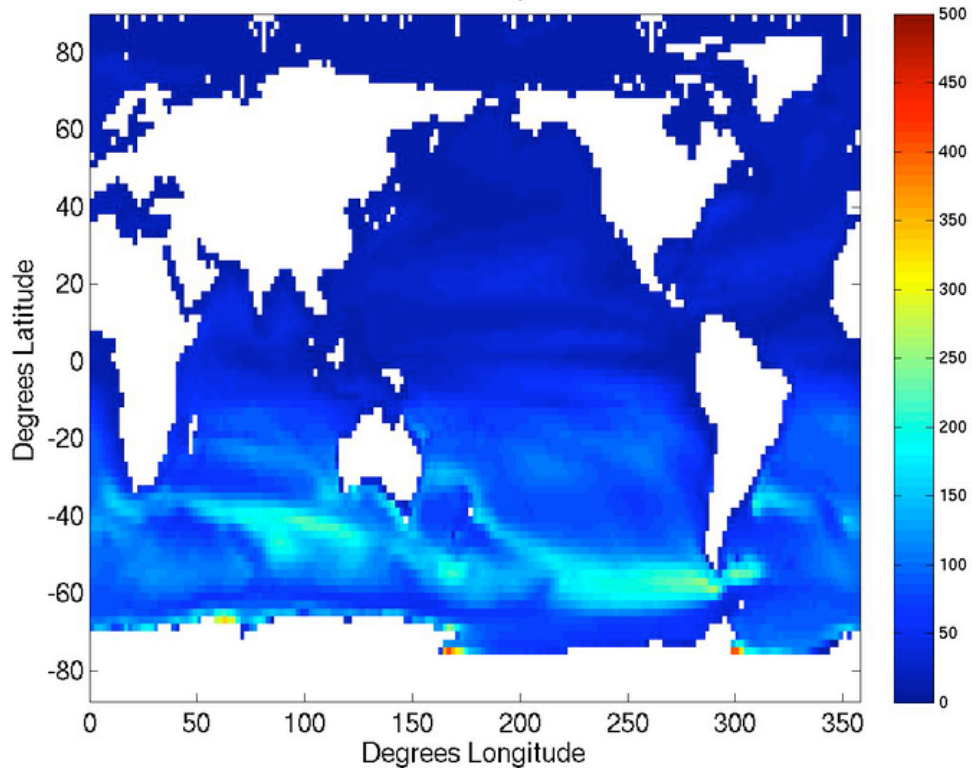
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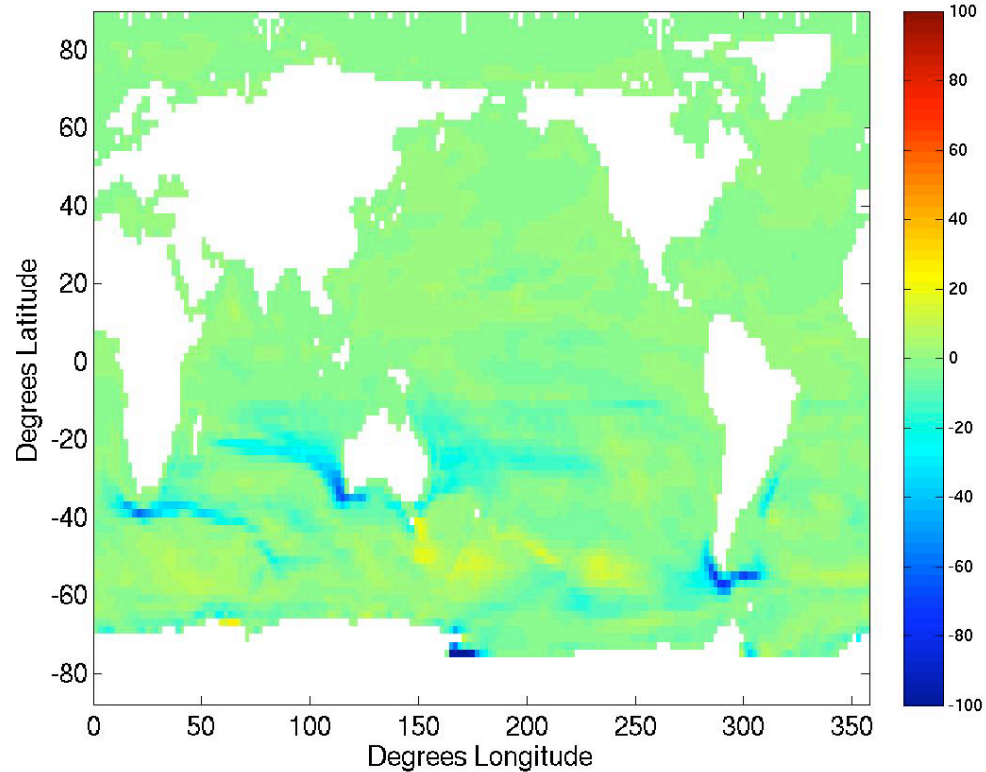
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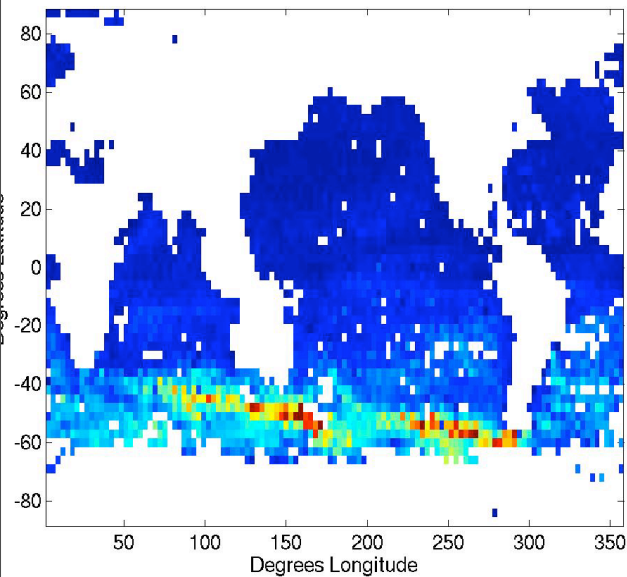
GOLD/CM2.2 with MLE param. BLT JAS



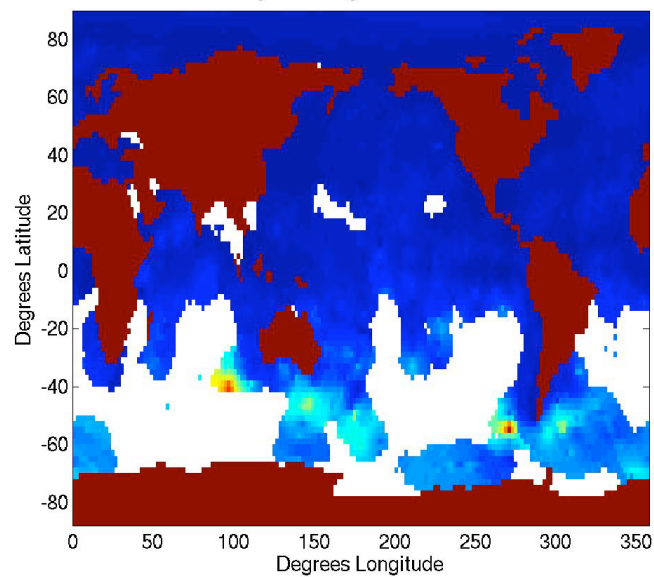
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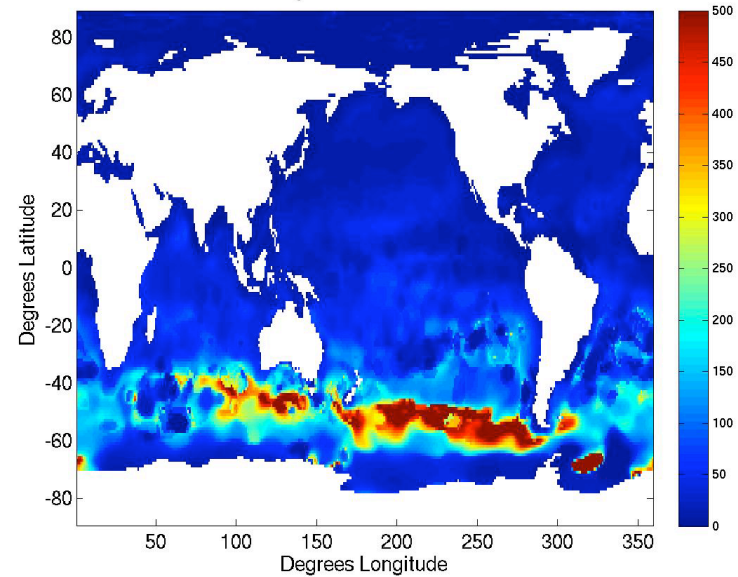
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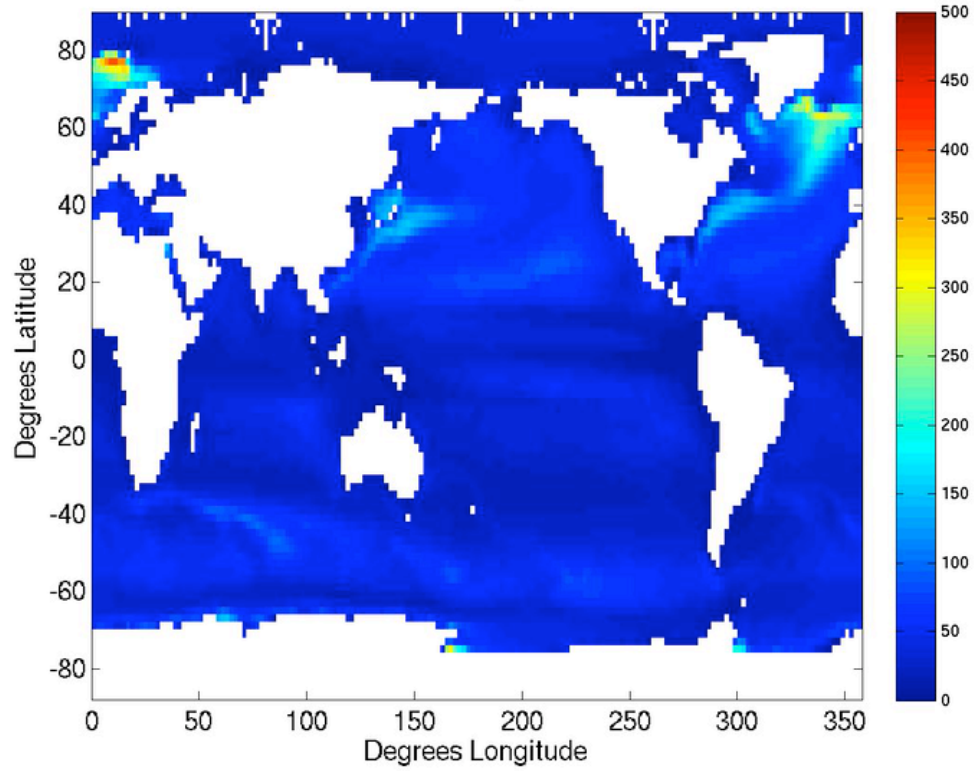
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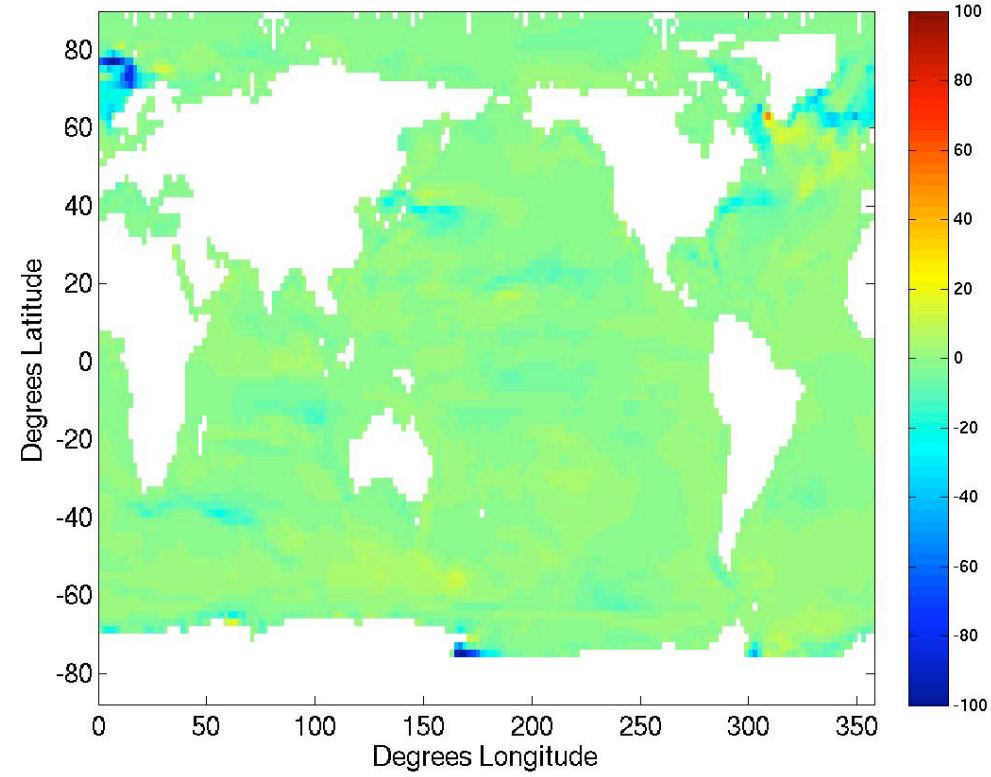
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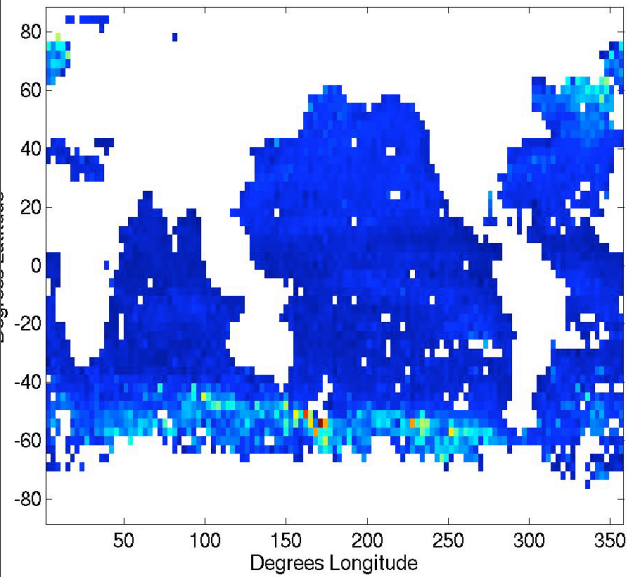
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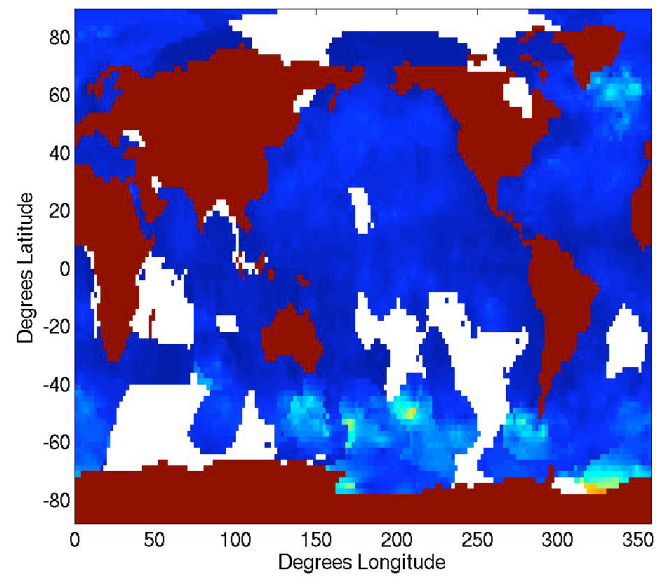
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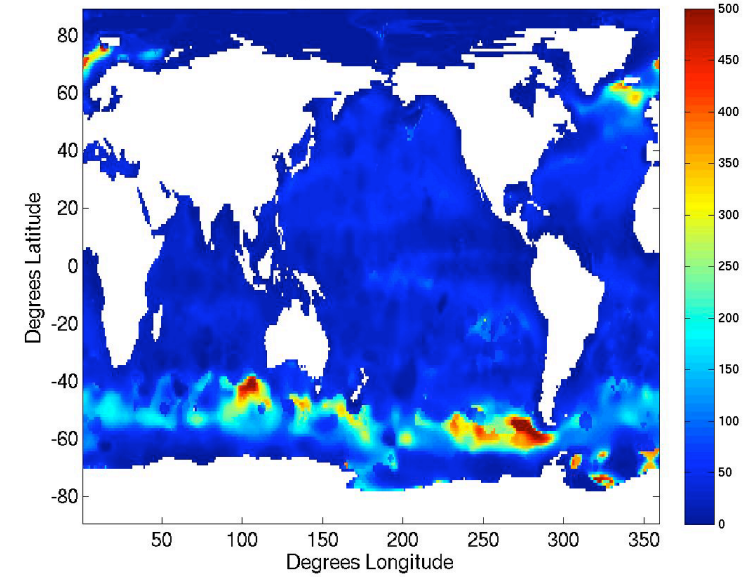
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Monterey and Levitus MLD OND



Publications

- Fox-Kemper, Ferrari, Hallberg: 2008, JPO
- Fox-Kemper, Ferrari: 2008, JPO
- Fox-Kemper, Danabasoglu, Ferrari, Hallberg: 2008 CLIVAR Exchanges
- Fox-Kemper, Danabasoglu, Ferrari, Griffies, Hallberg, Samuels, Peacock: In prep for OMod
- Peacock et al.: In prep.
- Hill et al.: In prep.