# NERP

## Torres Strait / GBR environmental conditions report:

### Recent status and predictions

13 August 2012

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UQ-GPEM Biophysical Oceanography Group

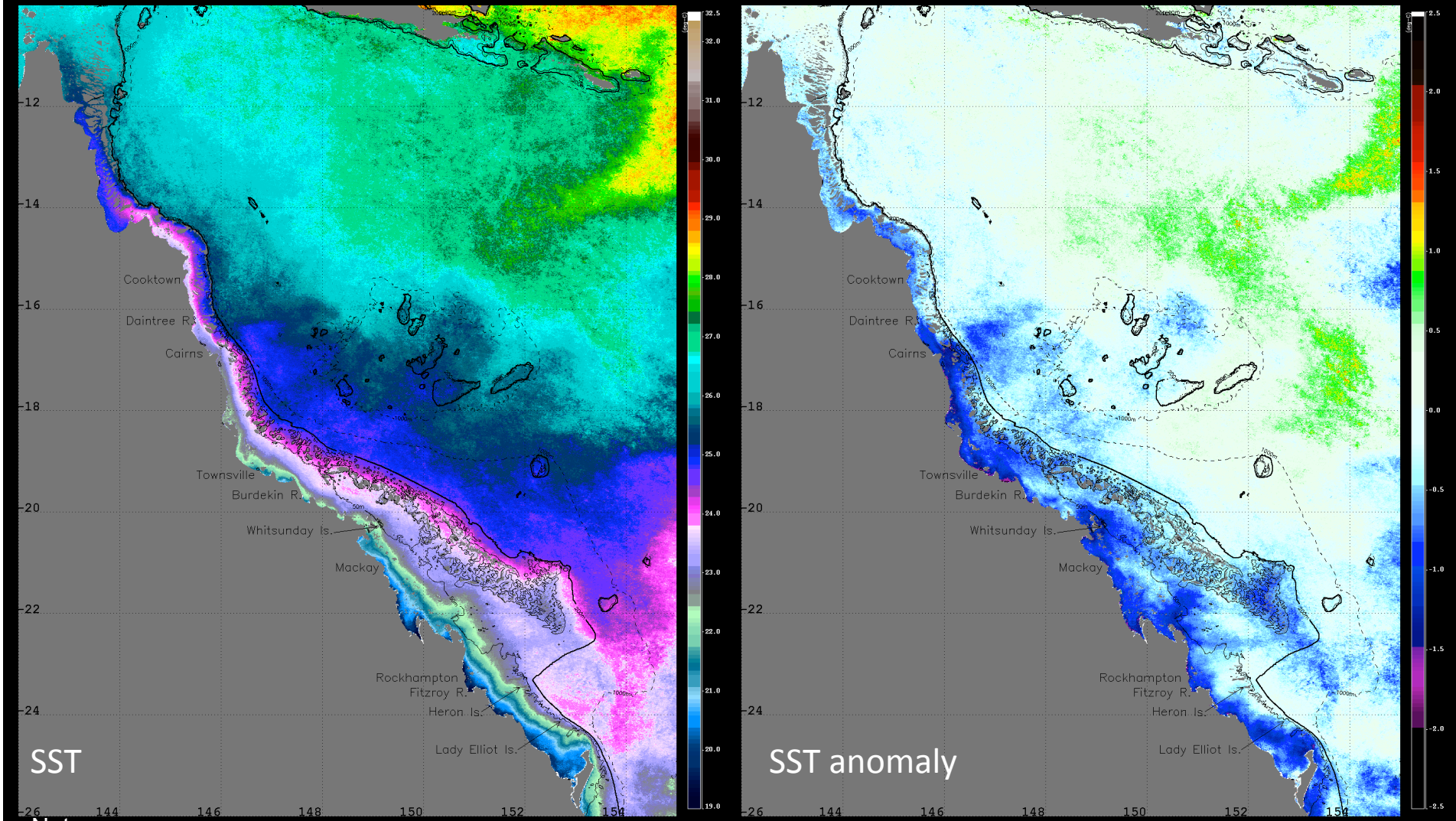
# Outline

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

# Overview

- Mostly neutral SST in Torres Strait and northern GBR for both June and July.
- Negative SST anomalies in the inshore areas of the central and southern GBR
- Forecast of close to neutral SST anomalies along the GBR and Torres Strait areas for the upcoming months.
- No bleaching alert for GBR and Torres Strait corresponding with the winter and spring seasons.
- ENSO-neutral conditions prevalent in the Pacific, El Niño expected to develop in the upcoming months.

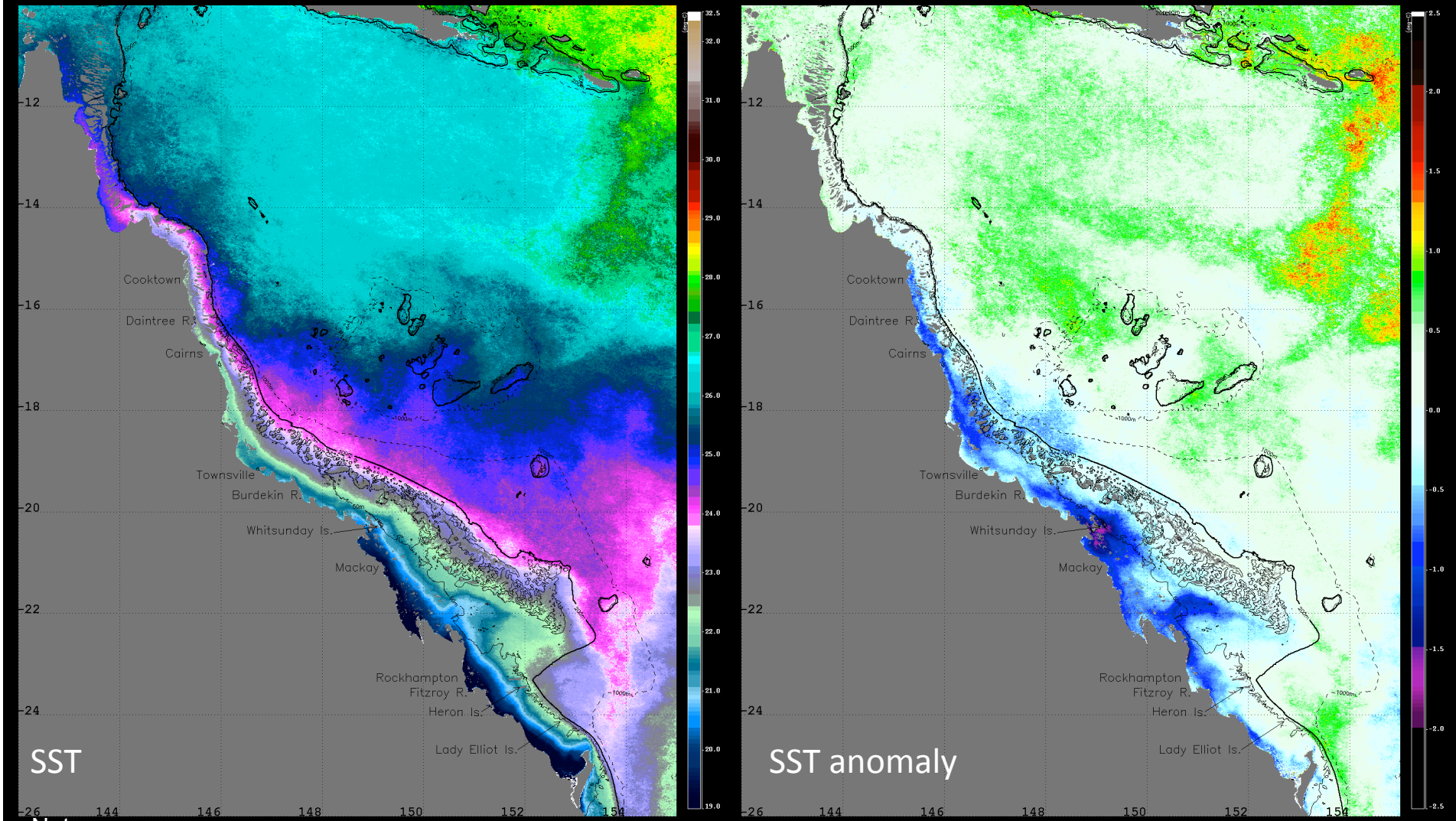
# Modis SST (day+night): June 2012




Note:

- Mostly average conditions present over the Torres Strait and N-GBR areas during June
- Strong negative anomalies in the inshore areas south of ~16°S.

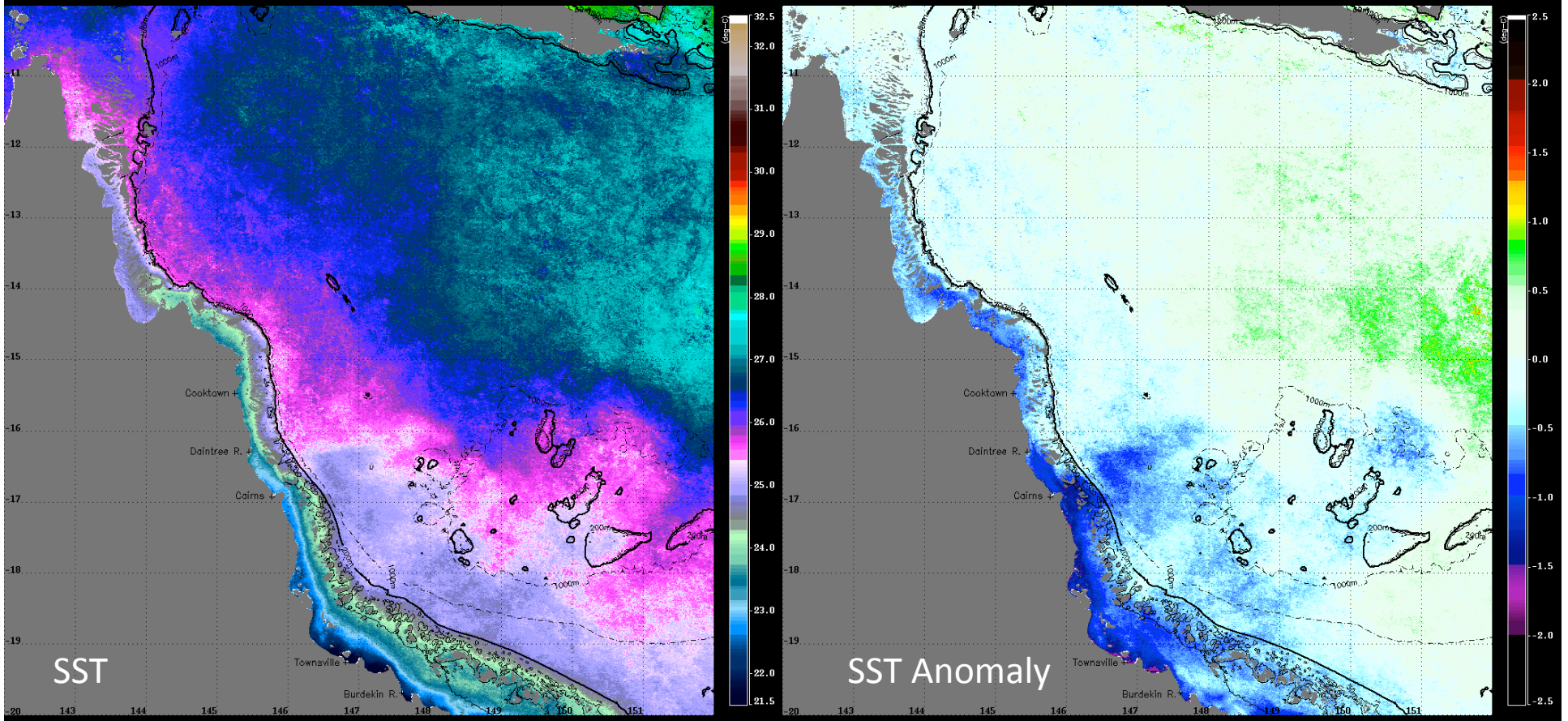
# Modis SST (day+night): July 2012




Note:

- Average conditions continued during July for the Torres Strait and N-GBR areas with positive anomalies developing in the Coral Sea.
- Strong negative anomalies prevalent on the inshore reefs south of 16°S.

# Torres Strait / northern GBR MODIS SST: June 2012

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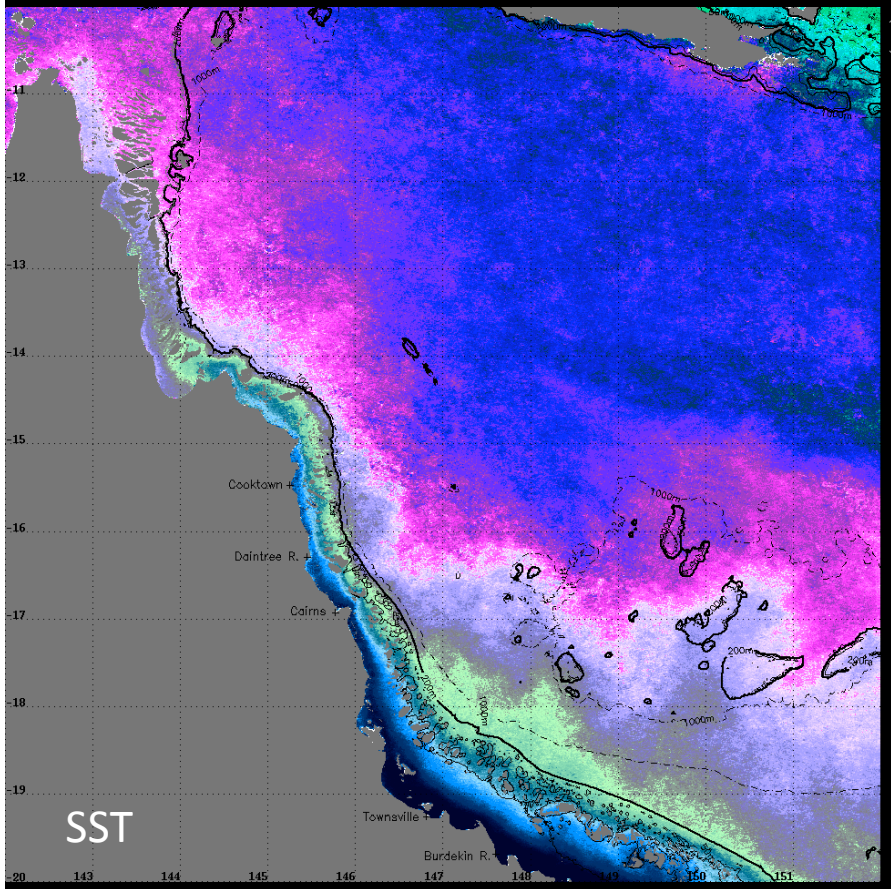
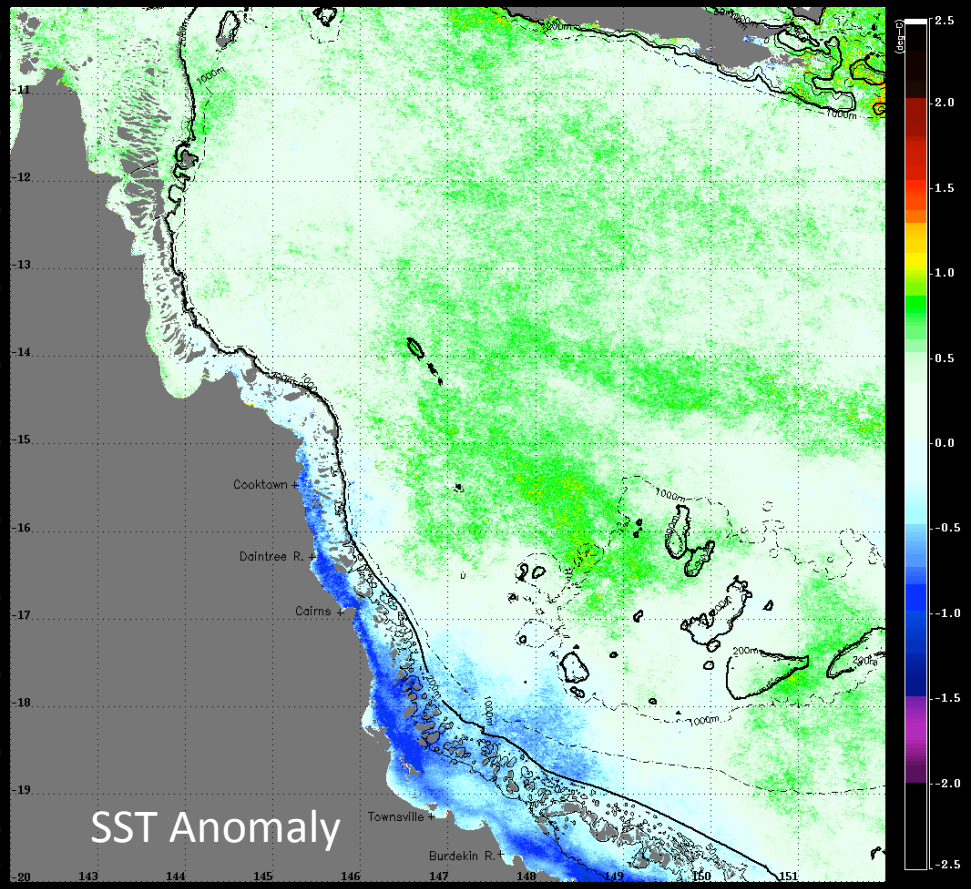
# Torres Strait / northern GBR MODIS SST: July 2012




Note:

- Average conditions continued during July for the Torres Strait and N-GBR areas.
- Negative anomalies dissipating in the inshore reefs areas & mild positive anomalies offshore

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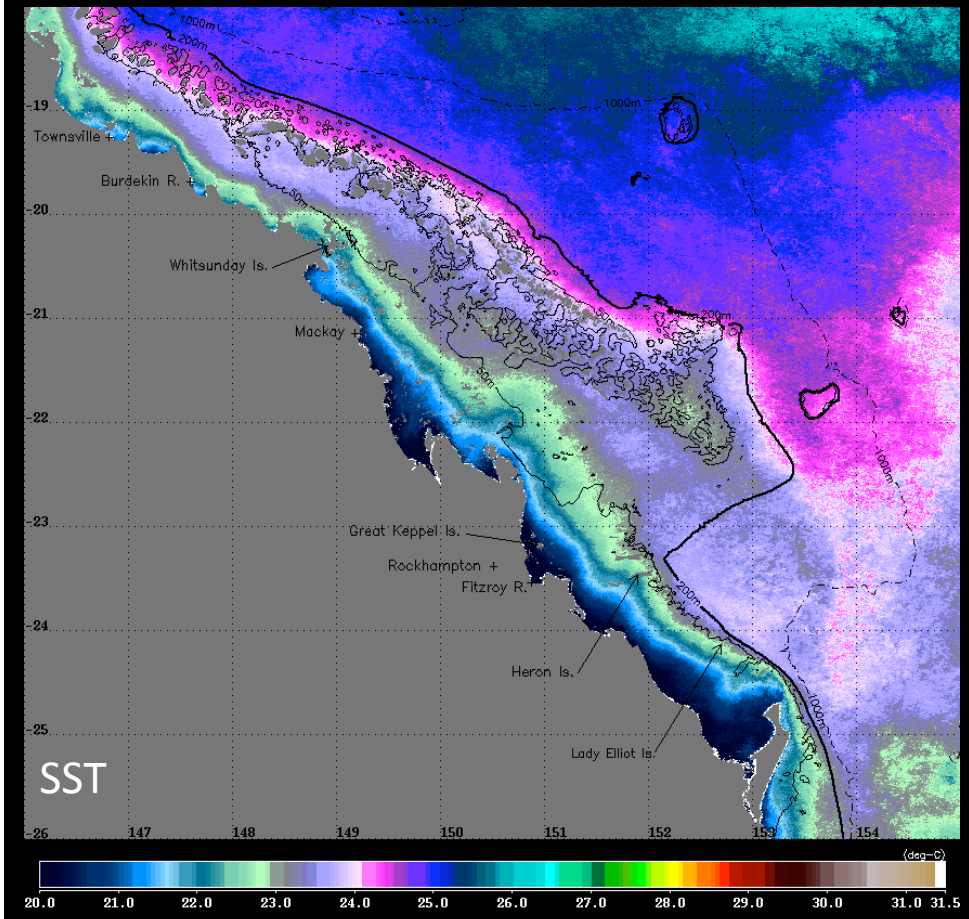
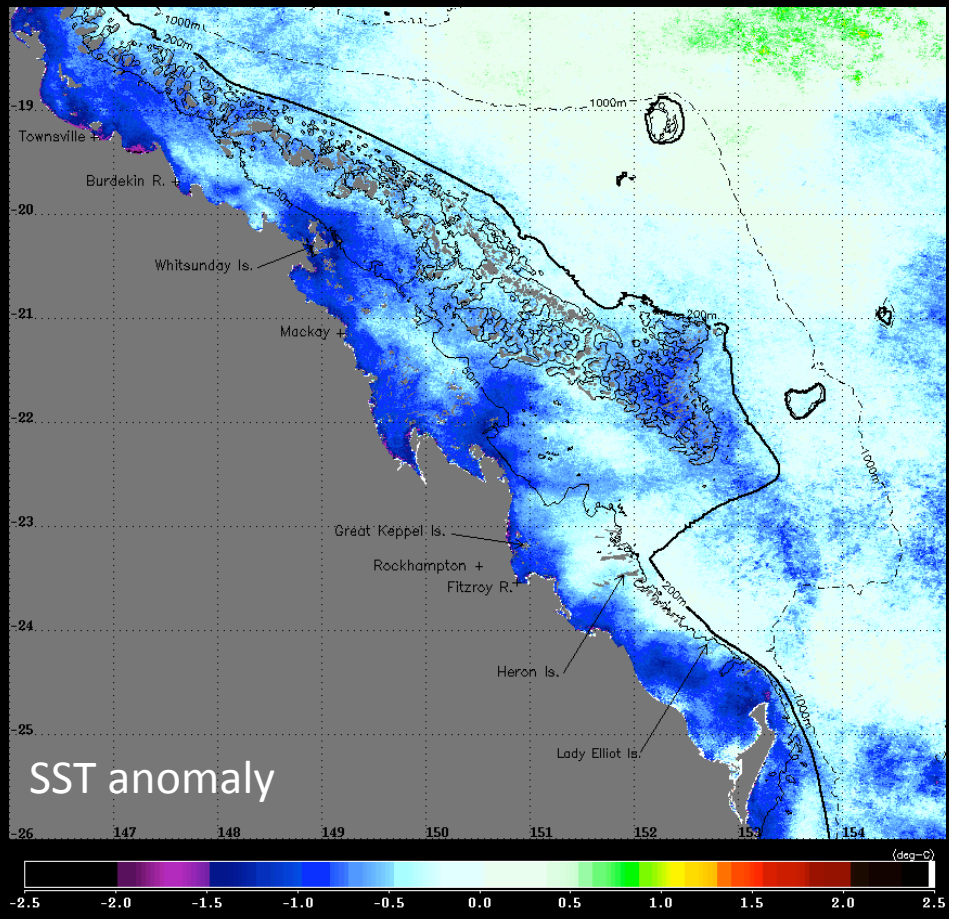
# Southern GBR MODIS SST: June 2012

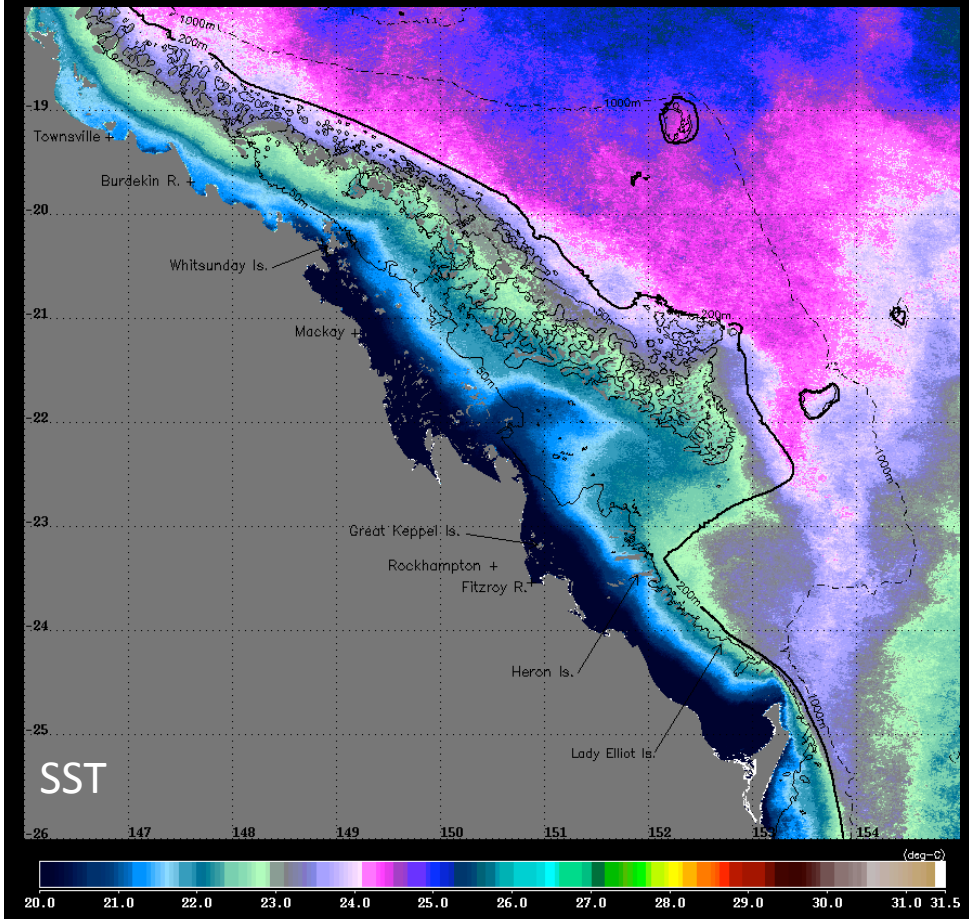


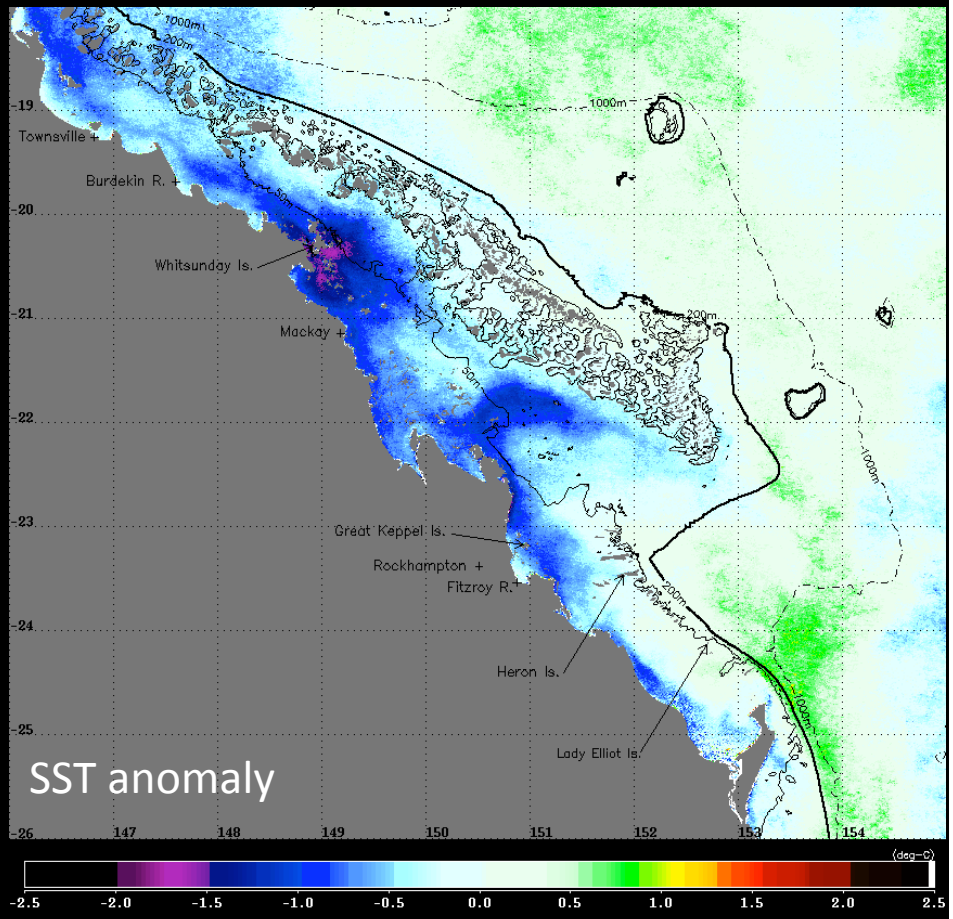




Note:

- Extensive negative anomalies in June, especially on inshore reefs

# Southern GBR MODIS SST: July 2012

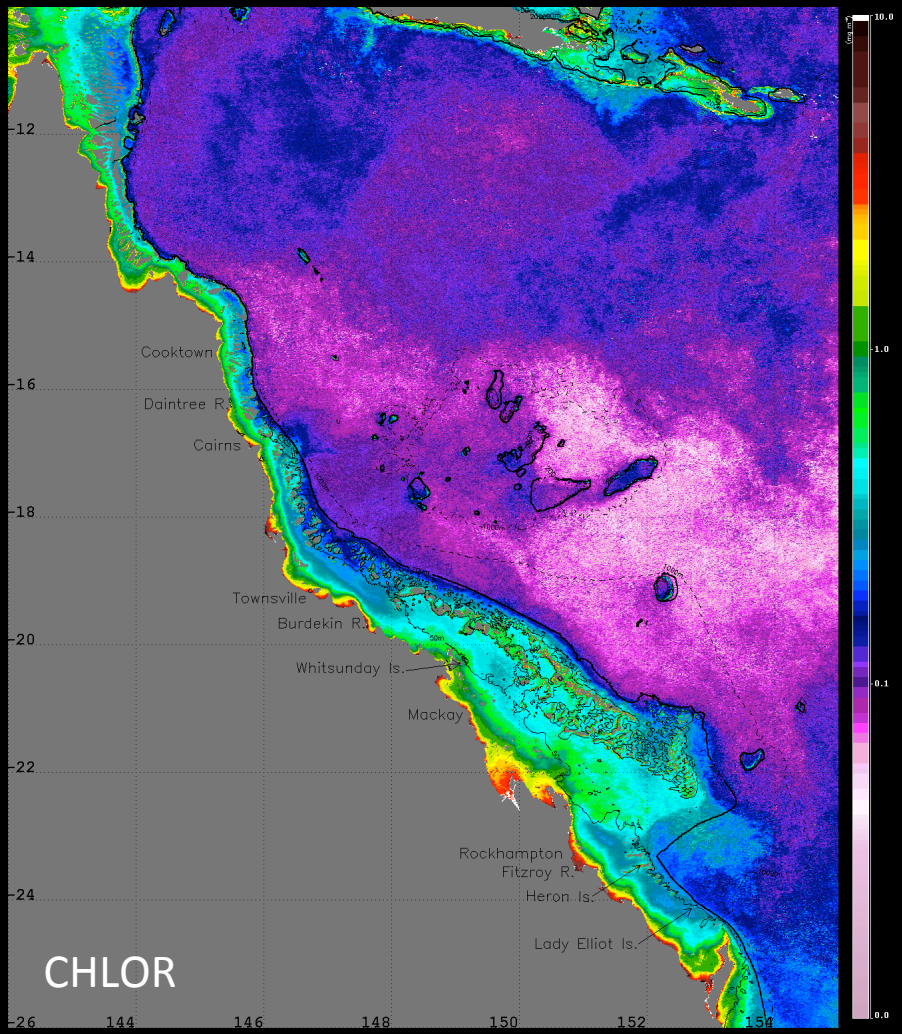


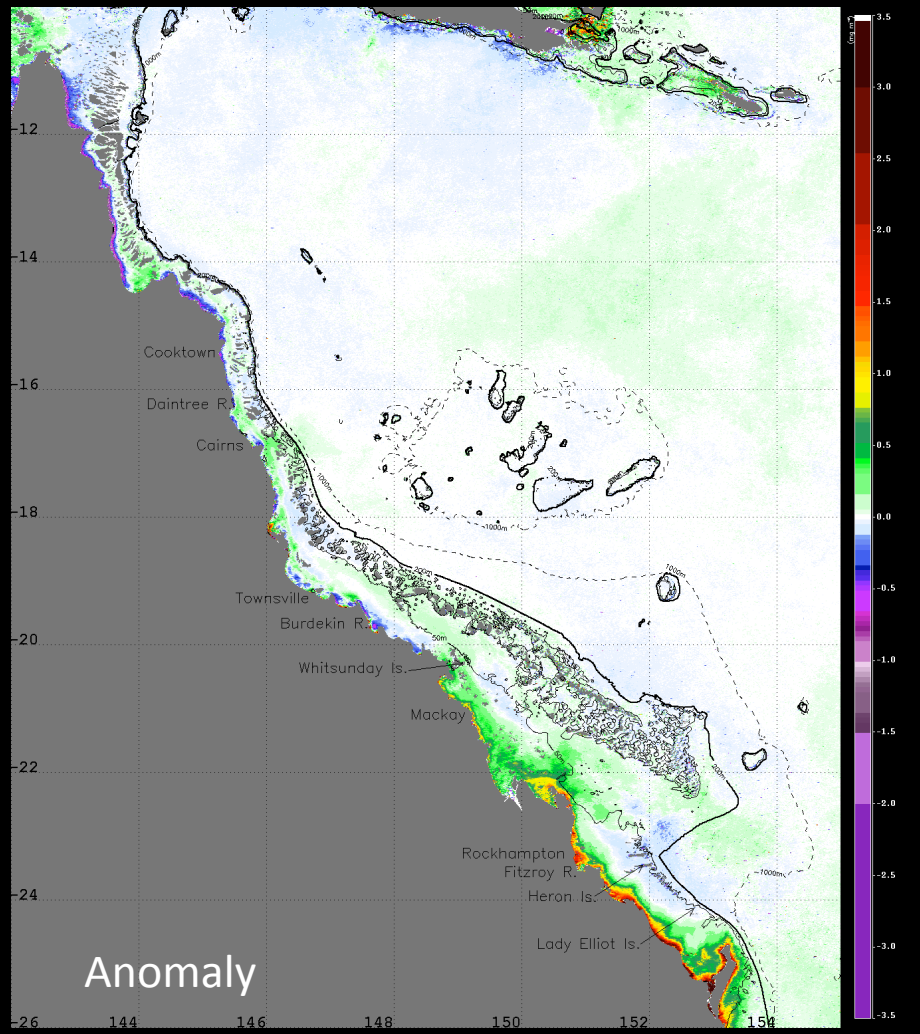




Note:

- Negative anomalies generally dissipating in the S-GBR, specifically around the Capricorn-Bunker Reefs
- However, negative anomalies more intense in the Whitsundays area & offshore of Broad Sound

# MODIS Chlorophyll-*a* concentration: June 2012




Note:

- Since May, strong positive chlorophyll anomalies over GBR inshore reefs have dissipated remaining moderate only in the Fitzroy River and far southern inshore areas
- Negative anomalies in far northern region to be interpreted with caution due to limited data north of 18°S

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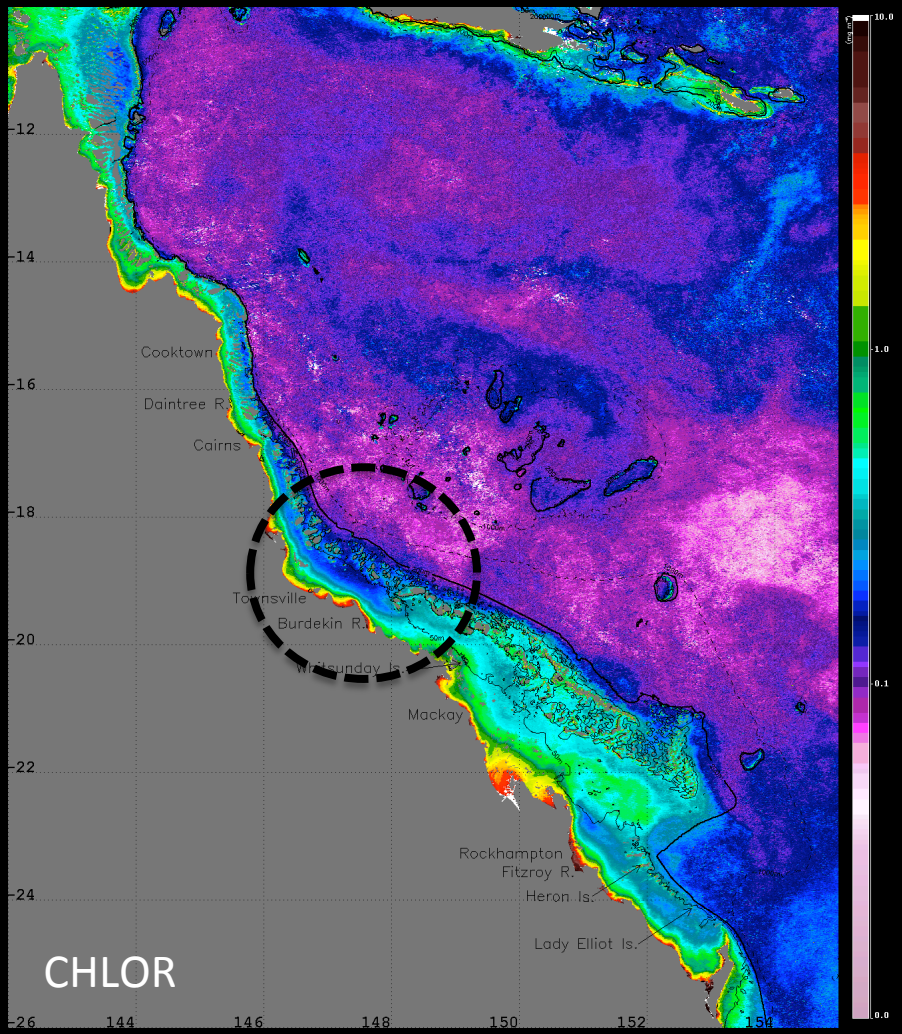
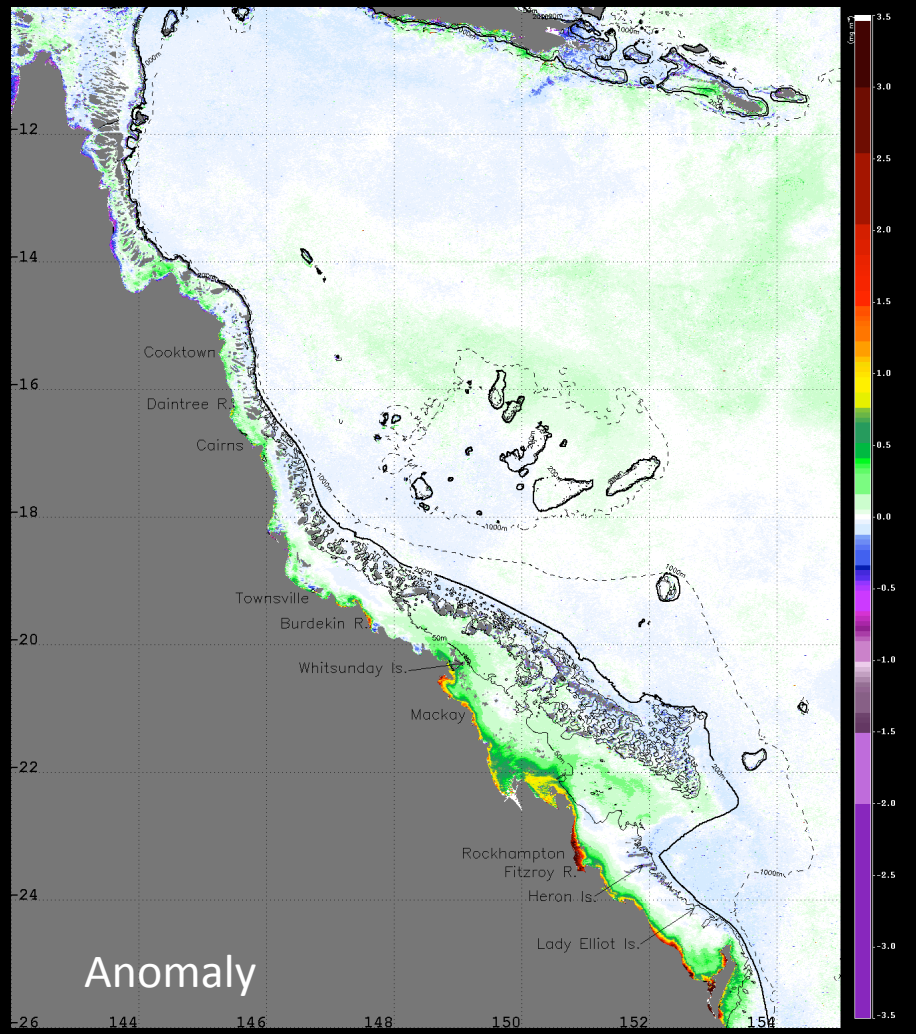
# MODIS Chlorophyll-*a* concentration: July 2012

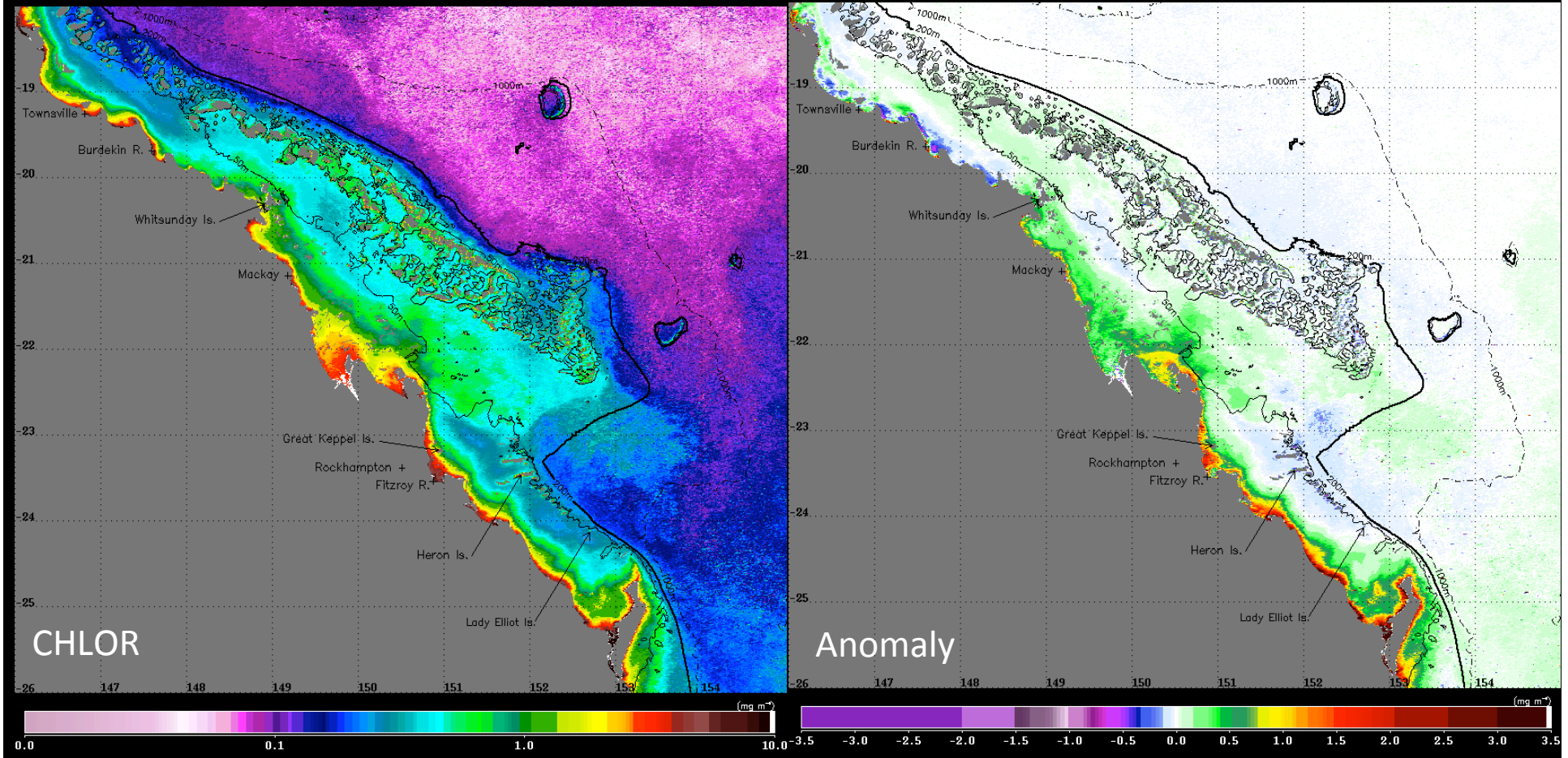



Note:

- Positive chlorophyll anomalies remain moderate over inshore reefs in southern GBR, especially in the Fitzroy River area
- Note intrusions of low chlorophyll EAC waters in the central GBR

# Southern GBR
# MODIS Chlorophyll-*a* concentration
## June 2012




Note:

- Moderate positive chlorophyll anomalies along inshore reefs in the Fitzroy River and far southern inshore areas
- Negative to neutral conditions in the Burdekin River area

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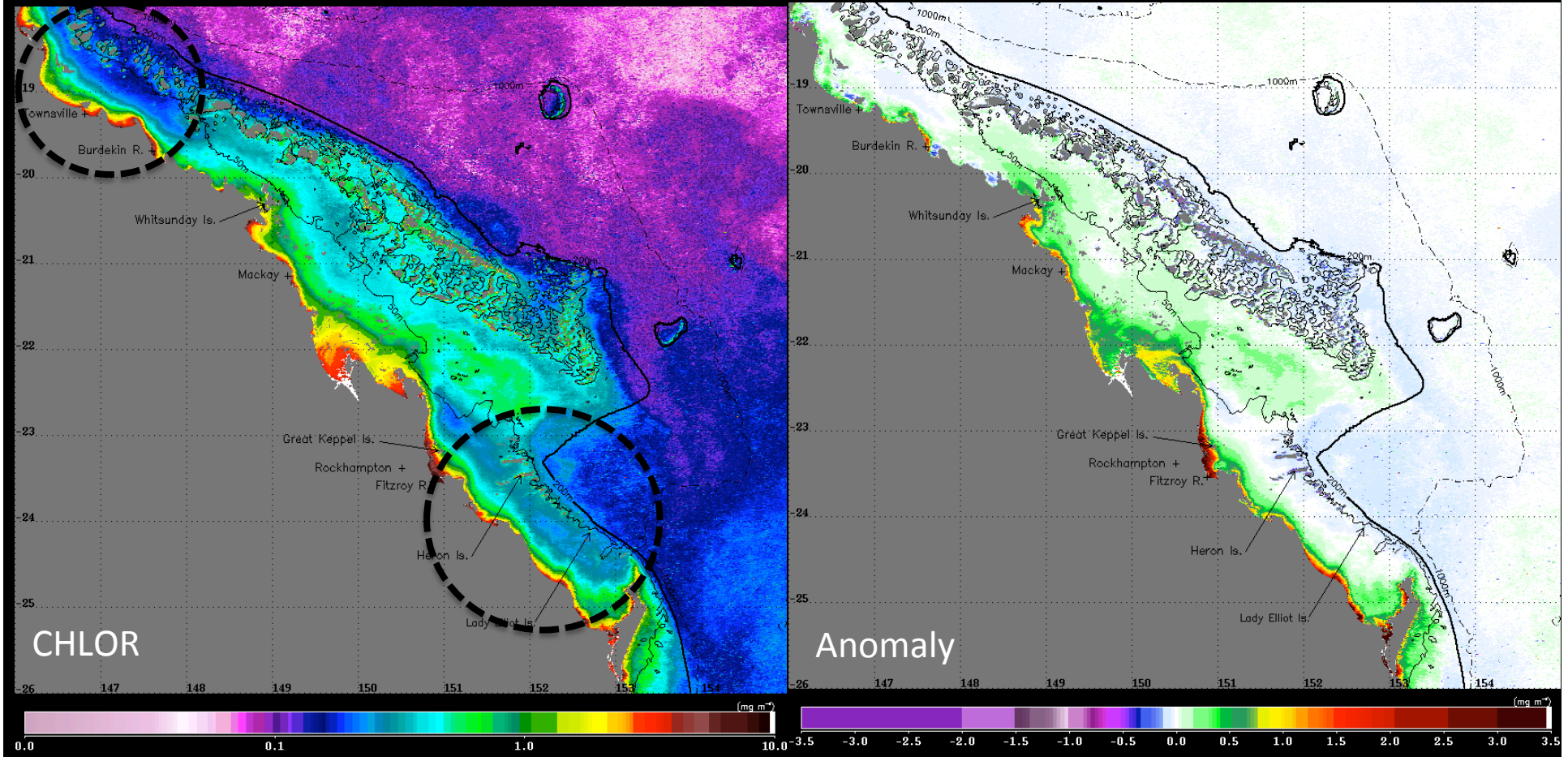
# Southern GBR
# MODIS Chlorophyll-*a* concentration
## July 2012

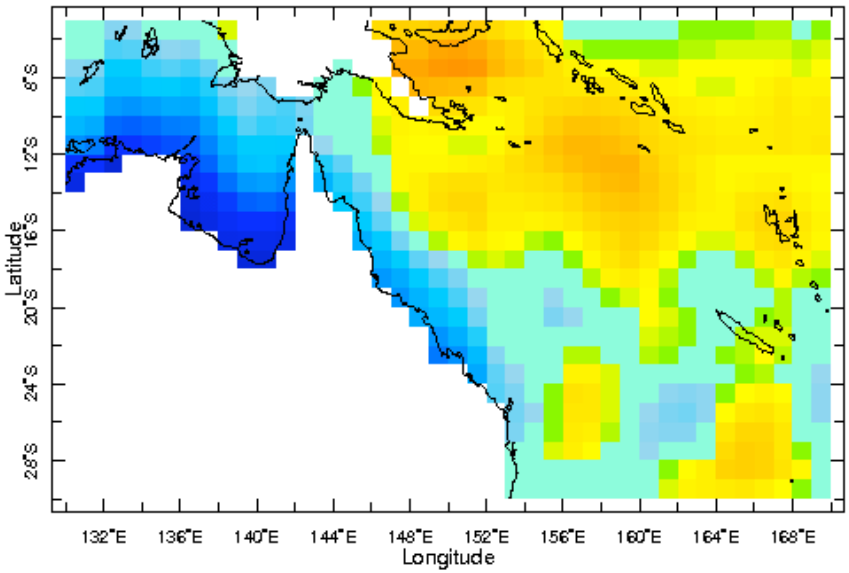



Note:

- Moderate positive chlorophyll anomalies along most of the southern GBR inshore reefs
- Note intrusions of low chlorophyll EAC waters both in the central GBR and, from the south, into the Curtis Channel

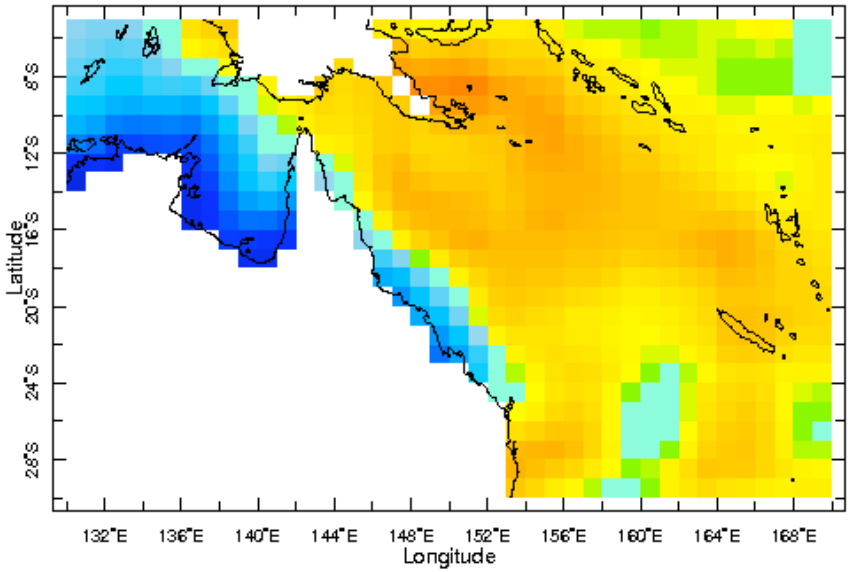
# NOAA NCEP EMC CMB GLOBAL Reyn_SmithOIv2 monthly SSTA: Sea Surface Temperature Anomaly data

June 2012

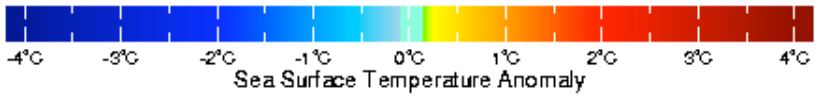



Jun 2012

July 2012




Jul 2012



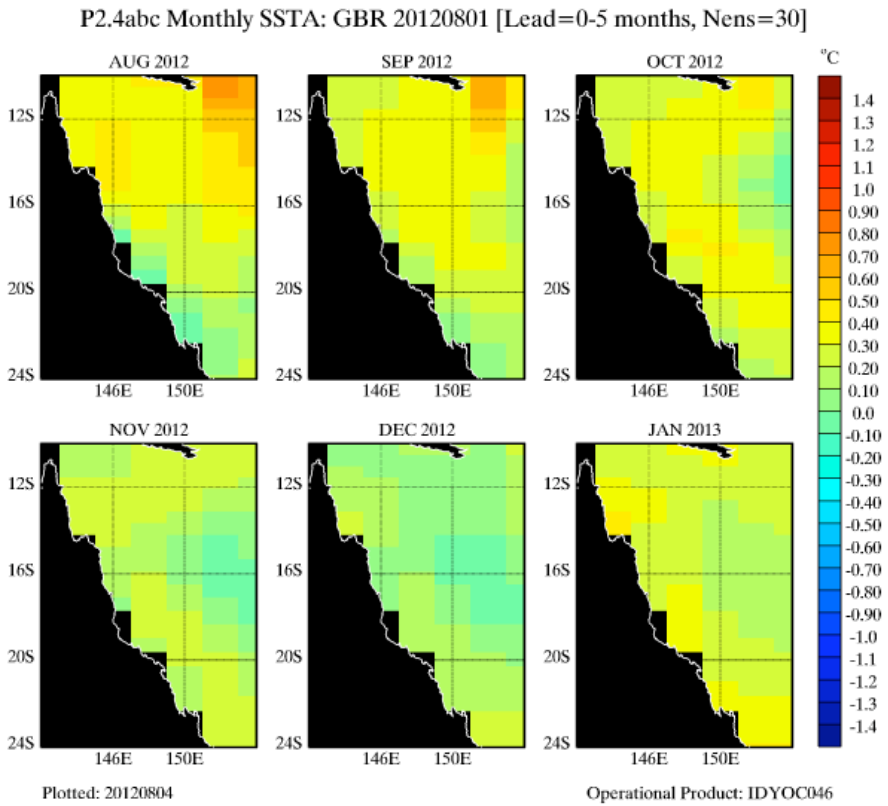

Note:

- Neutral conditions present over the Torres Strait and N-GBR areas during June & July with negative anomalies in S-GBR
- Increasing positive SST anomalies in the Coral Sea during July

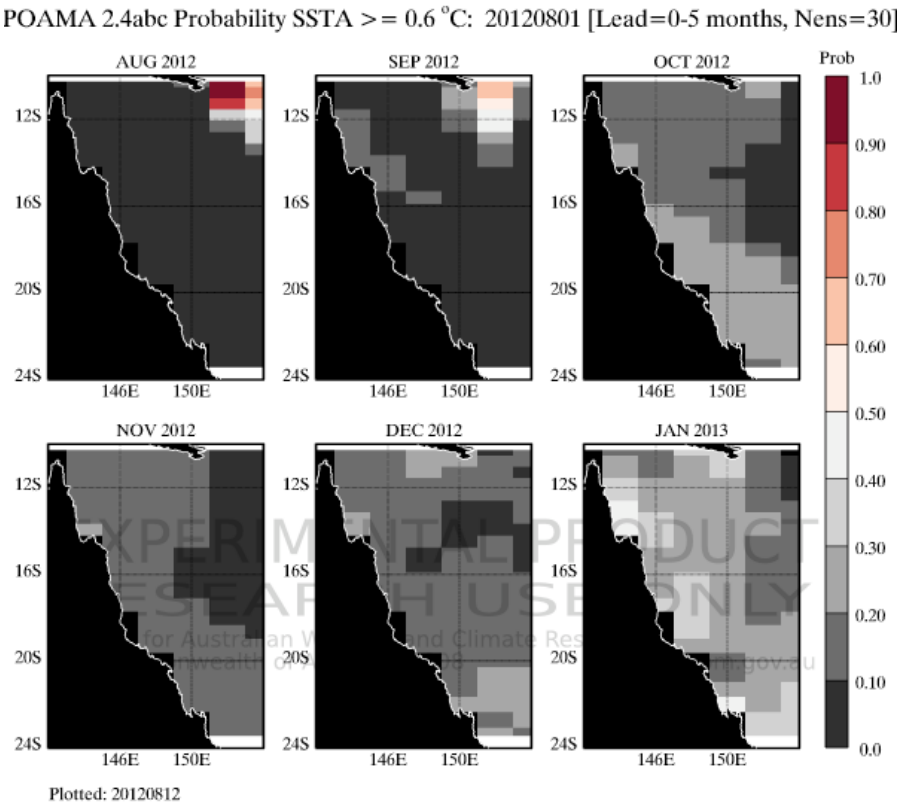
http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.EMC/.CMB/.GLOBAL/.Reyn_SmithOIv2/

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

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




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




Note:

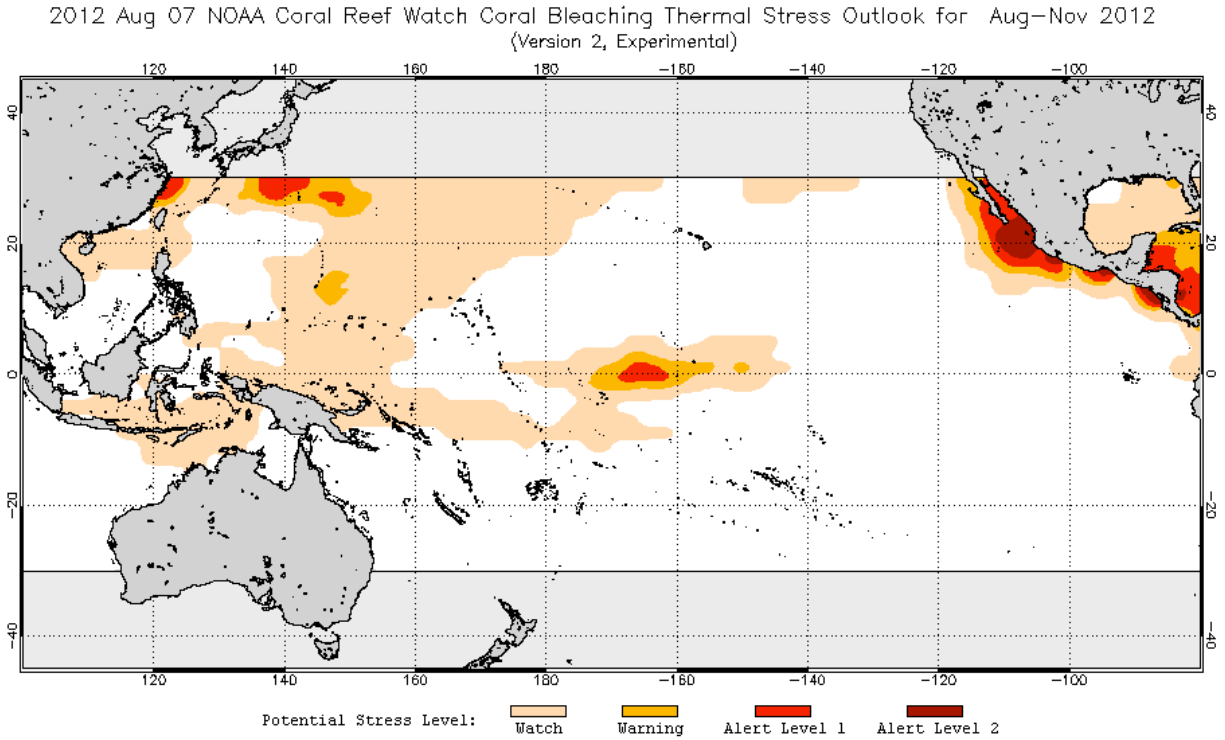
- POAMA is currently forecasting mostly average/below average conditions until January 2012

# NOAA Coral Reef Watch

## Coral Bleaching Thermal Stress Outlook

## (Version 2, experimental)

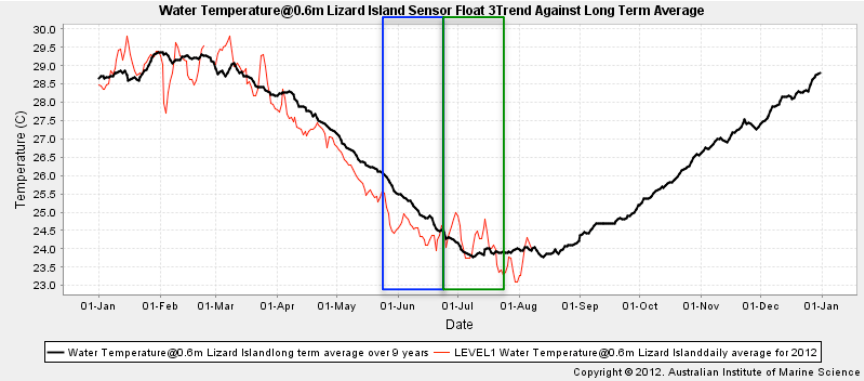
## Outlook for August 2012 to November 2012

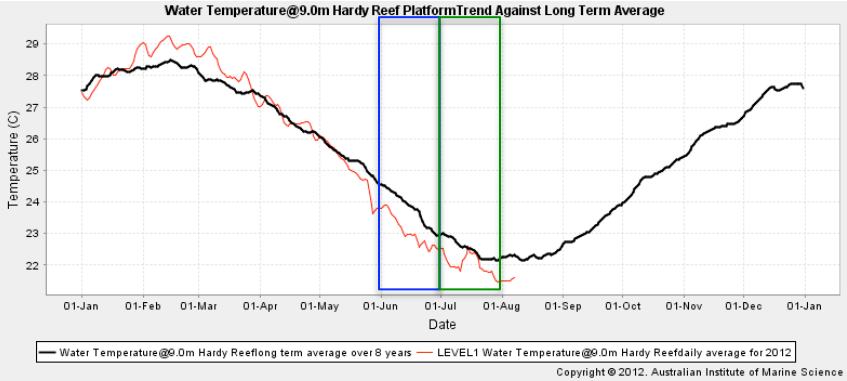


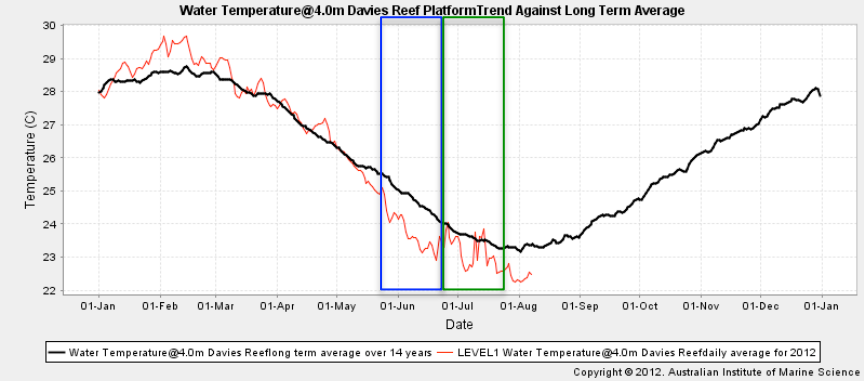

Note:

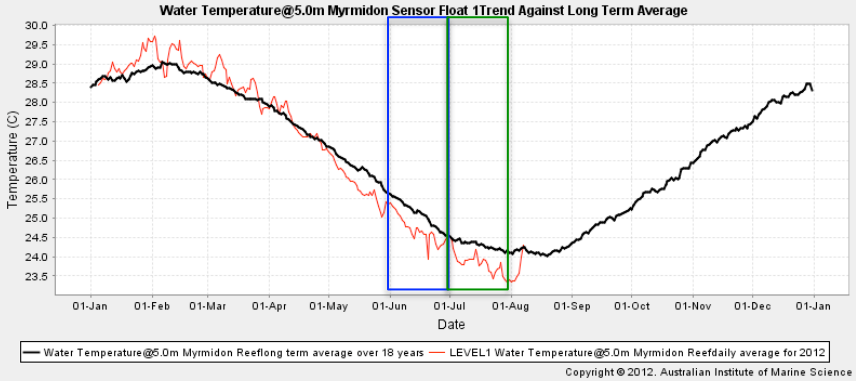
- No bleaching alerts for the southern Pacific (as expected for the austral winter/spring season)

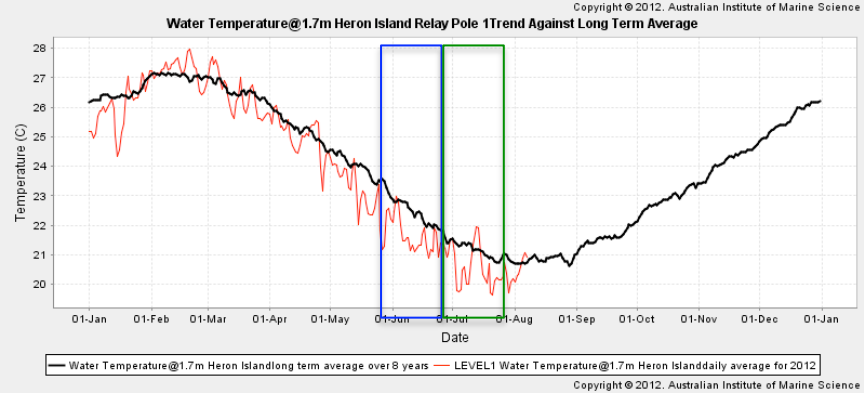
# Weather Observing System: AIMS Data Centre

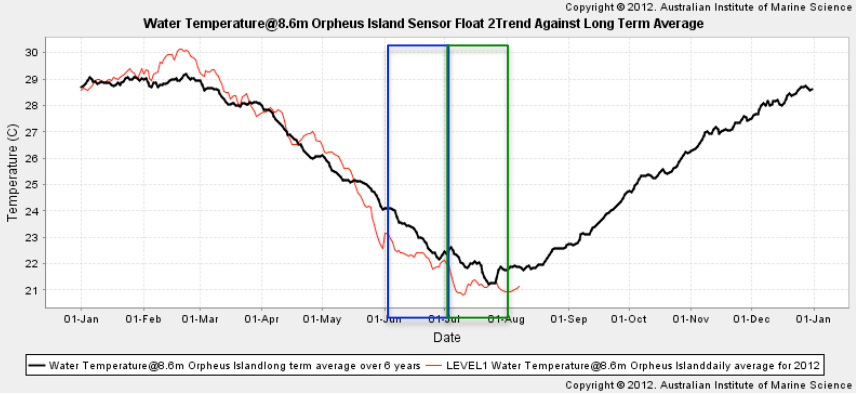


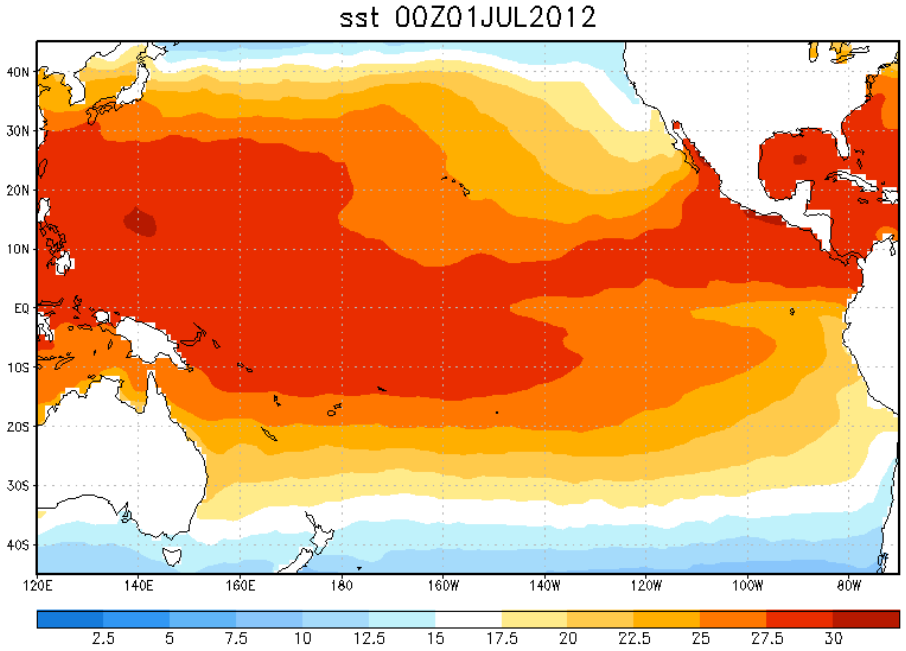



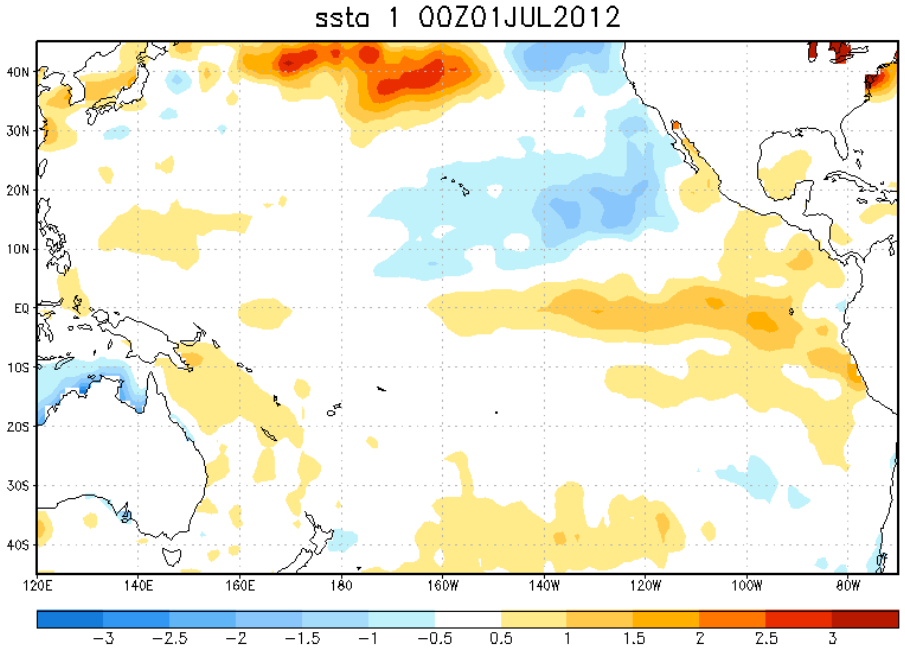

All the AIMS weather stations show below average temperatures for June and mostly average for July.

# NOAA Optimum Interpolation Sea Surface Temperature Analysis:

## OI SST: JULY 2012




## OI SST ANOMALY: JULY 2012



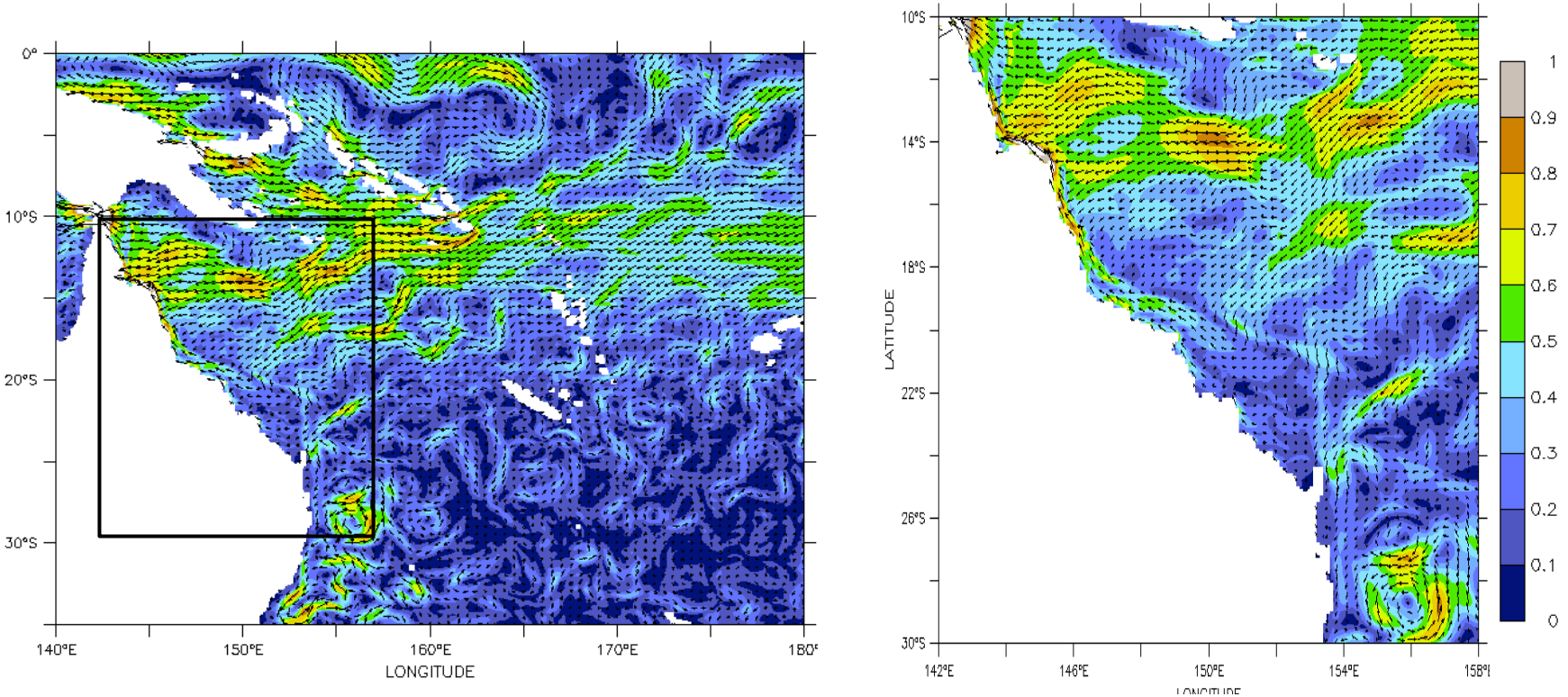

Note:

- Positive SST anomalies developing in the eastern Pacific, resembling an El Niño pattern

# OceanMAPS 15m Depth-Average Currents

## July 2012

**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.

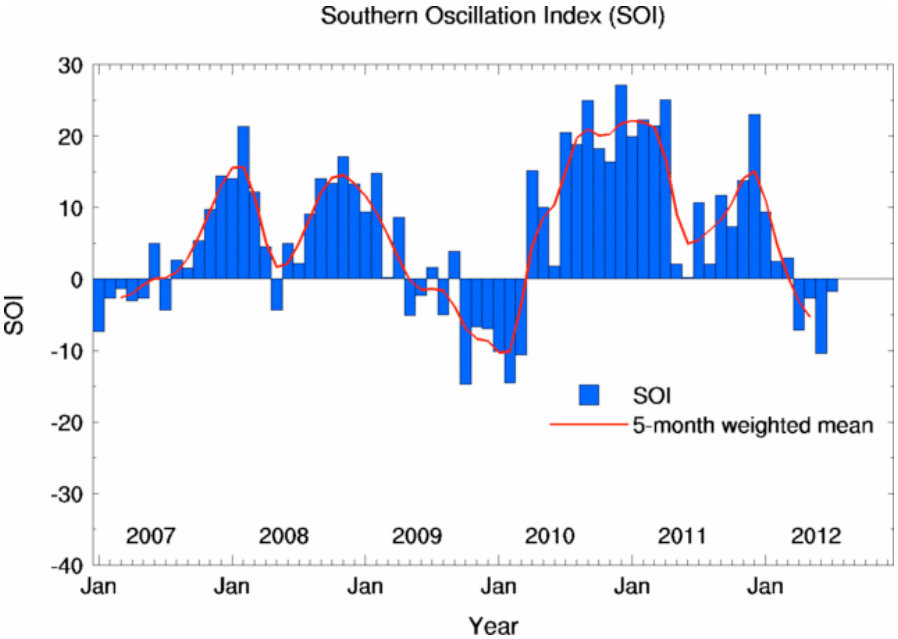



Behind Real Time analysis
15 m Depth-Averaged Currents (m/s).

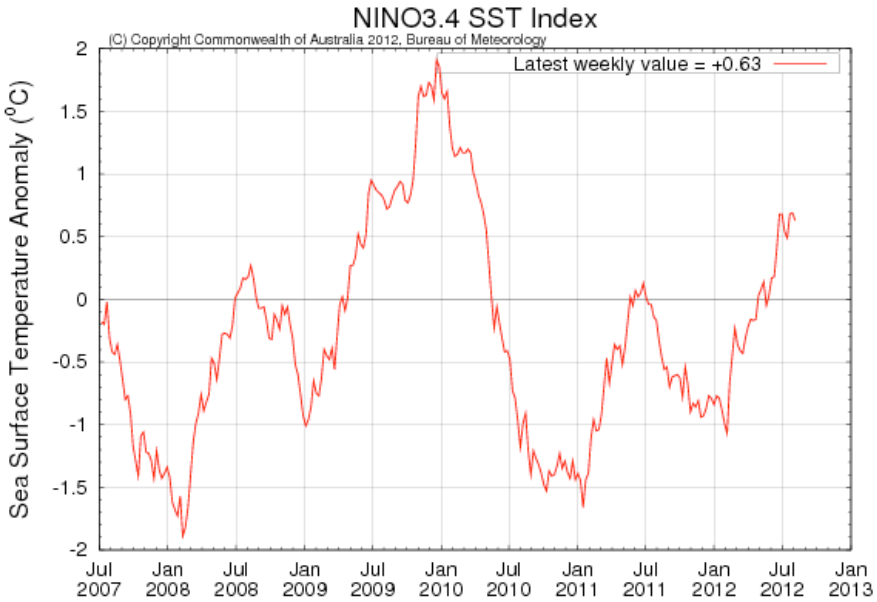
Note:

- Strong westward South Equatorial Current clearly entering the Coral Sea as several intense jets
- As expected for winter, the East Australian Current remains relatively weak
- (an intense cyclonic eddy is located off SE Queensland)

# ENSO index




Negative SOI = El Niño




Positive Nino 3.4 index= El Niño

Note:

- ENSO neutral conditions continue, although El Niño 3.4 SST index is above 0.5° C, consistent with the positive SST anomalies observed in the eastern equatorial Pacific.
- The dynamical ocean-atmospheric models predict the onset of an El Niño in 2012, whereas the statistical models continue to predict ENSO-neutral conditions.