

# **Project Manta**

## **East Australian Current (EAC) Region: Oceanographic conditions report**

September 2012

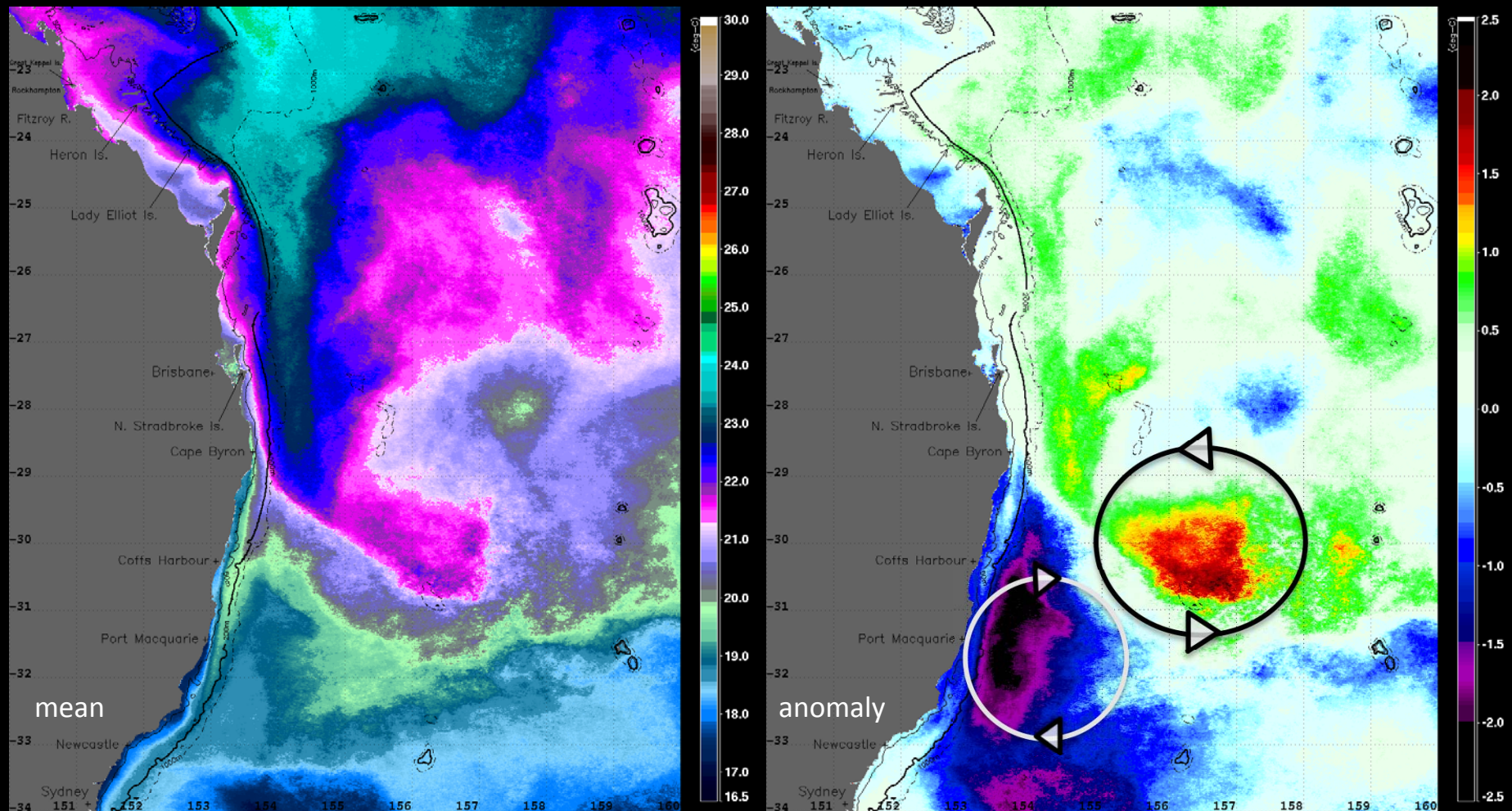
Marites M. Magno-Canto  
Ana Redondo-Rodriguez

Supervised by Scarla Weeks

UQ-GPEM Biophysical Oceanography Group

# EAC Monthly MODIS SST (D+N): September 2012

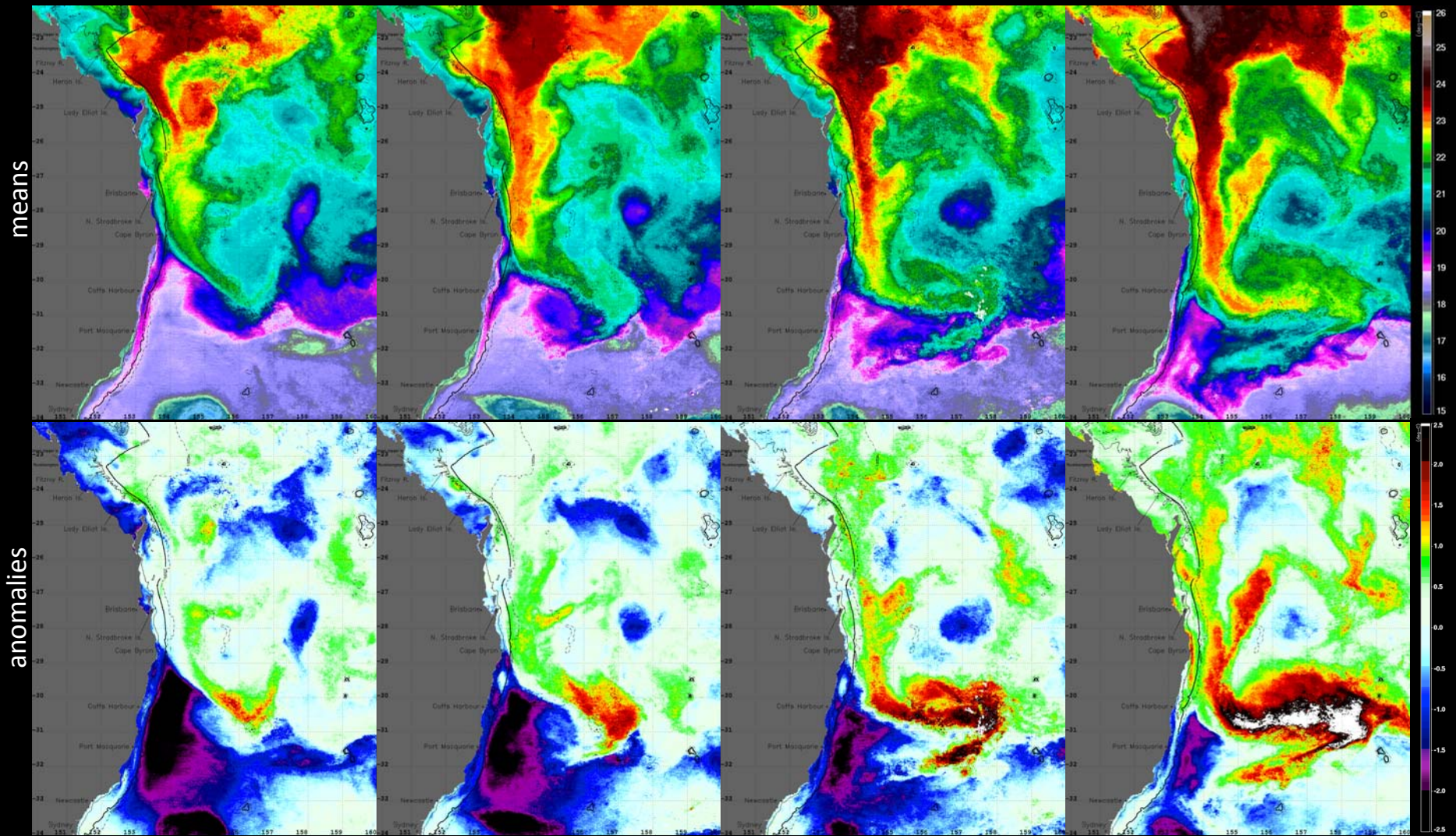
- Similar to August, intense negative SST anomalies along the continental shelf edge corresponding to a strong cyclonic (cold core) eddy is also apparent but core located a bit further south off Port Macquarie
- Likewise, southward progression of the EAC disrupted by this cold-core eddy blocking and forcing the main current to flow eastward, separating from the shelf edge just south of  $\sim 29^\circ\text{S}$ , forming an anticyclonic eddy (i) centred at  $\sim 30.25^\circ\text{S}$  (black circle and arrow) and (ii) core characterised by strong positive SST anomalies





## EAC weekly dynamics: starting from 1-7 September 2012

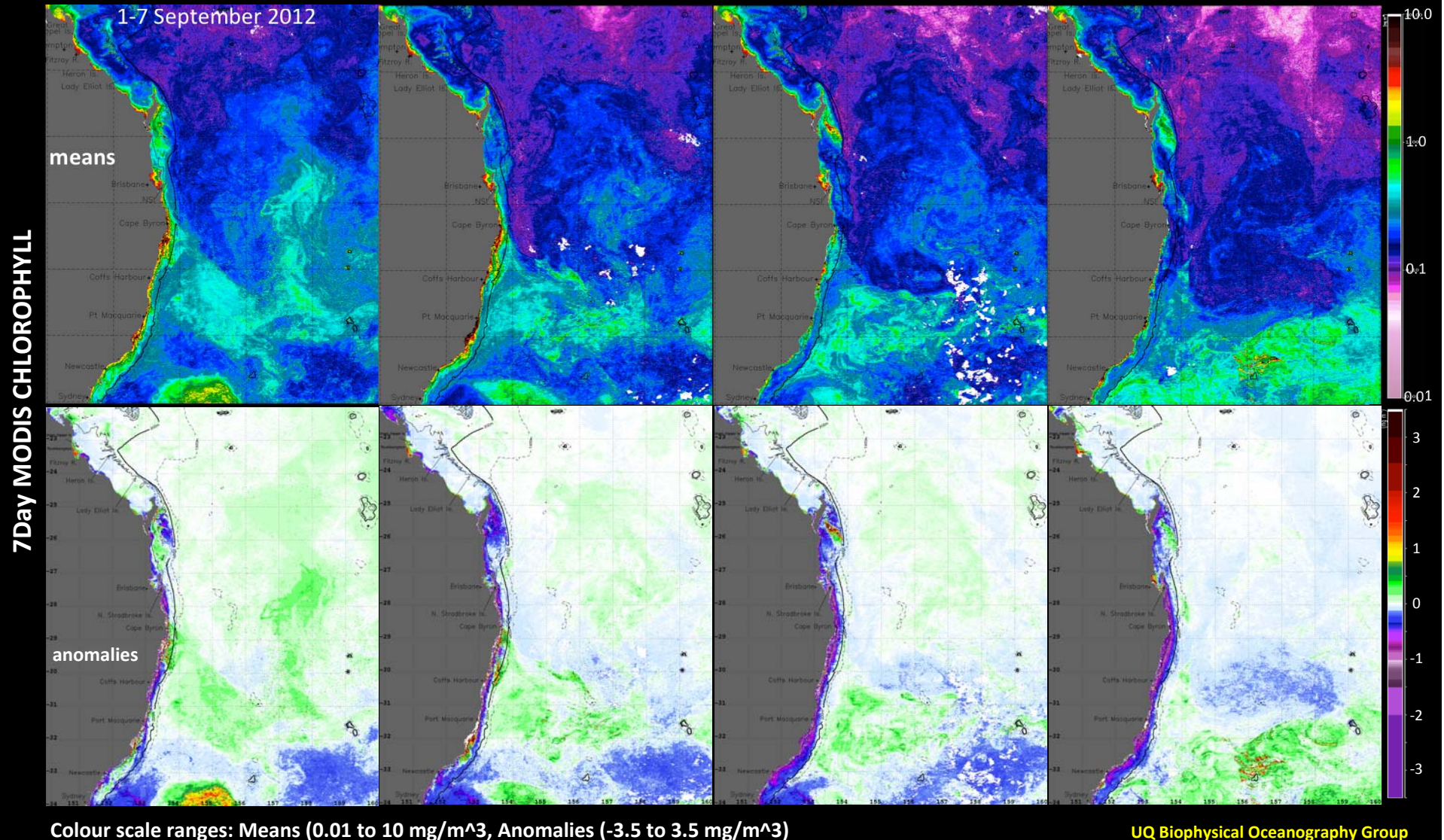
- Weekly images shows the overall progressive intensification of the EAC with strongest positive anomalies during the 4<sup>th</sup> week, both along the shelf and offshore (from south of ~29°S) with SST difference exceeding 3°C compared to a 10yr long term mean
- In contrast, intense negative anomalies corresponding to the cold-core eddy progressively weakens (i.e., both less intense and spatially narrower) towards the end of the month, although stayed very close to the shelf edge, allowing portion of the warm retroflected EAC to progress southwestward



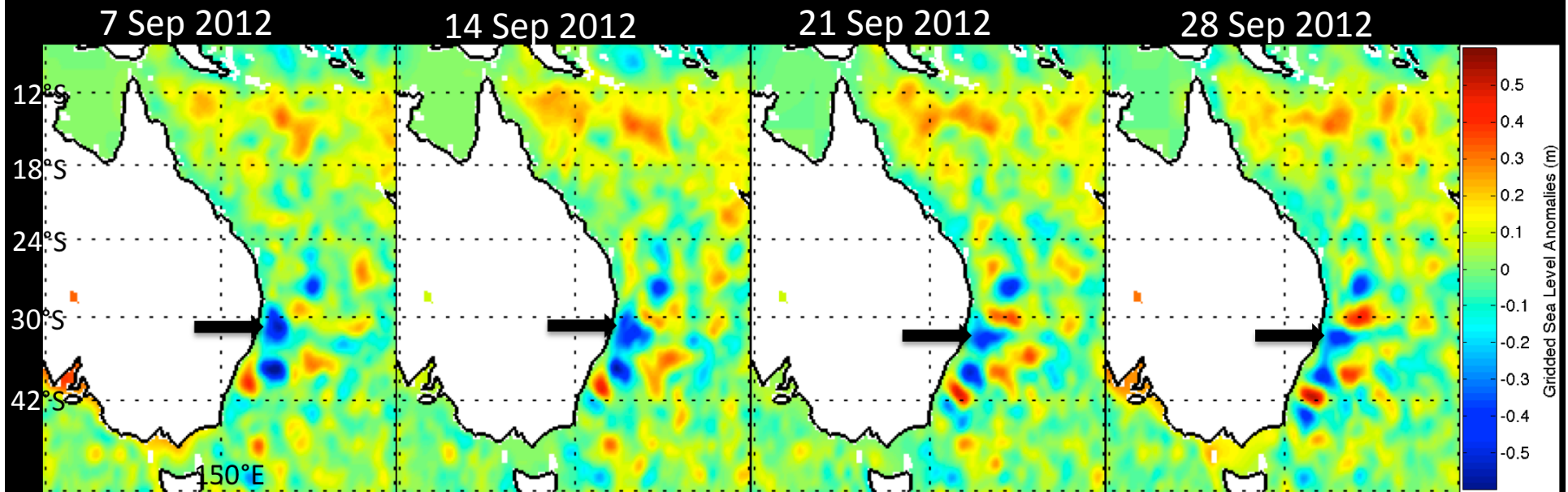
Colour scale ranges: Means (15 to 26 °C), Anomalies (-2.5 to 2.5 °C)



- Elevated chlorophyll concentration along the length of the shelf, especially during the first two weeks. High concentration also apparent just south of Fraser Is. during the last two weeks resulting from sharp frontal boundaries between shelf waters and intensified southward flowing EAC
- Similar to August, high chlorophyll concentration entrained offshore coincident with the sharp frontal boundaries between the two eddies, but highest during the first week for September. Also note high chlorophyll signal offshore of 34°S probably due to a cyclonic (cold-core) eddy



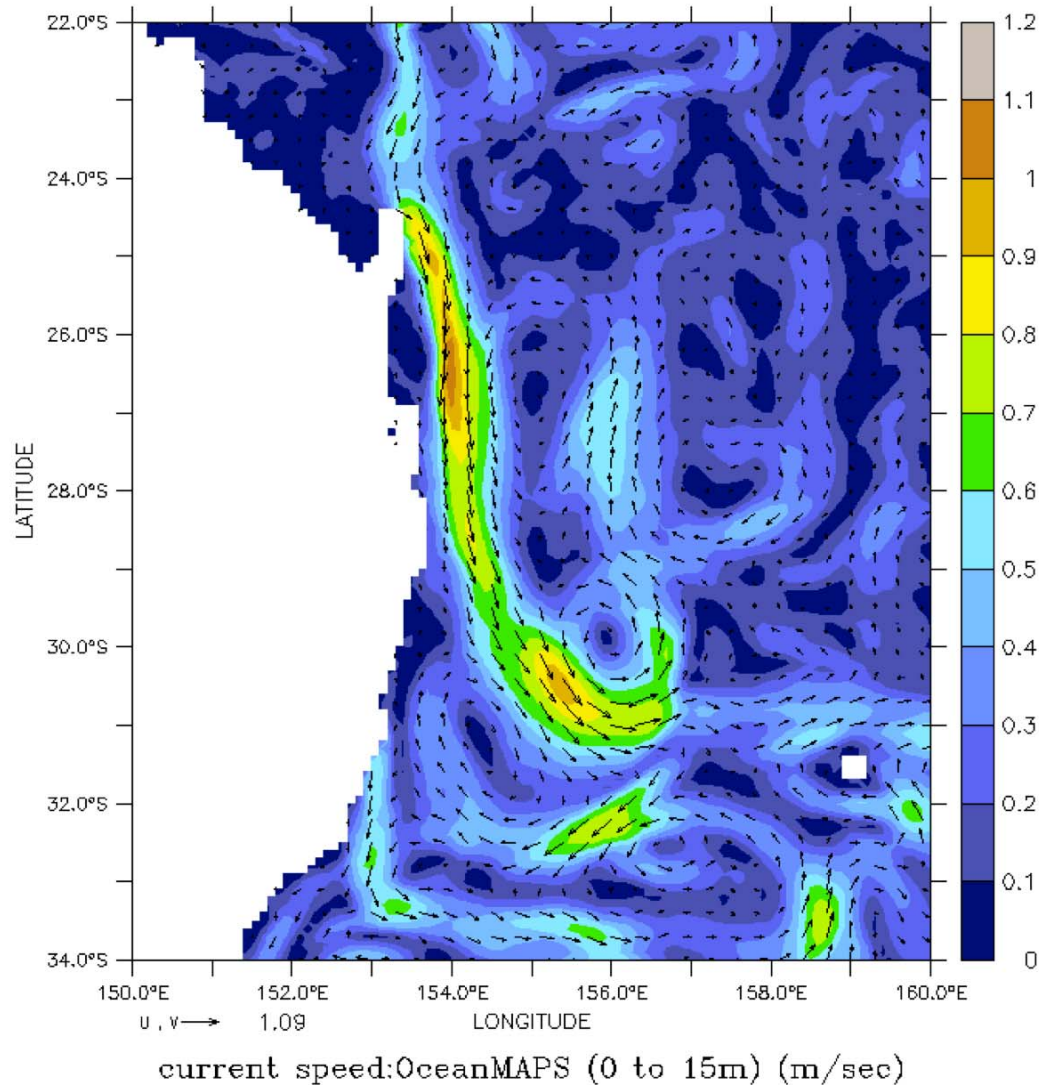
# IMOS Sea Level Anomalies



Sea level anomalies highlighting the cyclonic (cold-core) eddy that impeded the southward flow of the EAC, progressively weakening towards the 4<sup>th</sup> week



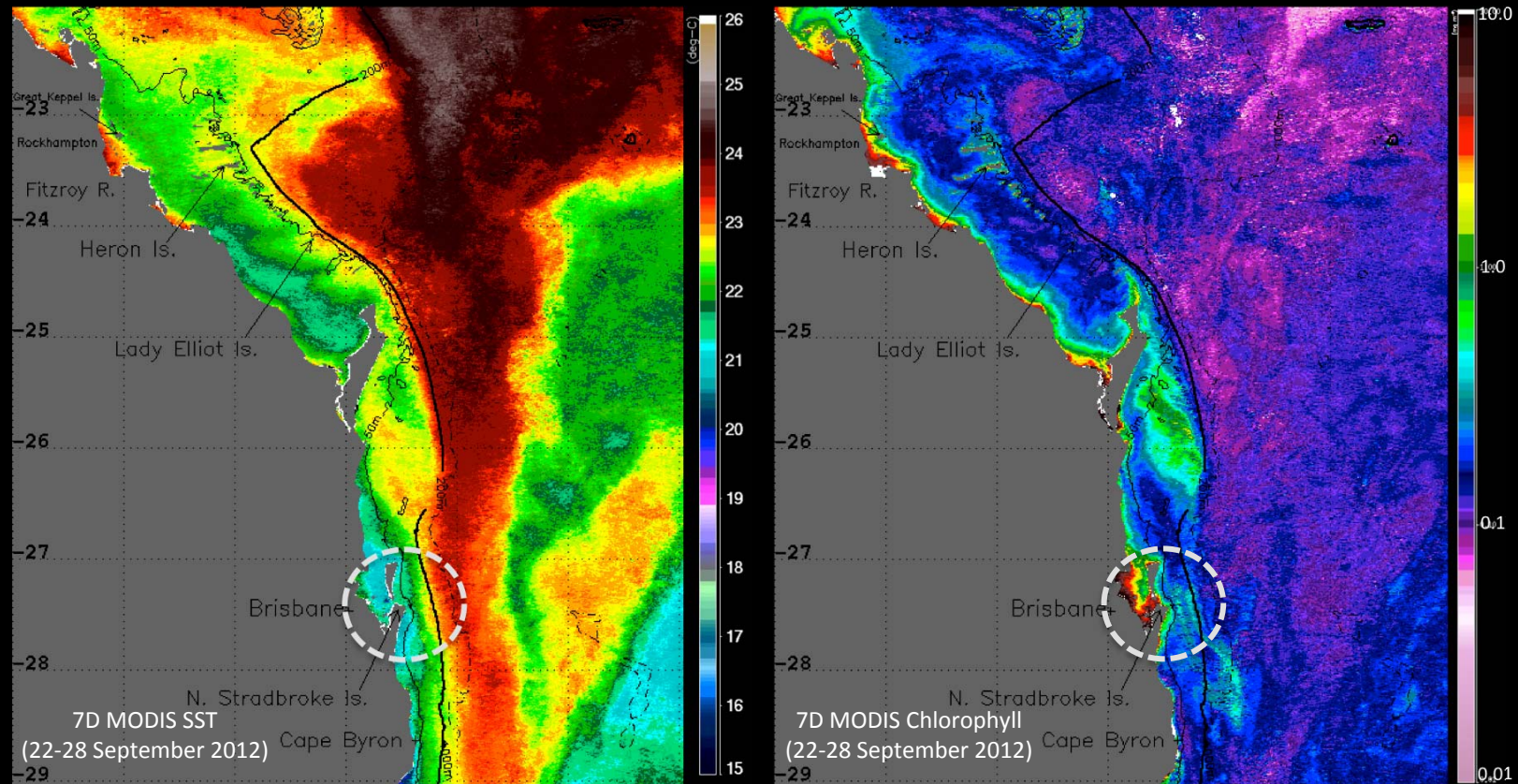
# OceanMaps : September 2012 mean



Depth integrated (0-15m) currents from OceanMaps reveal the strong EAC

- (i) flowing close along the shelf edge
- (ii) more intensified just off Fraser coast
- (iii) southern limb impeded by a cyclonic (cold-core) eddy and forced to flow eastward forming an anticyclonic (warm-core) eddy

# Manta watch



- Sightings reported for LEI in small numbers
- Feeding manta sighted off Noosa on the 3<sup>rd</sup> September
- Large number of 'manta rays' sighted off North Stradbroke by end of September probably influenced/ driven by the relatively high chlorophyll concentration in the area resulting from frontal features formed between the colder shelf waters and warmer EAC waters. This sighting, in particular, could either be an aggregation of devil rays (observed twice in the past at this time of the year) or manta rays passing by  
(Source: Lydie Couturier, PhD Candidate – Project Manta)