
Parameterizing Tidal Dissipation and Diapycnal Mixing over Rough Topography

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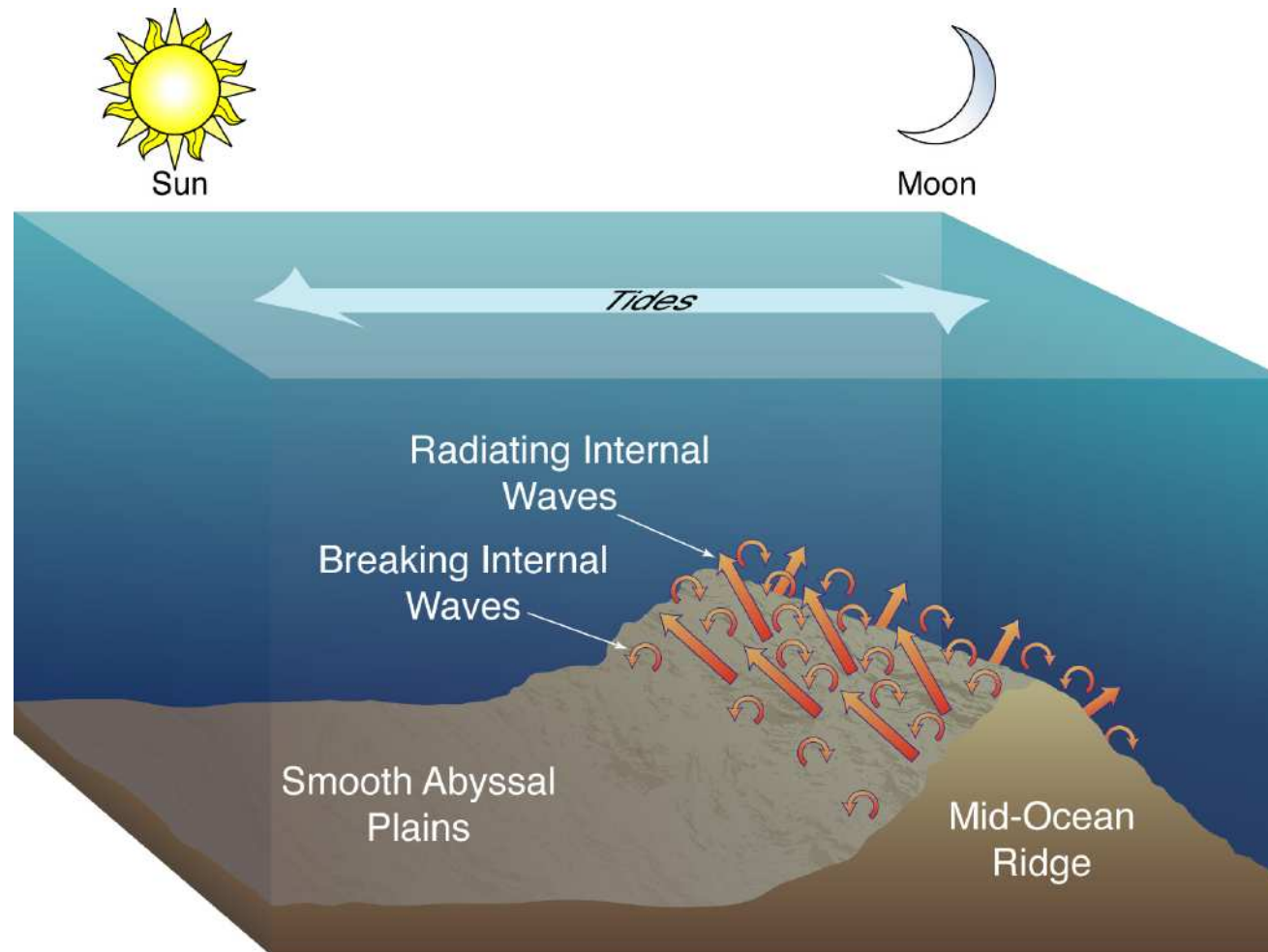
Woods Hole Oceanographic Institution

Motivation

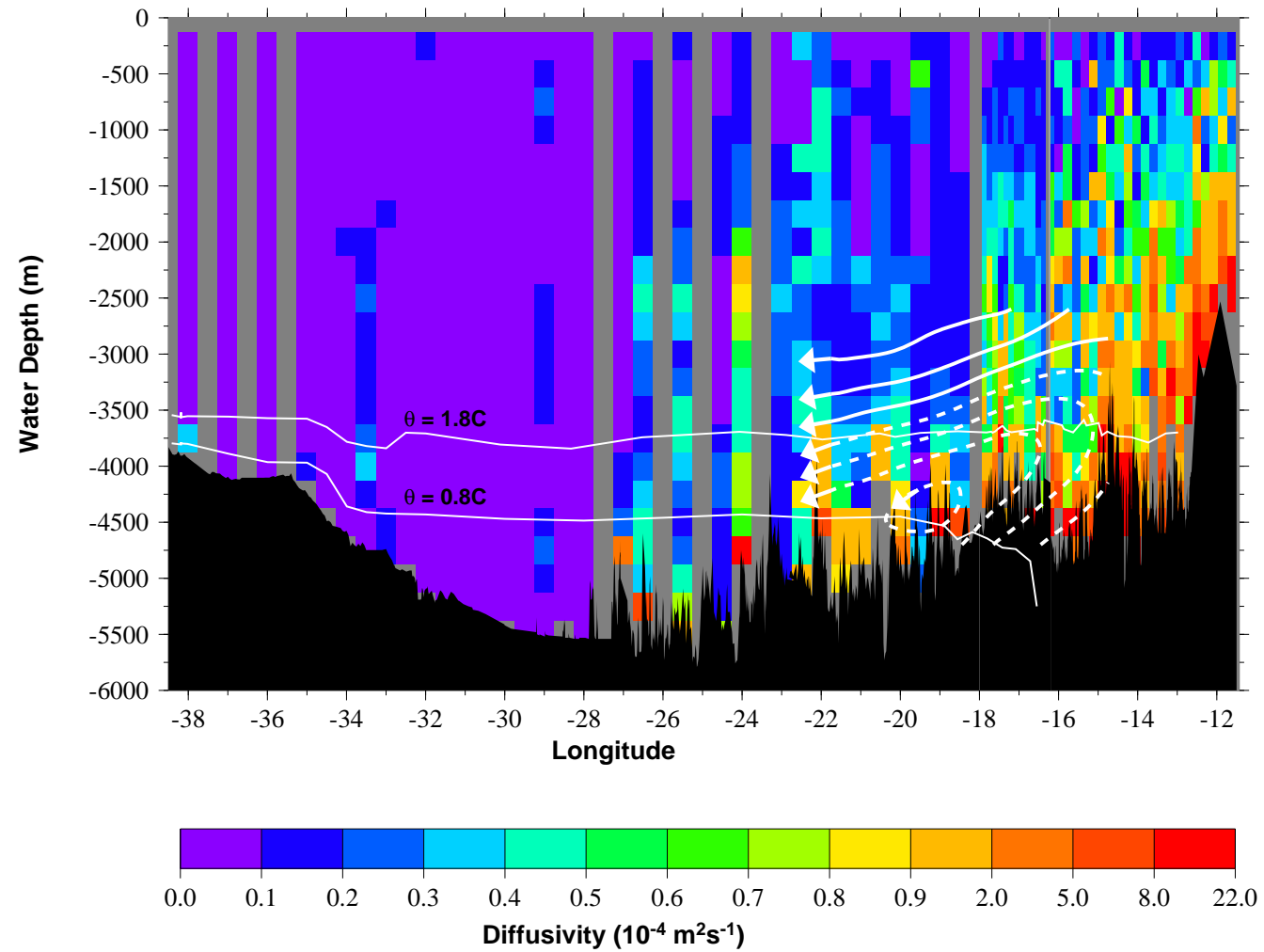
1. To add enhanced vertical mixing over rough topography into CCSM
2. To reproduce the results of Simmons *et al.* (2004)

$$\begin{aligned}\kappa &= \kappa_0 + \frac{\Gamma \varepsilon}{N^2} \\ &= \kappa_0 + \frac{q \Gamma E(x, y) F(z)}{\rho N^2}\end{aligned}$$

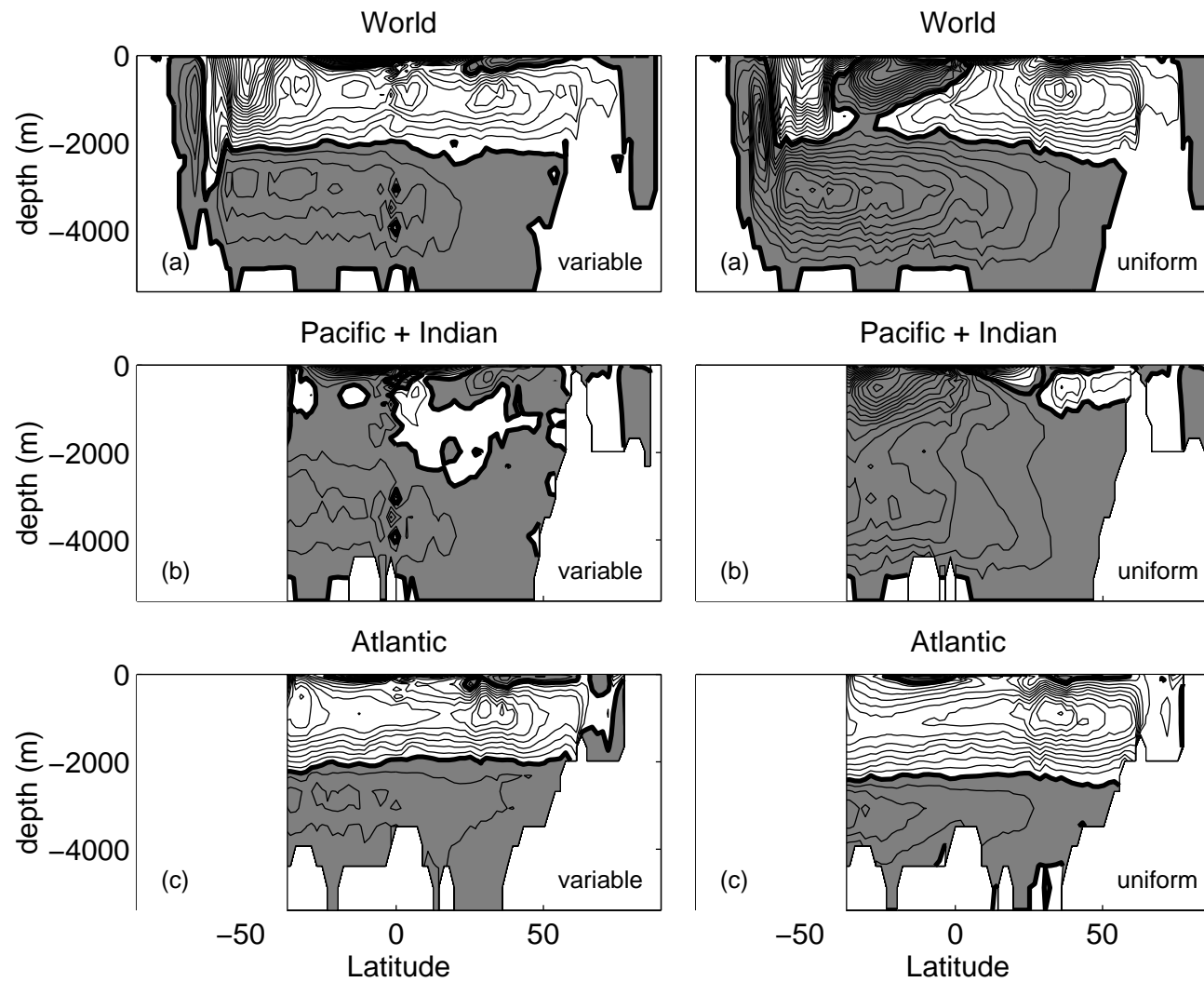
Mixing over Rough Topography



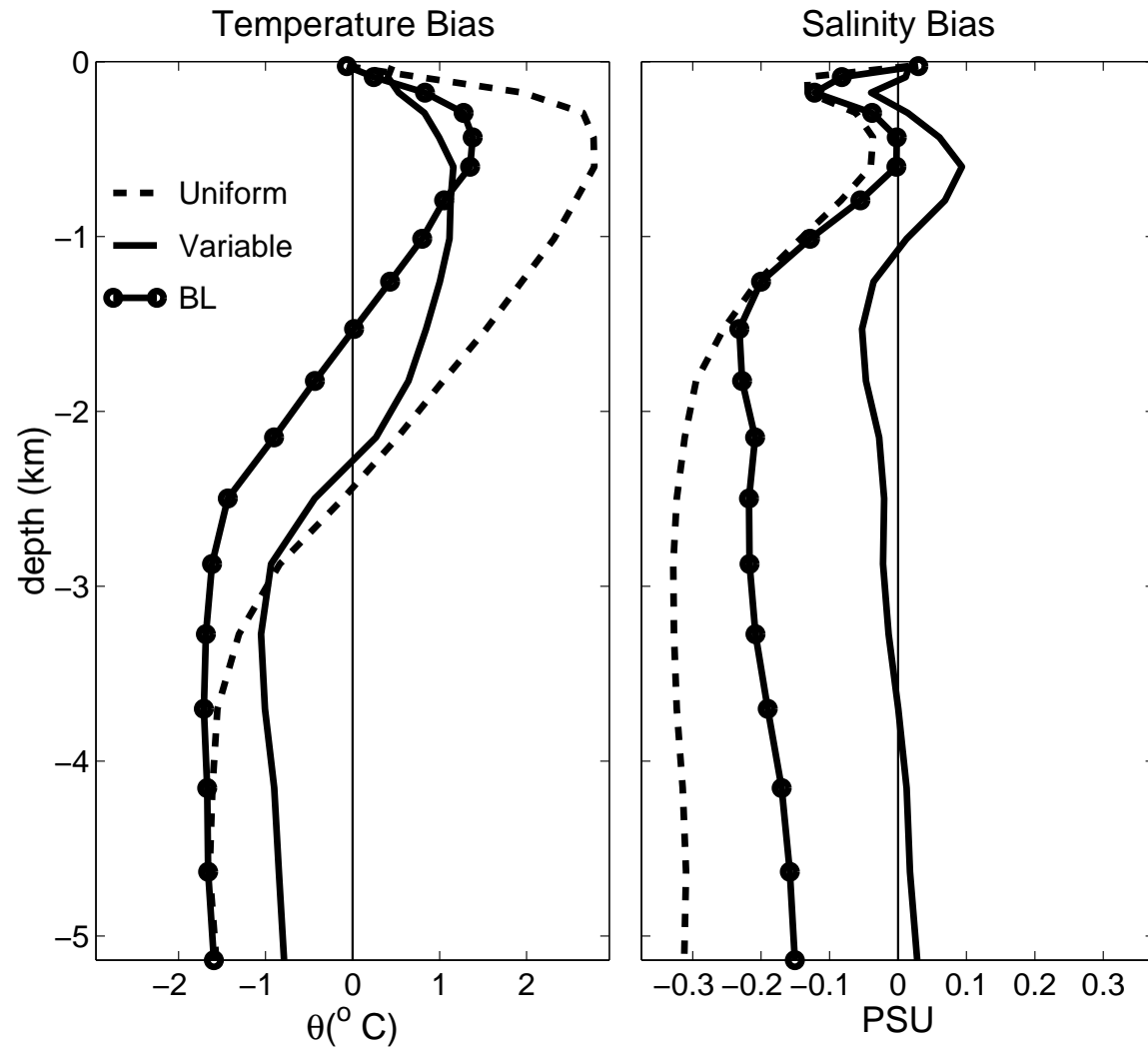
Observations in the Brazil Basin



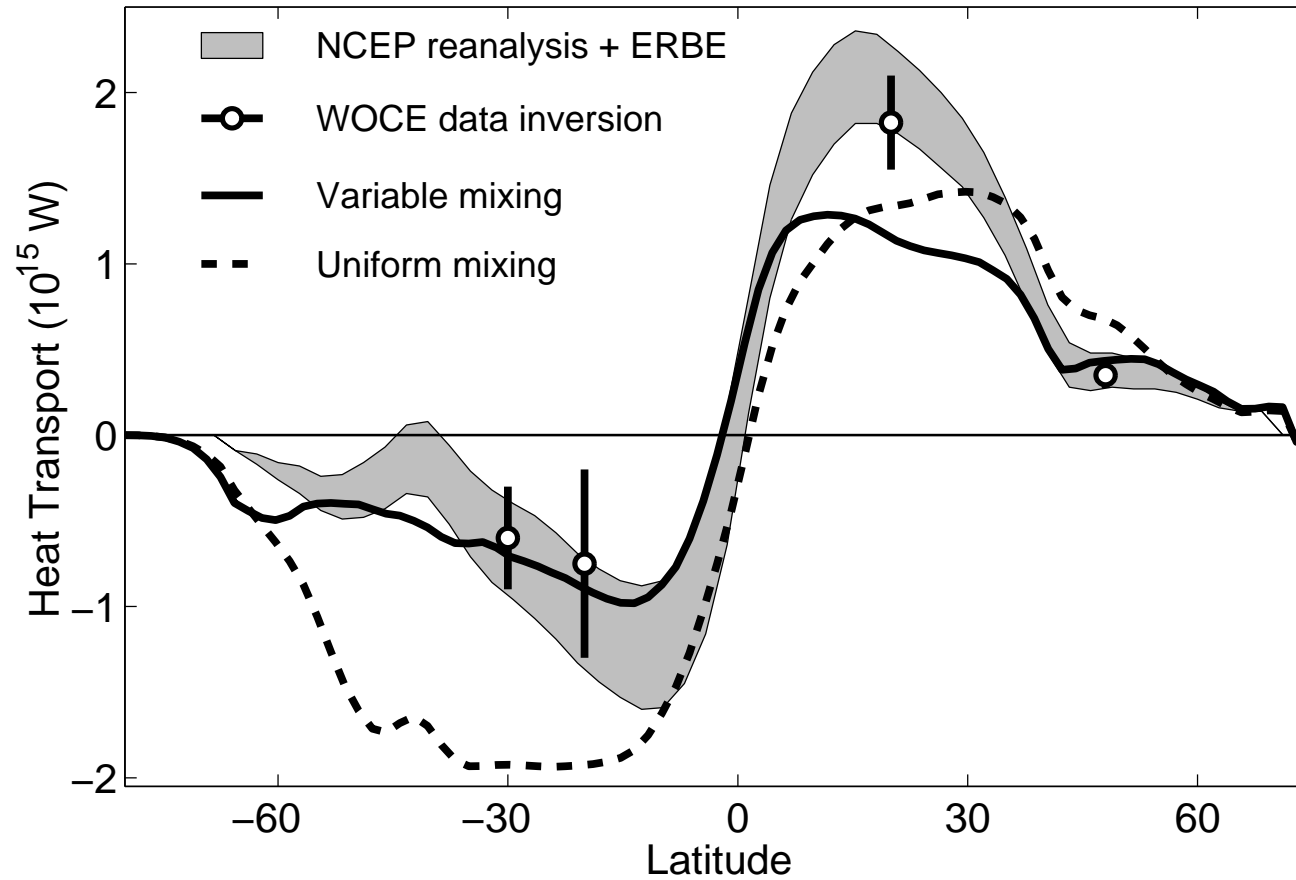
Results from Simmons *et al.*, part I



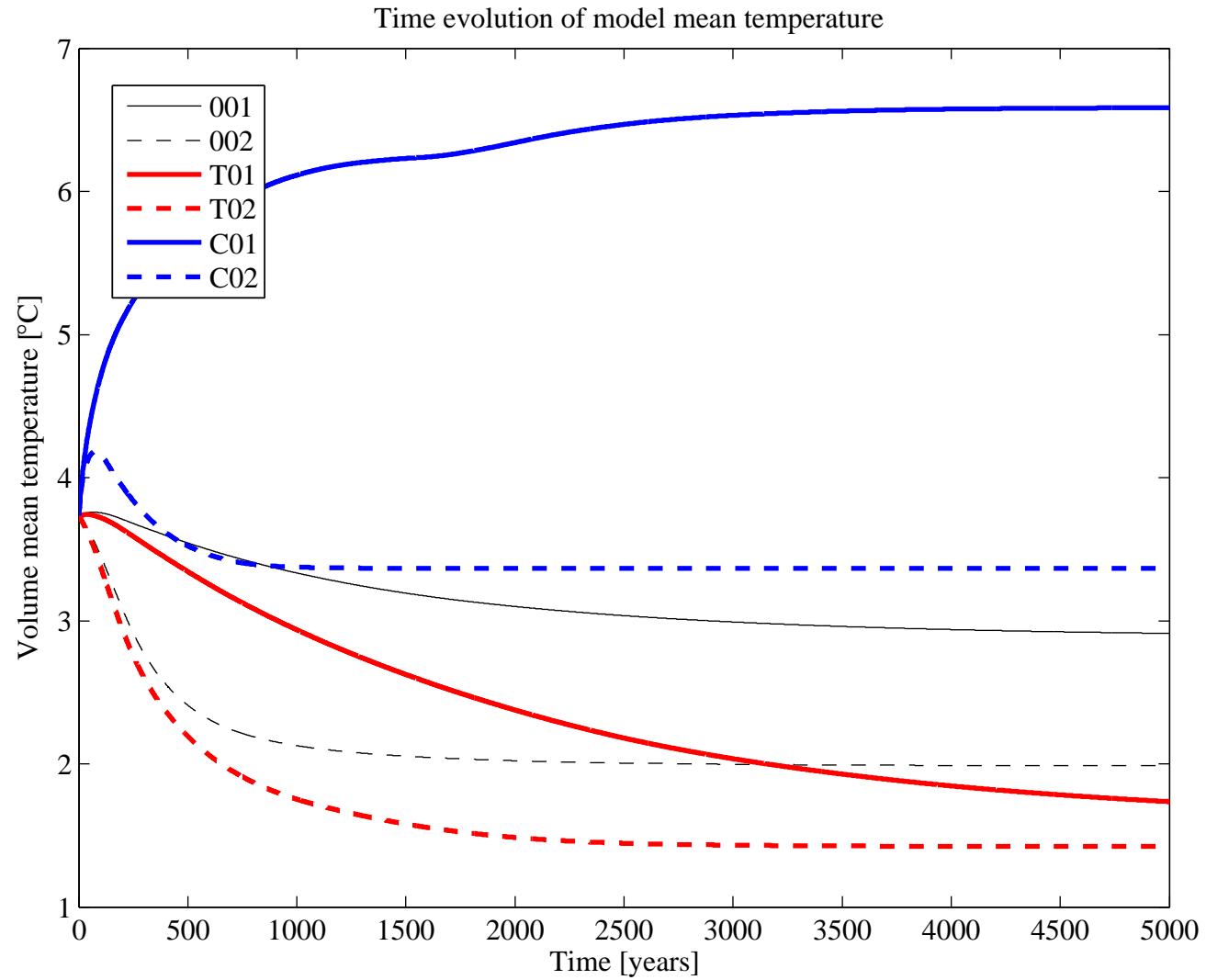
Results from Simmons *et al.*, part II



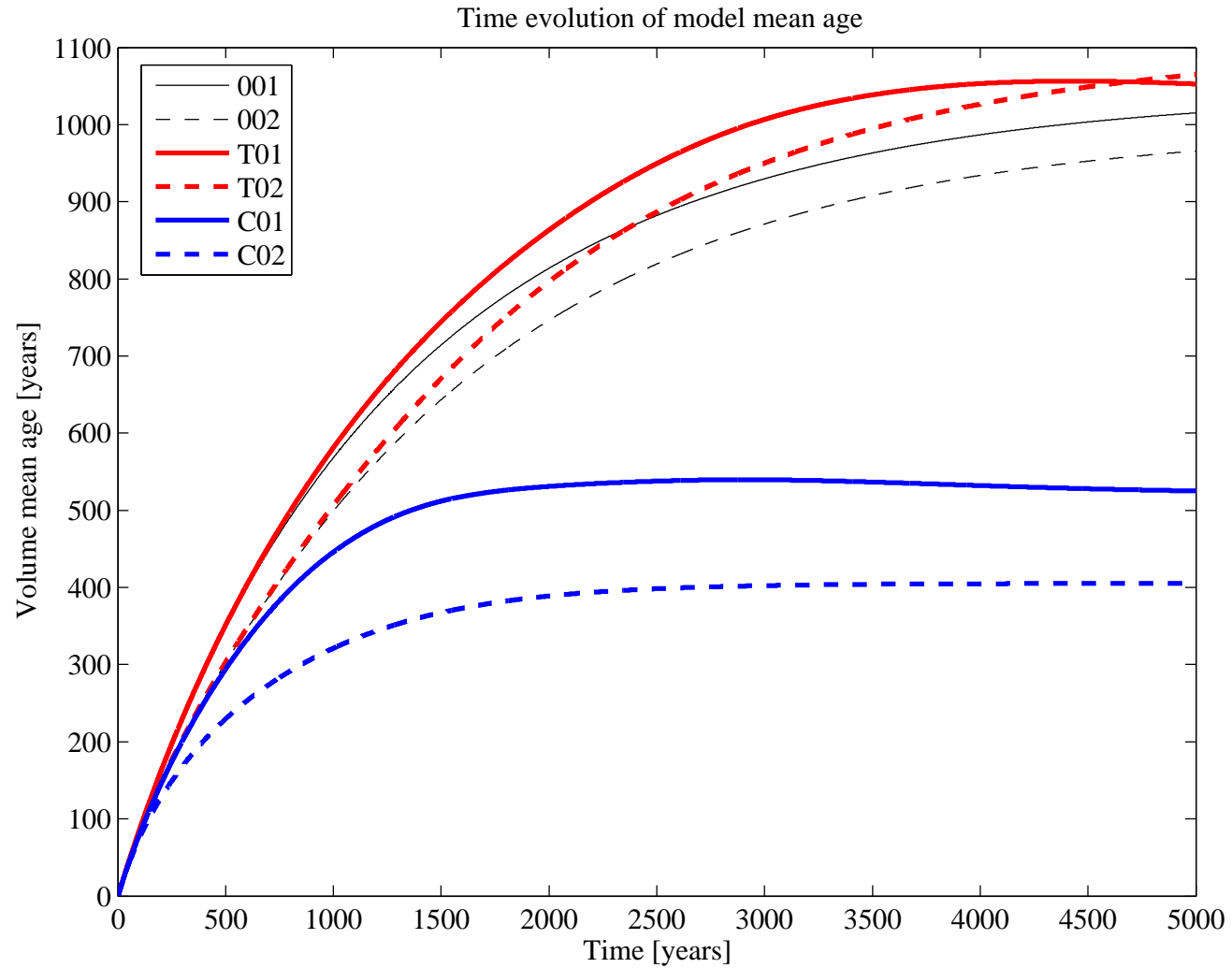
Results from Simmons *et al.*, part III



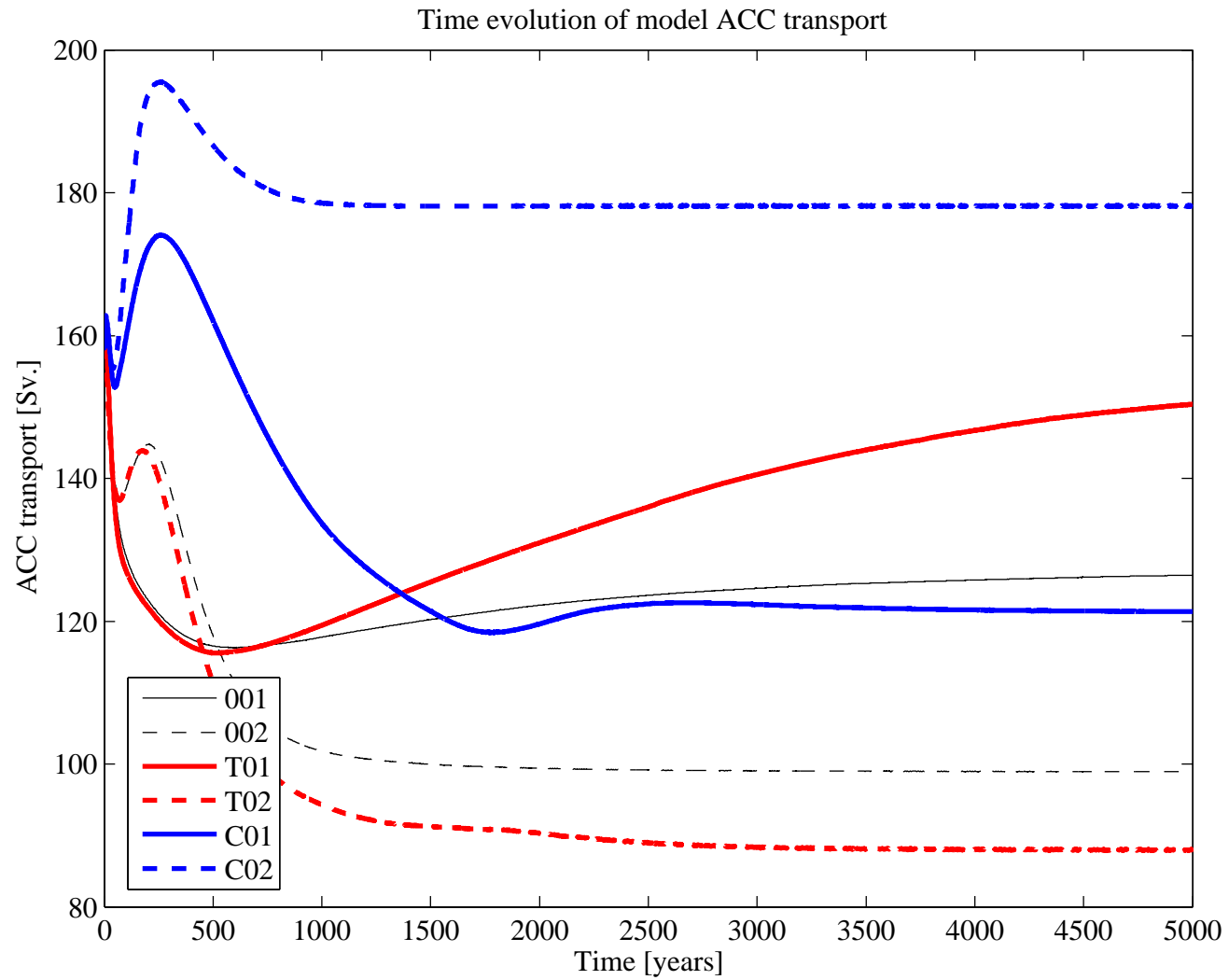
Time evolution of volume-averaged temperature



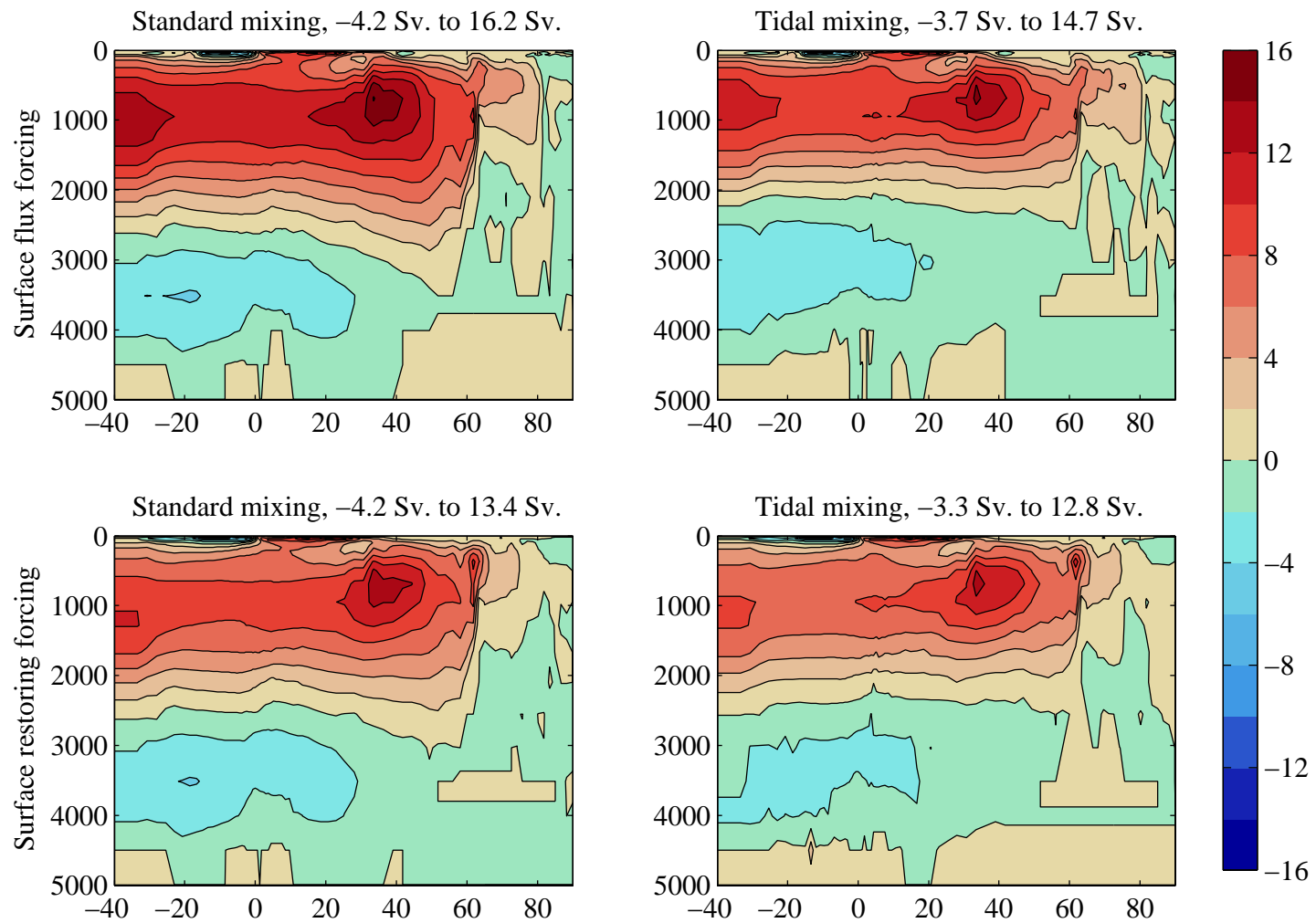
Time evolution of volume-averaged ideal age



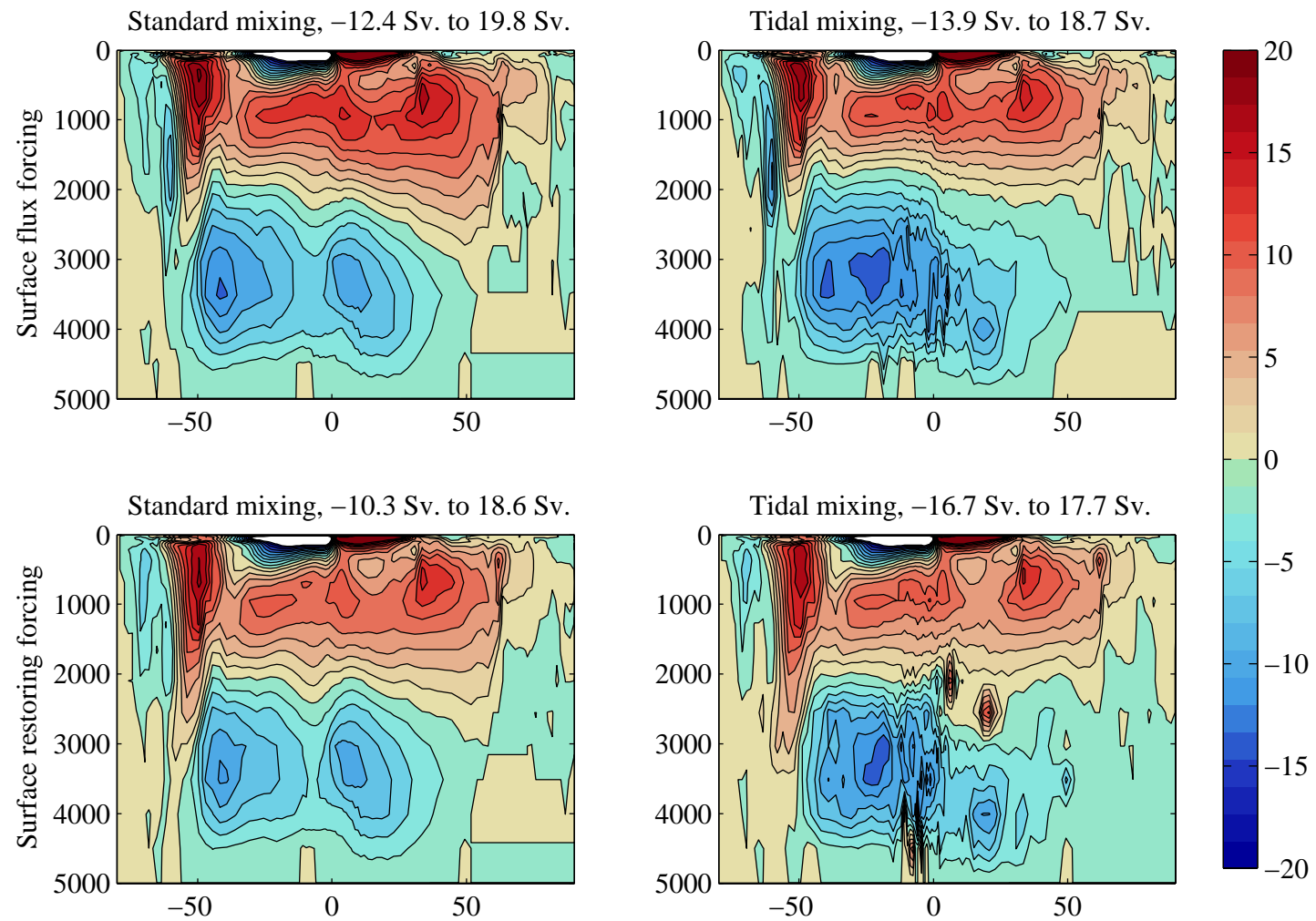
Time evolution of ACC transport



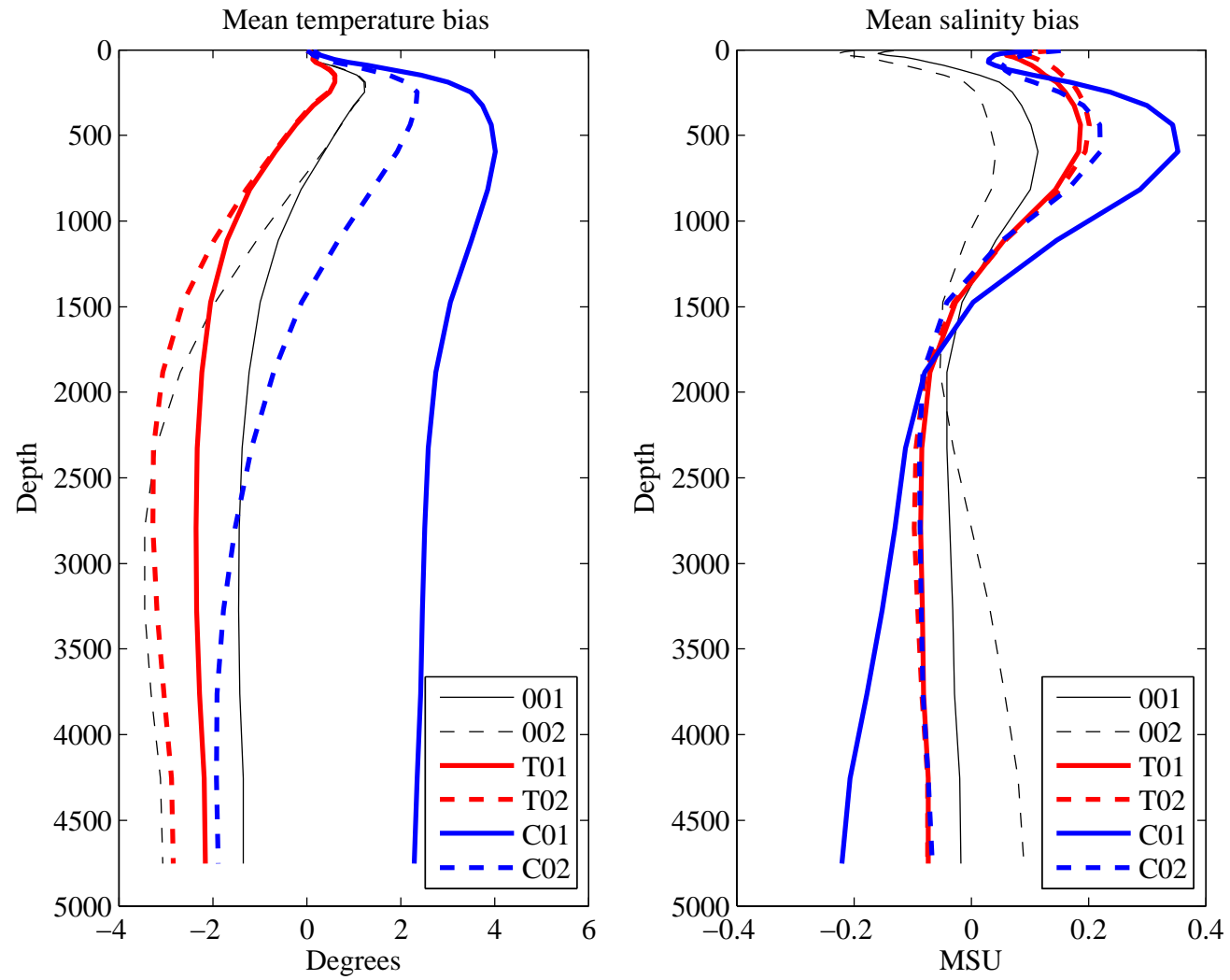
Atlantic Ocean Meridional Overturning



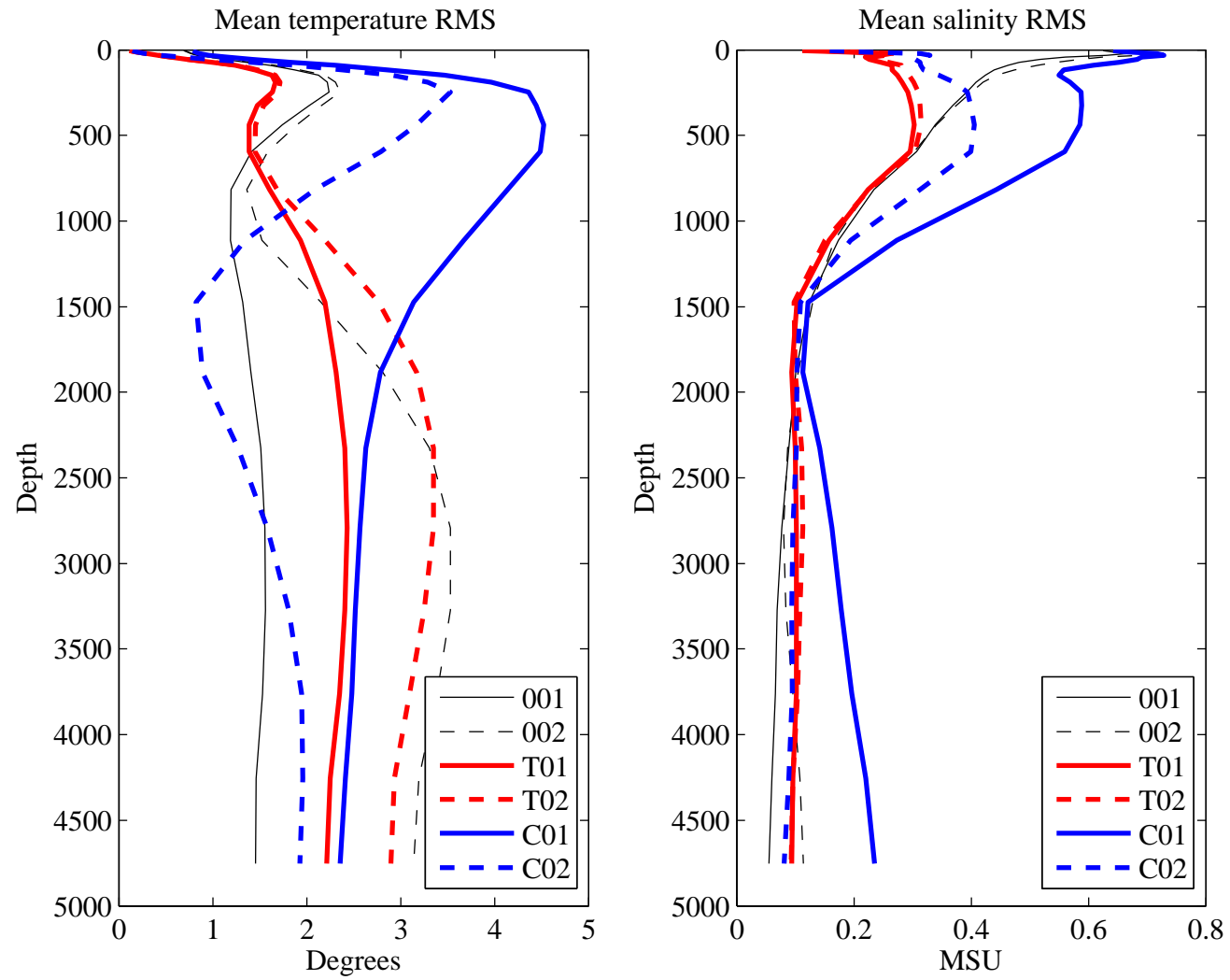
Global Ocean Meridional Overturning



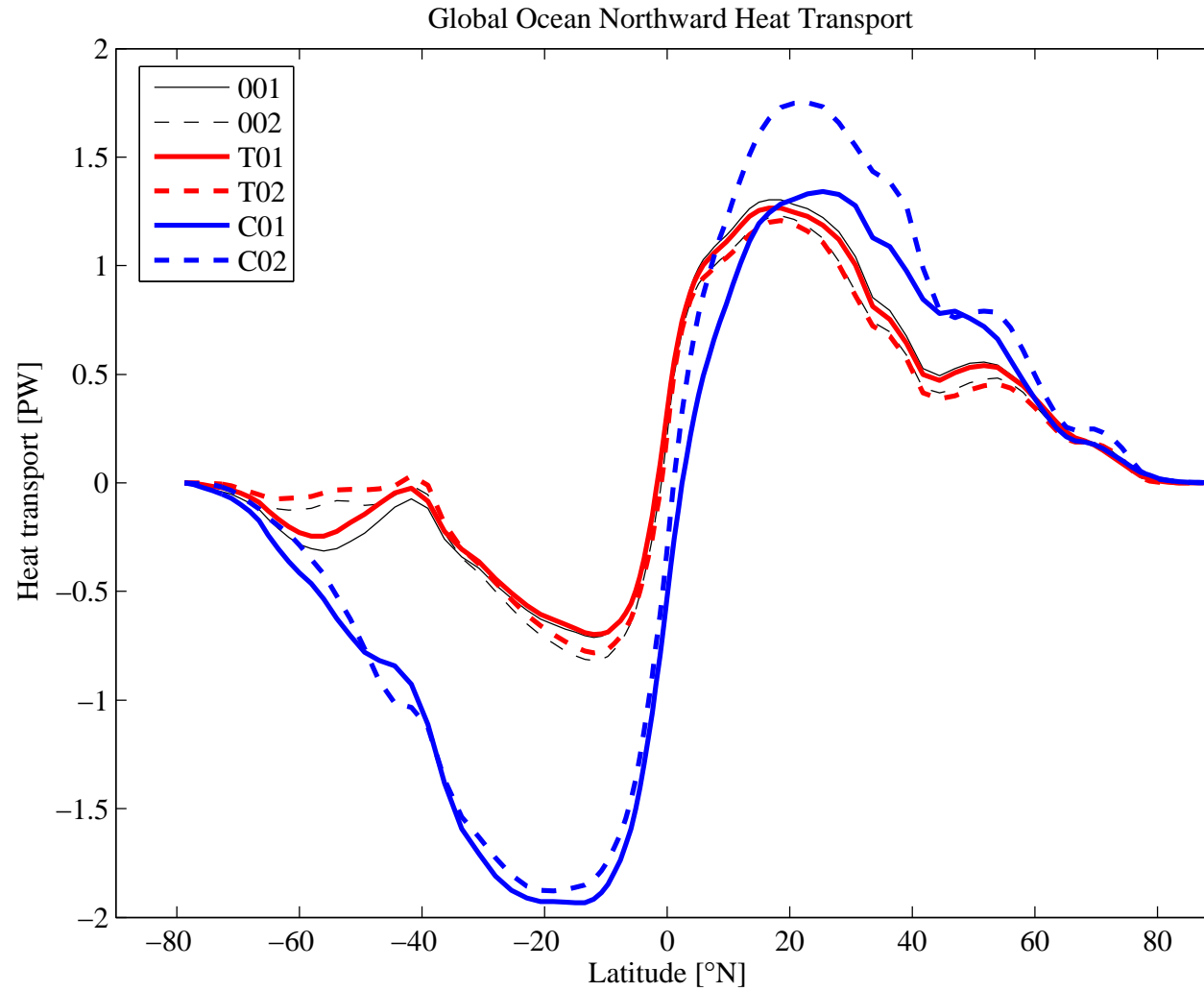
Temperature and Salinity Bias



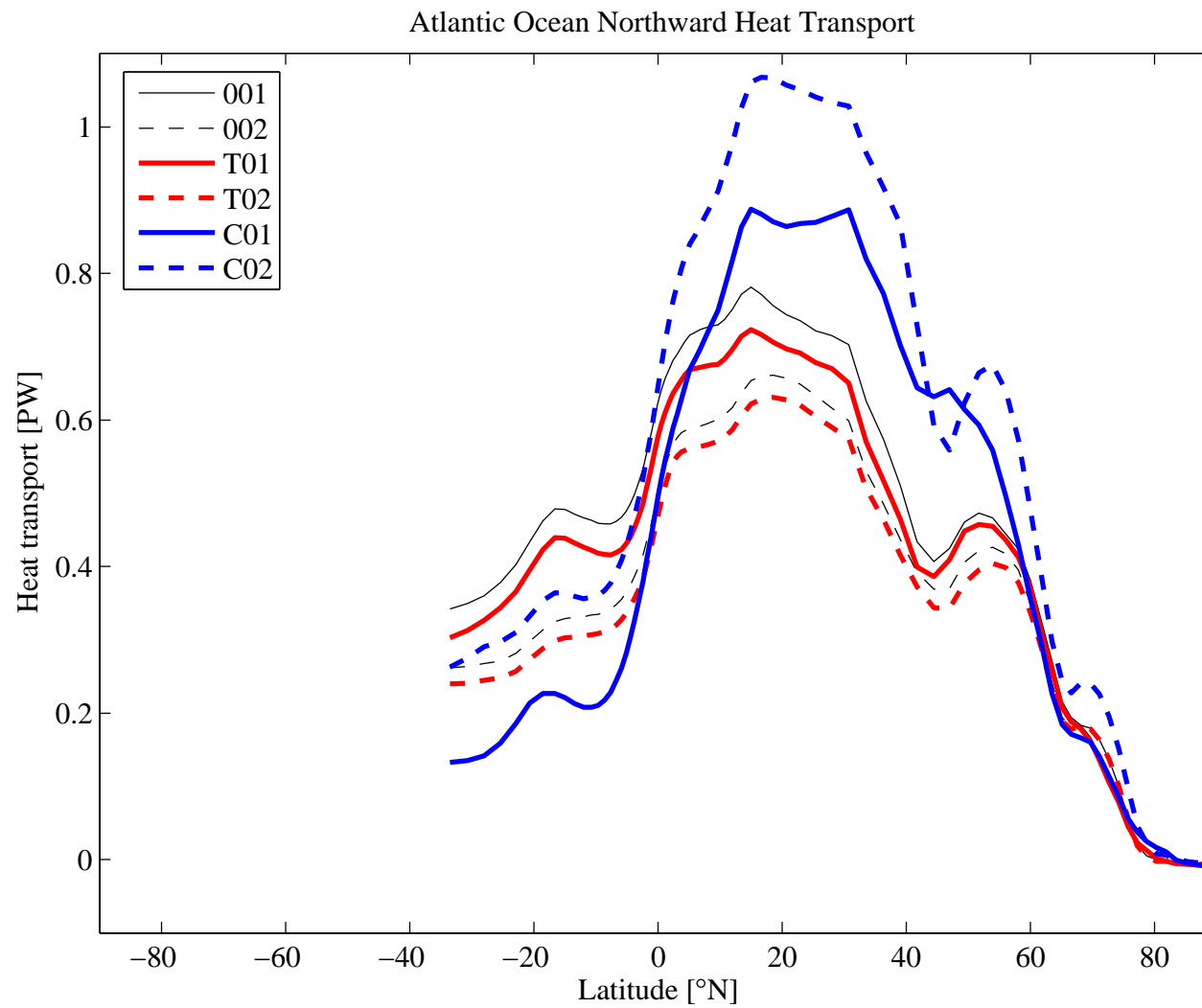
Temperature and Salinity RMS



Global Ocean Heat Transport



Atlantic Ocean Heat Transport



Global Ocean Meridional Overturning

