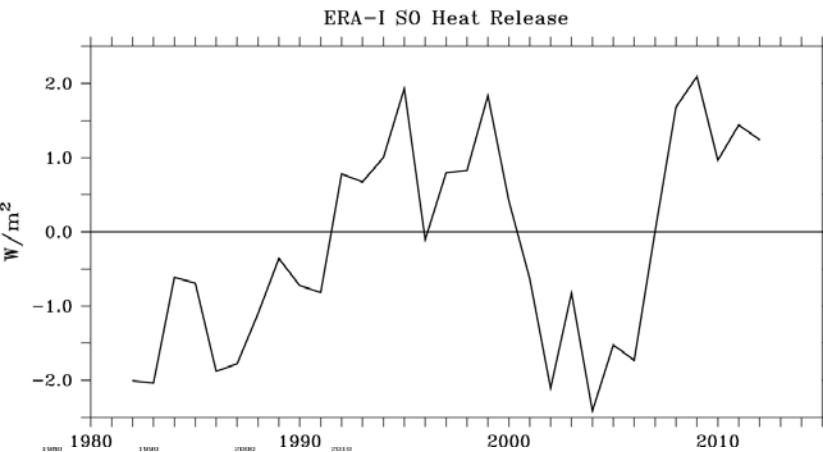
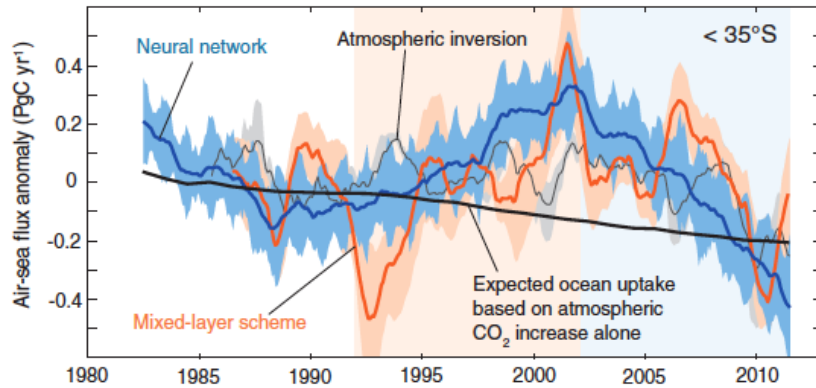


# The reinvigoration of the carbon sink?

Sybren Drijfhout, U Southampton

Landschutzer et al, Science 2015



Carbon uptake and heat uptake are anti-correlated in the Southern Ocean

Hypothesis:

Natural variations are driven by SO winds.

Increased upwelling:

Colder waters – more heat uptake

Carbon-rich waters – less carbon uptake

- The reinvigoration of the carbon sink is associated with the climate hiatus and will have terminated by now
- Decadal variations in carbon uptake are wind-driven
- We can test this in CMIP5 and NEMO simulations
- We can derive a metric for decadal variations in the carbon sink
- This will set recent & new observations in context
- Centennial changes (trend) are driven by a decrease in the AMOC. Diabatic eddy fluxes increase; stratification decreases; mixed-layer depth increases (Burns et al. JPO)
- A parameterisation can be derived for a metric that describes the trend (Burns & Drijfhout in prep.)