# Latitudinal Variations of Diapycnal Diffusivity in POP2

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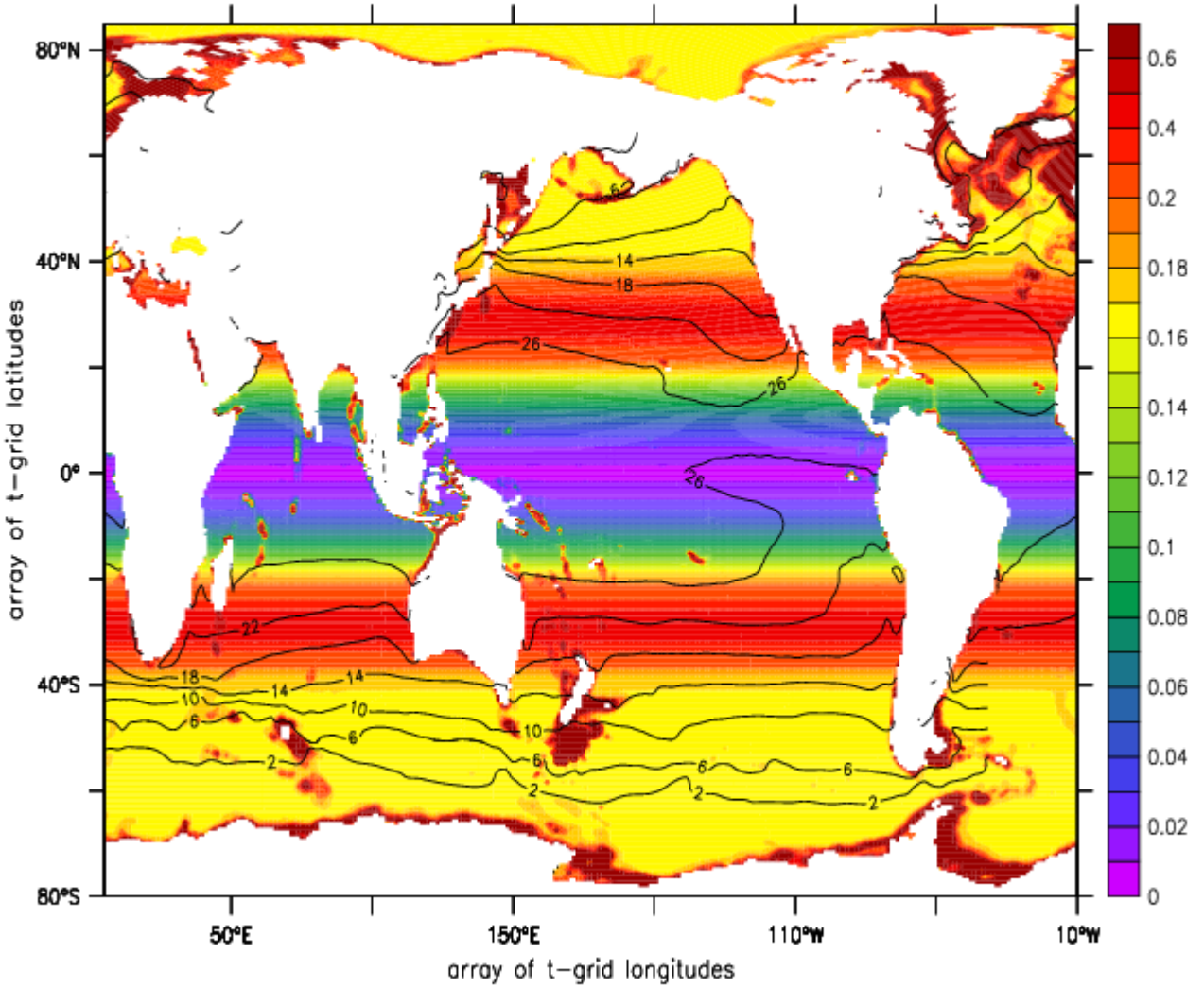
# Experiments

- all fully coupled FV 2.5 x 1.9 // gx1v6
- results based on mean from years 81-100
- vertical mixing:
- surface: KPP
- bottom: bottom intensified tidal mixing (Jayne)
- only background mixing values are changed

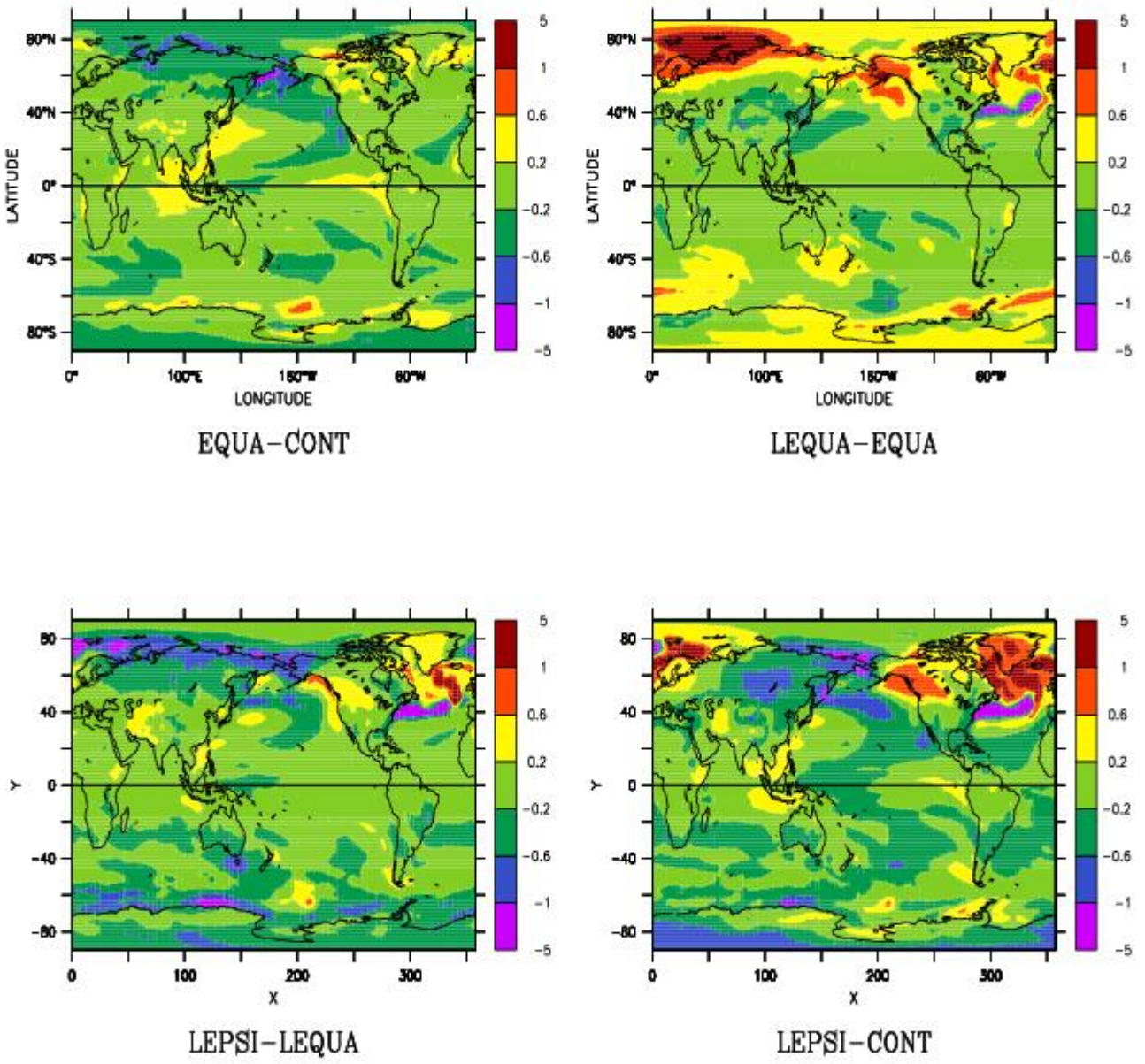
EQUA(tor) – Gregg et al.
(purple, 0.01)

LEQUA = Ledwell et al.
+ EQUA
(yellow, 0.17)

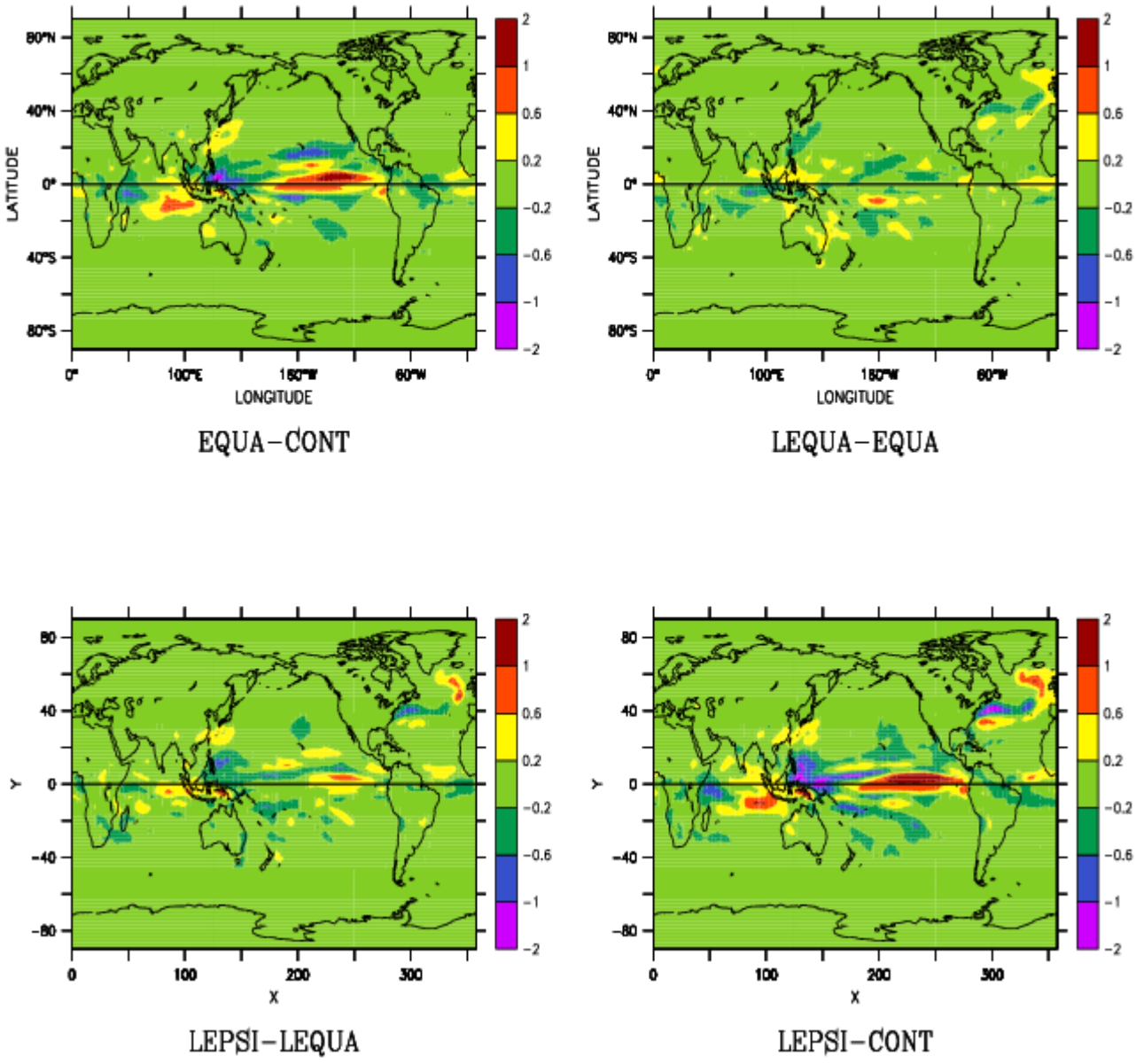
LEPSI = LEQUA + PSI
induced mixing of M2
(red, 0.5)



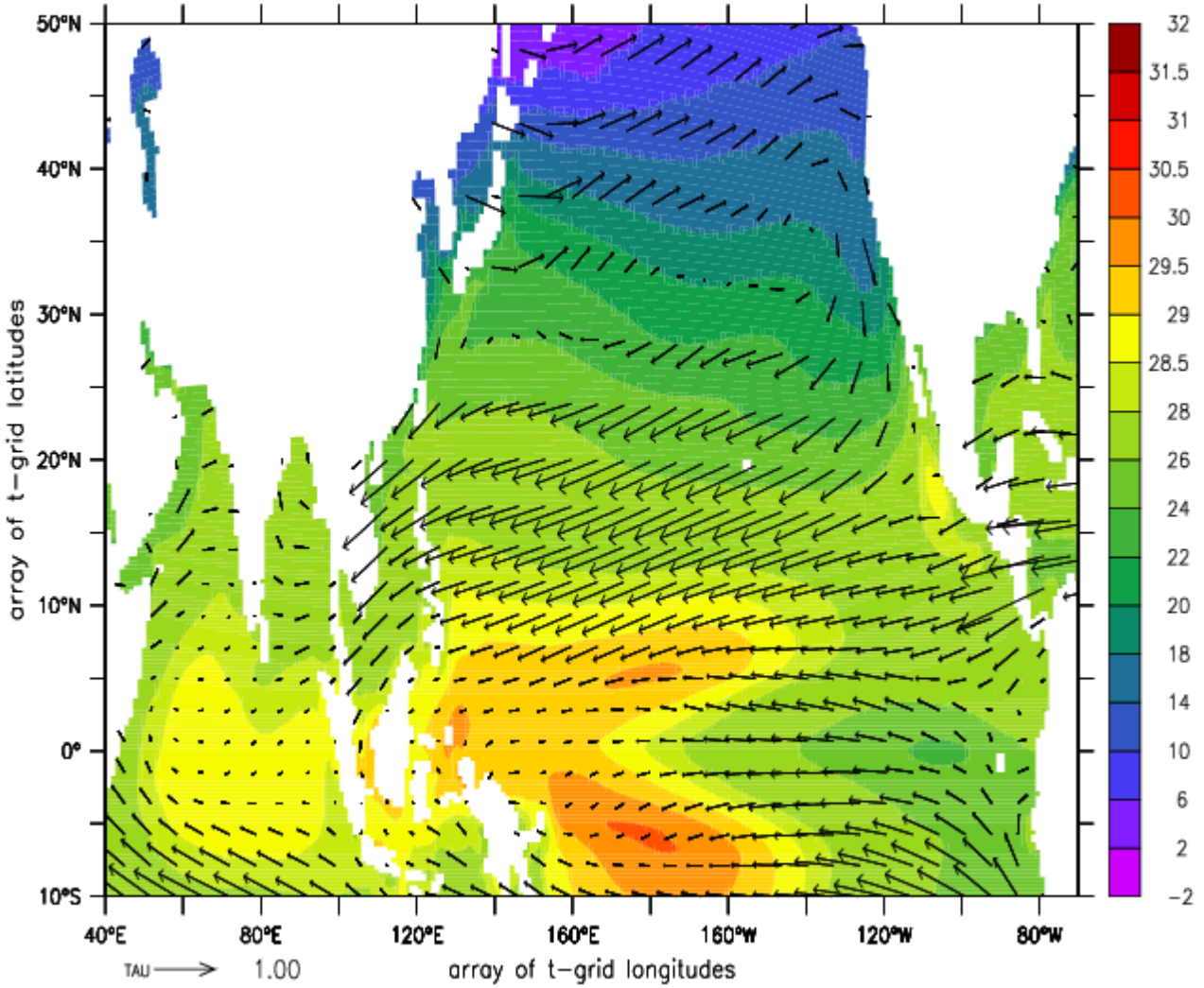

map of background diffusivity



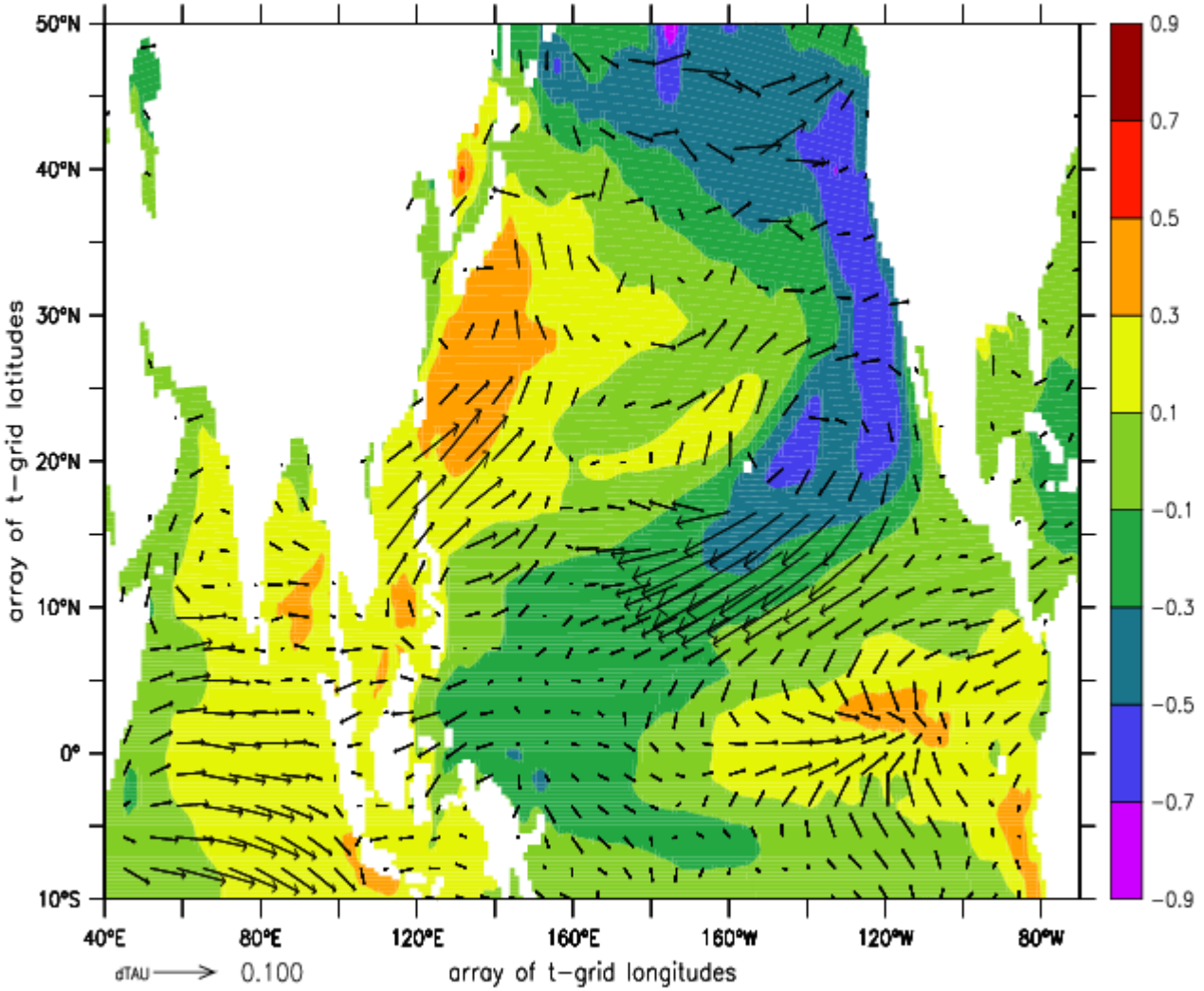

Differences in surface air temperature between the different experiments



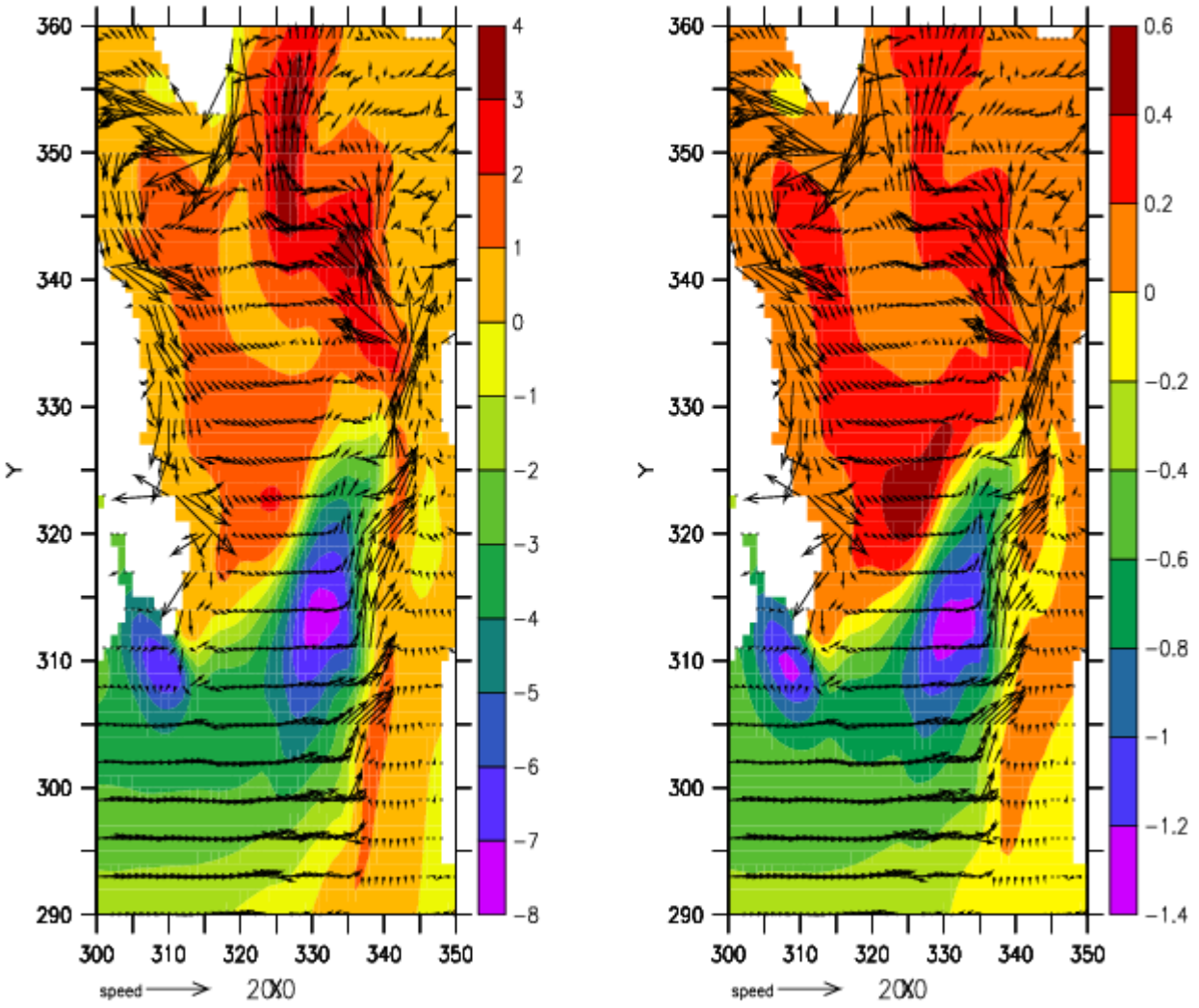

Precipitation differences between the different experiments



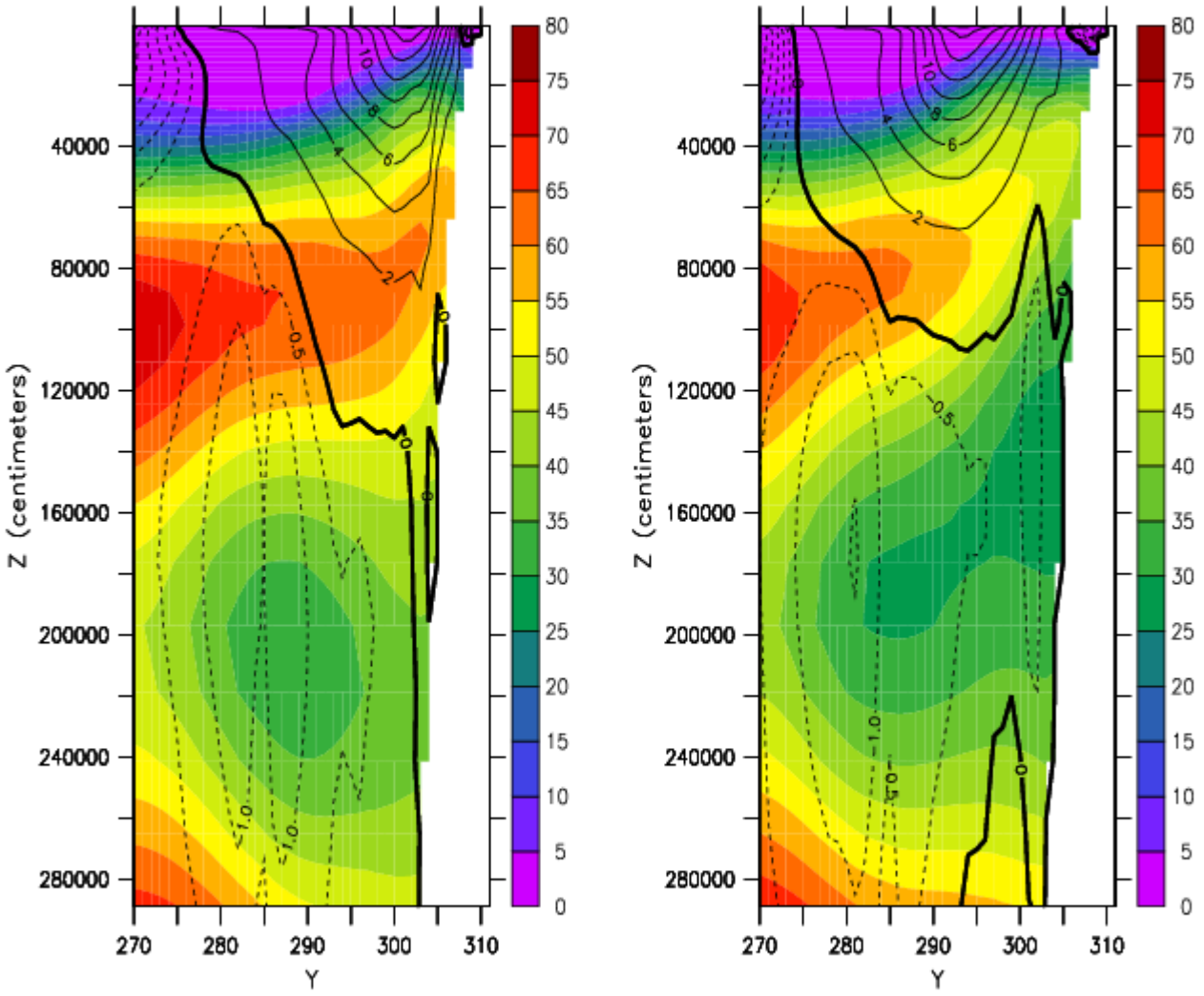

Mean SST and wind stress in CONT




Difference in SST and wind stress between EQUA and CONT




Velocity and difference in temperature (left) and salinity (right) on the sigma-28 isopycnal.




Alongshore velocity and ideal age across 65W (Nova Scotia)

# Conclusions

- some aspects of CCSM are sensitive to the value of the background diffusivity
- equatorial precipitation and Indian ocean watermass properties improve by using the observed background diffusivity
- Labrador Sea, Arctic ocean and Gulf Stream separation are very sensitive to the poorly constrained background diffusivity in the NA