

Update 2009 on climate and oceanographic conditions in the Indian Ocean

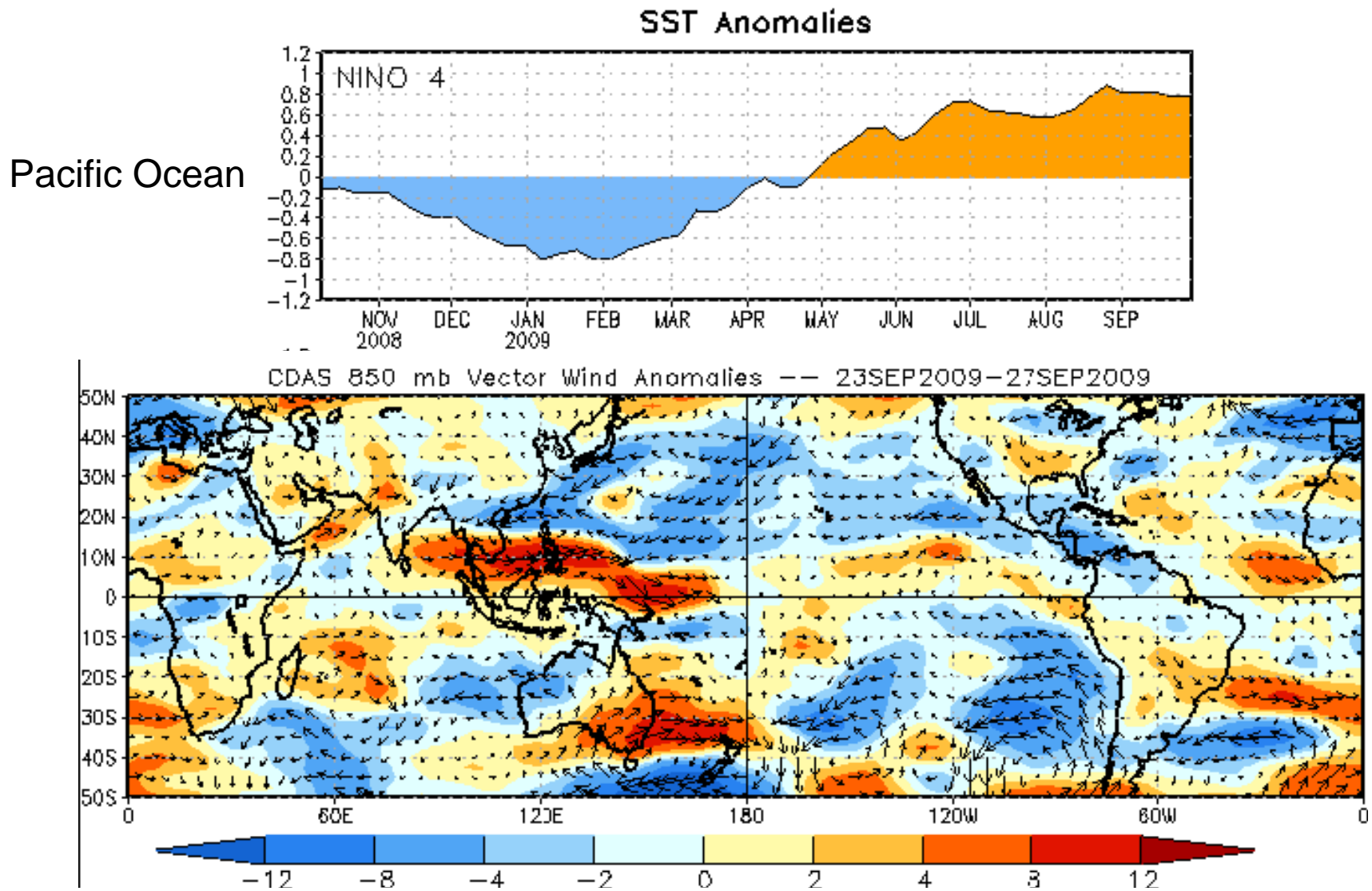
By Francis Marsac

IRD

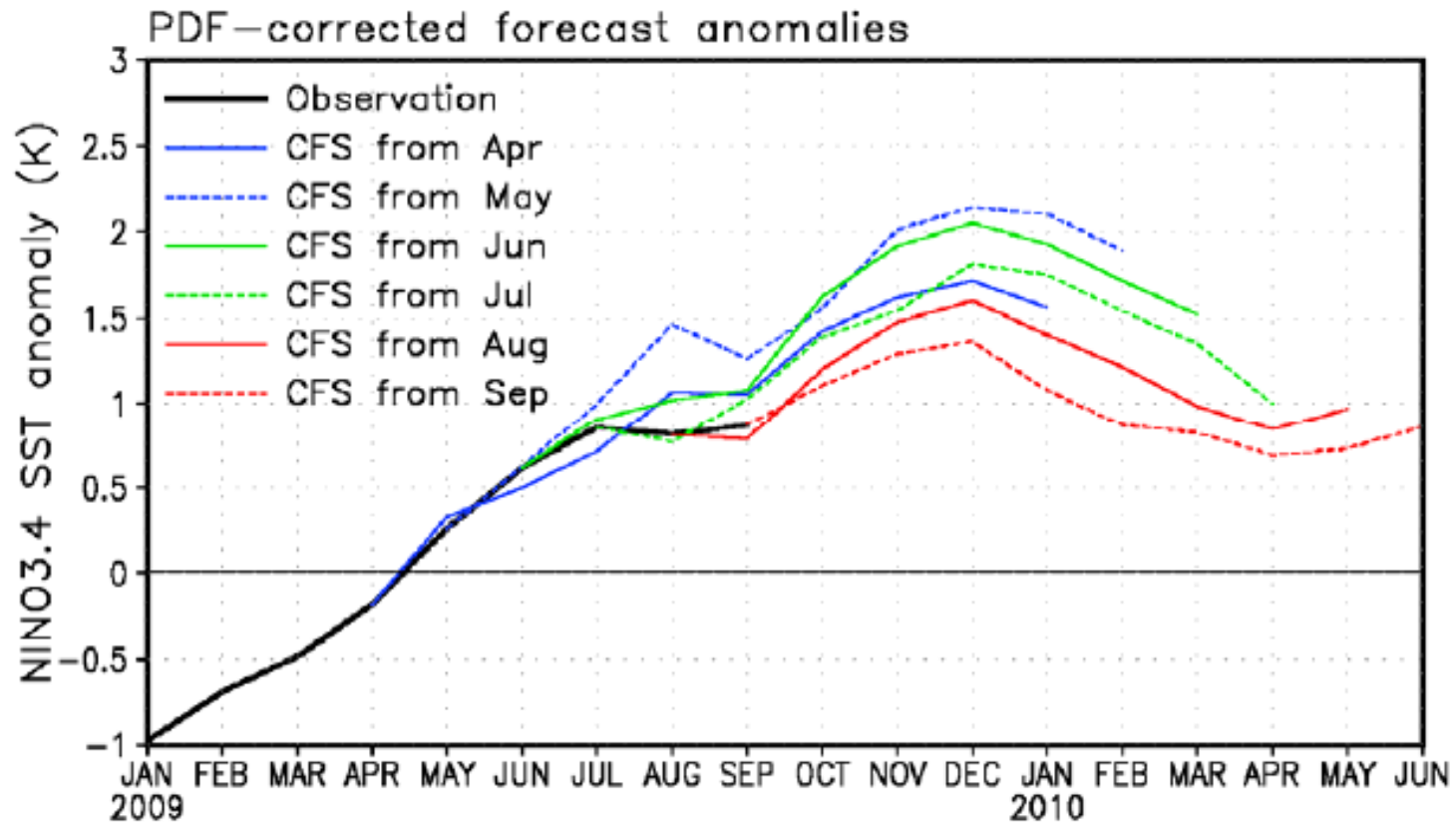
Univ. of Cape Town

South Africa

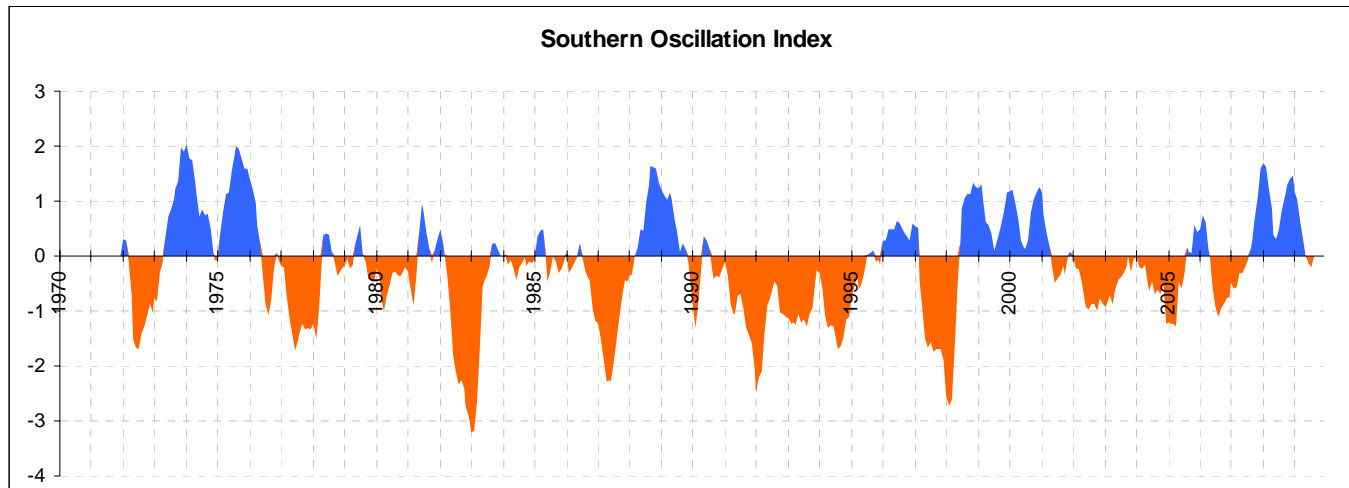
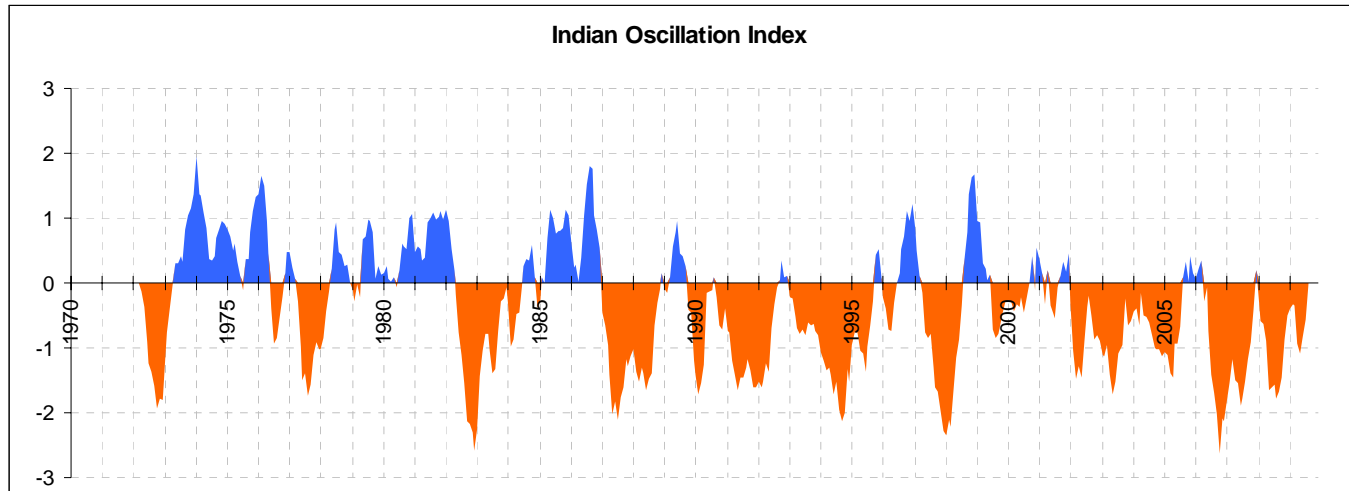
Current situation (Sept 2009)



Forecast SST Nino 3-4 region

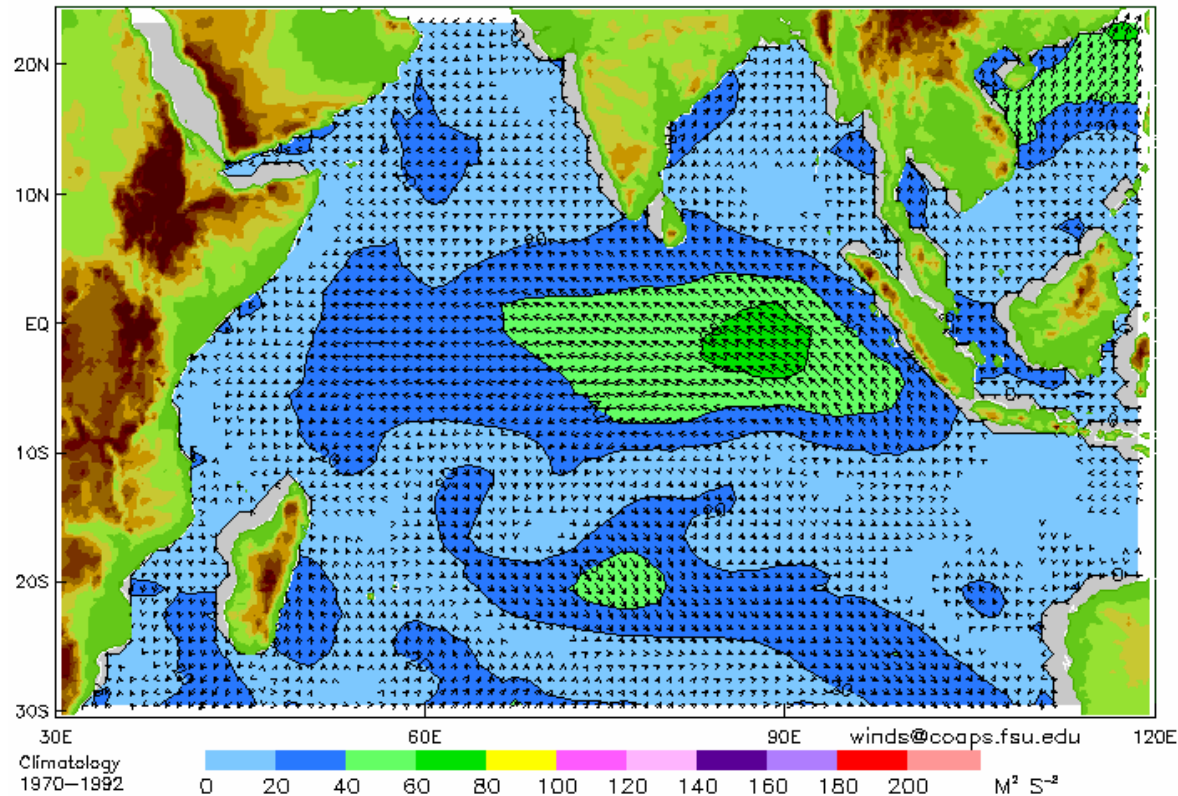


Atmospheric indices : SOI and IOI



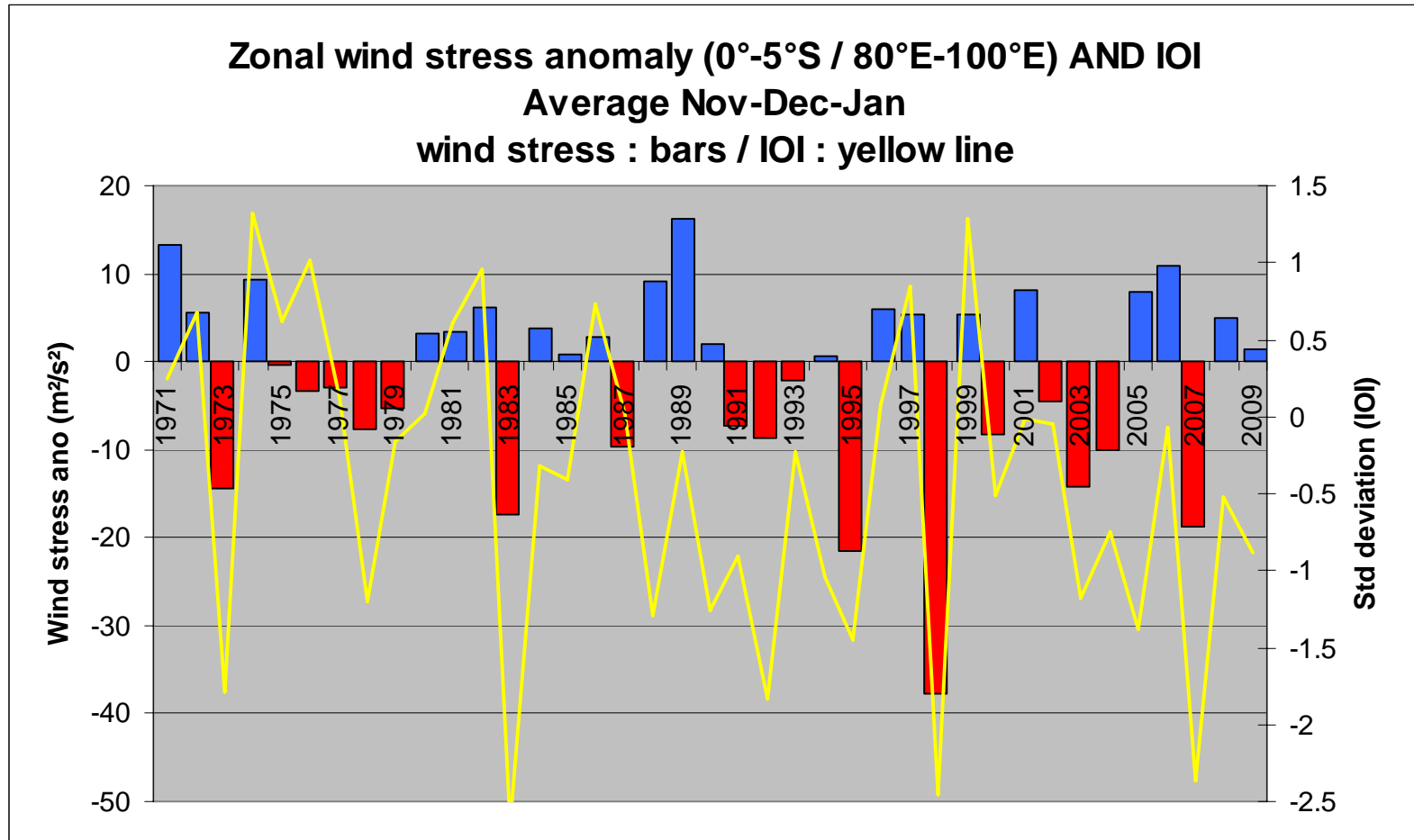
Wind indices

COAPS © Florida State University Pseudo-Stress Vector Anomalies November 1997

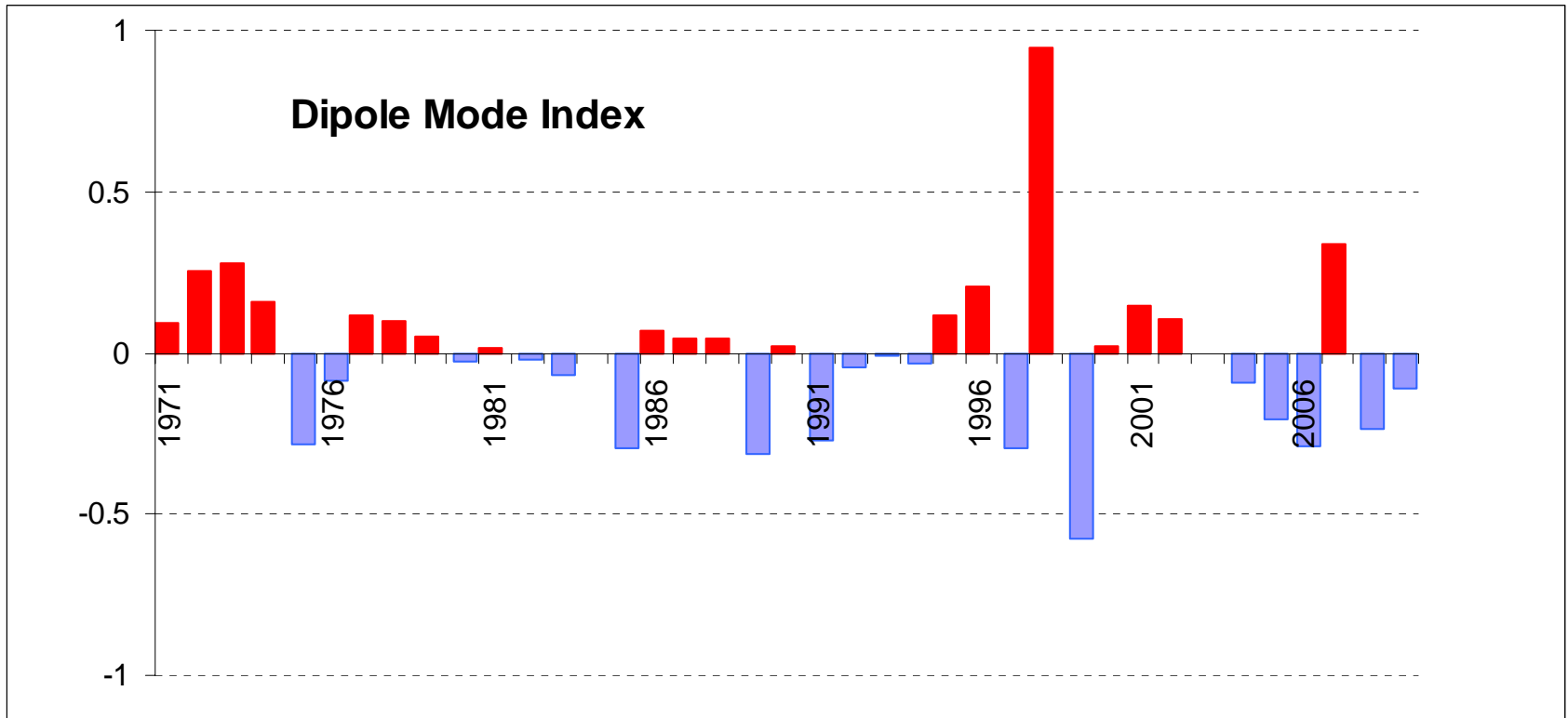


The development of a Dipole anomaly is preceded by anomalous easterly winds

Zonal wind stress anomalies and IOI



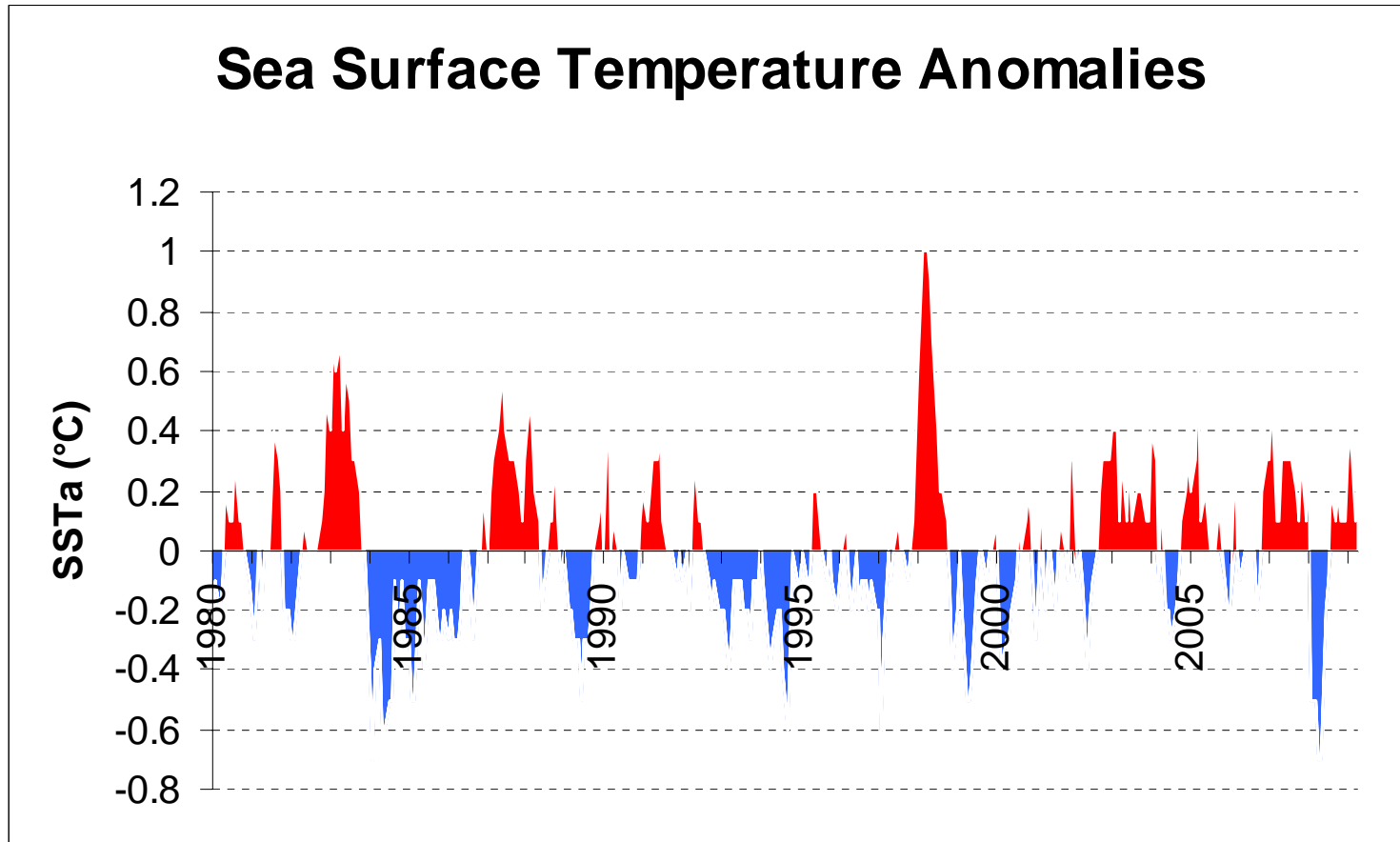
SST related indices



Yearly index computed from November to January, 1971-2009

SST related indices

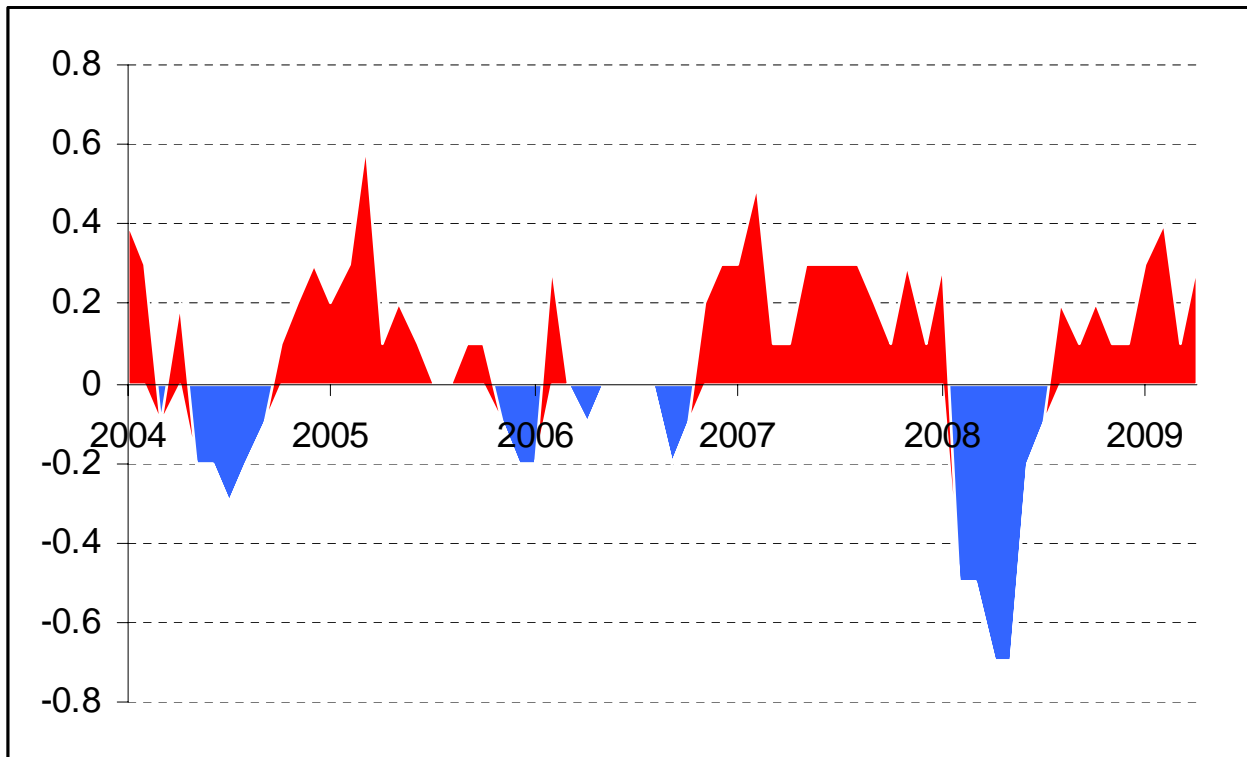
January 1980 – August 2009

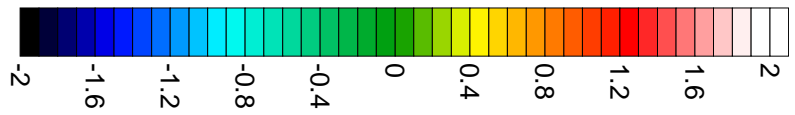
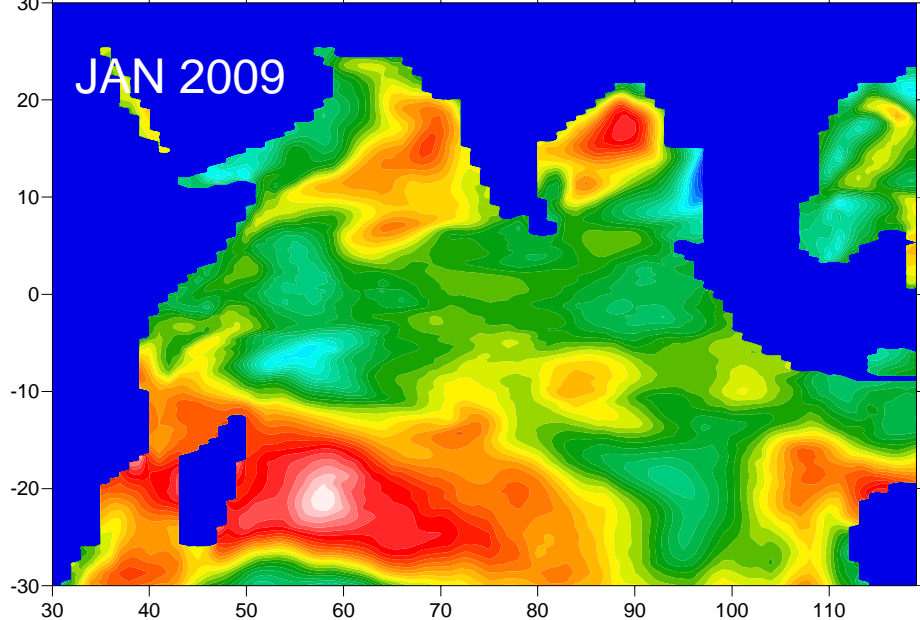
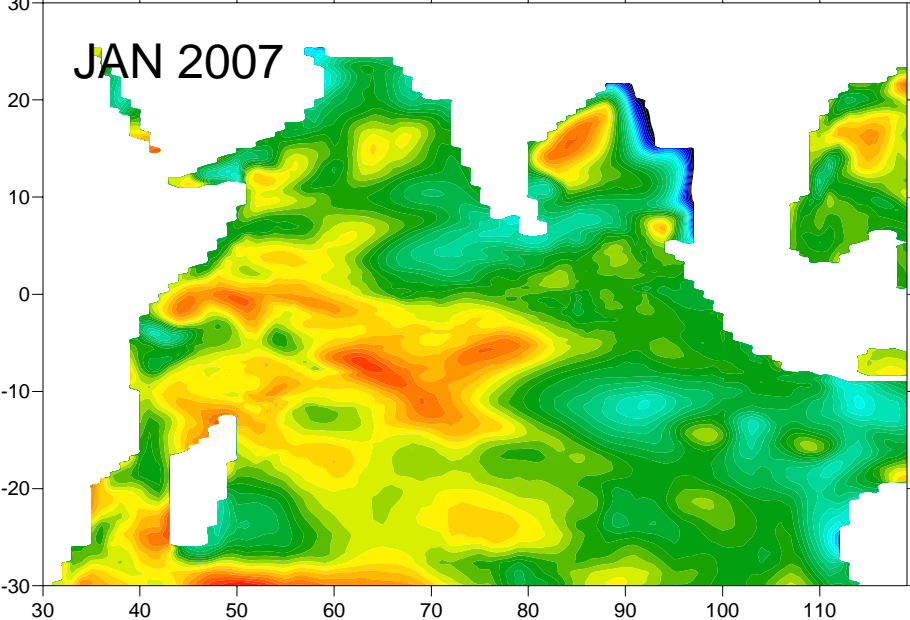
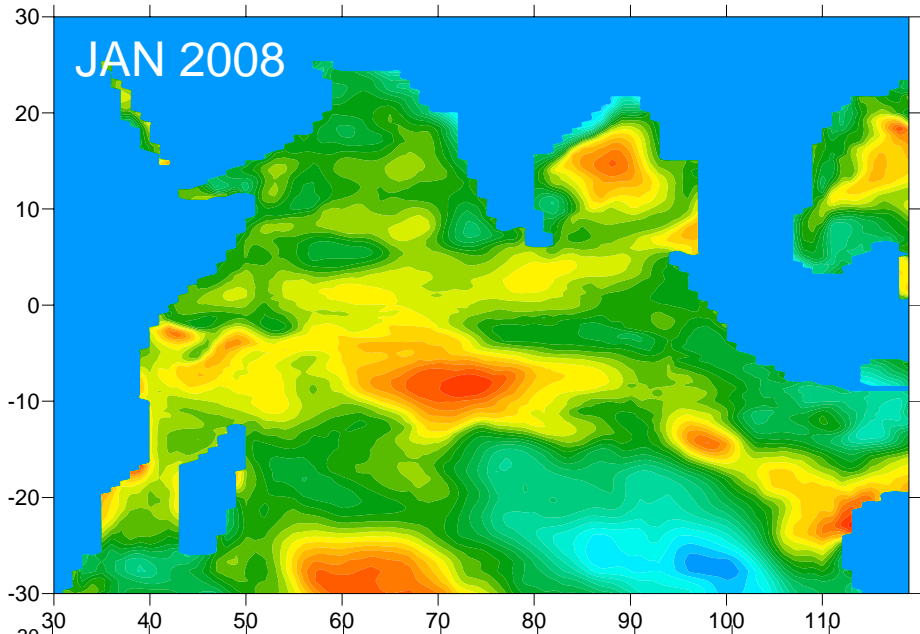
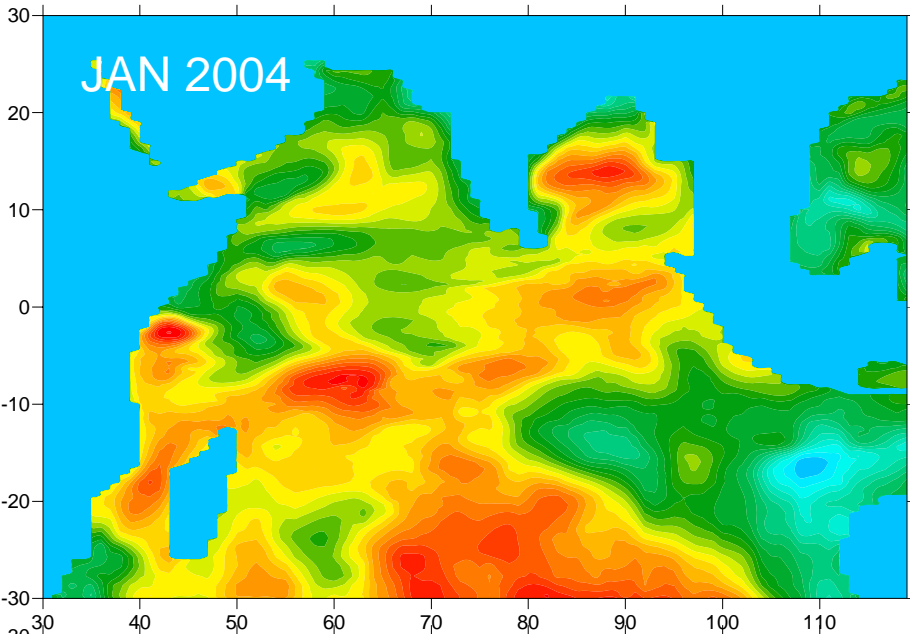


0°-10°S / 45°E-70°E

SST related indices

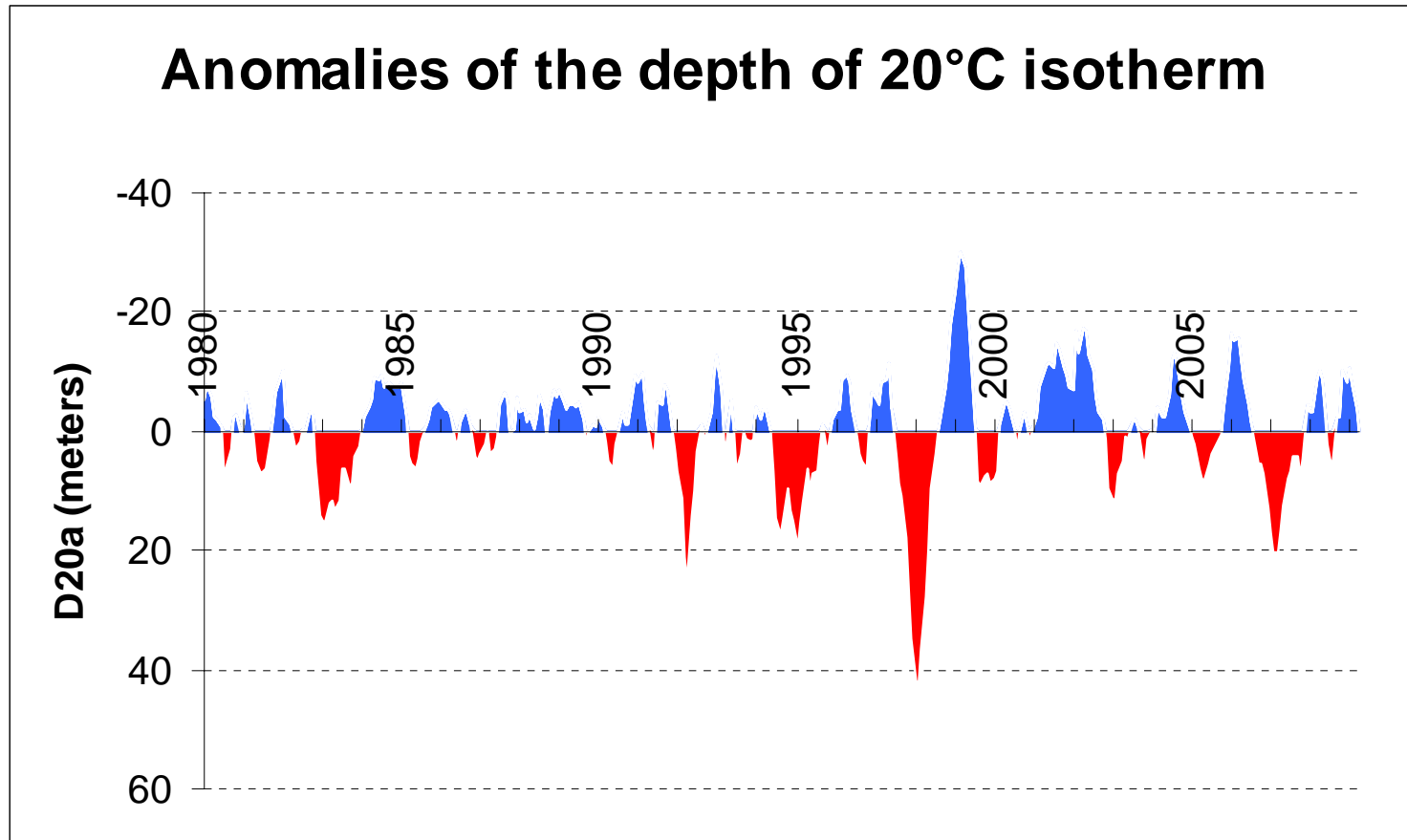
January 2004 – August 2009



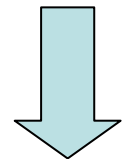
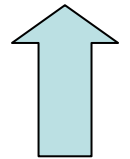


Depth of 20°C isotherm

January 1980 – August 2009

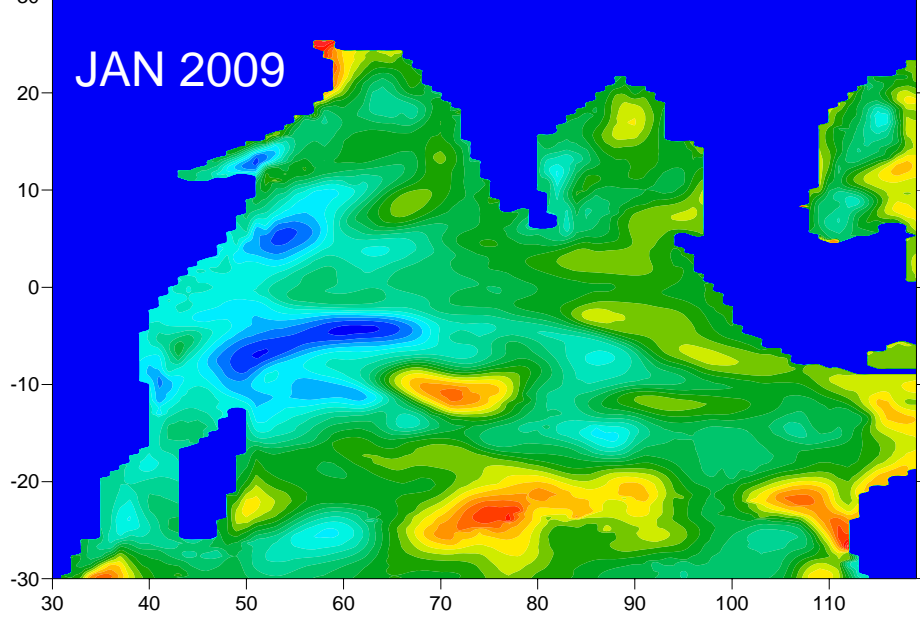
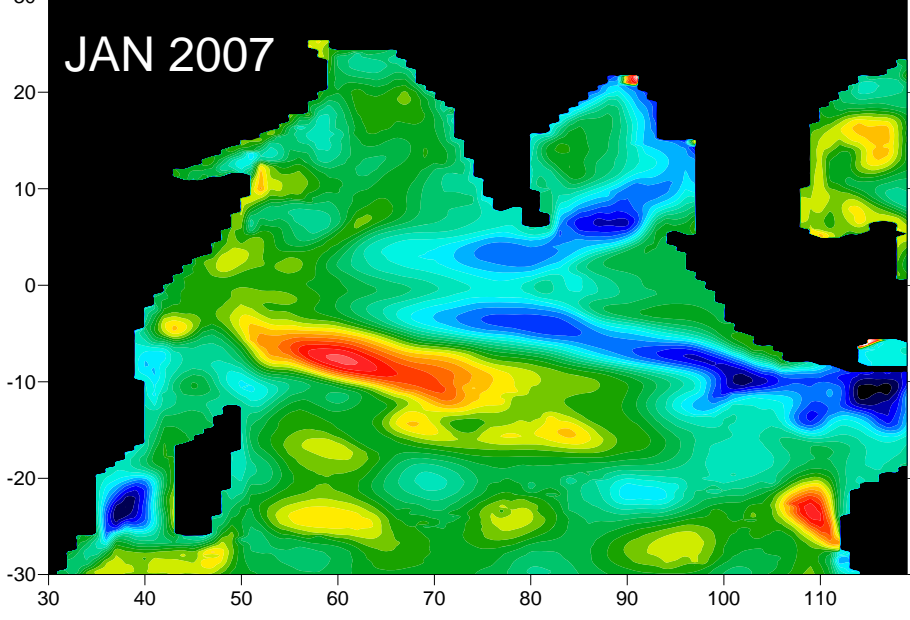
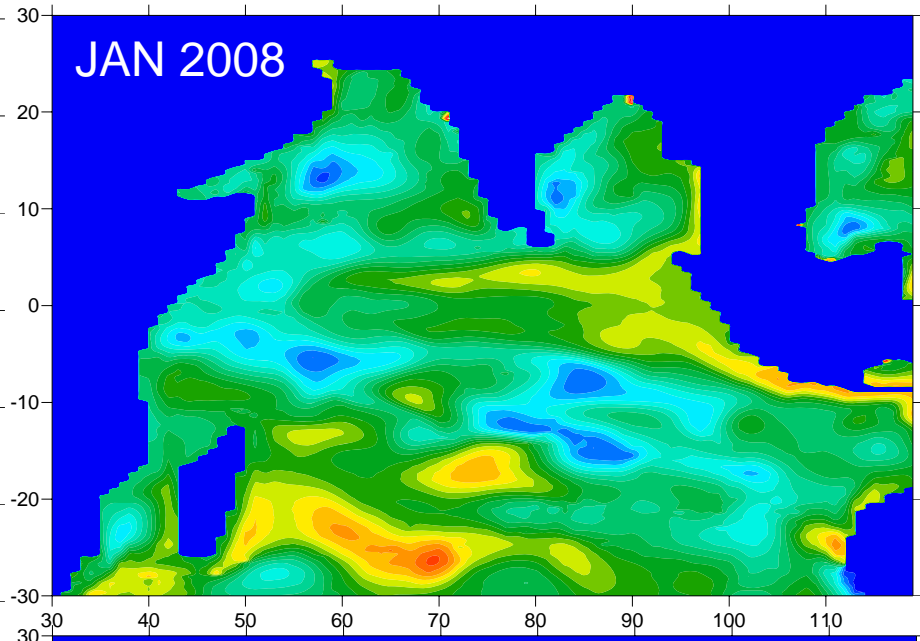
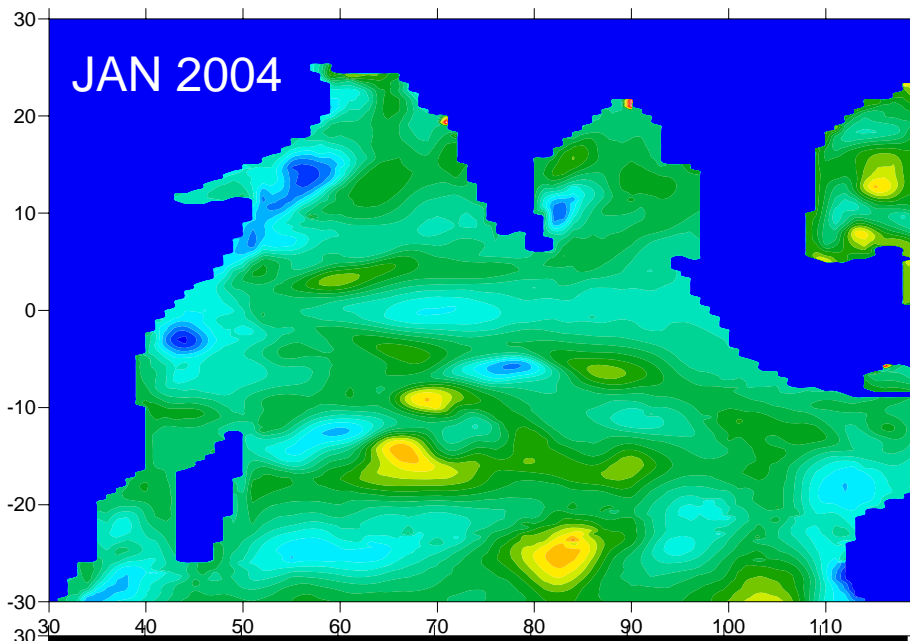


Shallowing

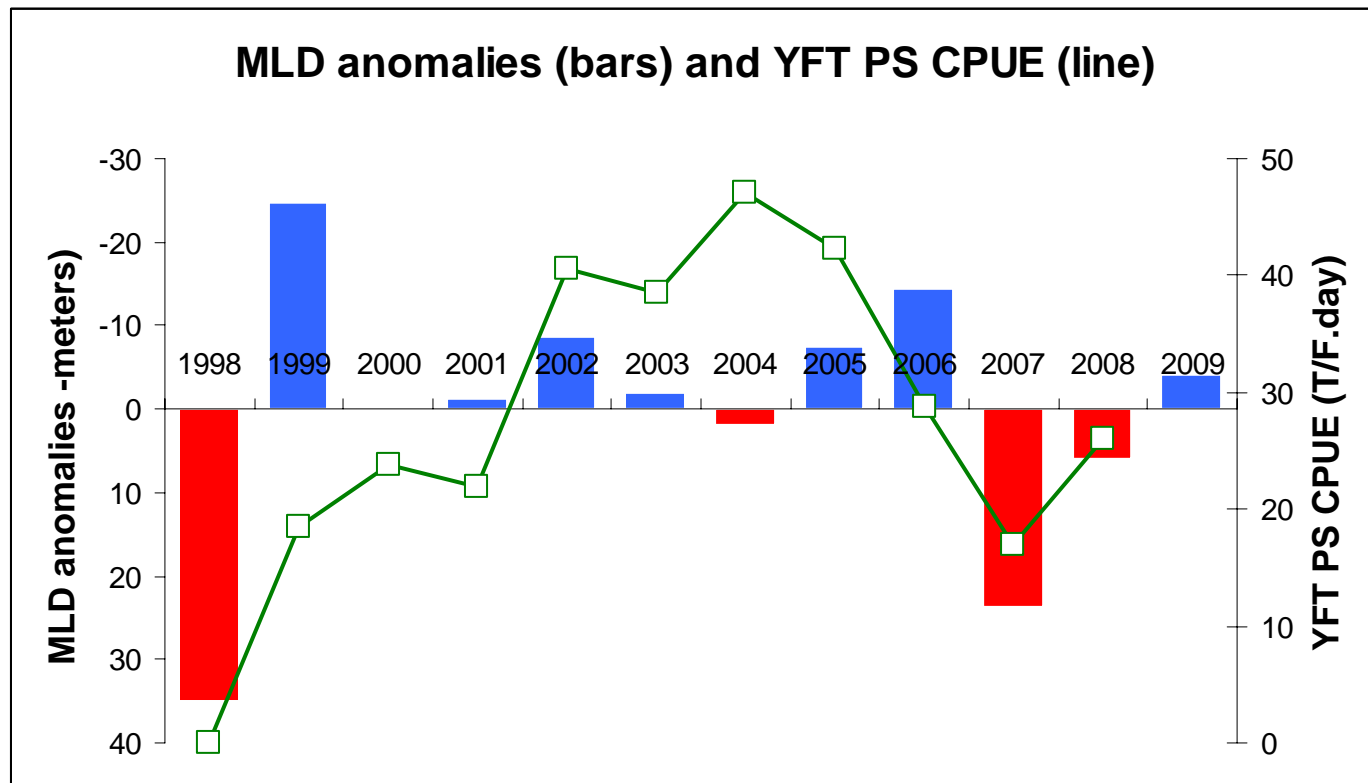


Deepening

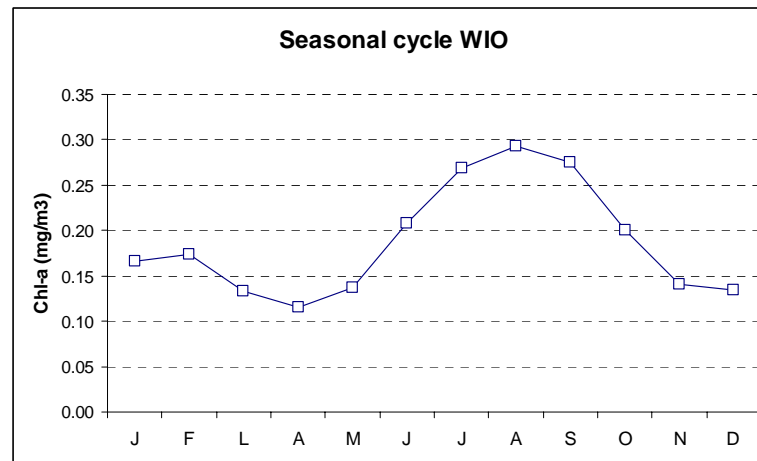
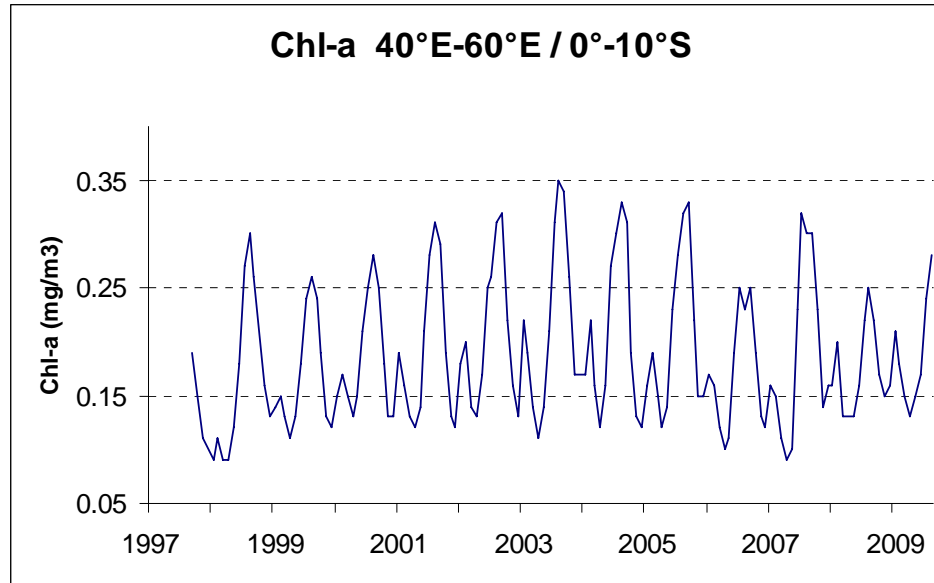
5°S-10°S / 50°E-70°E



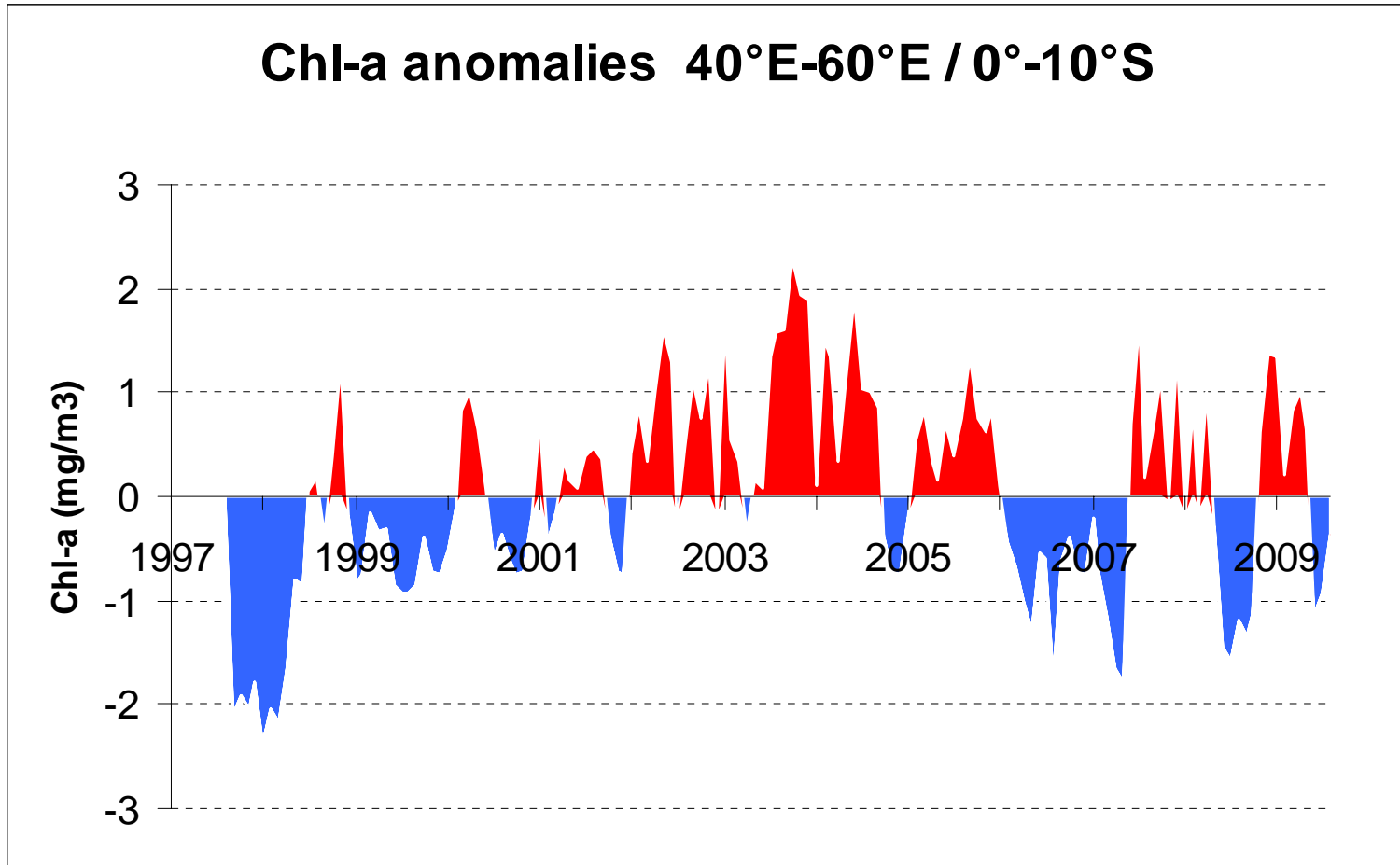
MLD Interannual variability during the core of the PS YFT season

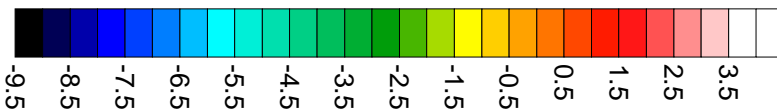
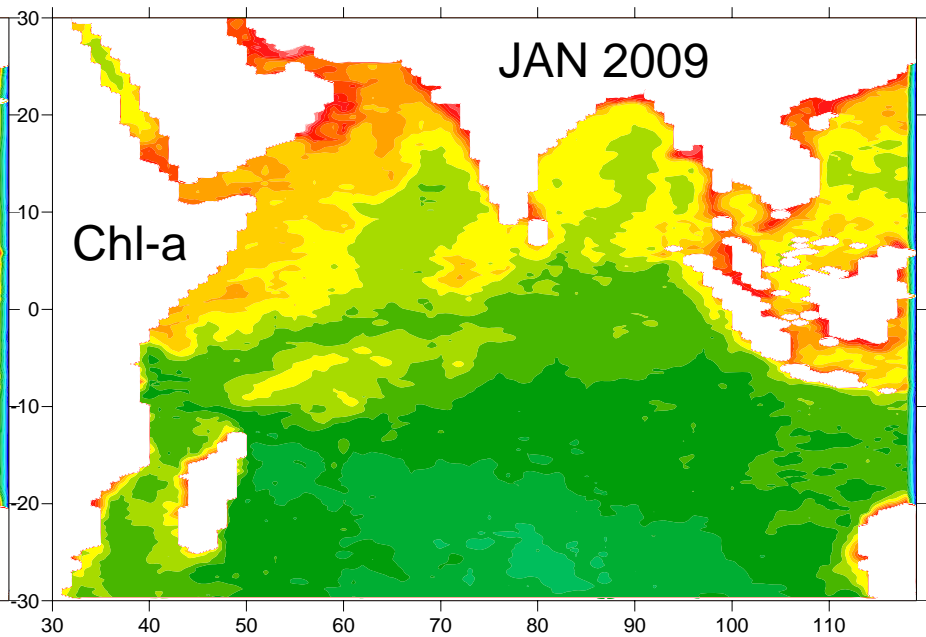
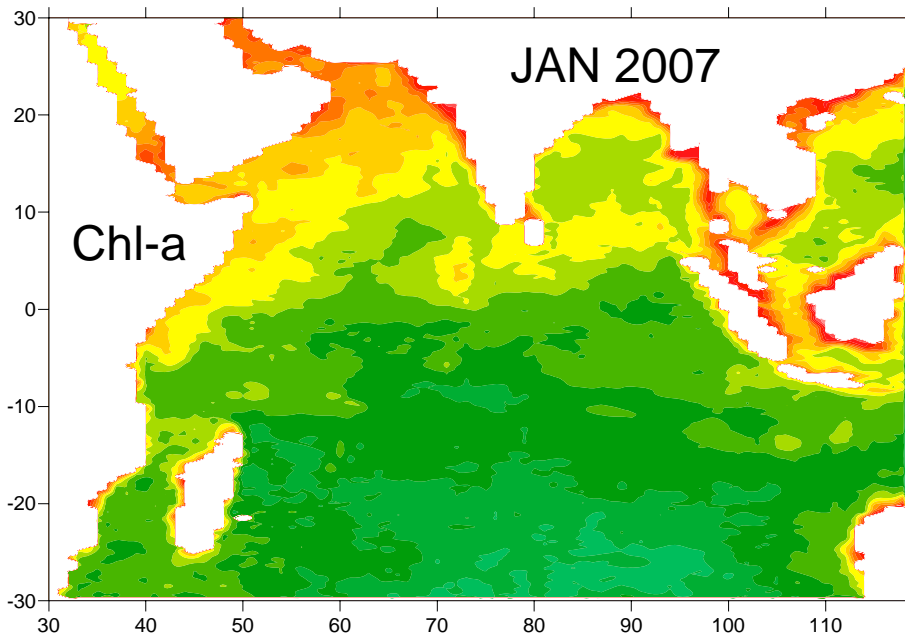
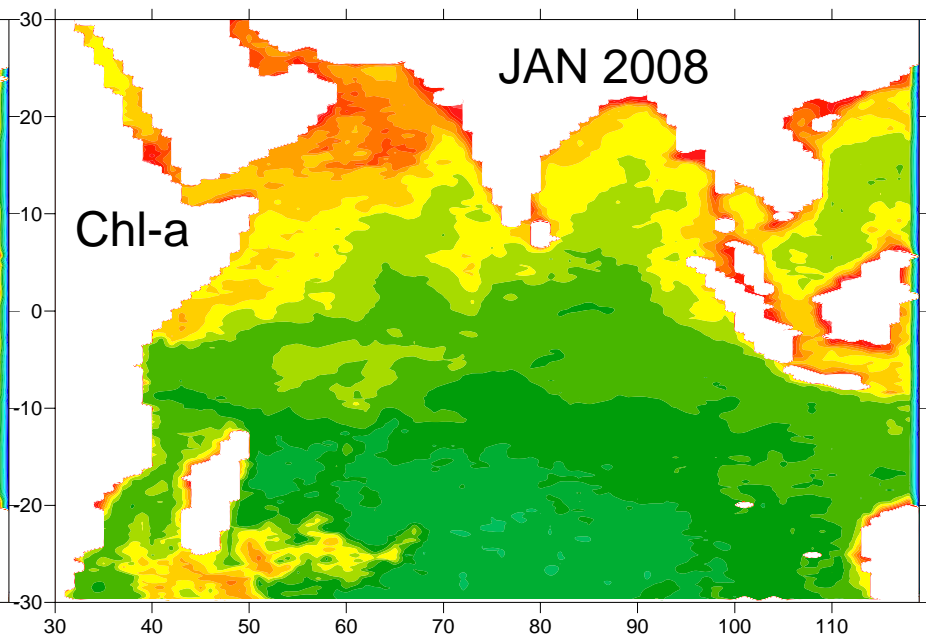
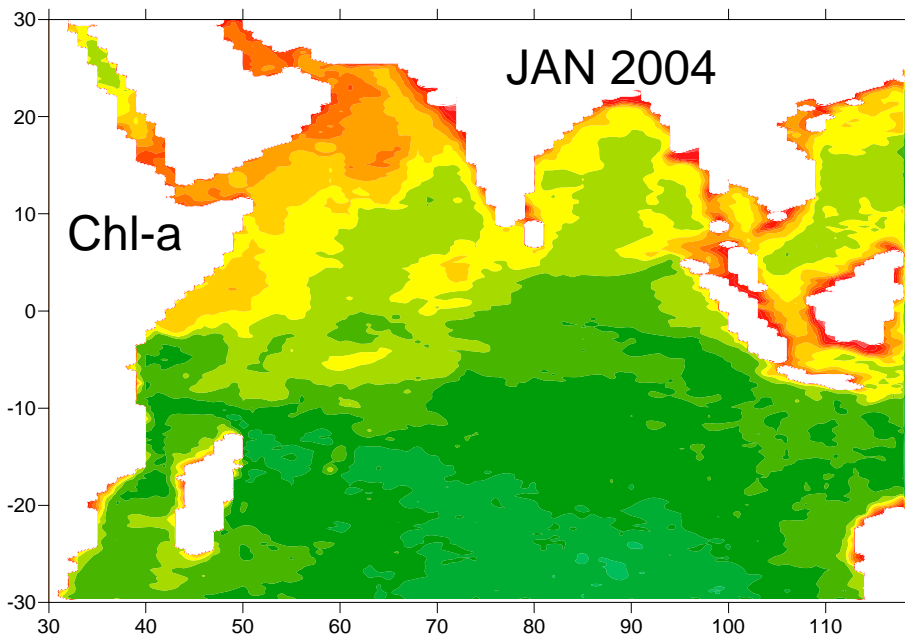


Biological index : Sea Surface Chlorophyll-a

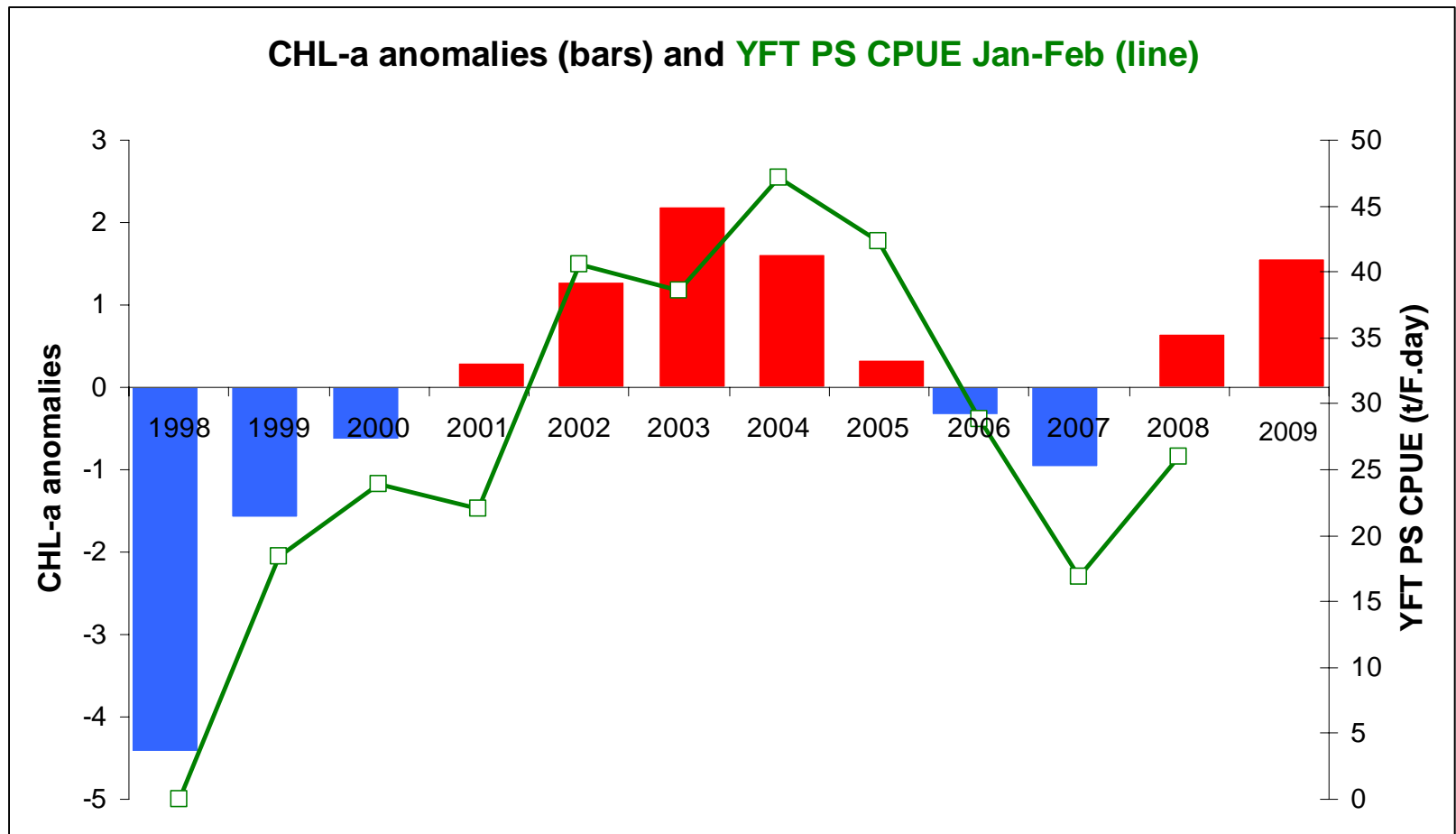


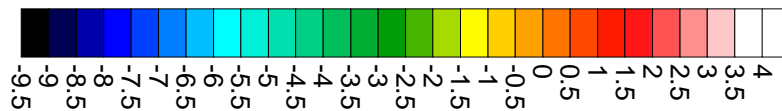
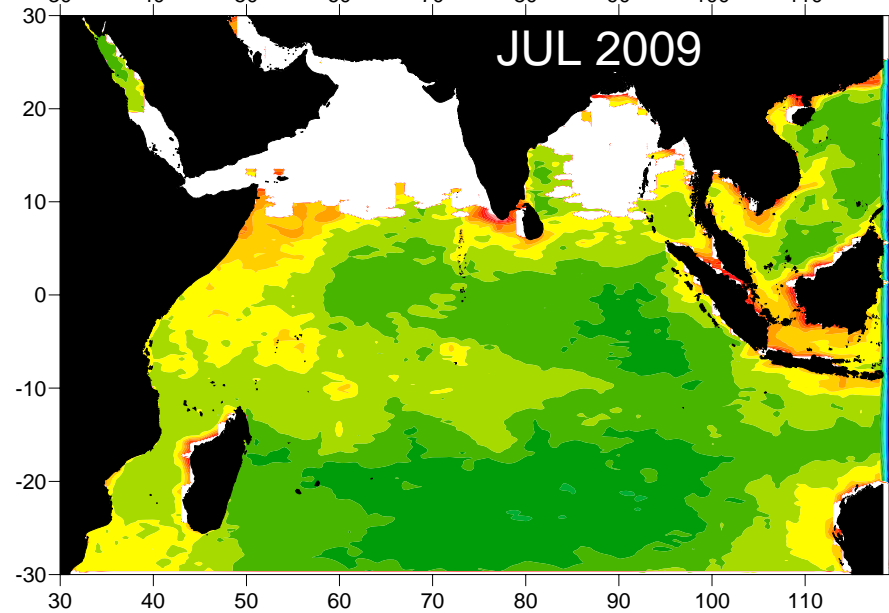
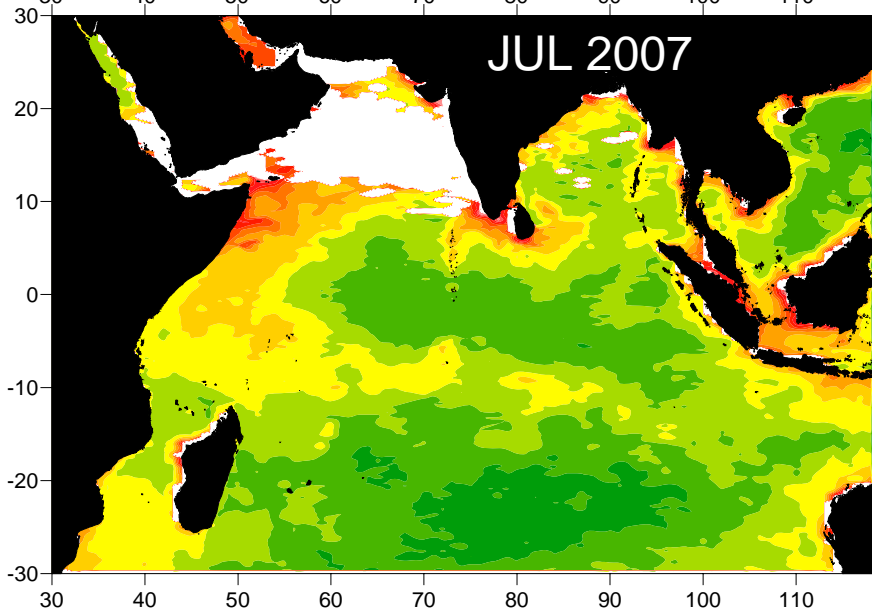
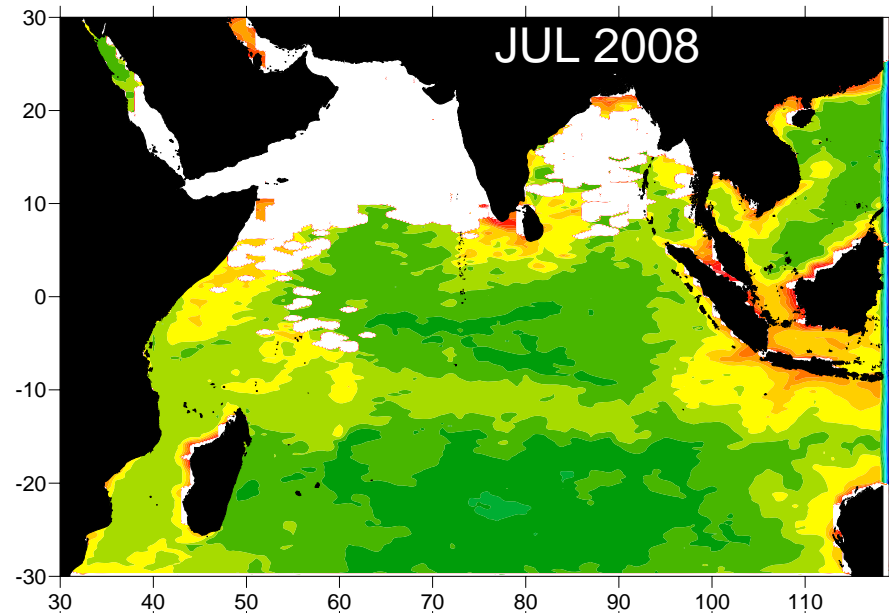
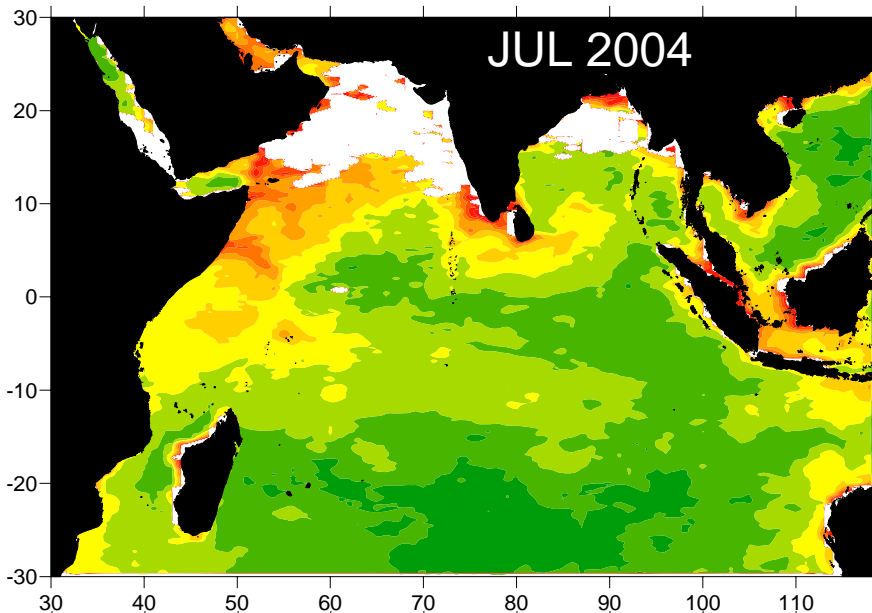
Chlorophyll Anomalies



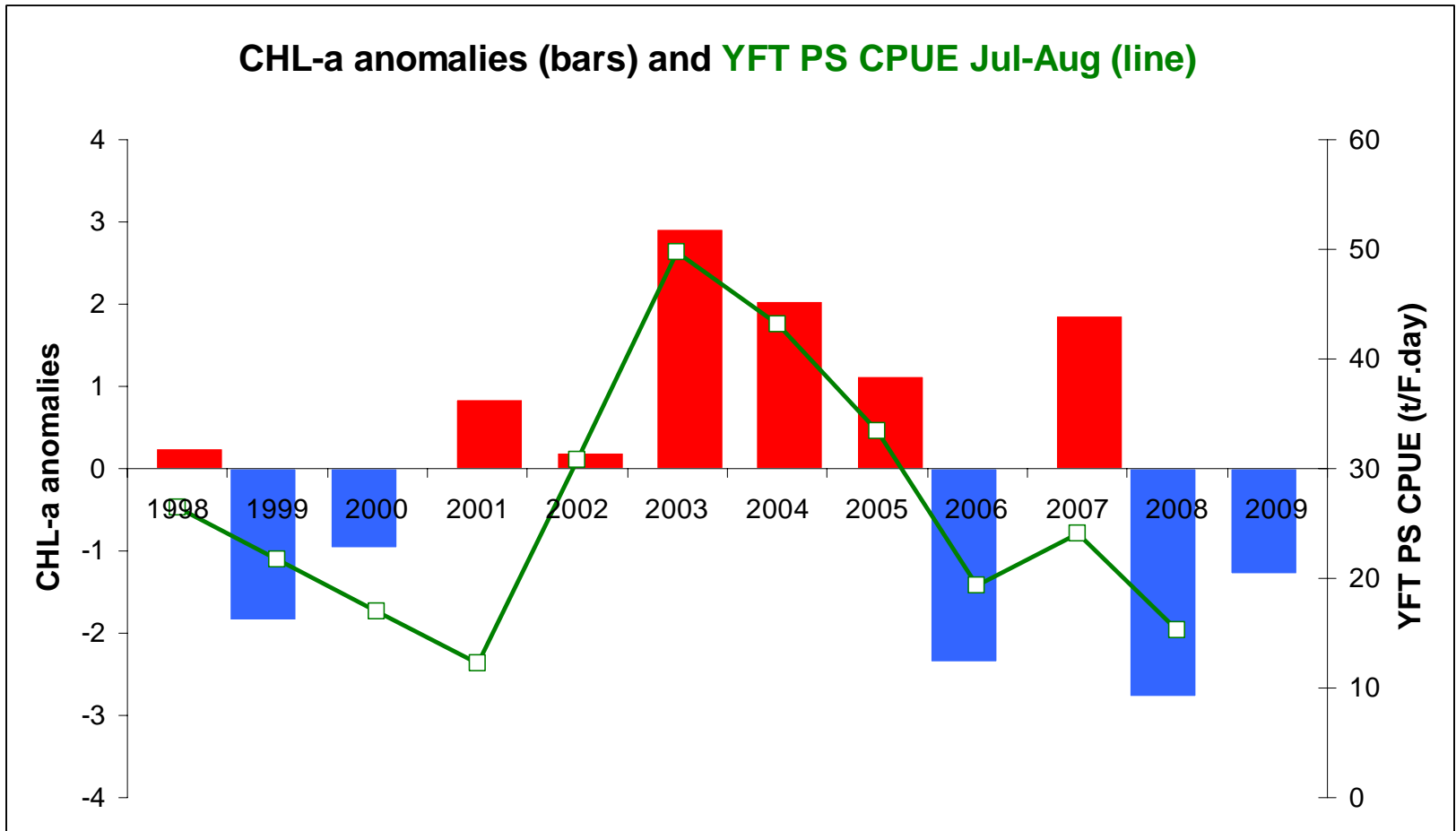


CHL-a Interannual variability during the YFT spawning season



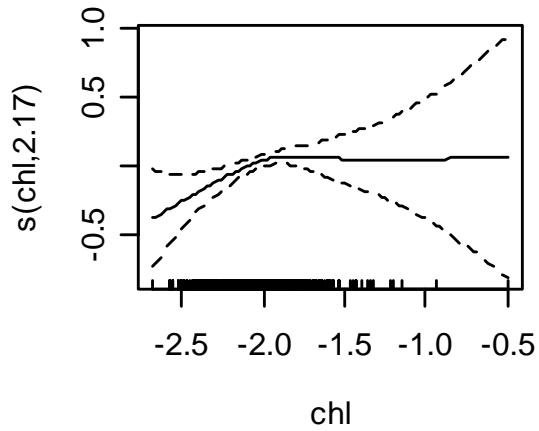


CHL-a Interannual variability during the southwest monsoon



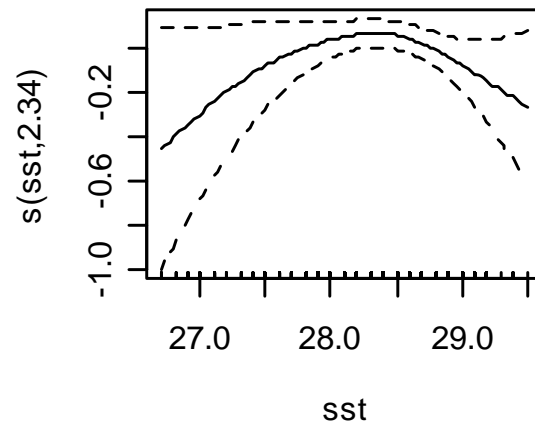
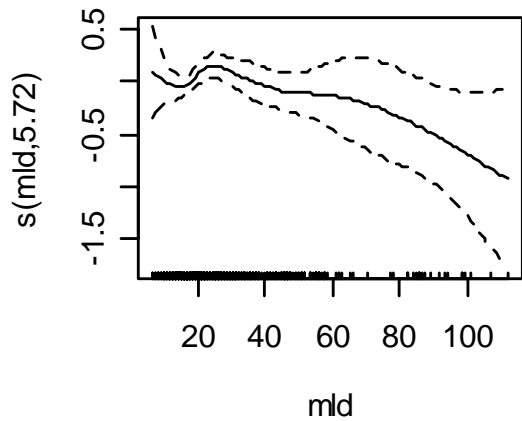
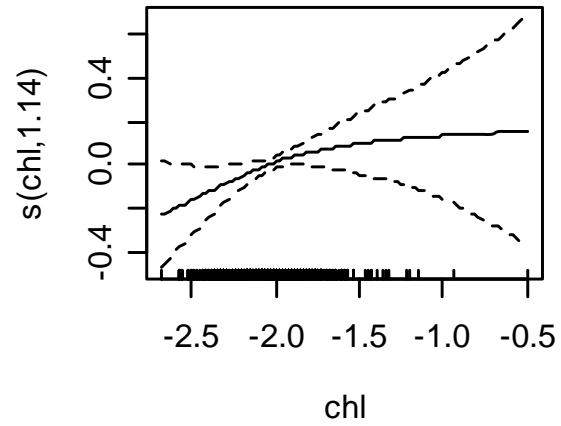
	edf	F	p-value
s(chl)	2.171	2.519	0.028642 *
s(mldt)	5.725	1.885	0.051597 .
te(long,lat)	12.128	2.242	0.000699 ***

Deviance explained : 10.7 %



	edf	F	p-value
s(chl)	1.143	2.482	0.060099 .
s(sst)	2.336	3.116	0.008737 **
te(long,lat)	12.279	2.437	0.000182 ***

Deviance explained : 9.64 %



Summary of results for West Indian Ocean (equat)

	Strong dipole situation	2008	2009
Wind stress	Anomalous easterlies	About average	About average
SST	Strong positive anomalies (~1°C)	Strong negative anomaly, 1st semester (- 0.6°C)	About average (0.1 to 0.2°C)
Depth 20°C	Deepening (20 to 40 m)	Slight shallowing (~10 m)	Slight shallowing (~10 m)
Chl-a	Highly depleted	Depletion, 1st semester	Enhanced, 1st semester