

# NERP

## Torres Strait / GBR environmental conditions report: Recent status and predictions

9 November 2011

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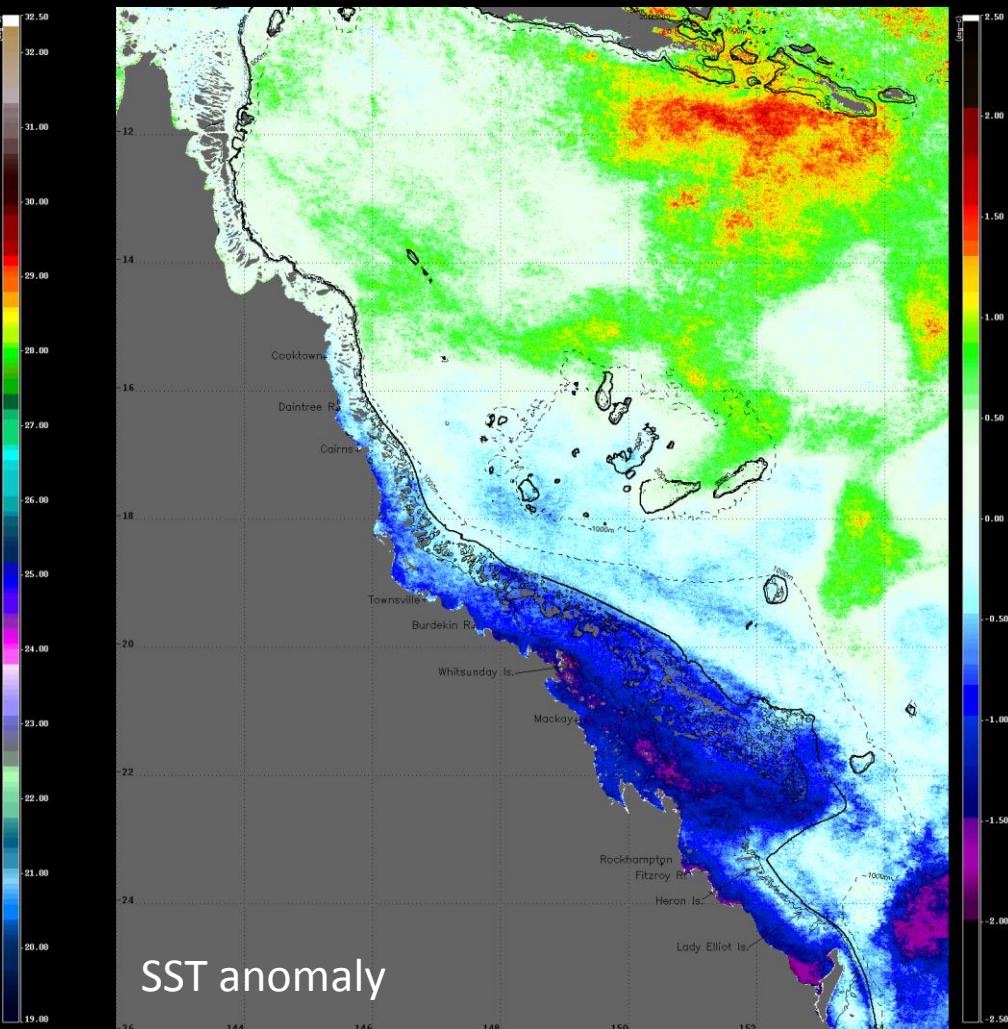
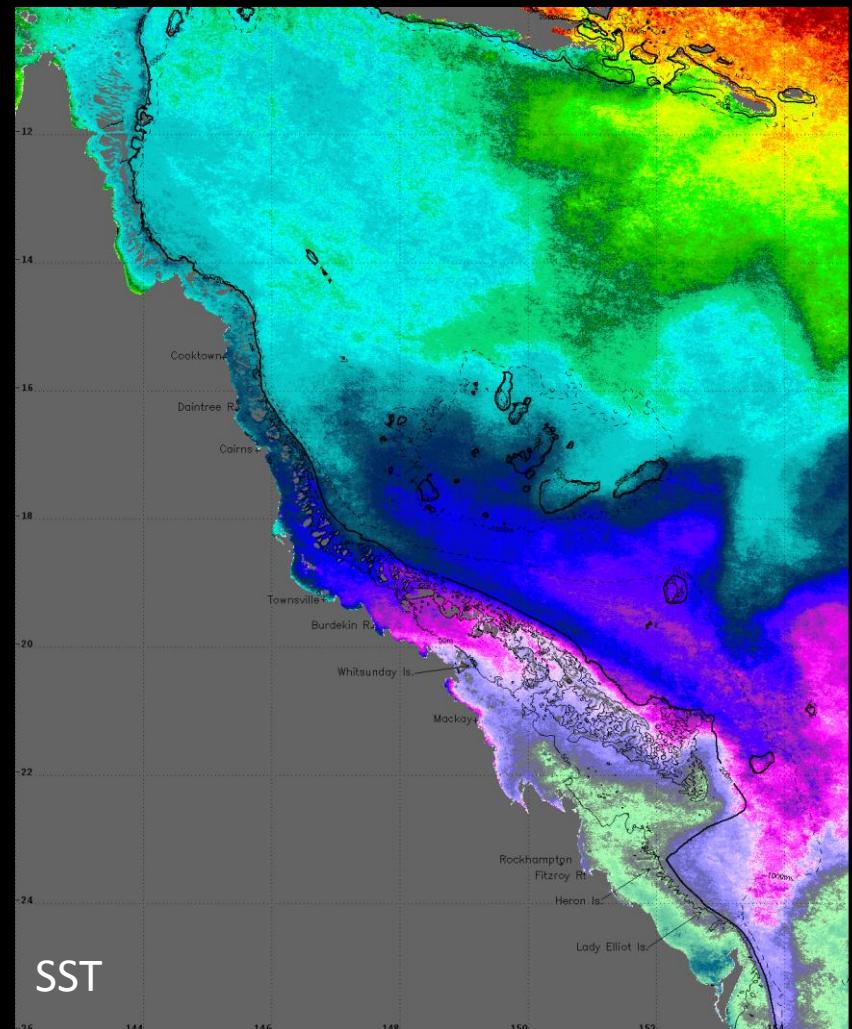
# Outline

- Overview
- Recent SST and in situ Temperature evolution
- Recent Chlorophyll-*a* Concentration values
- GBR SST forecast (POAMA)
- Coral Bleaching Outlook (NOAA:CRW)
- Surface conditions in the tropical Pacific
- ENSO evolution and predictions

# Overview

- Close to average SST for the Torres Strait / northern GBR area during October but strong negative SST anomalies south of  $\sim 17^{\circ}\text{S}$  on the inner GBR reefs.
- Forecast of close to normal SST conditions in the upcoming months (no bleaching alert).
- La Niña conditions established in the Pacific and are expected to strengthen and continue through the summer.

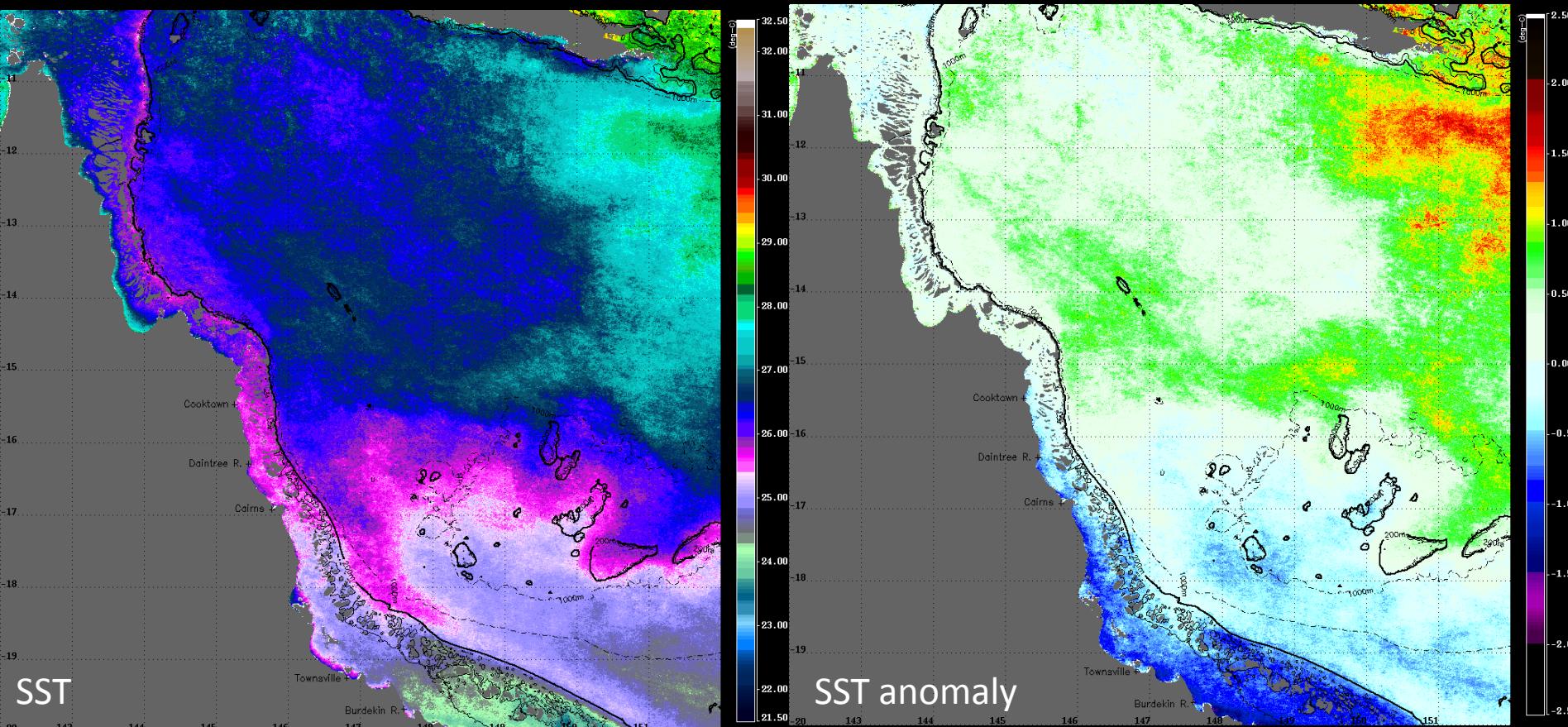
# Modis SST (day+night): October 2011



## Note:

- Strong negative SST anomalies persist on the GBR reefs south of  $\sim 17^{\circ}\text{S}$
- Strong EAC flow southward adjacent to the continental shelf
- Intensified SST positive anomalies in the Coral Sea

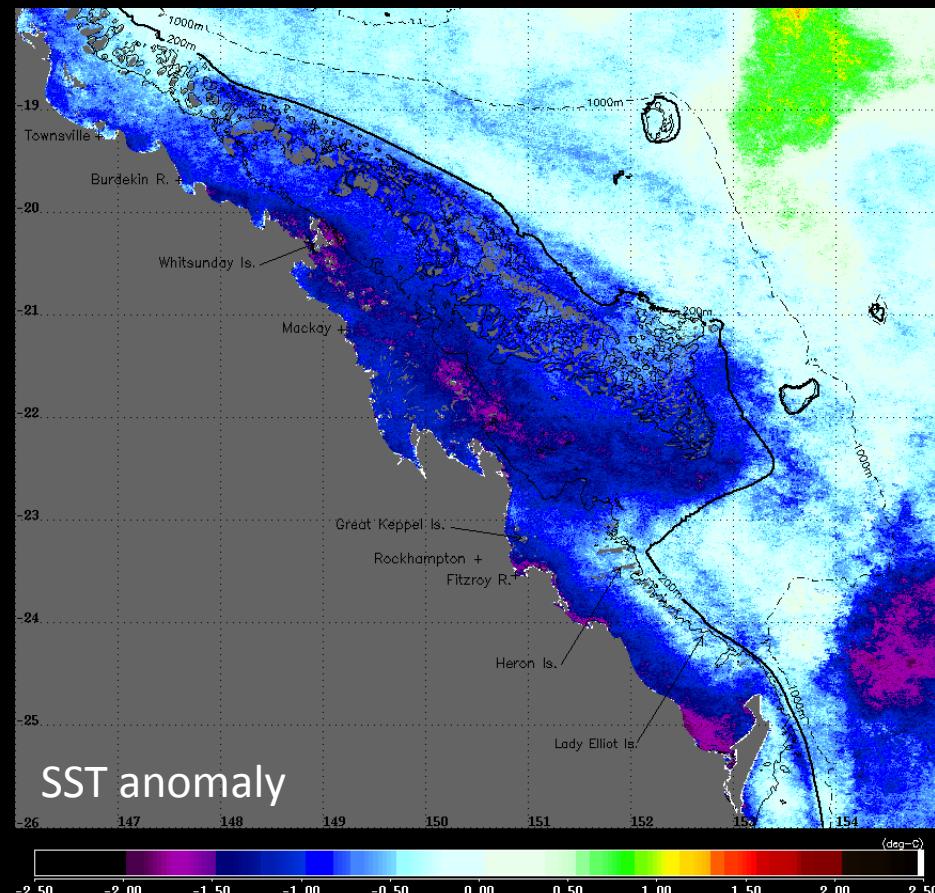
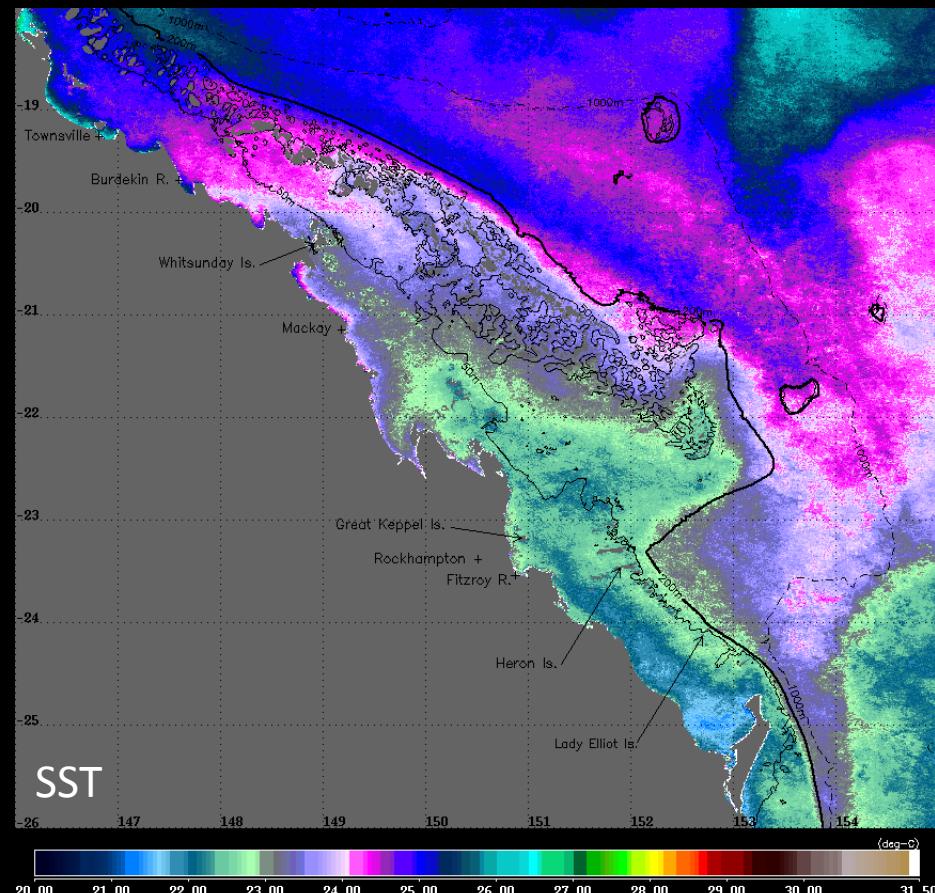
# Torres Strait / northern GBR MODIS SST: October 2011



Note: SST scale adjusted for N-GBR

- Mostly average conditions for the Torres Strait and N-GBR area, with the exception of the inner reefs south of ~17deg S
- Intensified SST positive anomalies in the Coral Sea, particularly in the region SE of Papua New Guinea

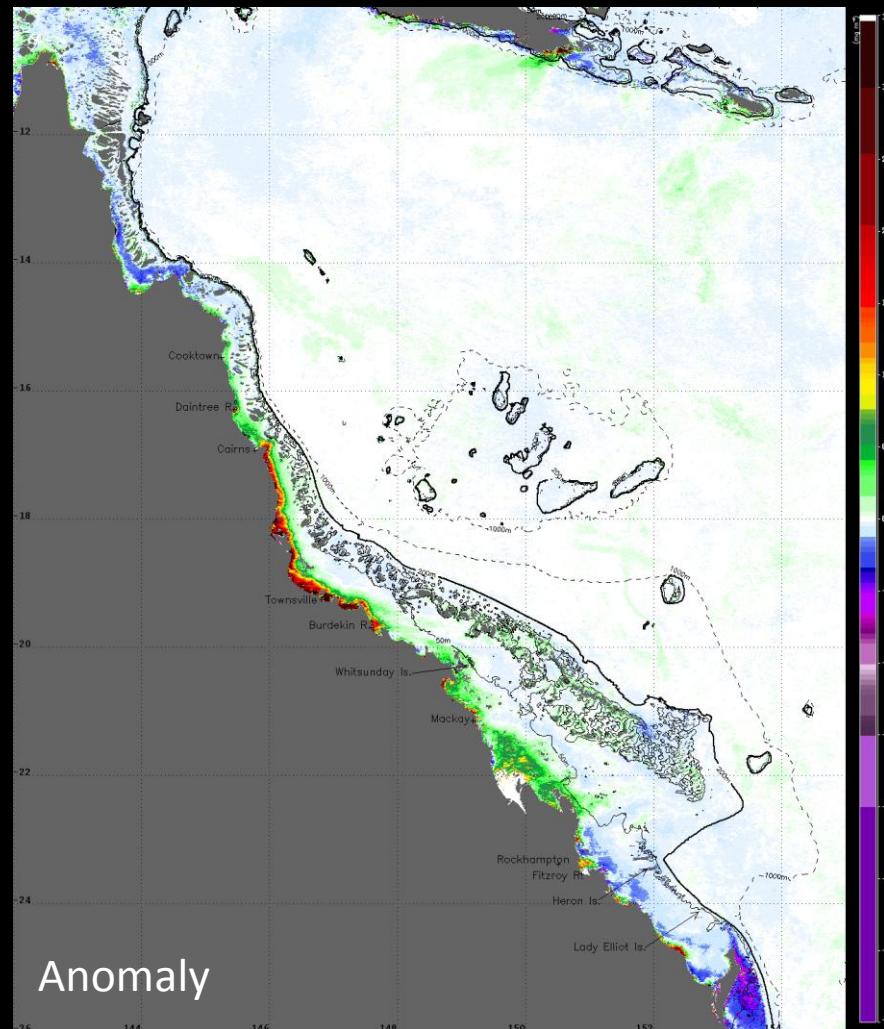
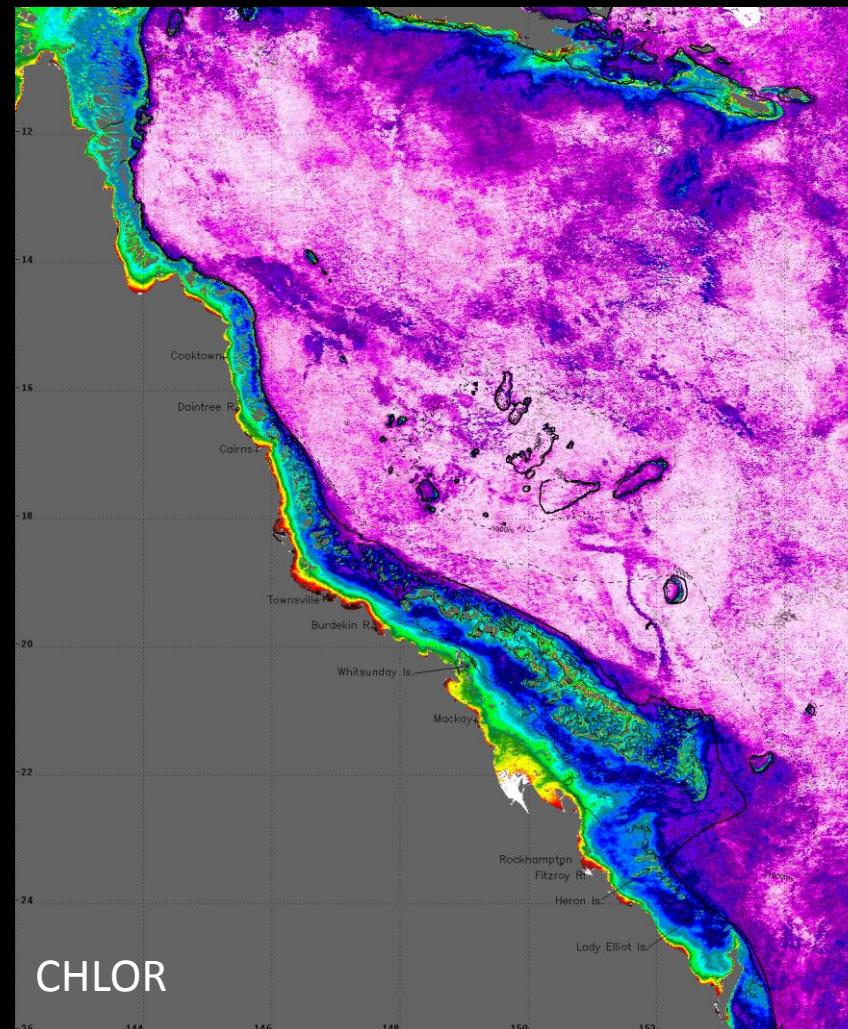
# Southern GBR MODIS SST: October 2011



Note: SST scale adjusted for S-GBR

- Strong negative SST anomalies persist on the southern GBR during October
- Intensified EAC flow confining negative SST anomalies, leading to close to average conditions for the Capricorn Bunker Reefs

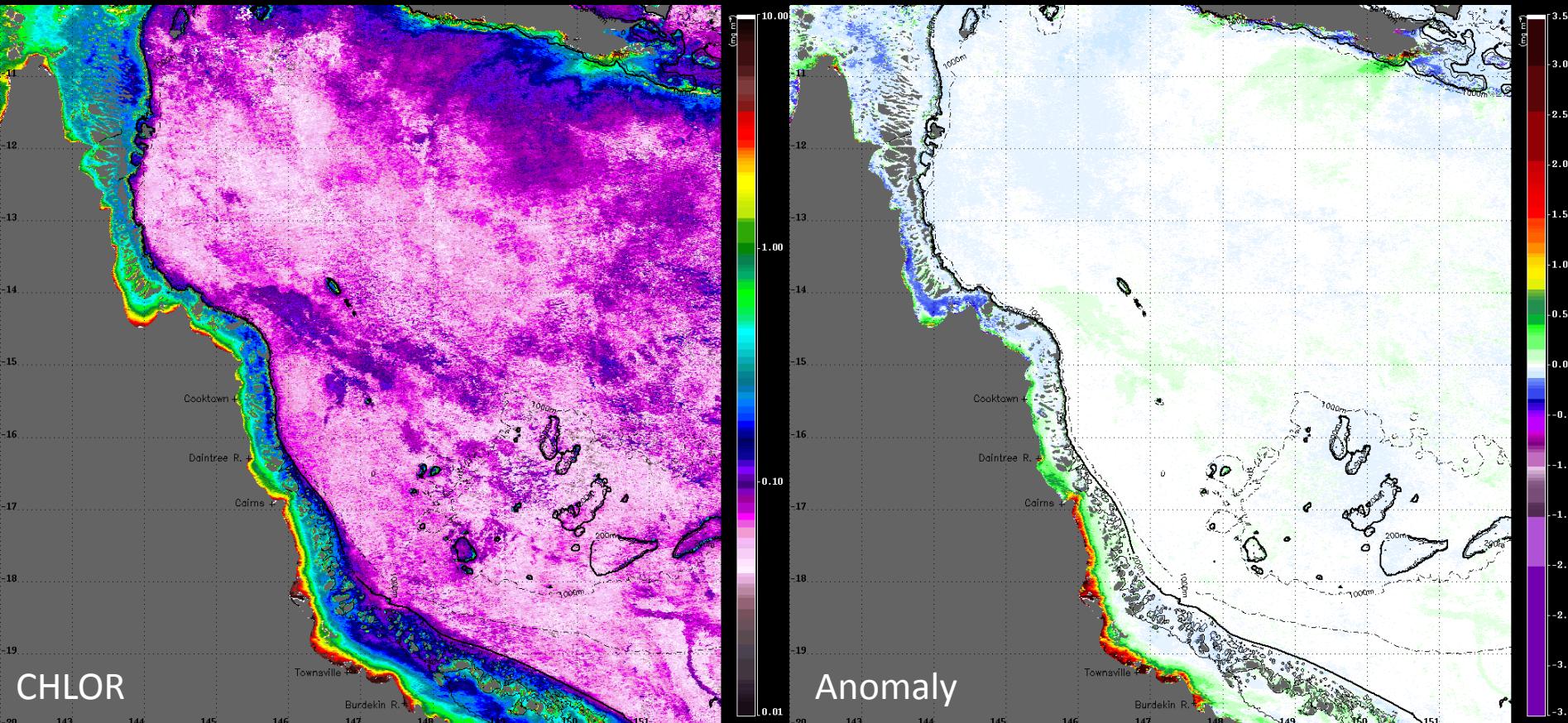
# MODIS Chlorophyll-*a* concentration: October 2011



## Note:

- For October, close to average chlorophyll concentration levels across the Torres Strait and the length of the GBR, except for:
- increased concentrations in the coastal waters from Burdekin River northward towards Cairns, likely due to river discharge & mixing of the water column

# Torres Strait / northern GBR MODIS Chlorophyll-*a* concentration October 2011

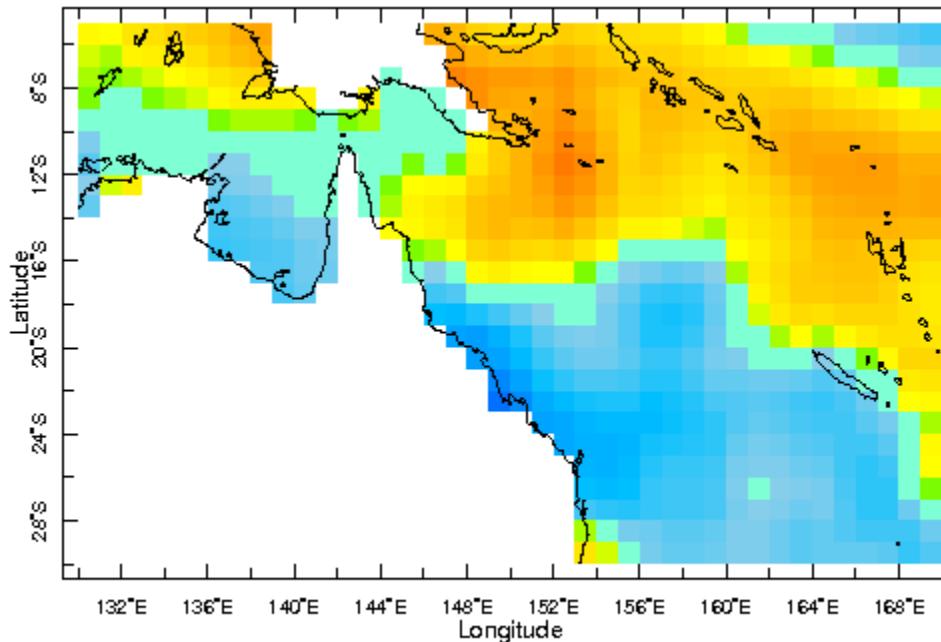


## Note:

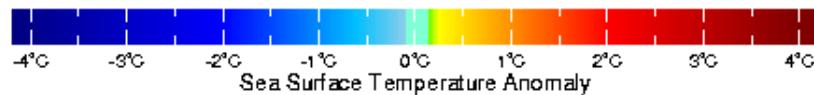
- Close to average chlorophyll concentrations in the Torres Strait region, high concentrations on inshore GBR reefs south of  $\sim 17^{\circ}\text{S}$
- Intrusions of low chlorophyll EAC waters into the GBR lagoon clearly apparent through the Myrmidon channel

# NOAA NCEP EMC CMB GLOBAL Reyn\_SmithOl2 monthly SST: Sea Surface Temperature Anomaly data

October 2011



Oct 2011



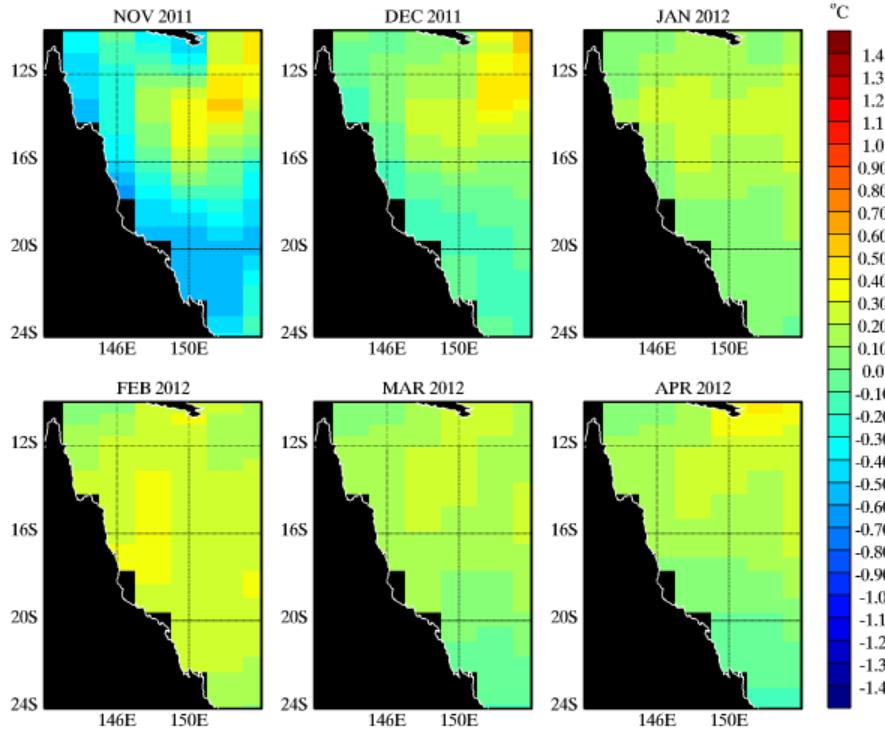
## Note:

- Coincident with the MODIS SST data, Reynolds SST anomaly data shows a pattern of lower than average temperatures along the east coast of Australia south of ~17deg S and positive SST anomalies in the Coral Sea during October.
- Close to average conditions for the Torres Strait area.

# Great Barrier Reef SST Anomaly Forecasts (POAMA-2)

POAMA SST anomaly forecast for the next 6 months  
(Operational)

P2.4abc Monthly SSTA: GBR 20111101 [Lead=0-5 months, Nens=30]

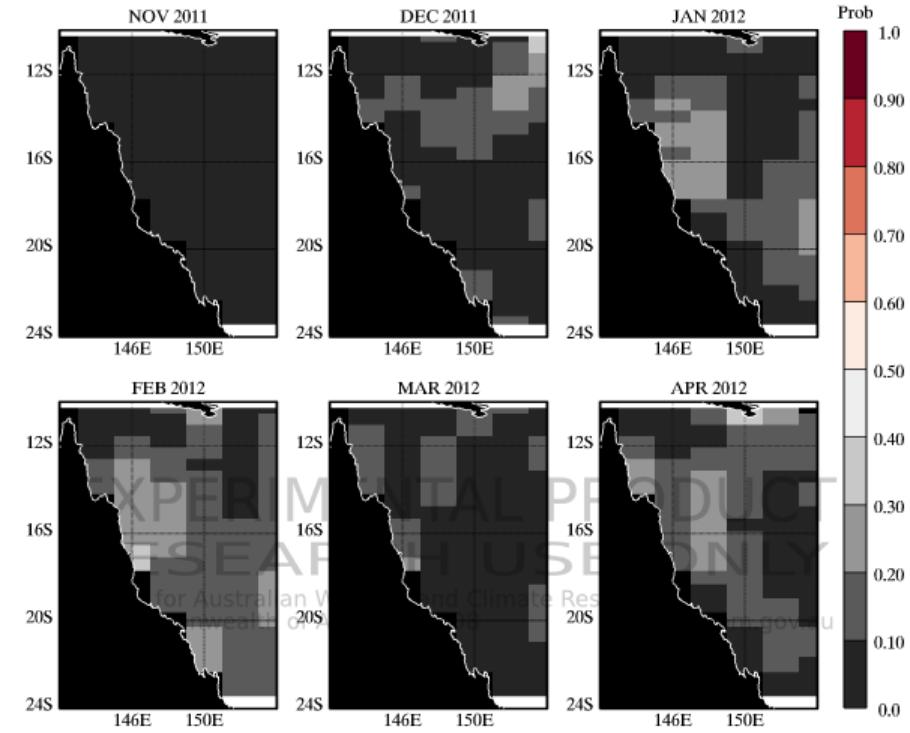


Plotted: 20111104

Operational Product: IDYOC046

Probabilities of SST anomalies greater than 0.6°C for the next 6 months (Experimental)

POAMA 2.4abc Probability SSTA  $\geq 0.6^{\circ}\text{C}$ : 20111101 [Lead=0-5 months, Nens=30]



Plotted: 20111108

## Note:

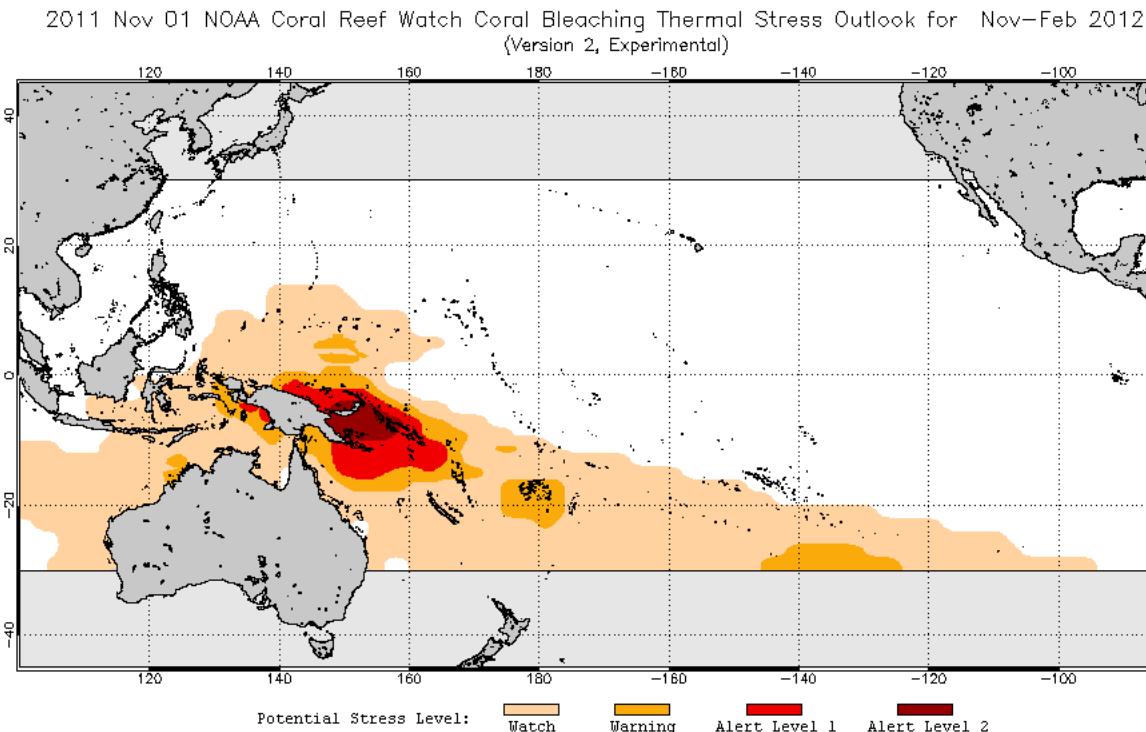
- From 3 November 2011, the POAMA model has been upgraded to POAMA-2.
- POAMA forecasts negative anomalies for November that will sequentially dissipate towards positive anomalies as we head into summer.
- SST anomalies are not expected to exceed 0.6°C in the following 6 months.

# NOAA Coral Reef Watch

## Coral Bleaching Thermal Stress Outlook

### (Version 2, experimental)

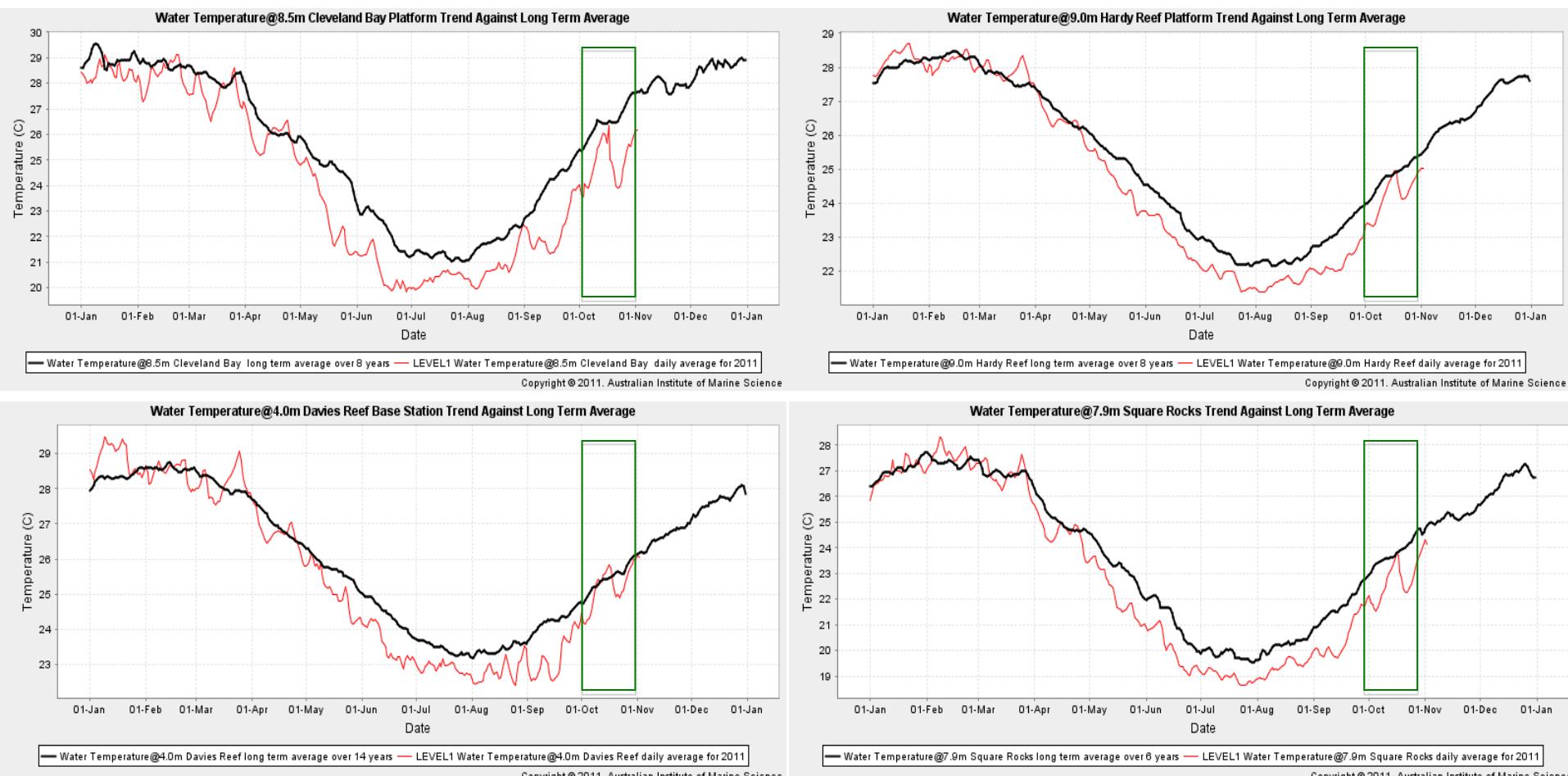
Outlook for November 2011 to February 2012



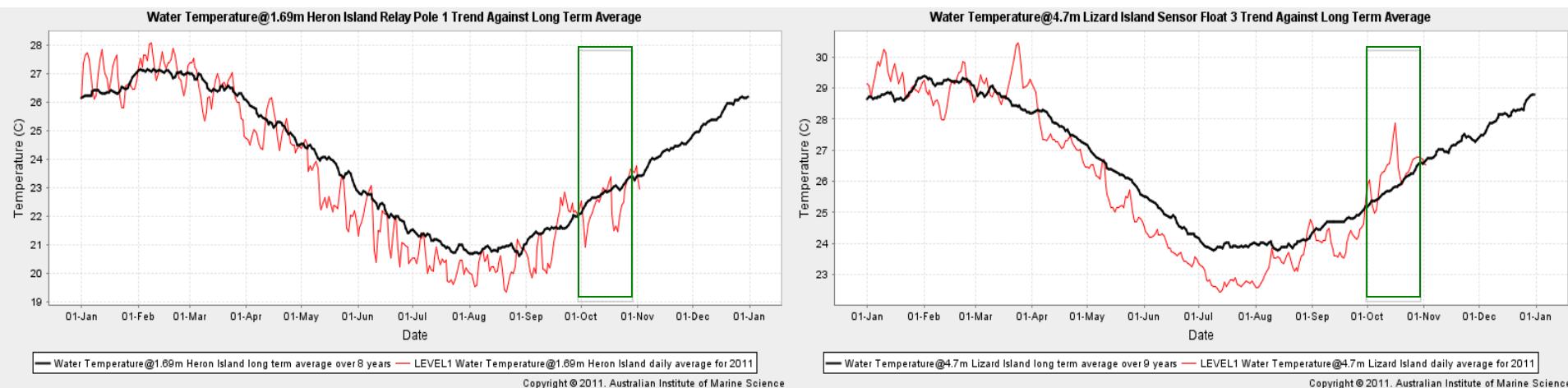
Note:

- NOAA thermal Stress Outlook suggests 'Watch' for potential thermal stress until February 2012, with increasing alert levels around PNG reefs.

# Weather Observing System: AIMS Data Centre



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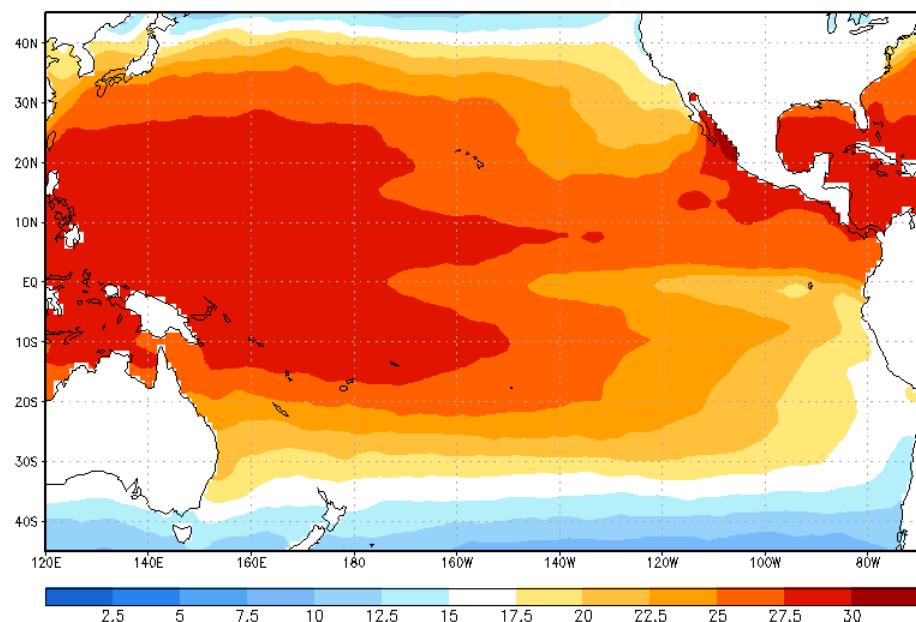
## Note:

- Coincident with the SST data, in situ temperatures at all stations show close to or lower than average temperatures for October, with the exception of Lizard Island which is situated at the most northerly location

# NOAA Optimum Interpolation Sea Surface Temperature Analysis:

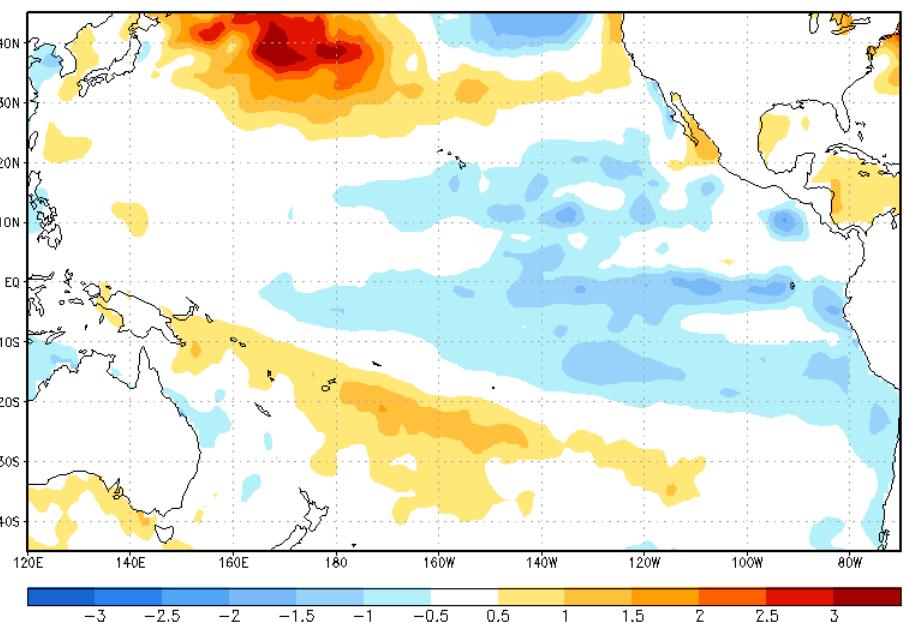
OI SST: OCTOBER 2011

sst 00Z01OCT2011



OI SST ANOMALY: OCTOBER 2011

ssta 1 00Z01OCT2011

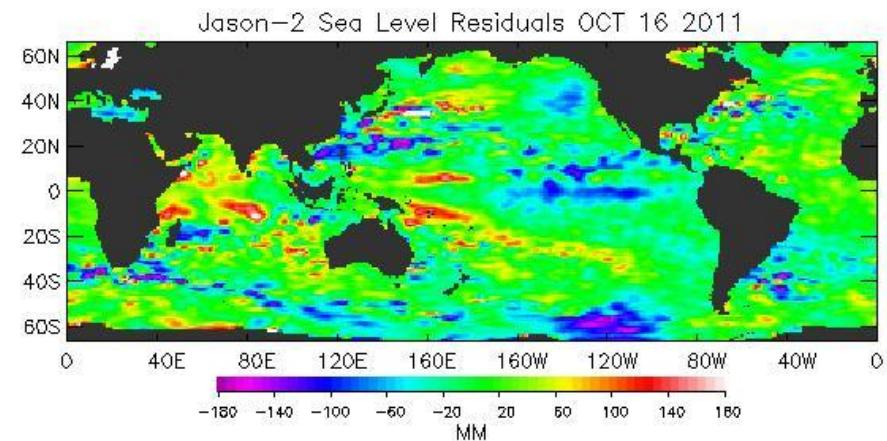
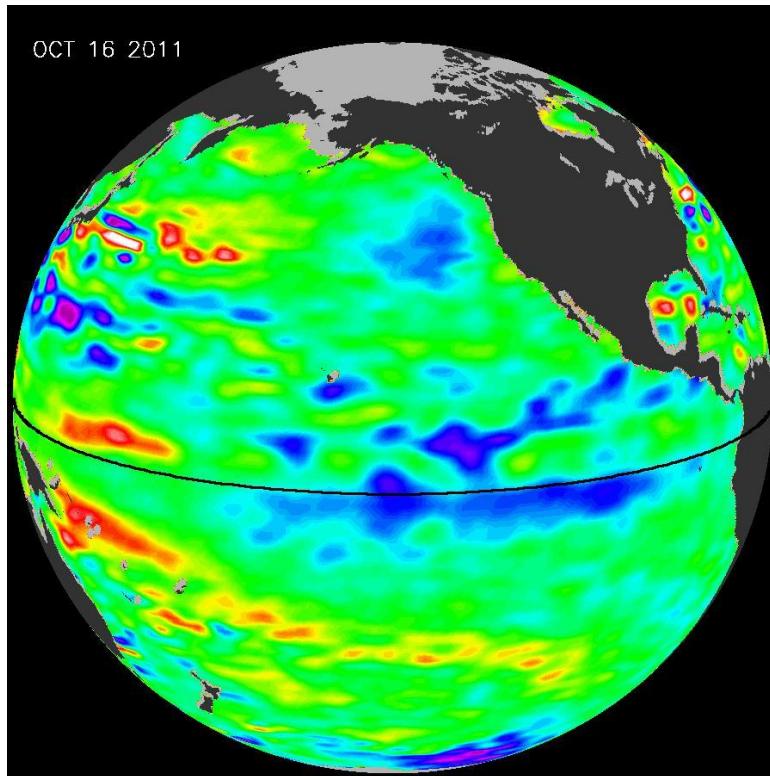


## Note:

- Negative SST anomalies persisted across the east half of the equatorial Pacific during October, indicative of La Niña conditions

# Sea surface height anomalies from Ocean Surface Topography: Jason-1 and Jason-22 (NASA/French)

10-day data cycle centered around 16 October, 2011.



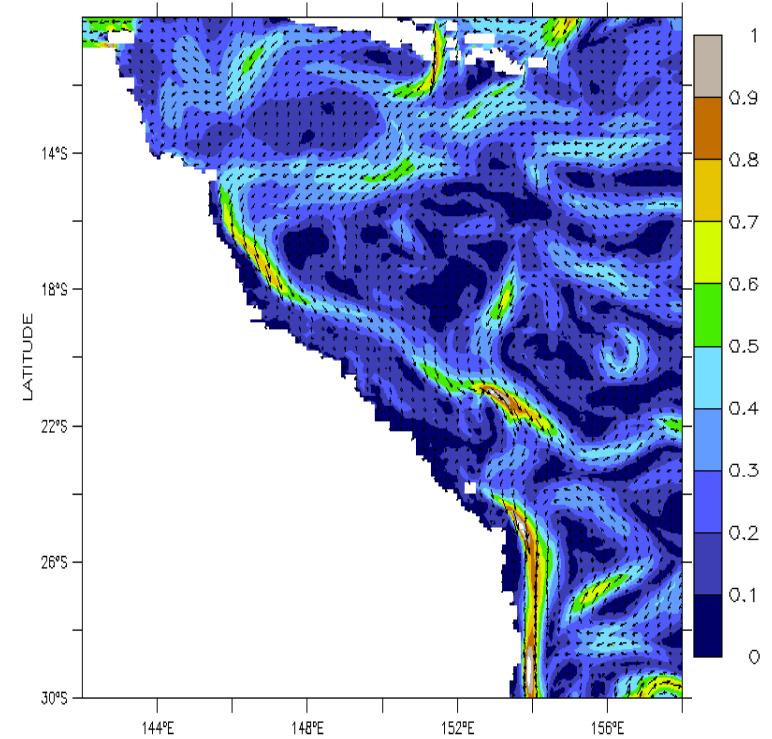
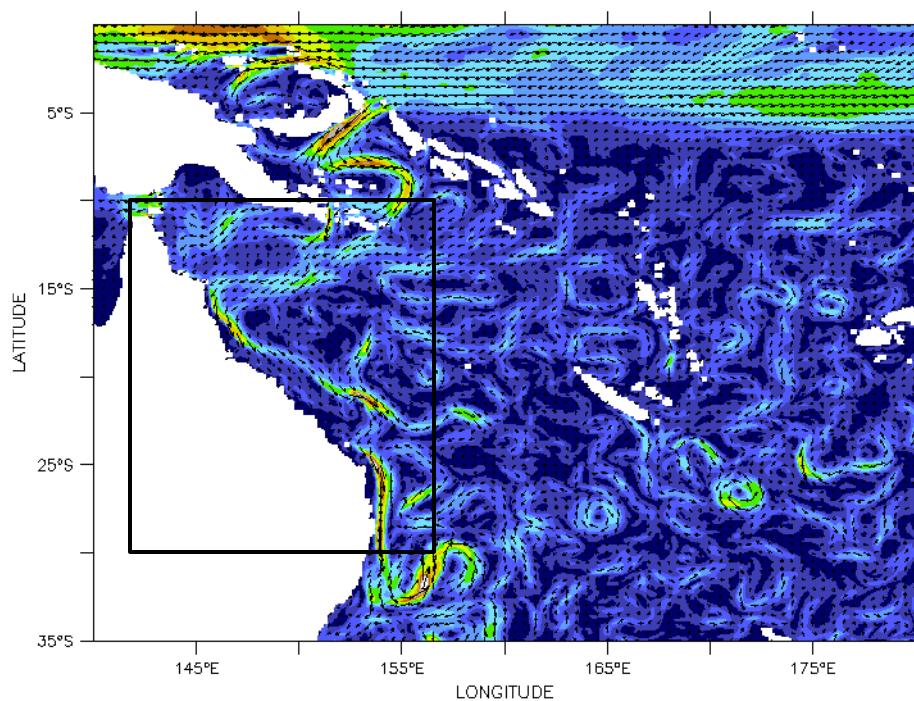
## Note:

- Satellite SSH data shows negative SSH anomalies located in the eastern equatorial Pacific, related to La Niña which is characterized by lower SSH in the central and eastern equatorial Pacific and an increase in SSH over the Western Pacific Warm Pool.

# OceanMAPS 15m Depth-Average Currents

## October 2011

**OceanMAPS** Ocean Modeling, Analysis and Prediction System was developed at CSIRO Marine and Atmospheric Research and the Bureau of Meteorology and it is part of the **Bluelink** project.

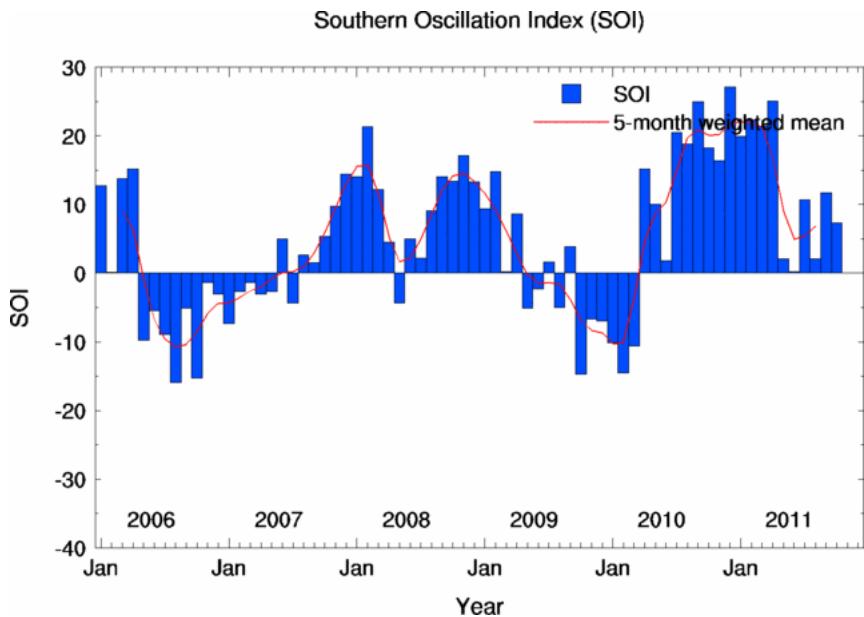


Behind Real Time analysis  
15 m depth-averaged currents (m/s).

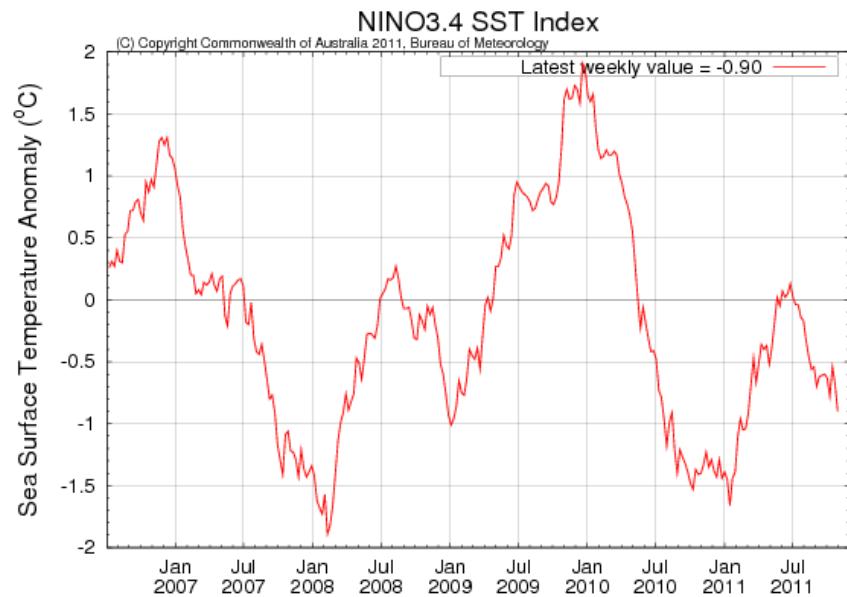
Note:

- Strong southward EAC flow adjacent to the GBR shelf from 14 deg S,
- Pronounced strengthening of the EAC around the Swains and south of ~23°S

## ENSO index



Positive SOI = La Niña



Negative Nino 3.4 index= La Niña

**Note:**

- ENSO indices indicate La Niña conditions, which are expected to strengthen and continue through the summer.