

Project Manta

East Australian Current (EAC) Region: Oceanographic conditions report

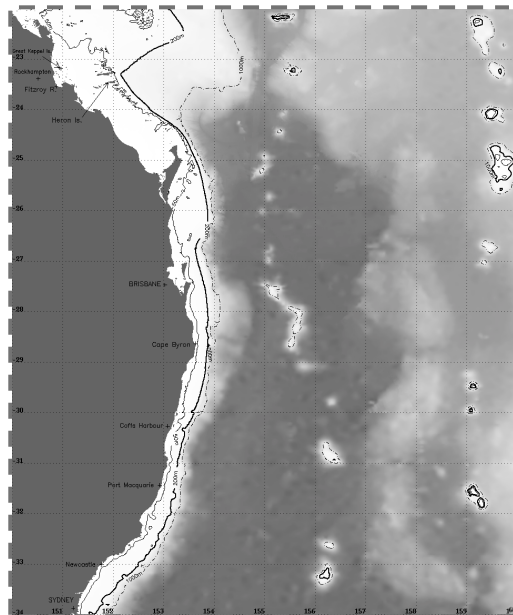
October 2012

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Ana Redondo-Rodriguez

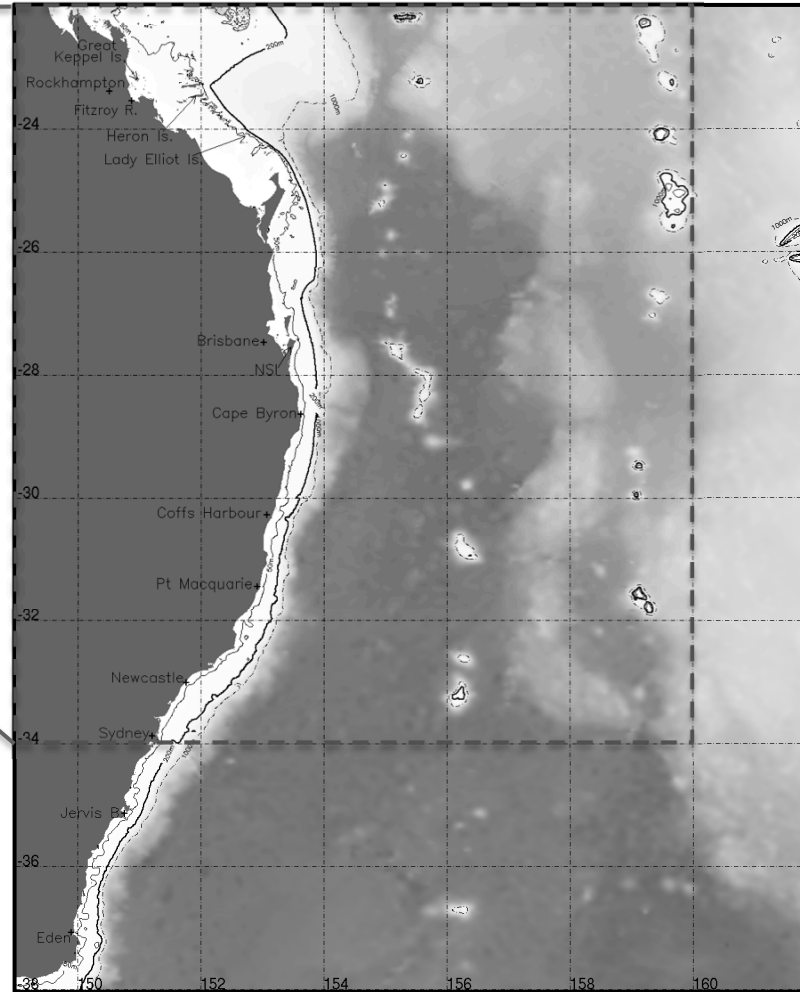
Supervised by Scarla Weeks

UQ-GPEM Biophysical Oceanography Group

EAC Region



Old region

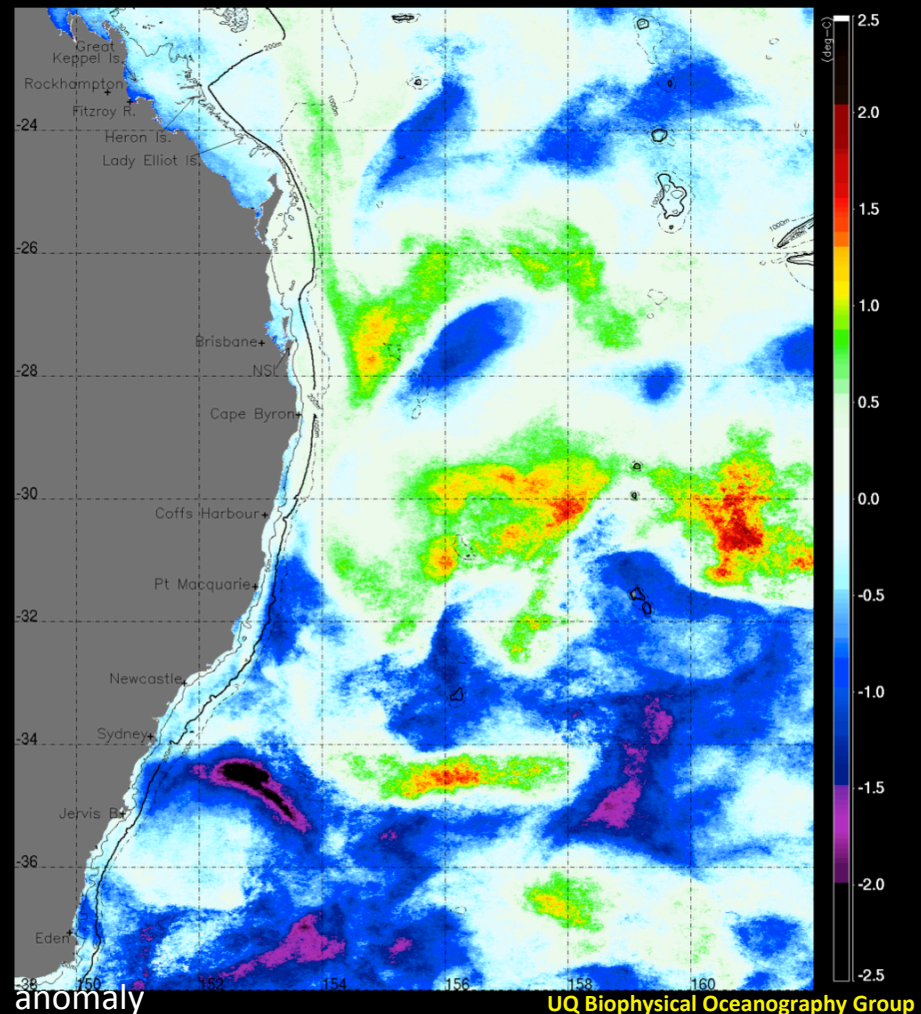
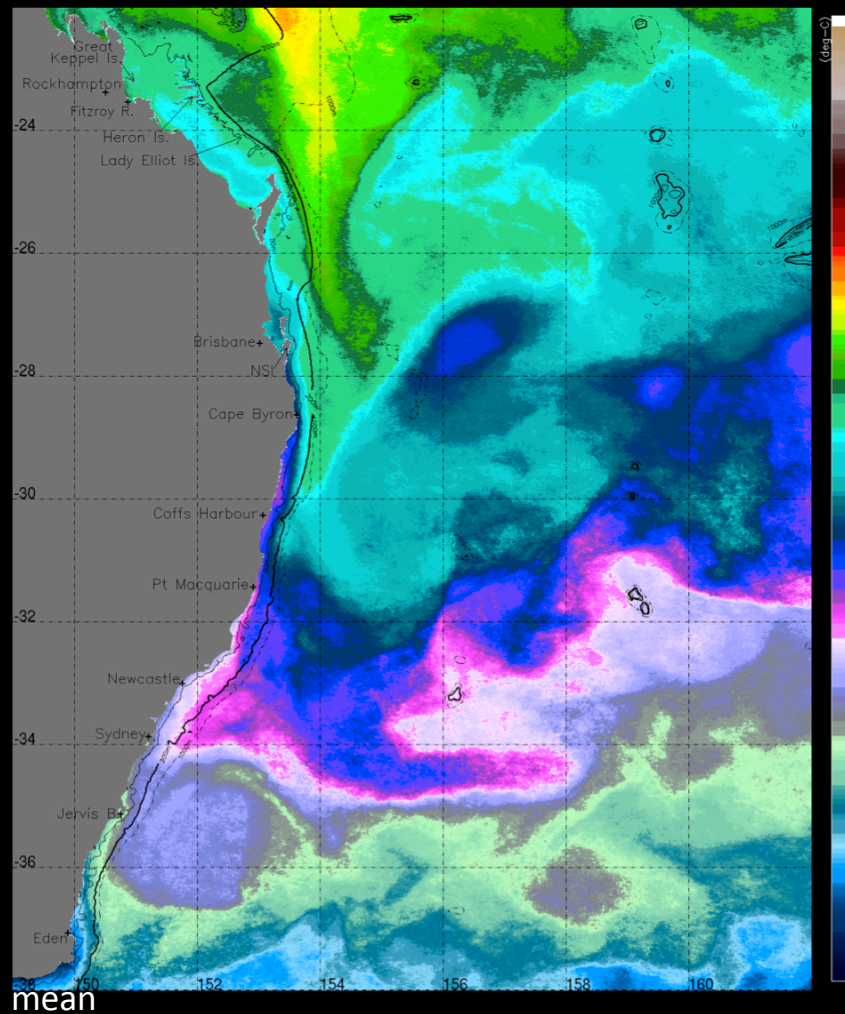


New region

The new extended region for the East Australian Current will now encompass the entire EAC and its extension as it flows poleward (and generate meanders/eddies) along the eastern Australian seaboard

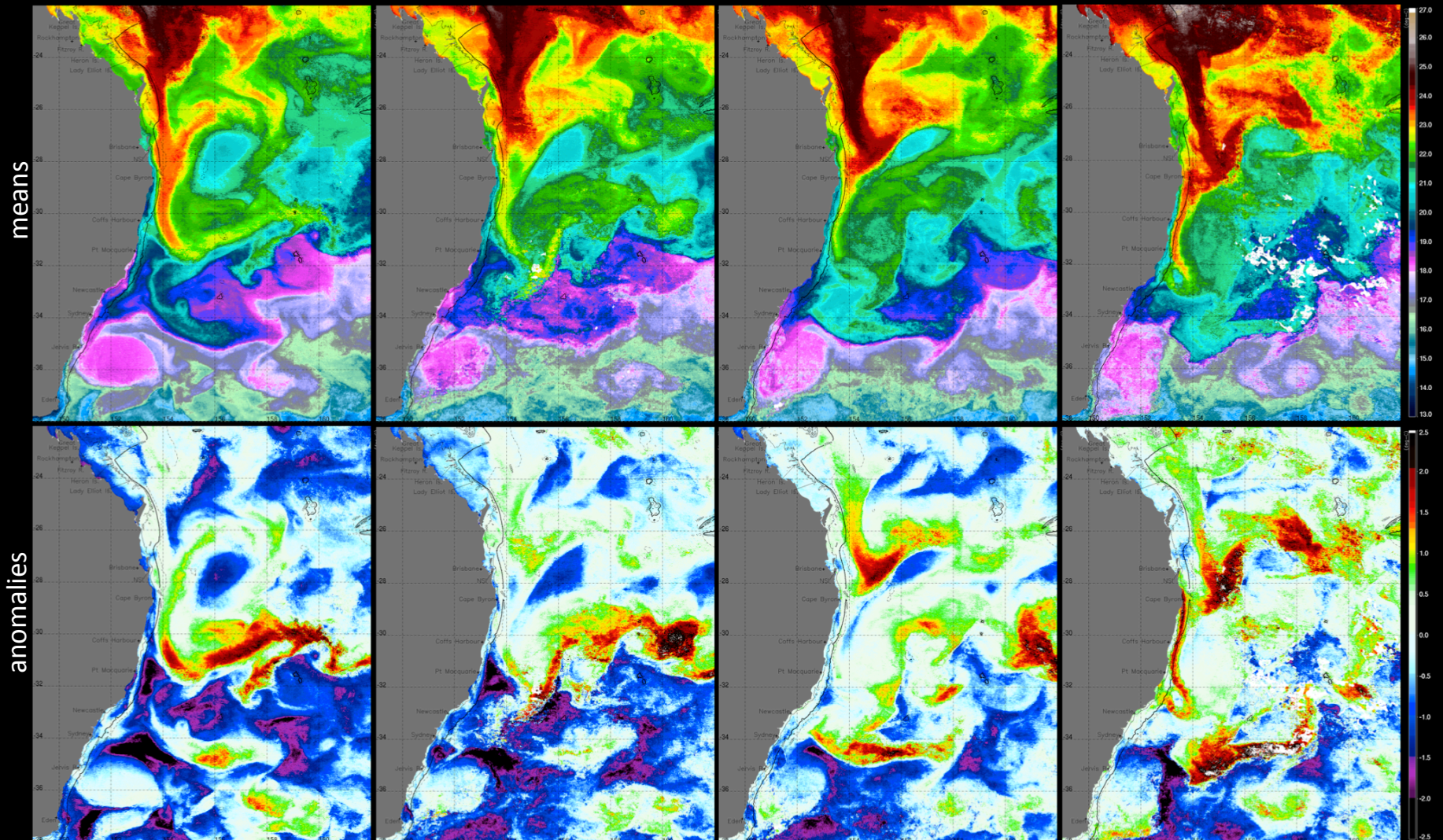
EAC Monthly MODIS SST (D+N): October 2012

- The EAC is apparent as a tongue of warm water along the 200m isobath but with weakened signature south of 28°S before separating from the coast at around 31°S
- Average conditions are apparent in the northern portion of the region while intense negative anomalies characterise most of the southern portion. Moderate to strong positive anomalies offshore along 30°S corresponding to the Tasman Front can be observed
- The strong cold-core (cyclonic) eddy off Port Macquarie that impeded the poleward flow of EAC for the last two months has significantly dissipated
- Moderate to intense negative anomalies apparent along the frontal boundary of a huge anticyclonic eddy off Jervis Bay



EAC weekly dynamics: starting from 1-7 October 2012

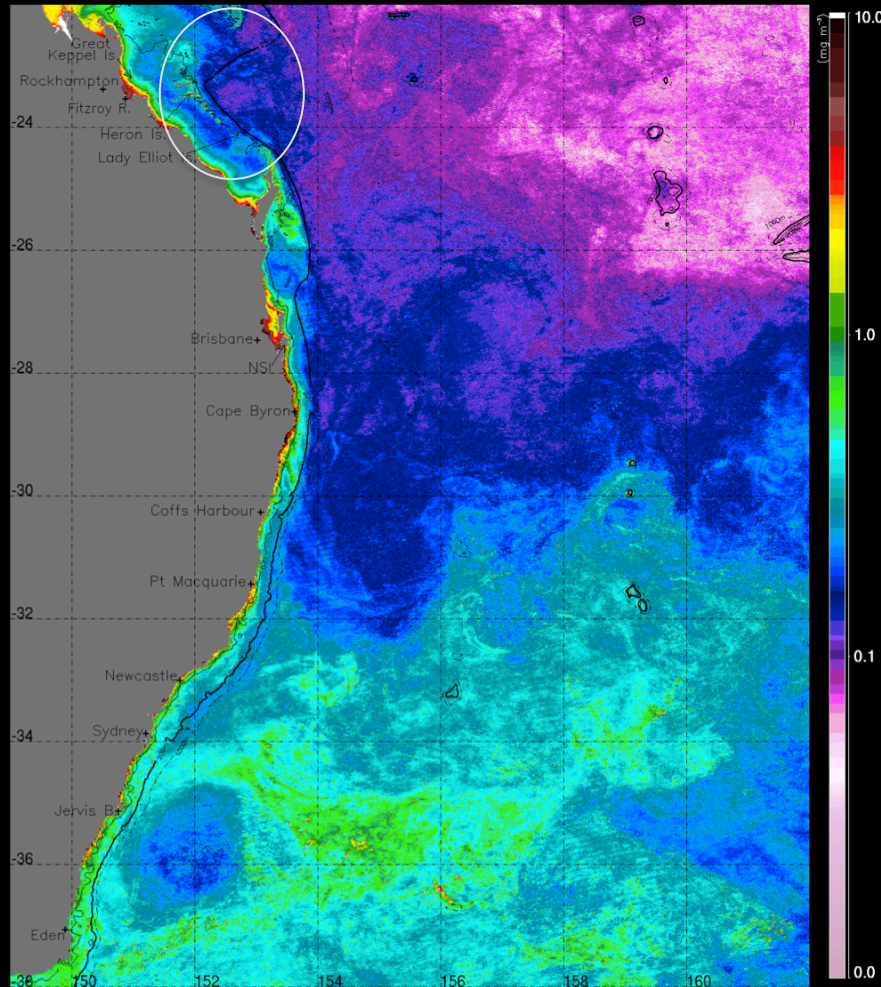
- Weekly images highlight the variability of the EAC and the larger region. Surface signature of the Capricorn Eddy is discernable in the SST mean during the first week
- Intense positive SST anomalies correspond to the EAC boundary current, with southern limb encroaching onto the shelf during the 4th week and forming a cyclonic eddy centered at 32.5°S and 153.5°E
- Intense negative SST anomalies in southern & offshore portion, particularly along the frontal boundary of the huge anticyclonic eddy off Jervis Bay



Colour scale ranges: Means (13 to 27 °C), Anomalies (-2.5 to 2.5 °C)

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EAC Monthly MODIS Chlorophyll: October 2012



- The extent of the influence of the warm oligotrophic EAC waters is apparent in the monthly chlorophyll image, with low chlorophyll concentrations typical of subtropical warmer waters in the northern half of the region, and higher chlorophyll concentrations in temperate waters of the south
- Intrusions of this low-chlorophyll water into the Capricorn Channel and Curtis channel also apparent (encircled area)
- Higher chlorophyll concentration particularly along the frontal boundary of the anticyclonic eddy centered off Jervis Bay

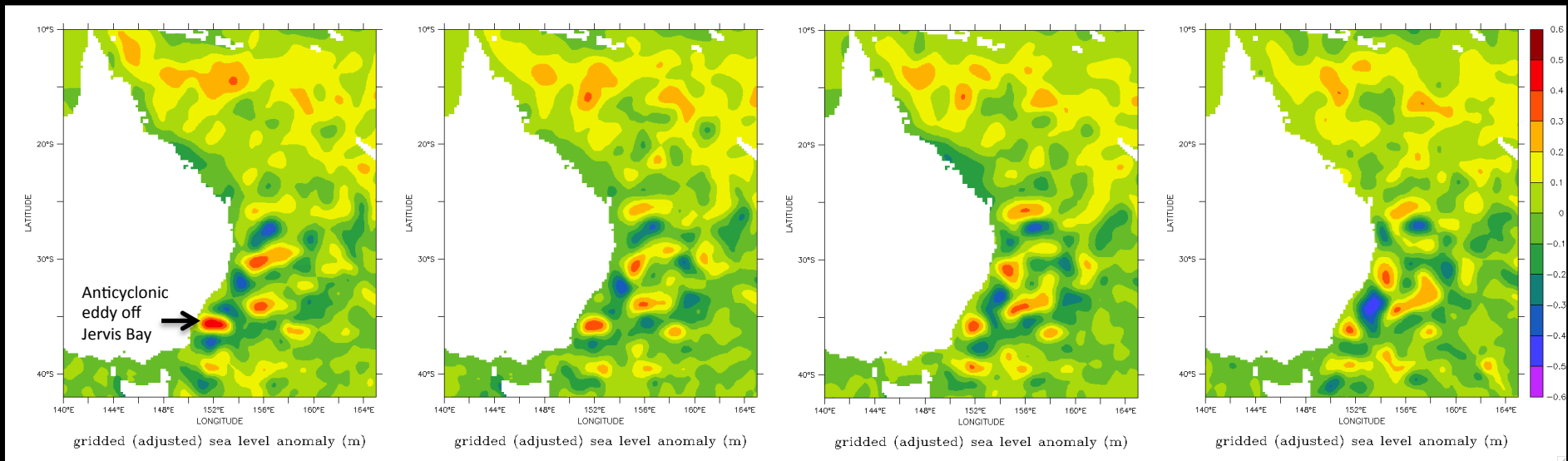
IMOS Sea Level Anomalies

7 Oct 2012

14 Oct 2012

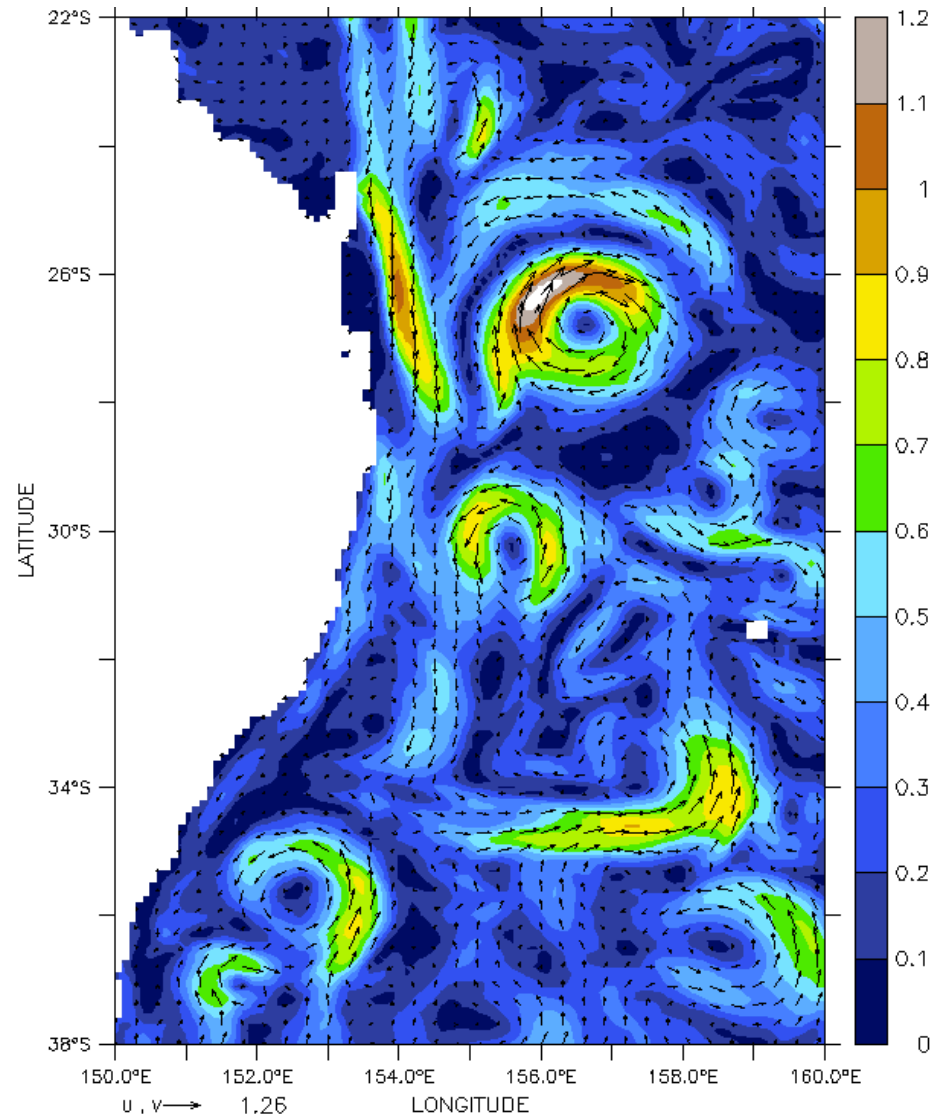
21 Oct 2012

28 Oct 2012



Sea level anomalies highlighting the high eddy-activity in the region, corresponding with the MODIS images

OceanMaps : October 2012 mean



Depth integrated (0-15m) currents from OceanMaps reveal an intensified EAC just off Fraser coast but significantly weakening south of 28°S.

Also apparent in this map is the very high eddy activity in the region corresponding to the dynamics shown in the preceding MODIS SST and Chlorophyll images.