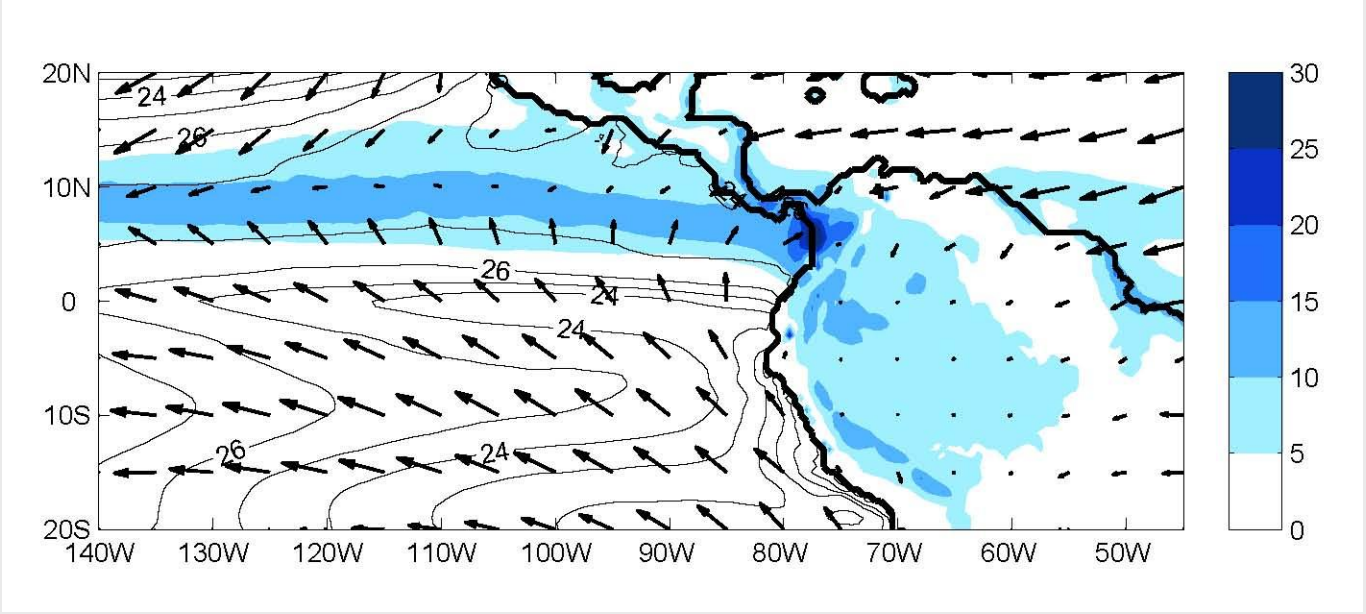
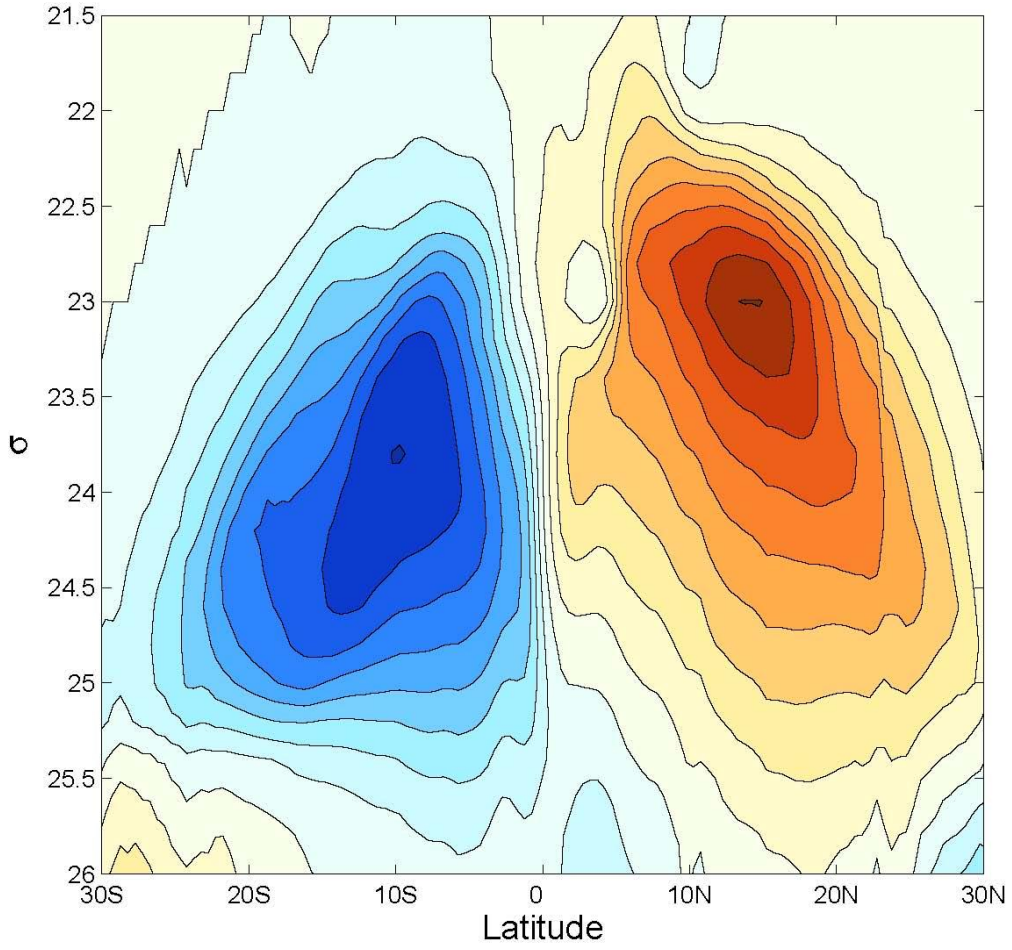
Annual mean precipitation (colour), SST (contours) & surface wind

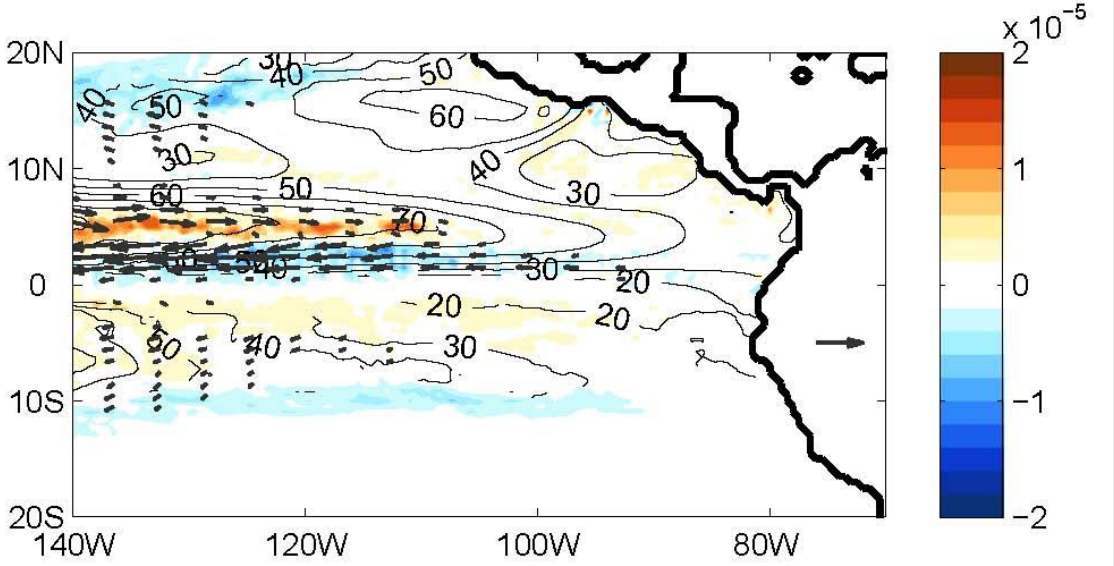


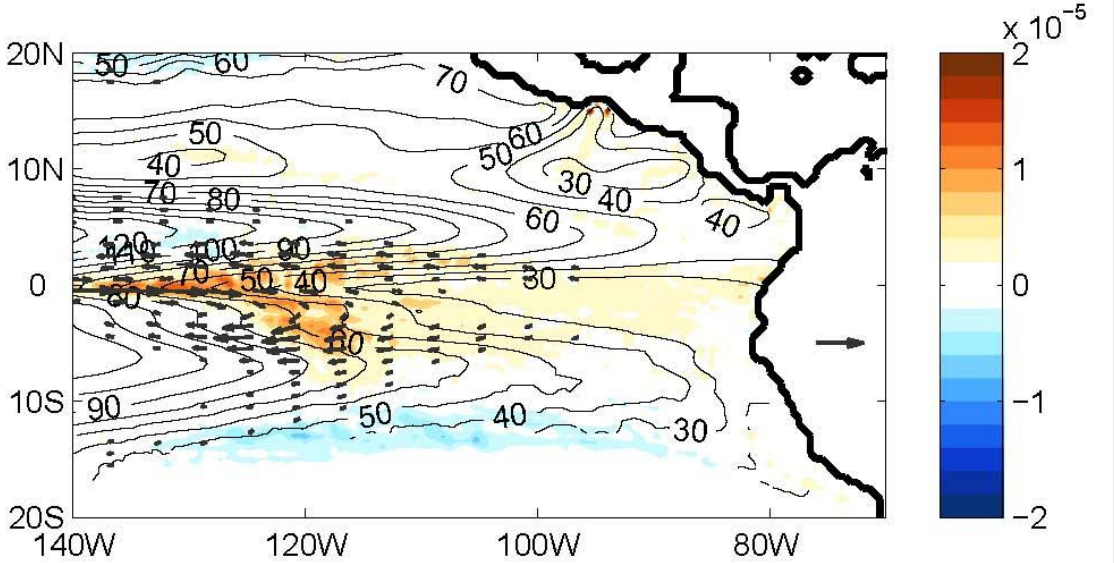
The ETP has striking zonal and meridional asymmetries

… results from iROAM

Overturning circulation







σ=22.9

Colour: Diapycnic velocity

Contours: Depth of density surface

σ=23.9

implications for mini PUMP

Vertical mixing in the ocean is parameterized using the Pacanowski and Philander (1981) scheme, i.e.

$$K_v = f(Ri) + \kappa_0$$

We will consider impact of the background level of tracer mixing, κ_0

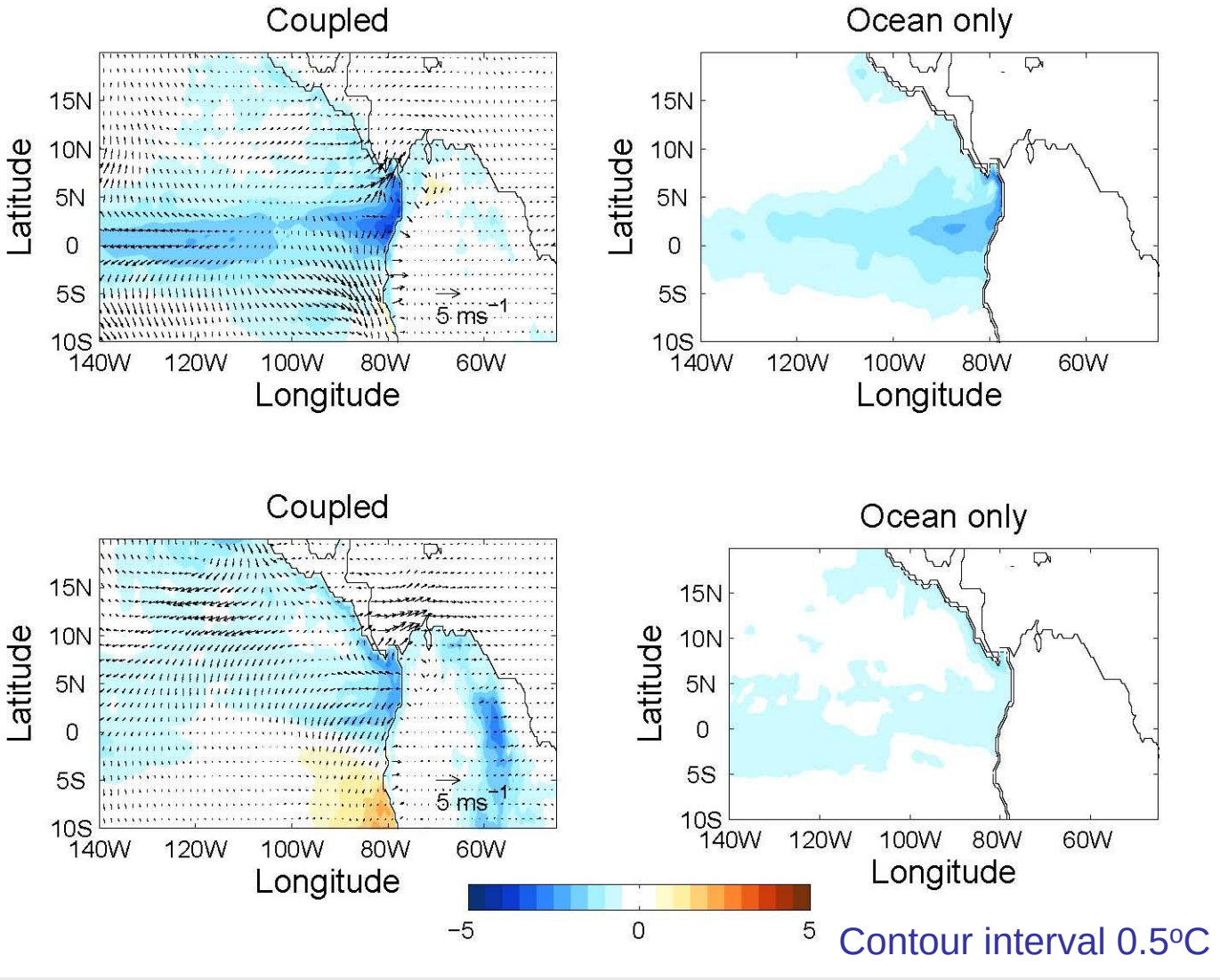
Low: $\kappa_0 = 10^{-6}\ m^2s^{-1}$ (control)

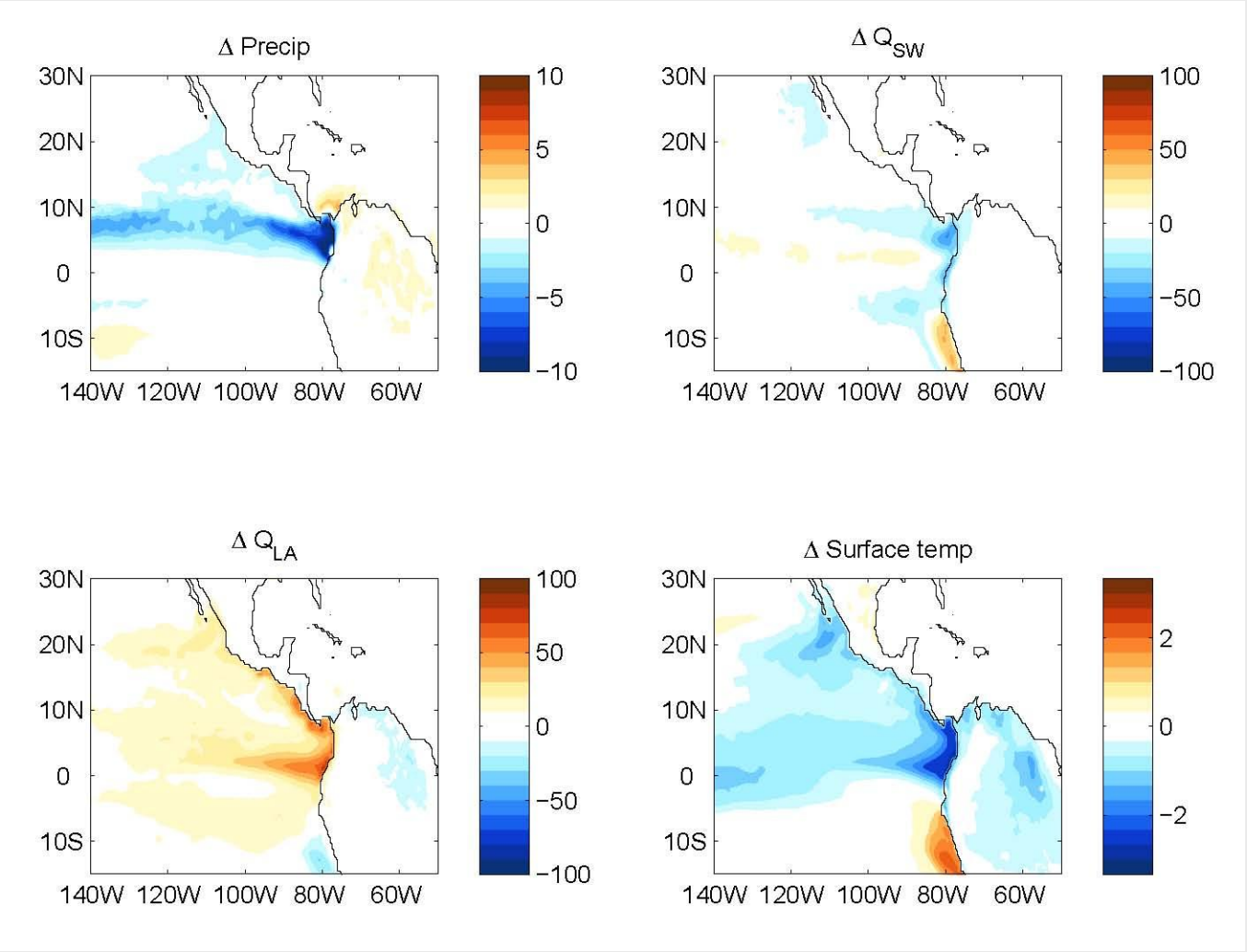
High: $\kappa_0 = 5 \times 10^{-5}\ m^2s^{-1}$

Δsurface temperature when background diffusivity increased

April

October

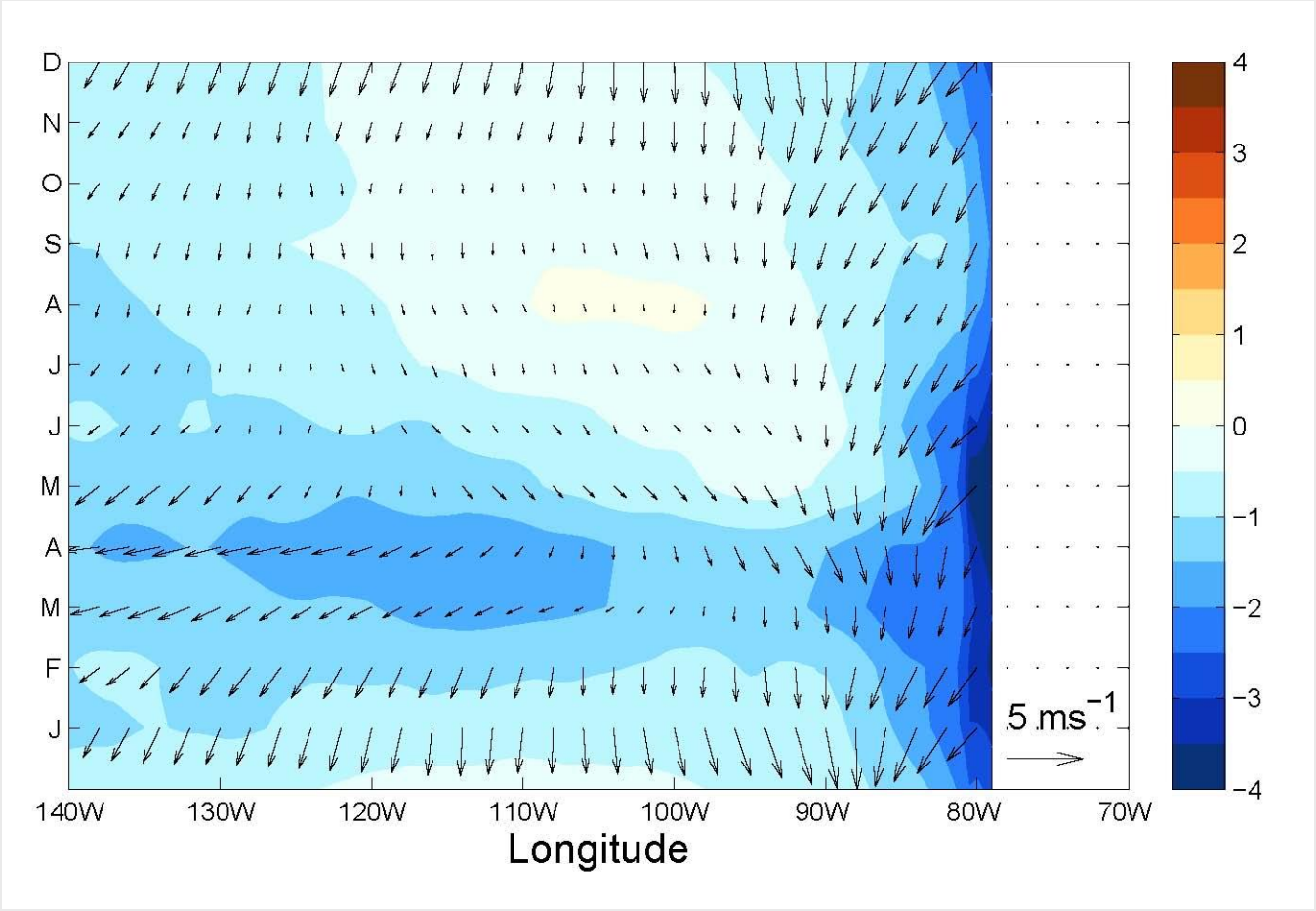




Increasing diffusion decreases meridional asymmetry

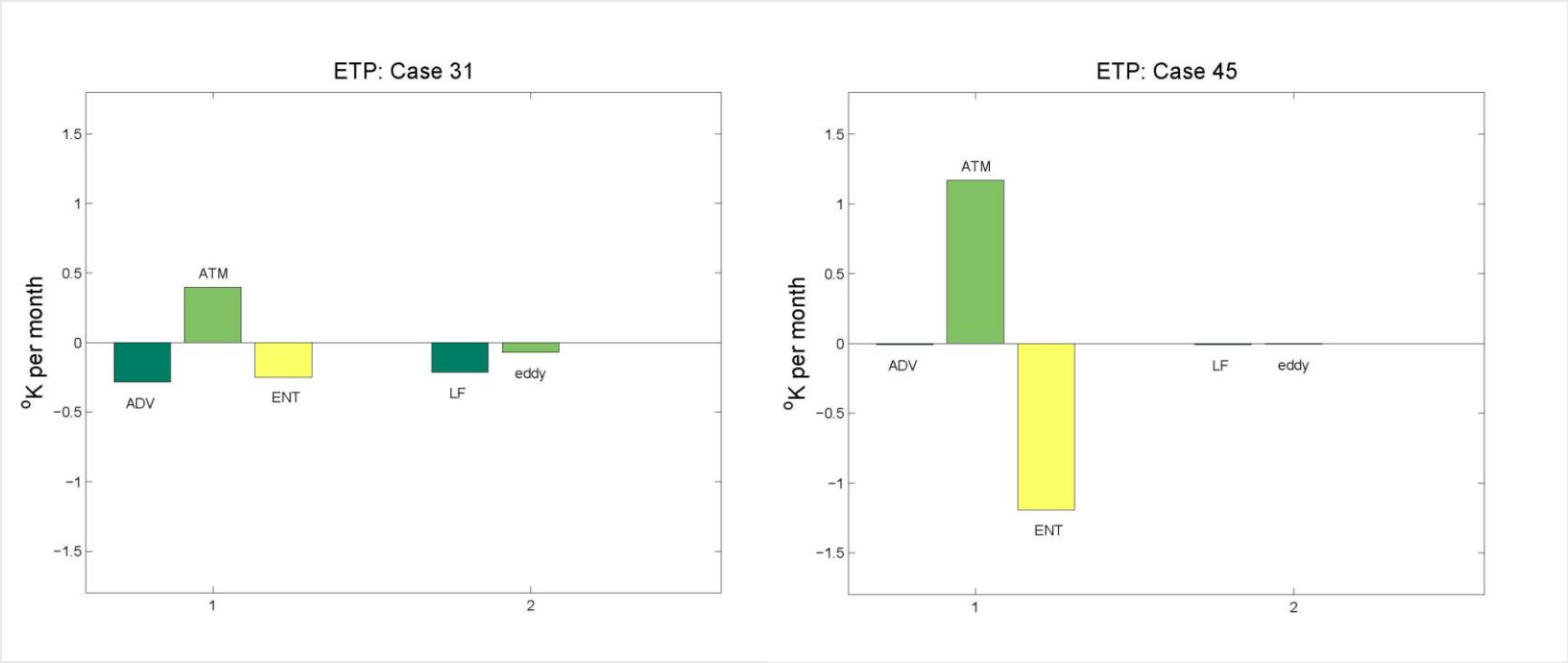
ΔSST	=	0.9C	Low diffusion
(10N-10S)		0.4C	High diffusion

Change in SST and surface along the equator



Low ocean κ_0

High ocean κ_0



Arrows: (0-30m) velocity. Colour: SST

Closing remarks

Eastern Tropical Pacific

- Ocean/atmosphere coupling important from TIW to basin scales
- Need to consider coupled system when assessing the sensitivity of the system to model parameters/physics/resolution
- Reducing vertical mixing decreases zonal asymmetry while increasing meridional
- Reducing vertical mixing increases the role of advection in the mixed layer heat budget