

Ocean mixing experiment



Ines Höschel, Madlene Pfeiffer, Jörg Steinkamp,
David Wårlind

Changes

$$\nu = \frac{\nu_0}{(1 + \alpha \text{Ri})^n} + \nu_b$$

$$\kappa = \frac{\nu}{(1 + \alpha \text{Ri})} + \kappa_b$$

Pacanowski and Philander (1981)

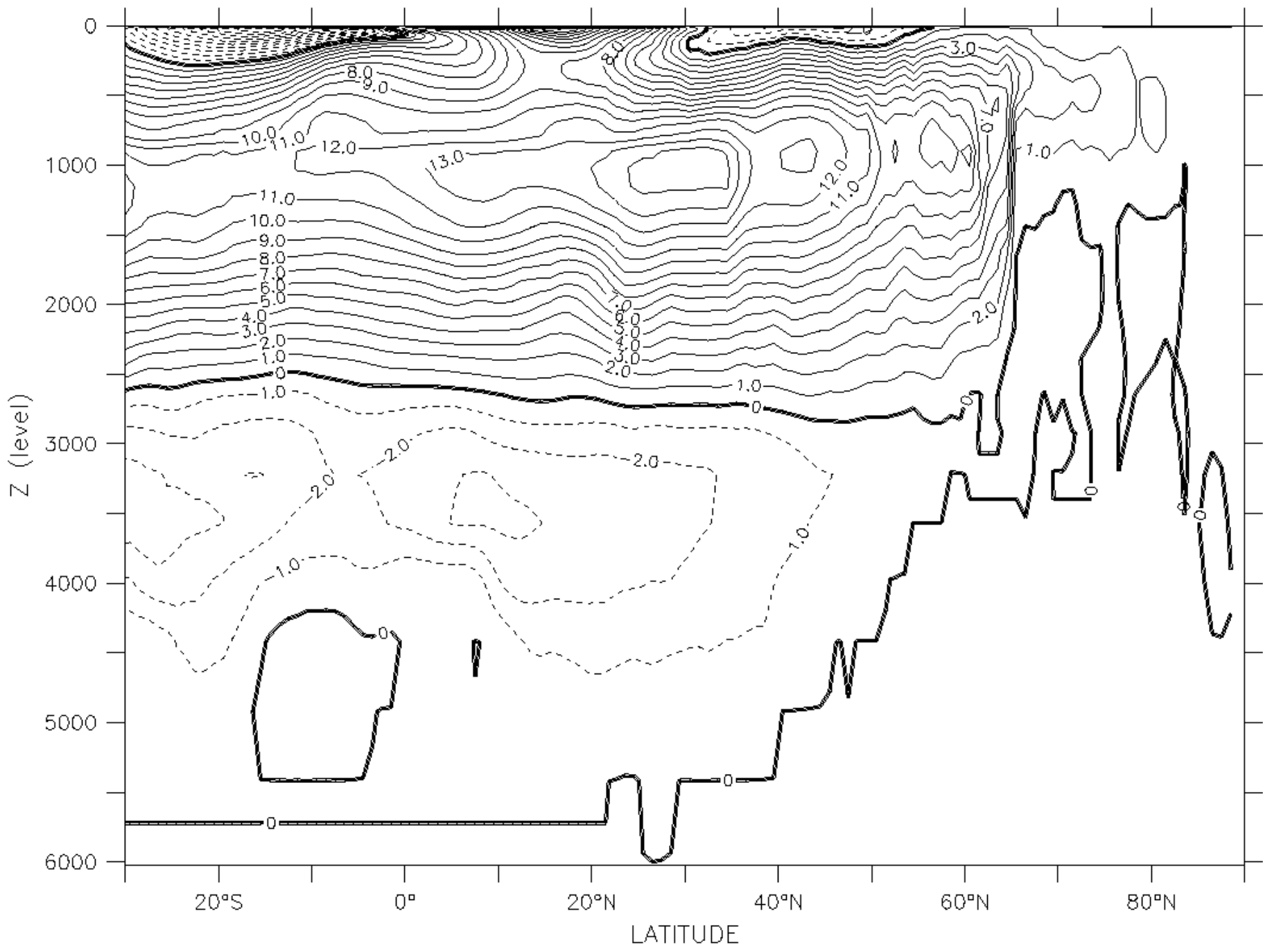
- Increased vertical mixing
- Increased unresolved rest (p. e. tides)

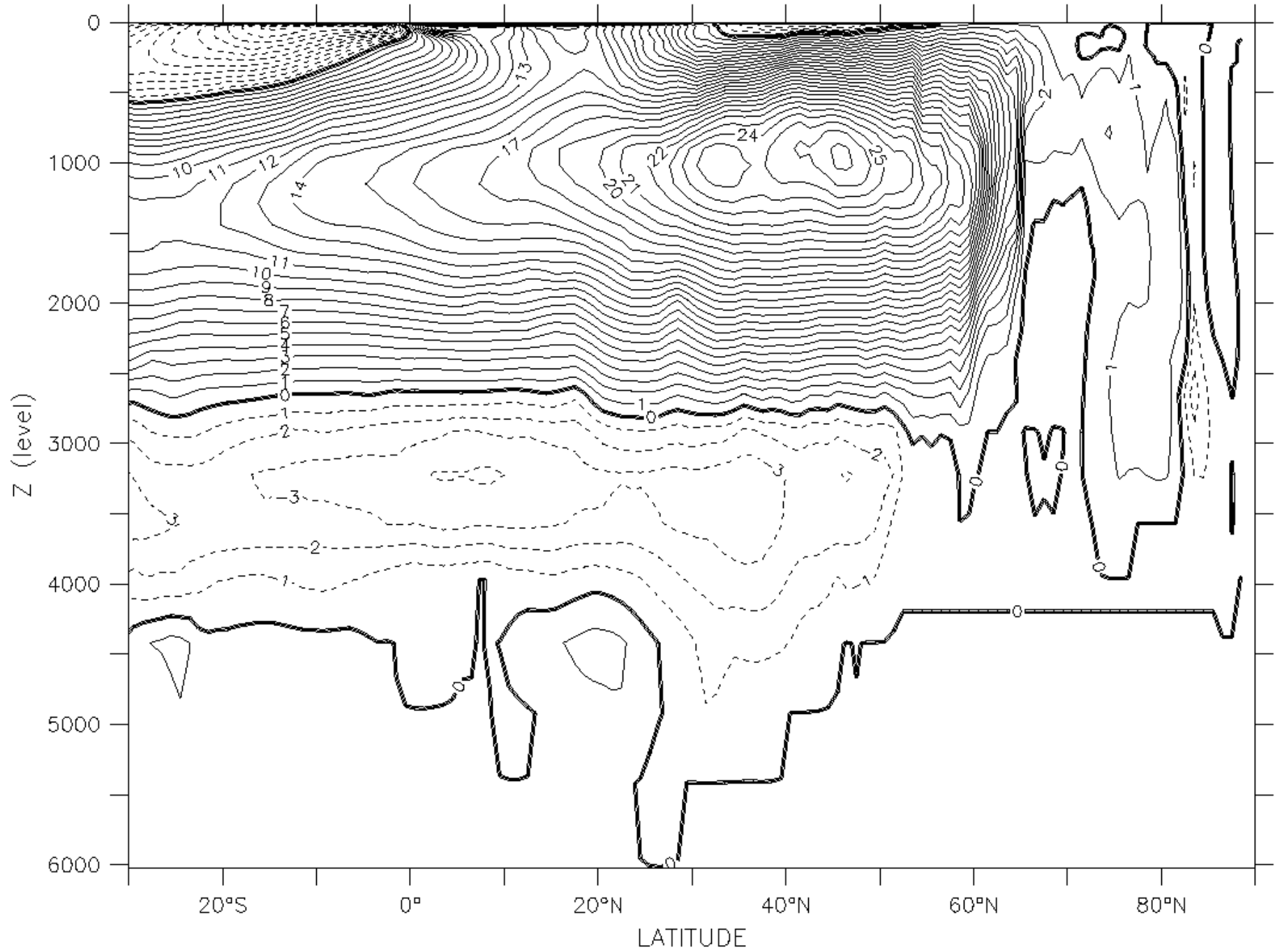
Hypotheses

- Weaker MOC
- SST increase in high latitudes/decrease in low latitudes
- Less sea ice
- Less salinity in high latitudes
- Higher CO₂ release from the ocean
- Change in cloud cover/precipitation
- Change in NPP

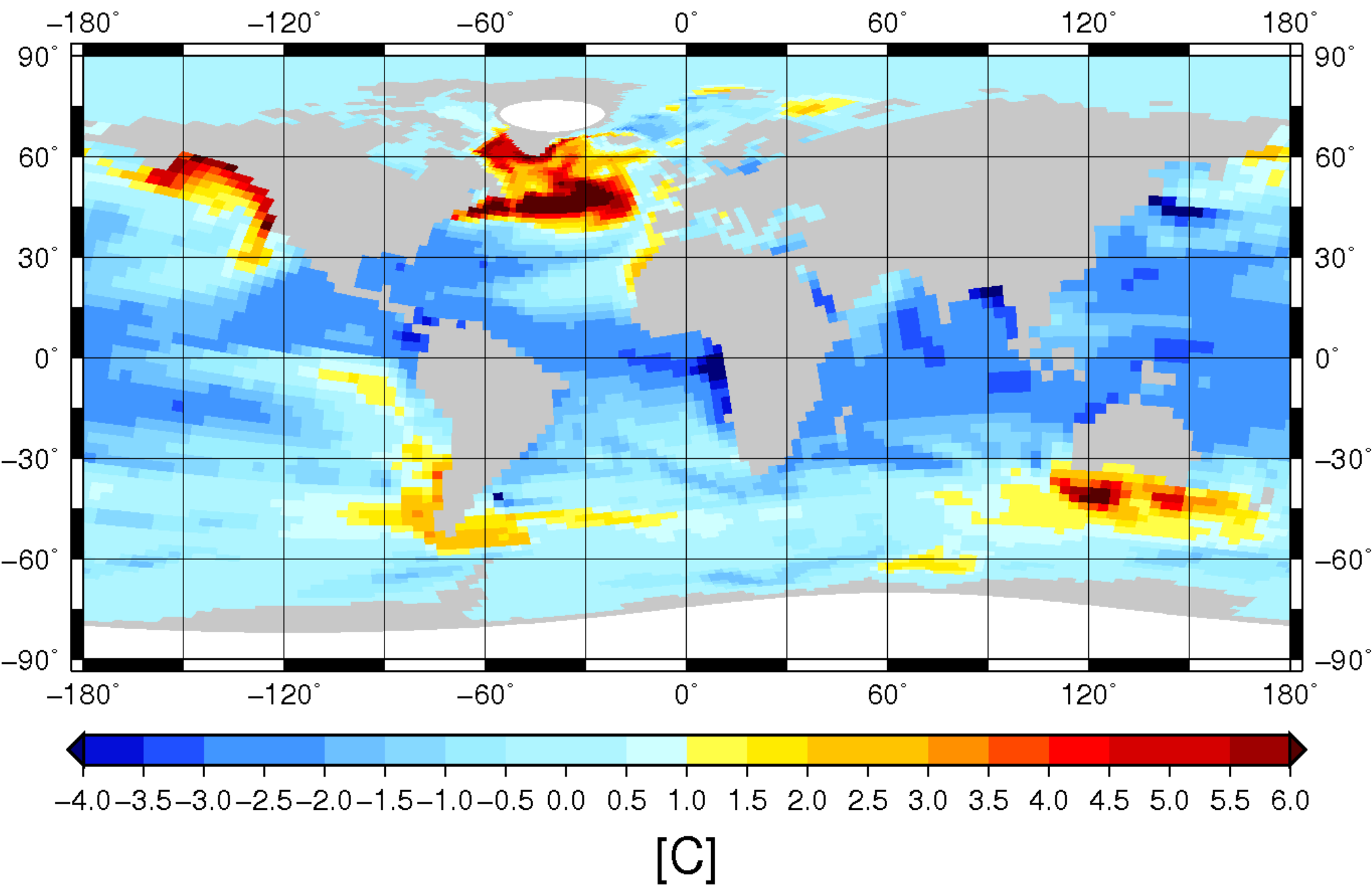
LONGITUDE : 0E
T (day as %Y%m%d.%f) : 8301231

DATA SET: sus0000.moc

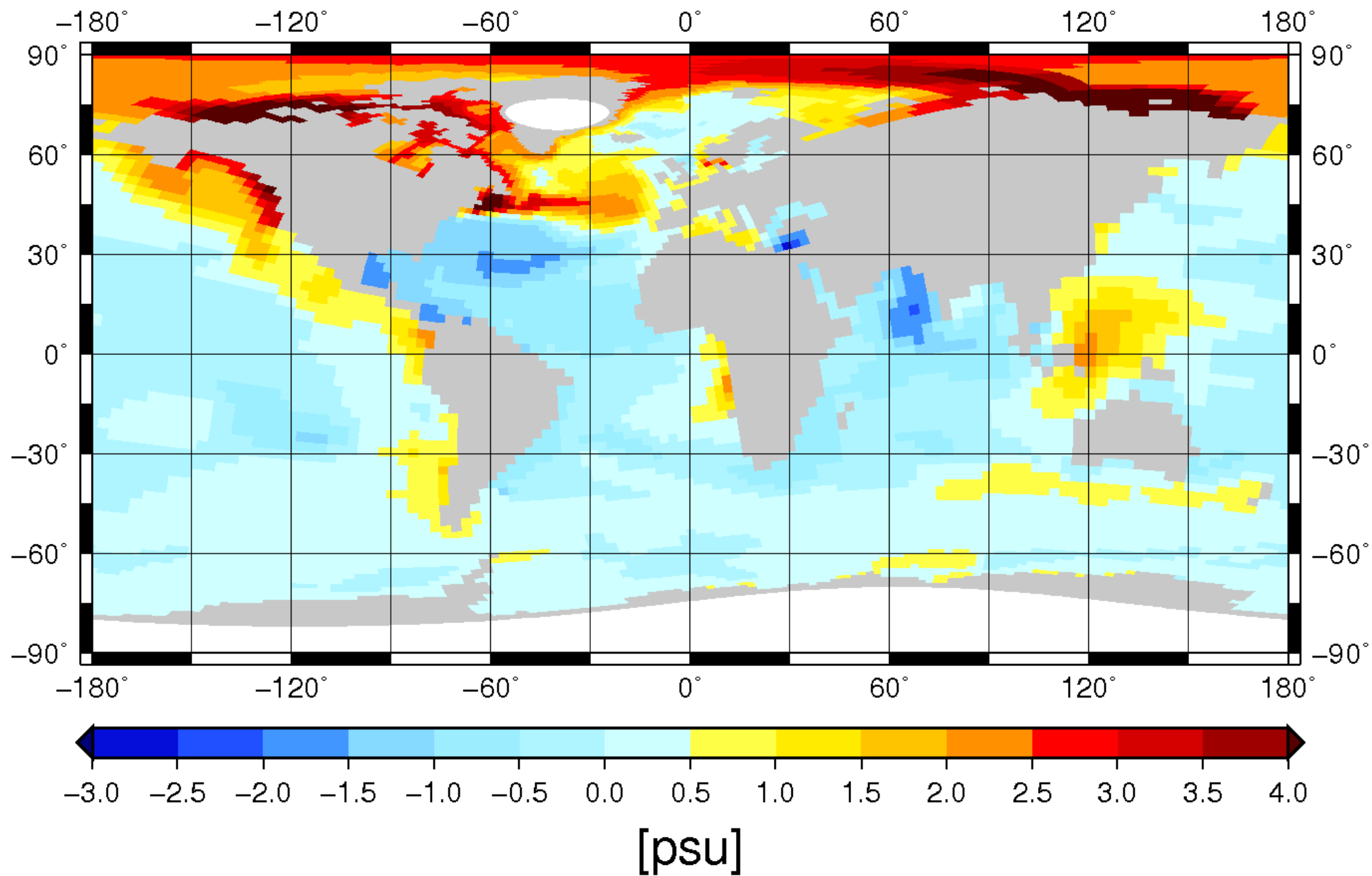




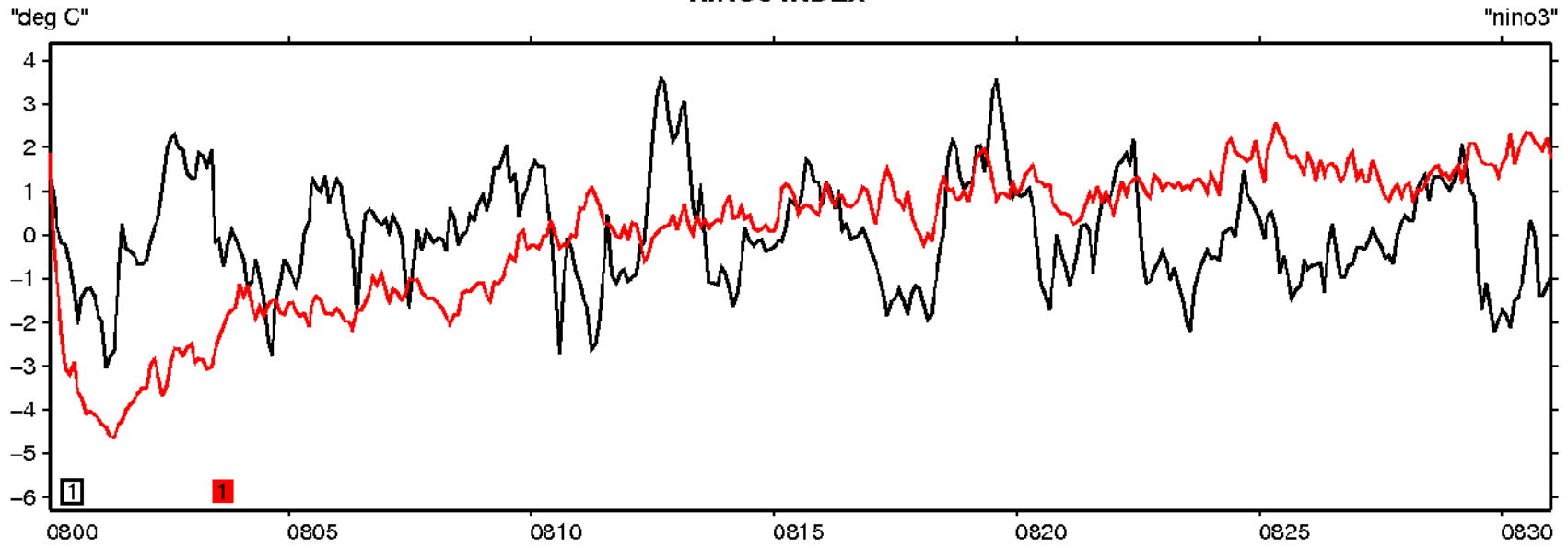
SST



Salinity



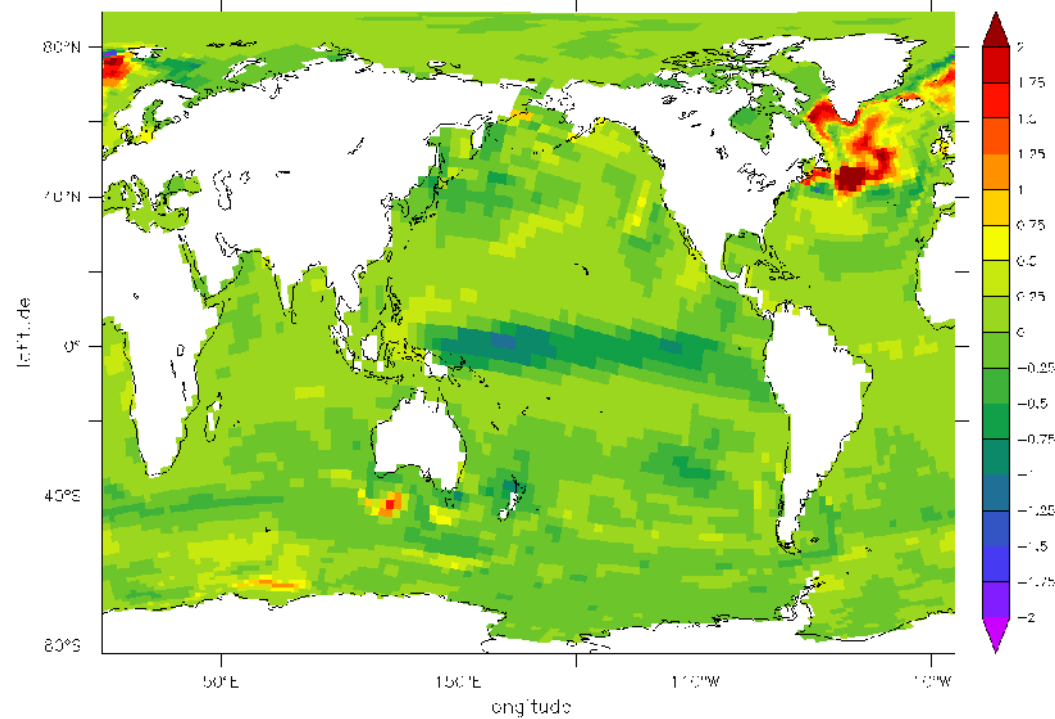
"NINO3 INDEX"



NINO3 INDEX (deg C)
Aug 7 2005 10:32:23

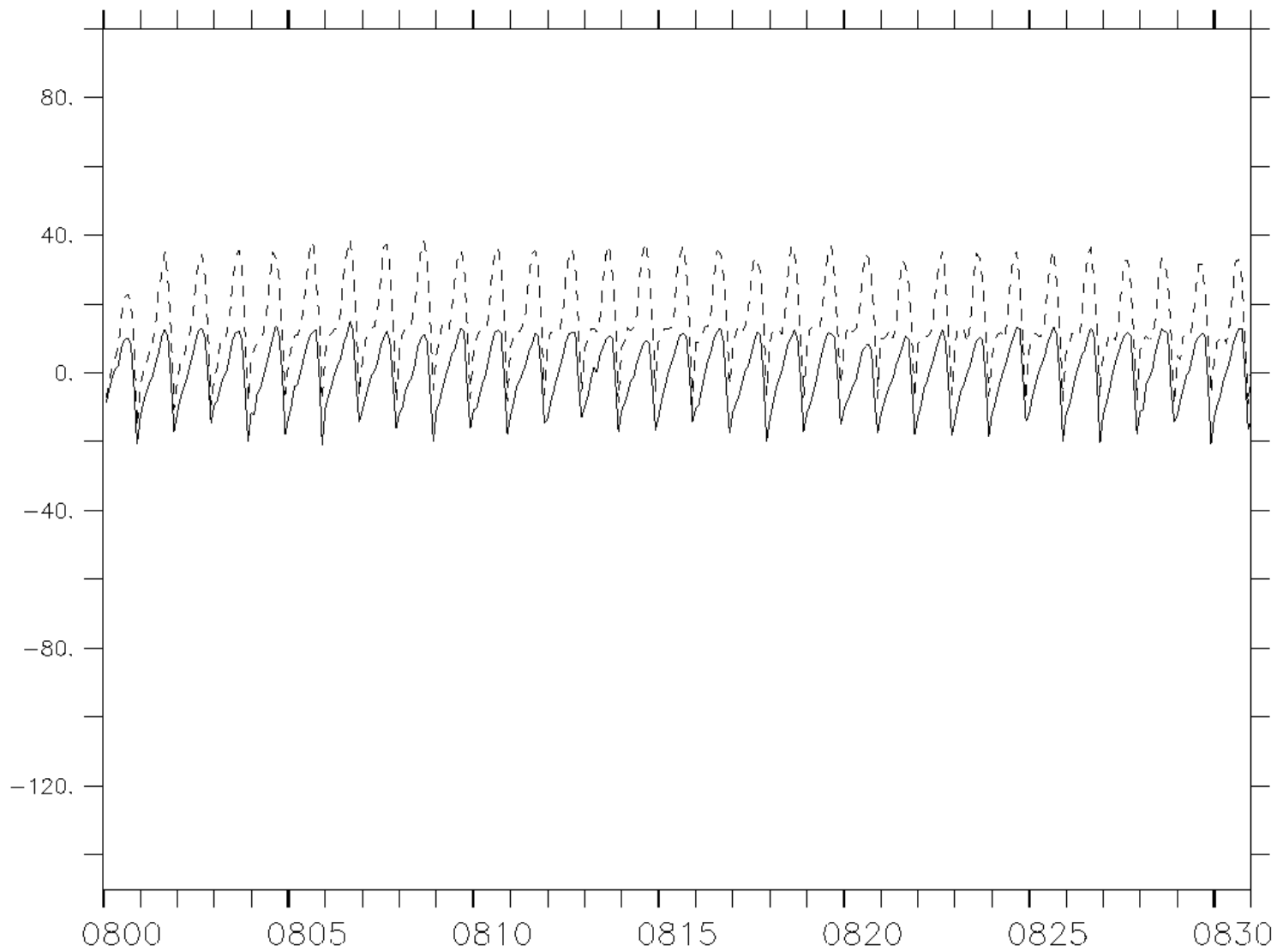
Z (Pa) : 8
(day ds %Y%M%e.%t) : 8301231

DATA SET: s1s0000_mp_om_std



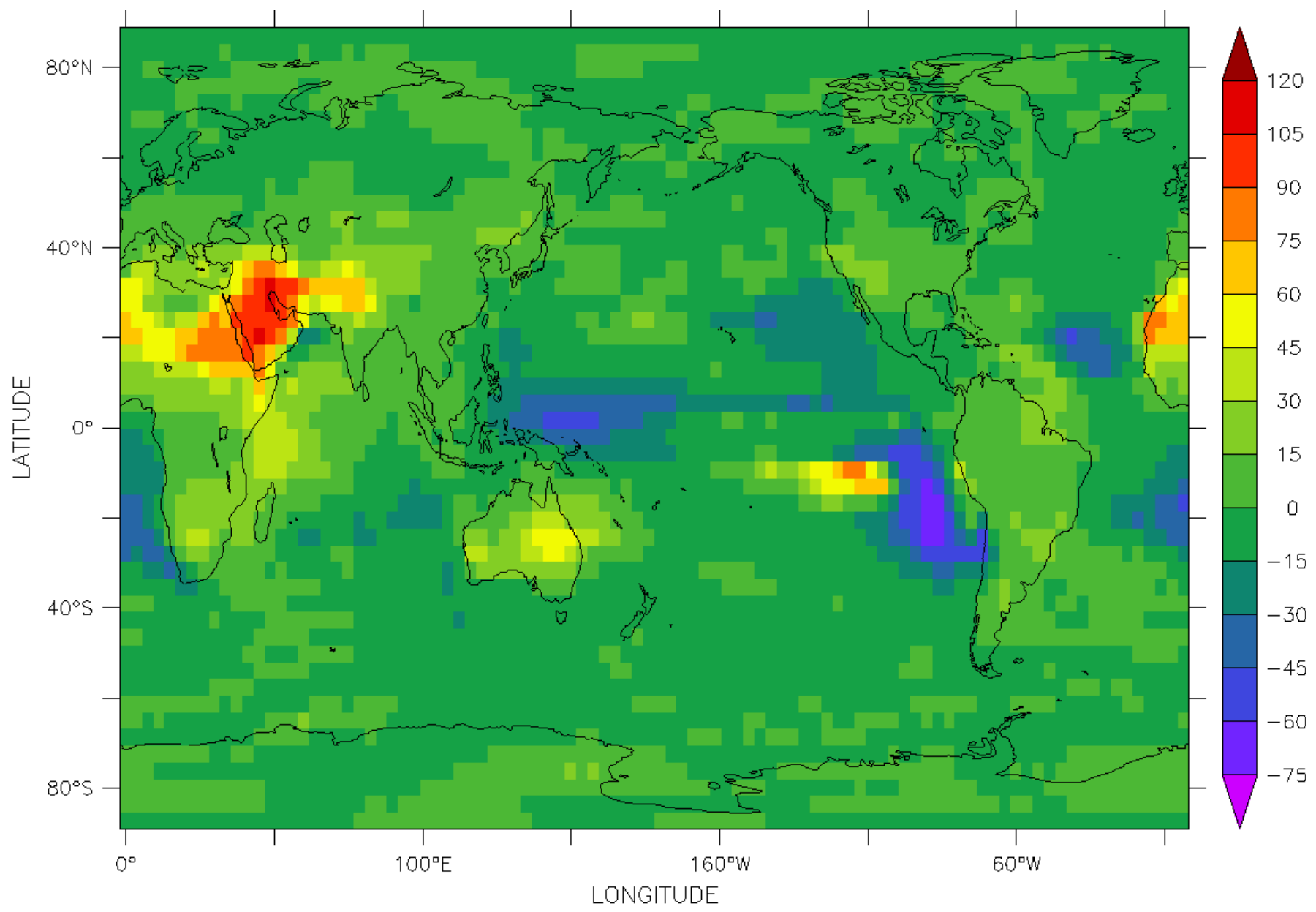
Diff STDDEV SST

LONGITUDE : 1.9W(-1.9) to 1.9W (summed)
LATITUDE : 89S to 89N (summed)



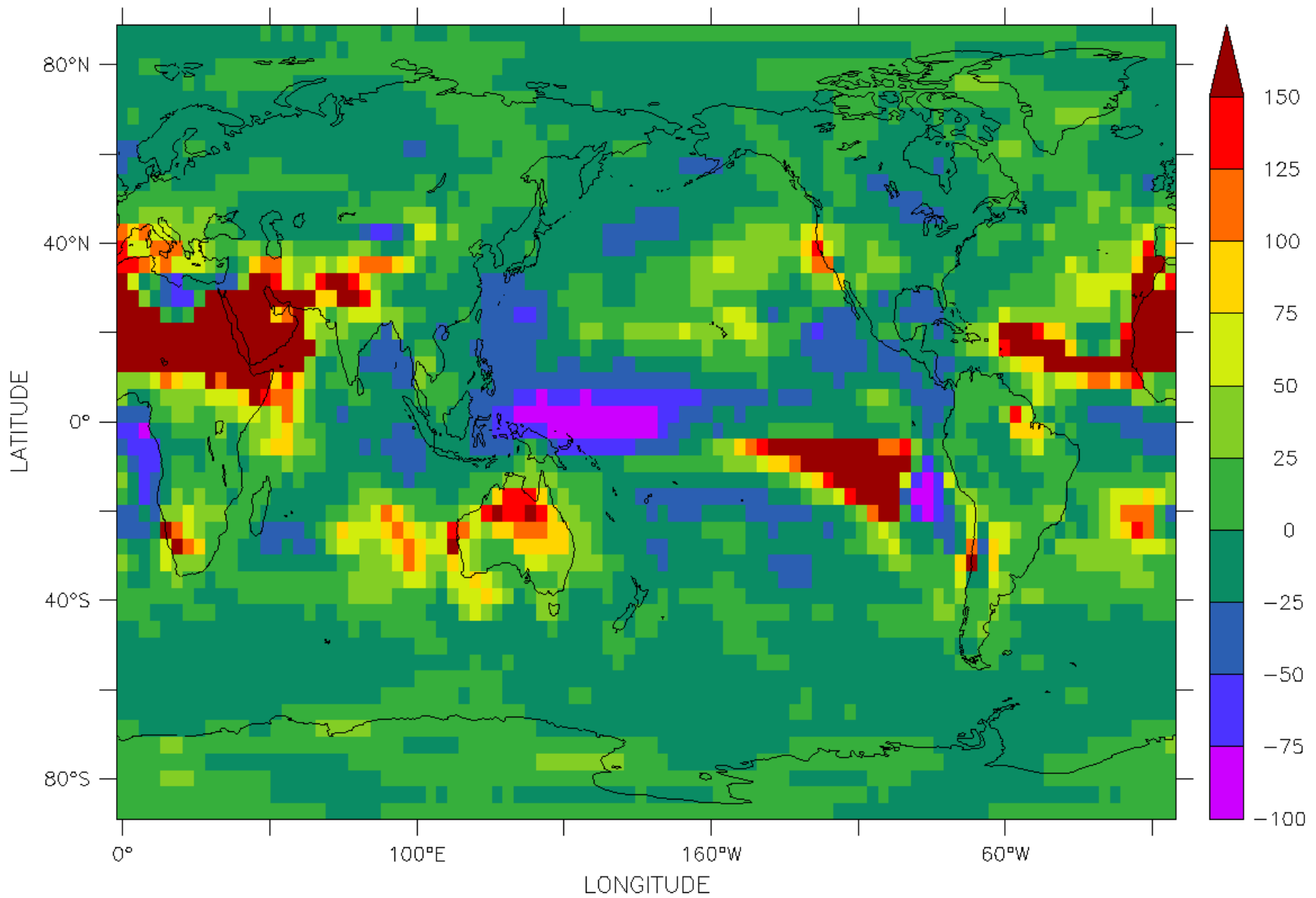
Yearly global CO2 flux from ocean [Pg]

TIME : 01-JAN-0826 00:00 to 01-DEC-0830 00:00



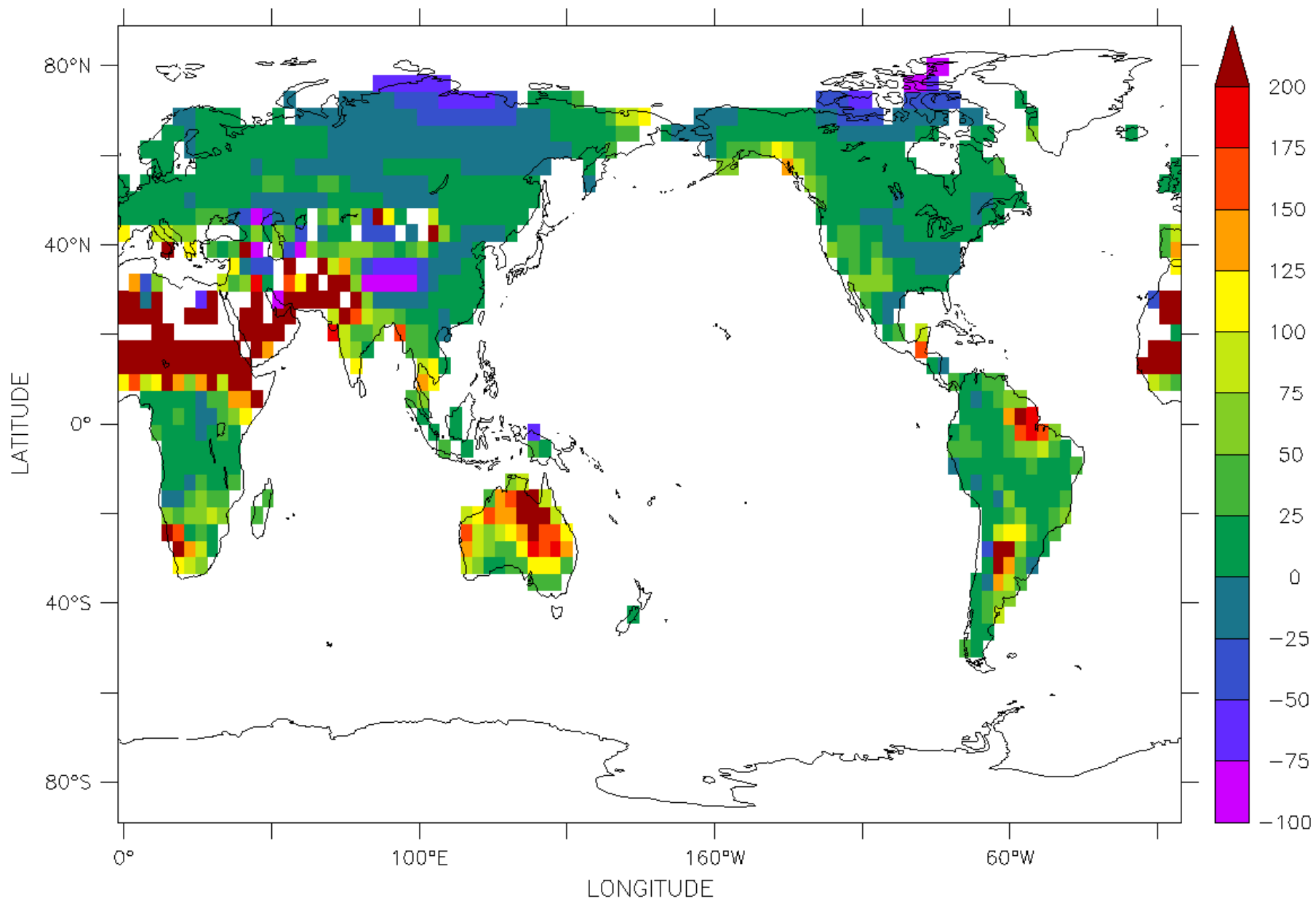
Total Relative Cloud Cover Difference

TIME : 01-JAN-0826 00:00 to 01-DEC-0830 00:00



Total Relative Precipitation Difference

TIME : 01-JAN-0826 00:00 to 01-DEC-0830 00:00



Total Relative NPP Difference (all Pft's)

Conclusion



- ~~Weaker MOC~~
- SST increase in high latitudes/decrease in low latitudes
- Less sea ice
- ~~Less salinity in high latitudes~~
- Higher CO_2 release from the ocean
- Change in cloud cover/precipitation
- Change in NPP