

NERP

Torres Strait / GBR environmental conditions report:

Recent status and predictions

10 September 2013

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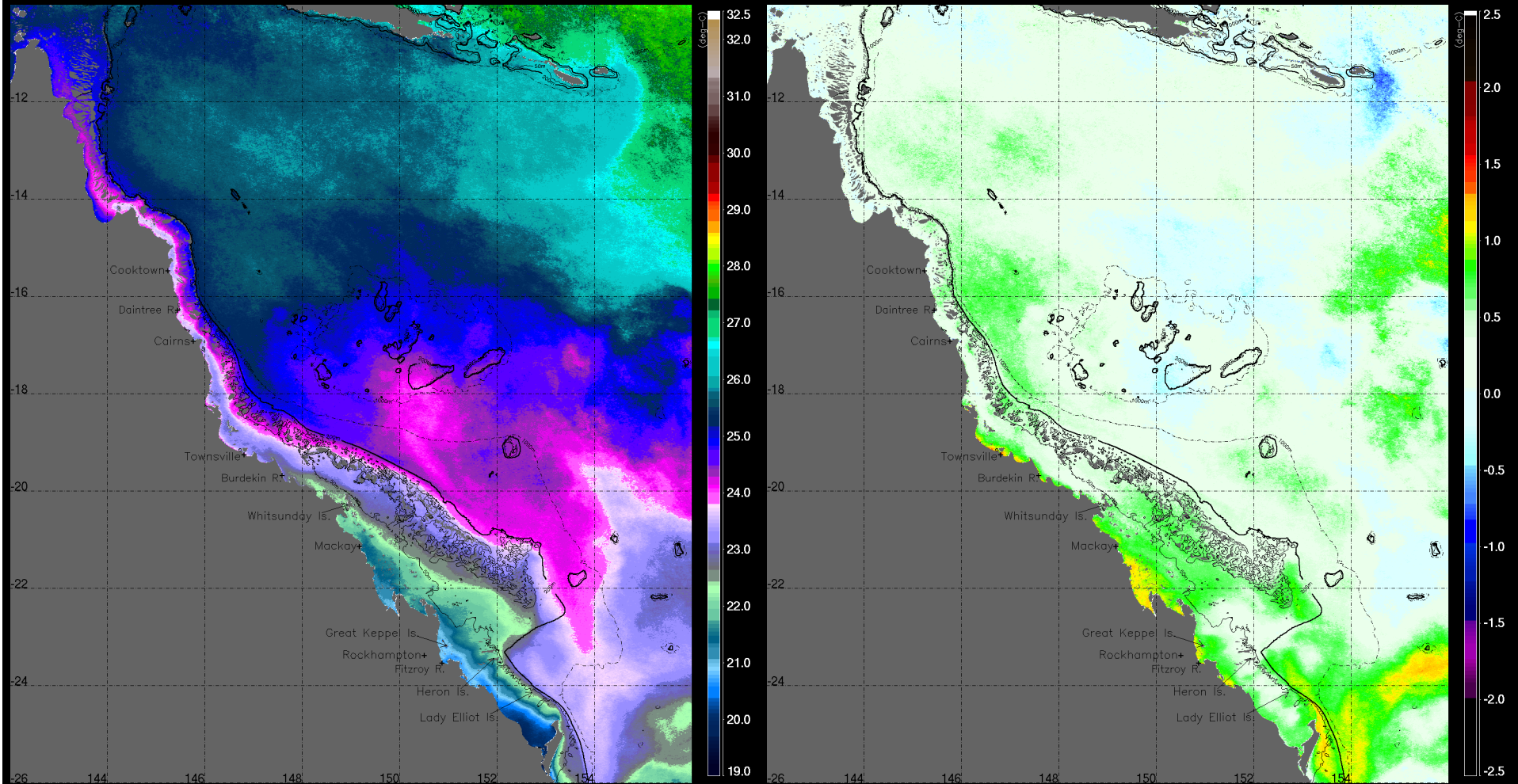
Outline

- Overview
- Recent SST and in situ Temperature evolution
- Monthly means and anomalies of MODIS Chlorophyll-a concentrations and 10% Photic Depth
- GBR SST forecast (POAMA)
- Coral Bleaching Outlook (NOAA:CRW)
- Surface conditions in the tropical Pacific
- ENSO evolution and predictions

Overview

- Neutral SST conditions prevalent over Torres Strait during August, in contrast with the moderate positive SST anomalies along the GBR.
- MODIS Chlorophyll-a concentrations and 10% Photic Depth products showing neutral conditions over the GBR and Torres Strait areas, with strong intrusions of oceanic waters into the S-GBR.
- Forecast of close to average SST and Torres Strait. No bleaching alerts for the upcoming months, although the LIM-based Coral Reef Watch outlook suggests 'Warning' for the N-GBR and Torres Strait areas.
- ENSO neutral conditions continued in the Pacific during August, and are expected to persist in the upcoming months

MODIS sea surface temperature (day+night) August 2013



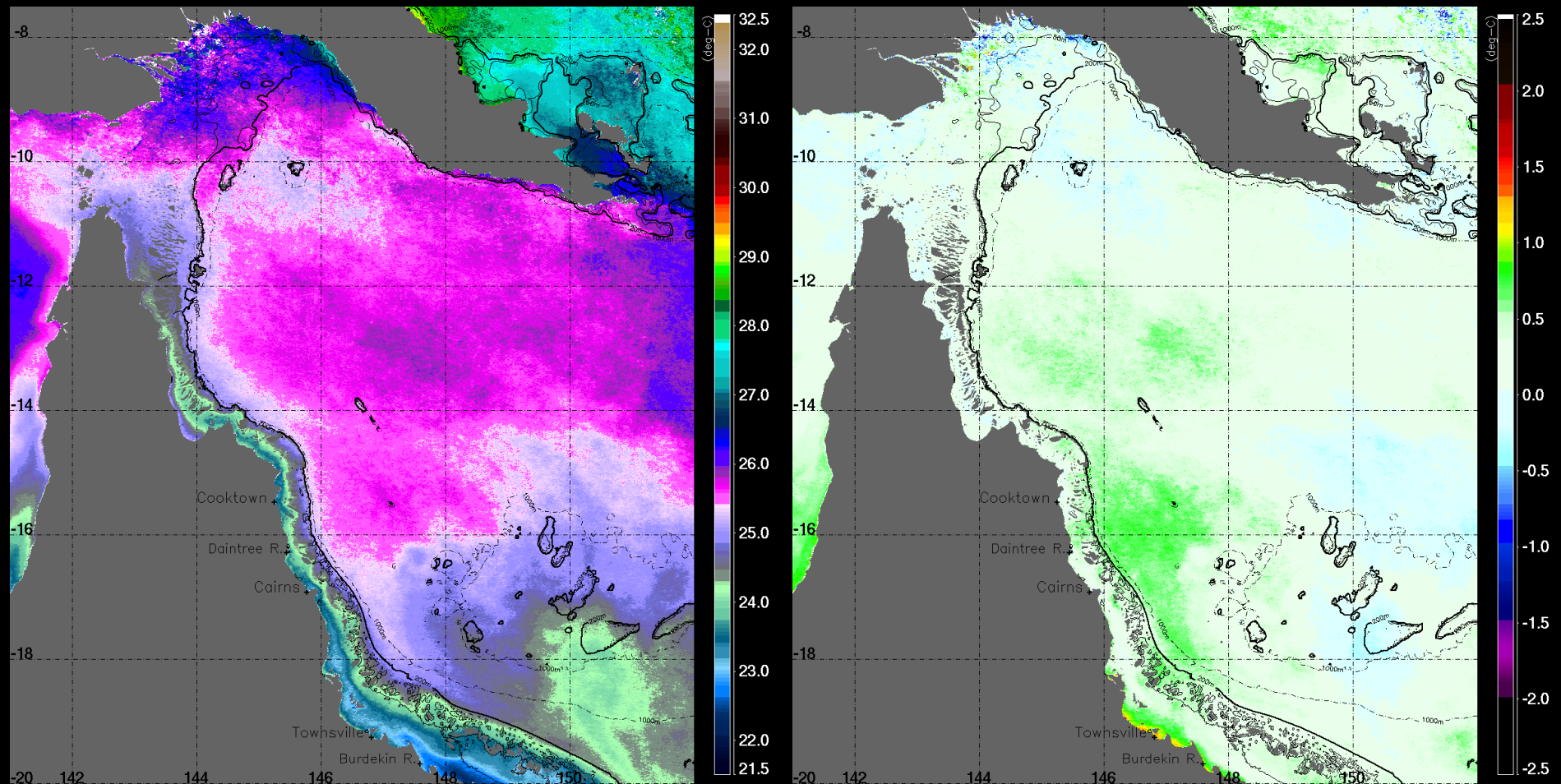
Note:

- Neutral SST conditions prevalent over the Torres Strait area during August, while positive SST anomalies are shown for most of the inner reefs south of $\sim 18^{\circ}\text{S}$.

Torres Strait / far northern GBR

MODIS sea surface temperature (day+night)

August 2013



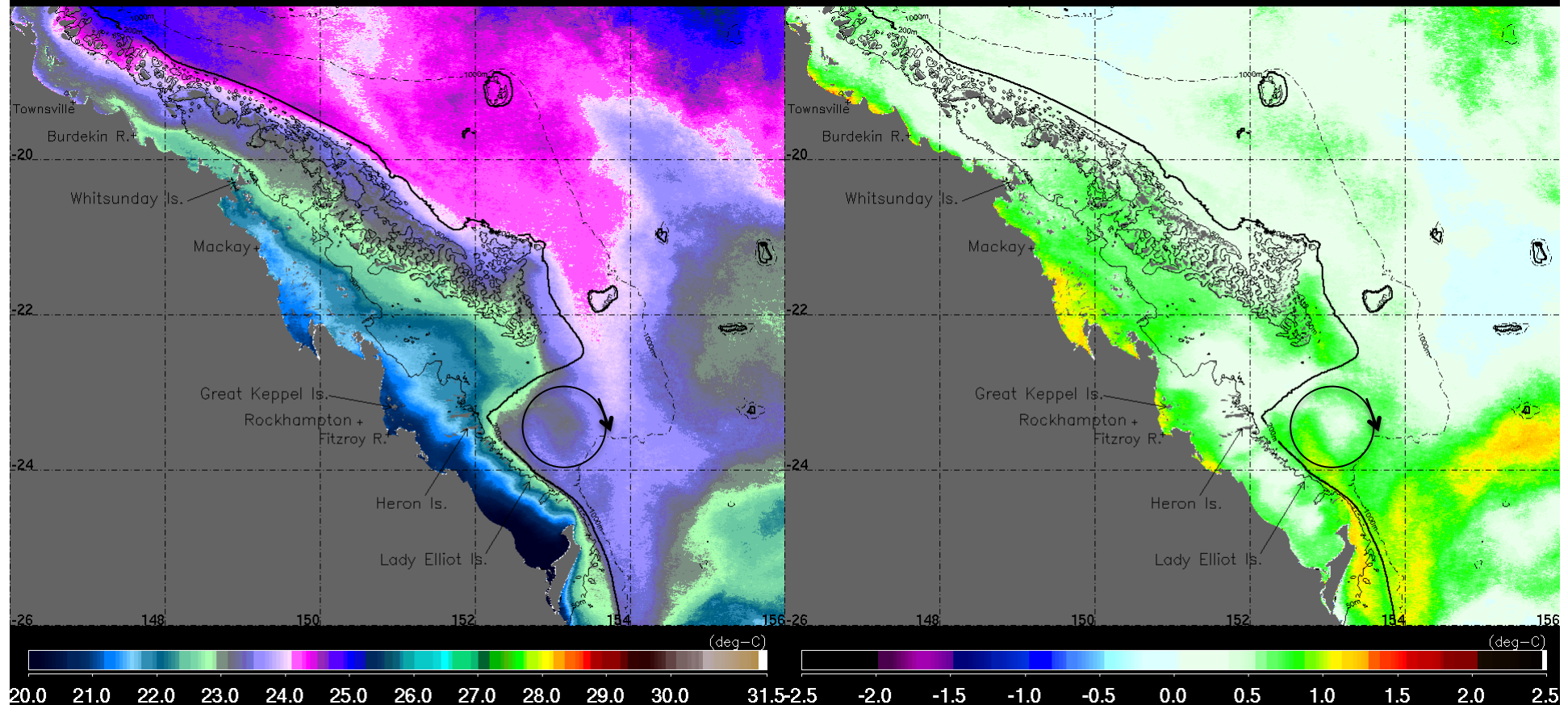
Note:

- Neutral SST conditions continued for the Torres Strait and far N-GBR during August.
- In contrast, positive SST anomalies are noticeable south of 14°S, especially marked on the inner reefs surrounding Townsville.

Southern GBR

MODIS sea surface temperature (day+night)

August 2013



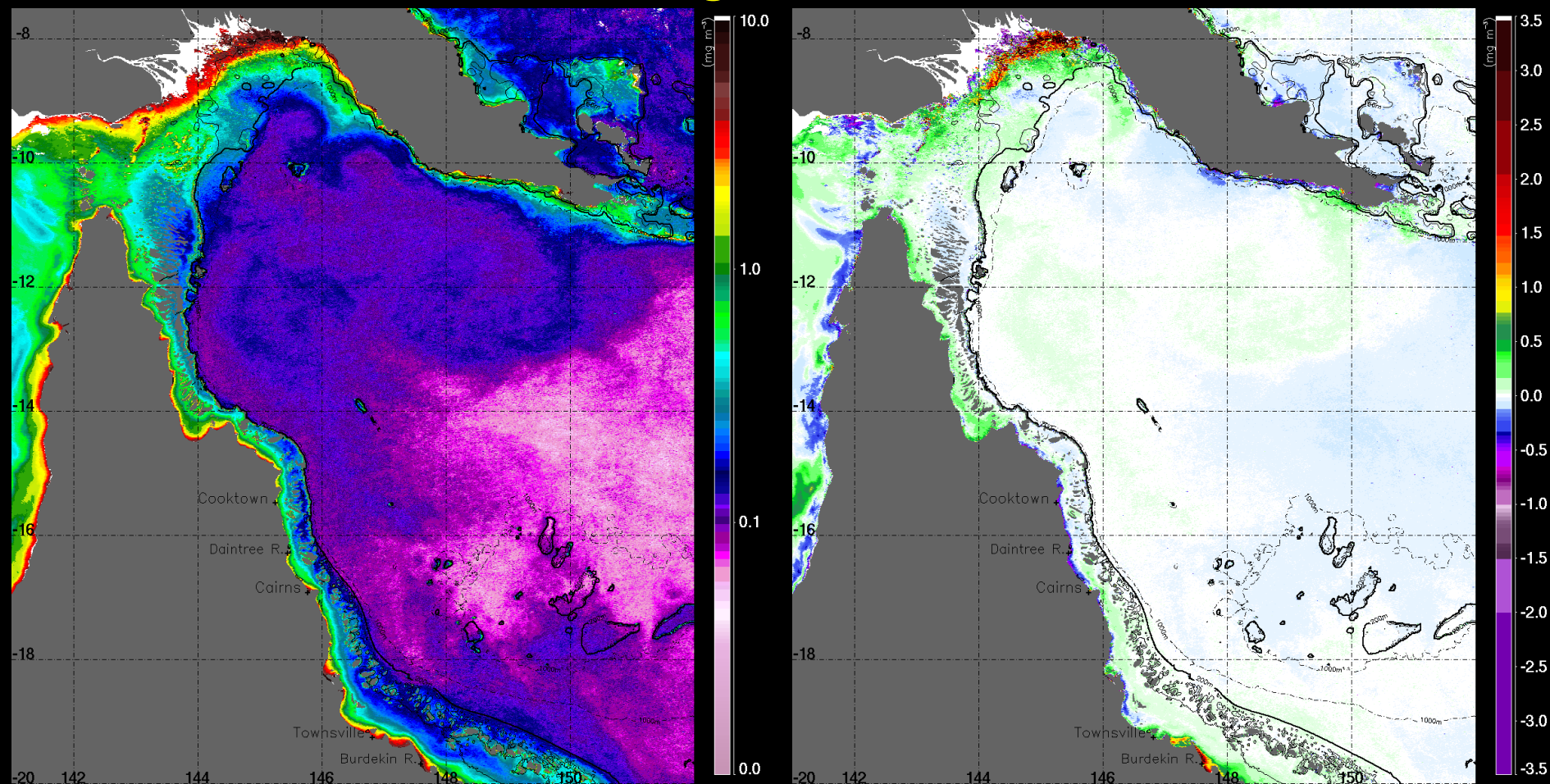
Note:

- Moderate positive SST anomalies present for most of the inshore reefs of the S-GBR as well as the Swain reefs and Capricorn-Bunker areas.
- Strong East Australian Current (EAC) signal flowing southwards along the shelf edge, with an active Capricorn Eddy apparent in the lee of the bathymetry

Torres Strait / far northern GBR

MODIS chlorophyll-*a* concentration

August 2013



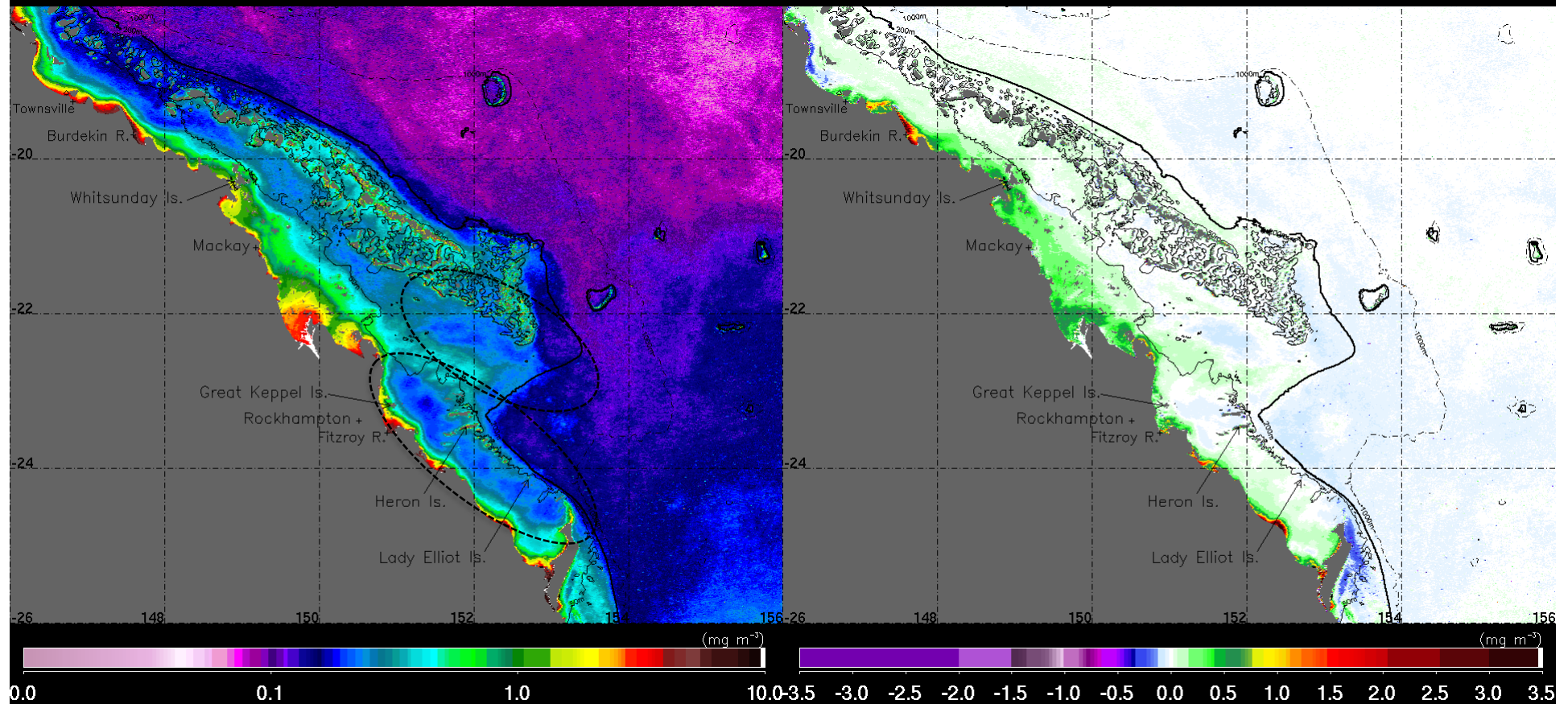
Note:

- Chlorophyll-*a* values mostly average during August for the Torres Strait and N-GBR, with moderately higher positive anomalies in Burdekin and Fly River areas.

Southern GBR

MODIS chlorophyll-*a* concentration

August 2013



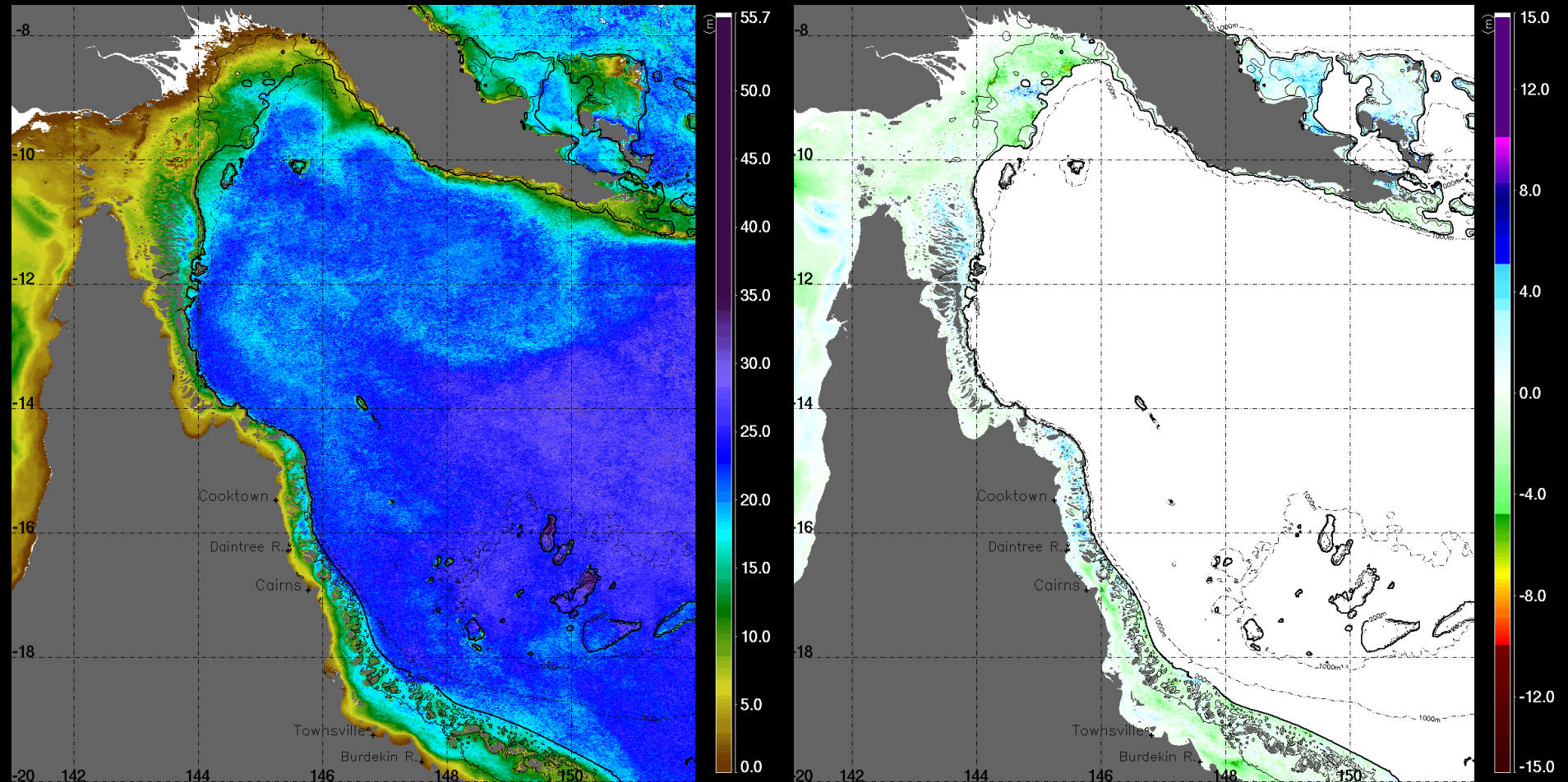
Note:

- Moderate positive chlorophyll-*a* anomalies along inshore S-GBR reefs during August
- Intrusions of lower chlorophyll-*a* EAC waters clearly apparent through the Capricorn and Curtis Channels.

Torres Strait / far northern GBR

MODIS 10% photic depth

August 2013



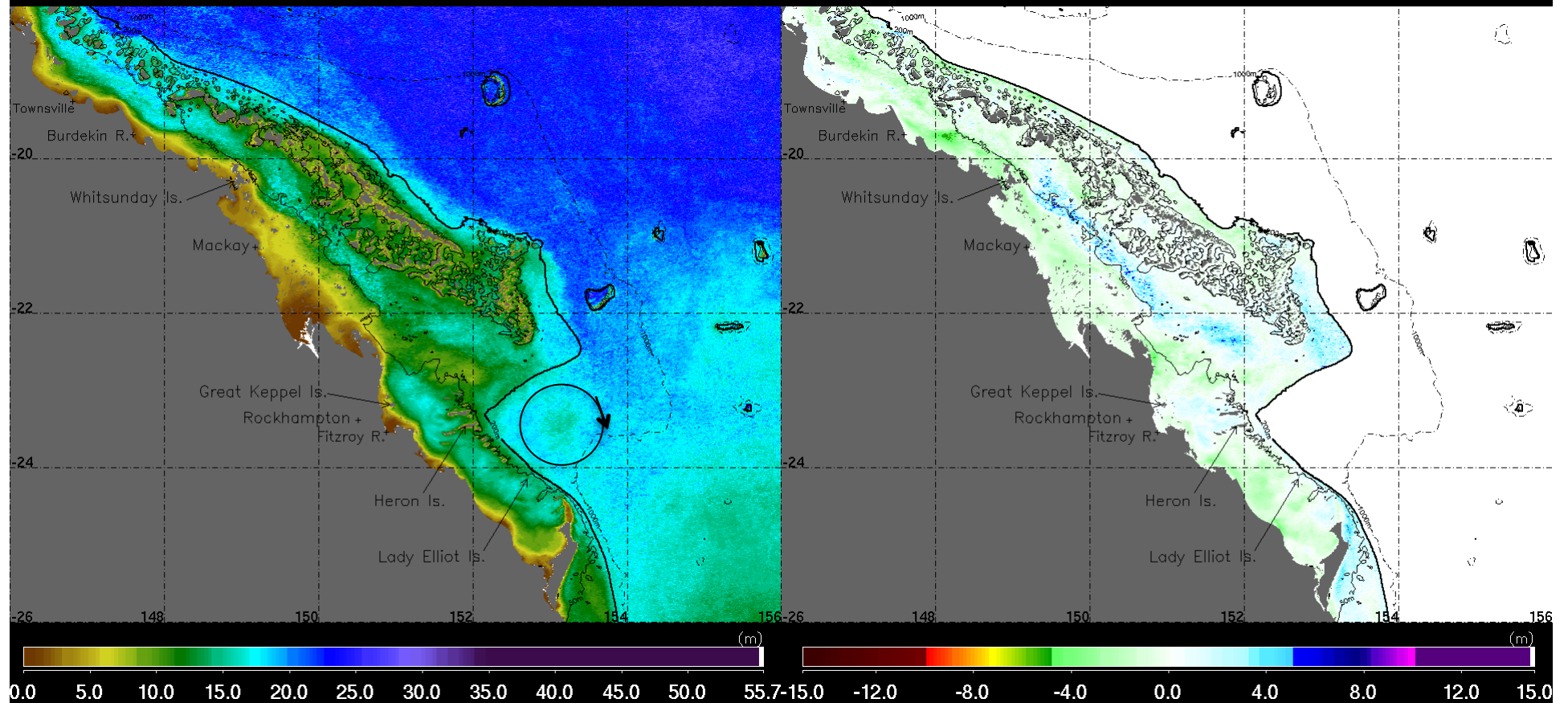
Note:

- MODIS 10% photic depth showed no apparent anomalies on the N-GBR / Torres Strait region during August, with turbid (low clarity) waters in the Torres Strait and coastal areas and clear waters offshore.

Southern GBR

MODIS 10% photic depth

August 2013



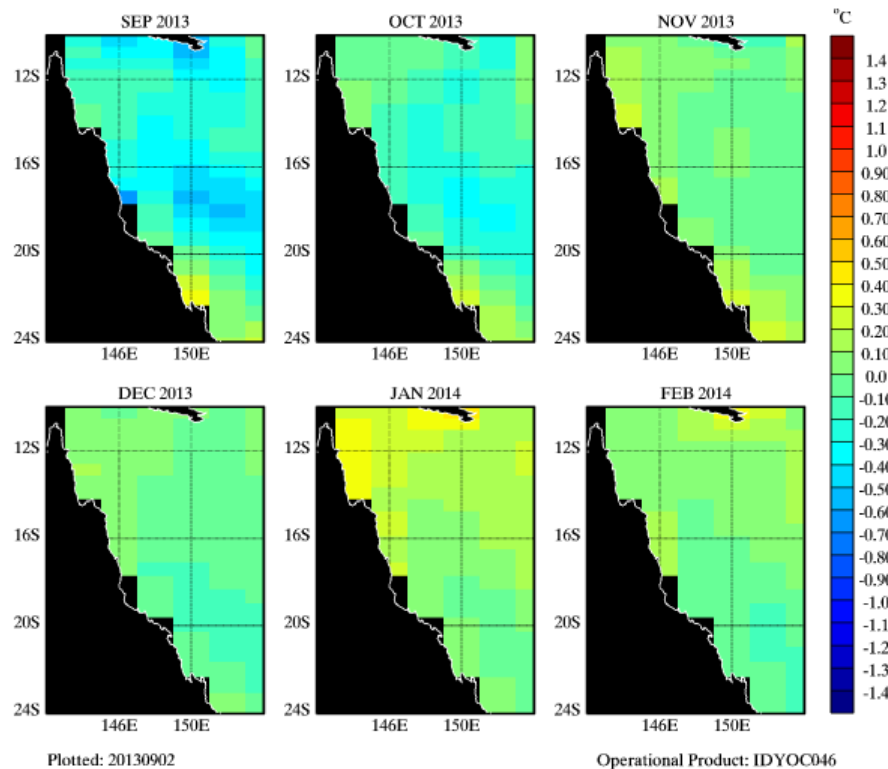
Note:

- MODIS 10% photic depth showed mostly averaged conditions for the S-GBR during August, with apparent intrusions of clear oceanic waters into the Capricorn Channel, leading to positive anomalies (clearer waters).

Sea surface temperature anomaly forecast (POAMA-2)

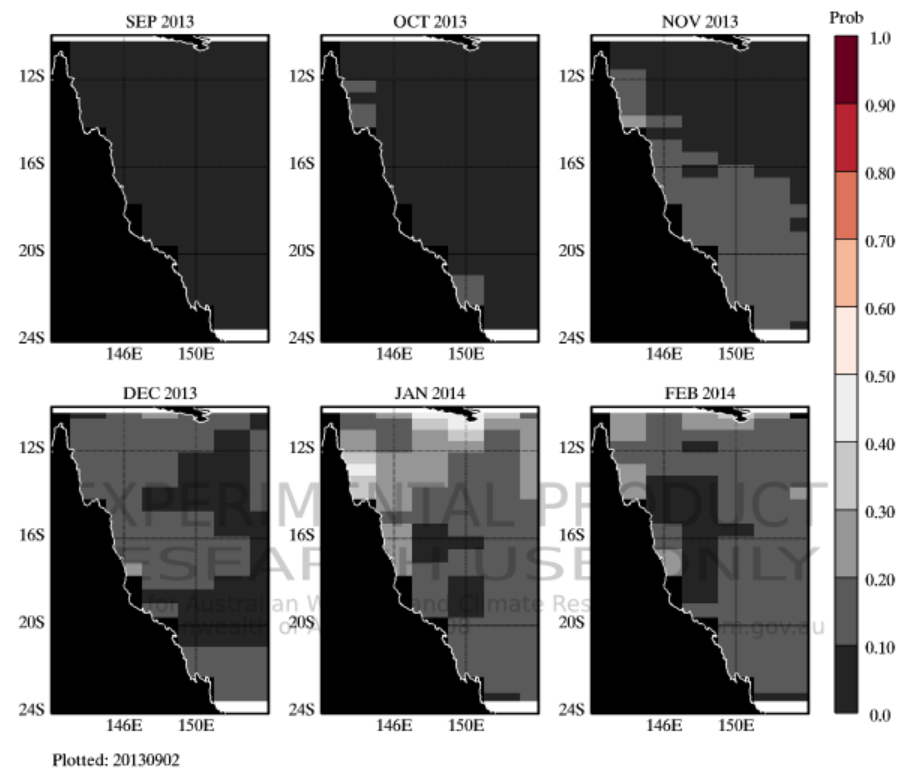
POAMA SST anomaly forecast for the next 6 months (operational)

P2.4abc Monthly SSTA: GBR 20130901 [Lead=0-5 months, Nens=30]



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

POAMA 2.4abc Probability SSTA ≥ 0.6 °C: 20130901 [Lead=0-5 months, Nens=30]



Note:

- POAMA forecast temperatures close to or slightly above average for the upcoming months. The probabilities of temperature anomalies exceeding 0.6°C remain low.

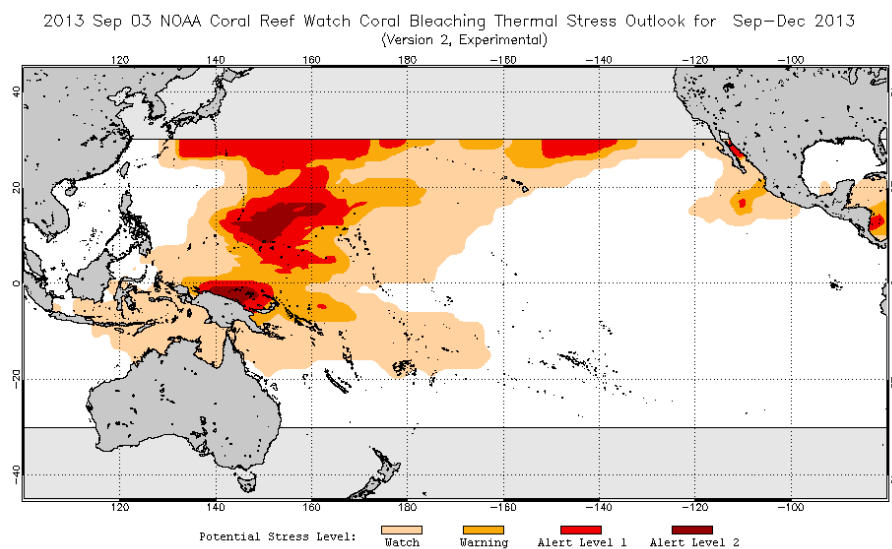
NOAA Coral Reef Watch

Seasonal coral bleaching thermal stress outlook

September to December 2013

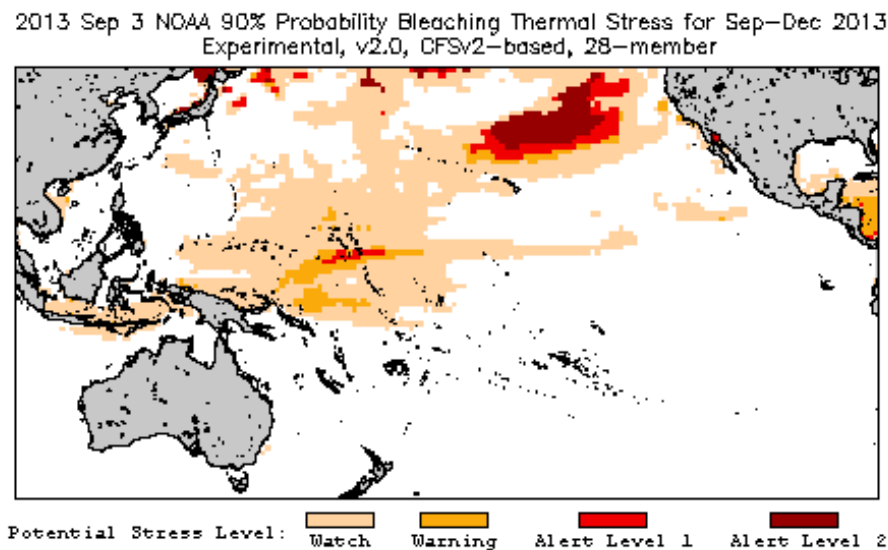
LIM-based

Version 2, experimental, weekly 2x2 degree spatial resolution



CFS-based

Version 2, experimental, weekly 1x1 degree spatial resolution
(90% probability)

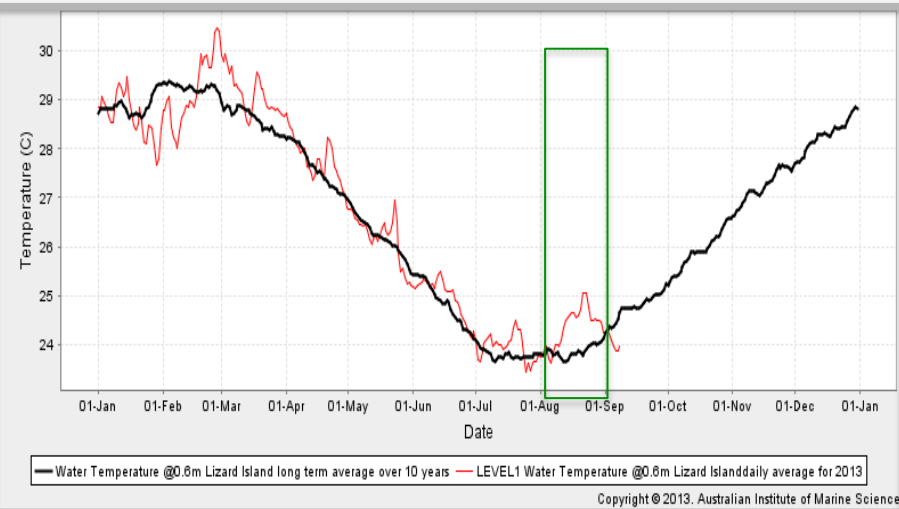


Note:

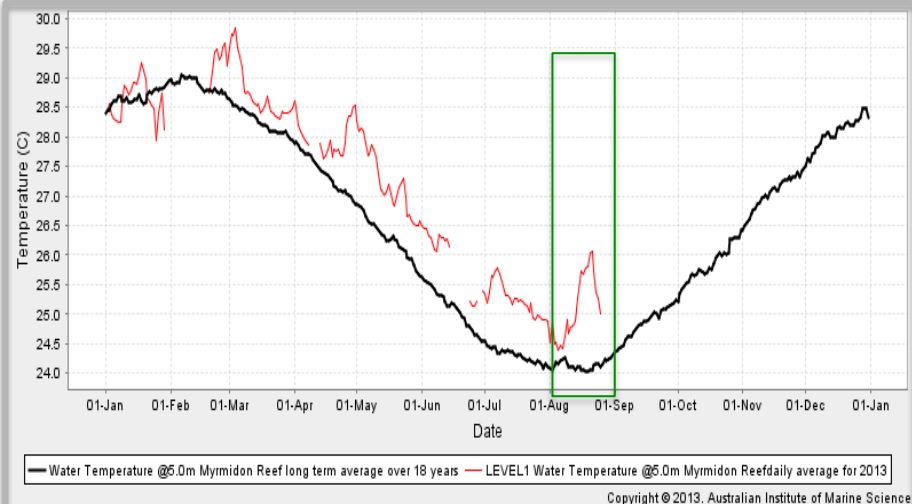
- The CFS-based NOAA CRW bleaching thermal outlook shows no bleaching alerts for the upcoming months (September to December). In contrast, the LIM-based outlook is showing 'Warning' for the N-GBR and Torres Strait areas.

Water temperatures from IMOS Sensor Network (FAIMMS) (AIMS operated)

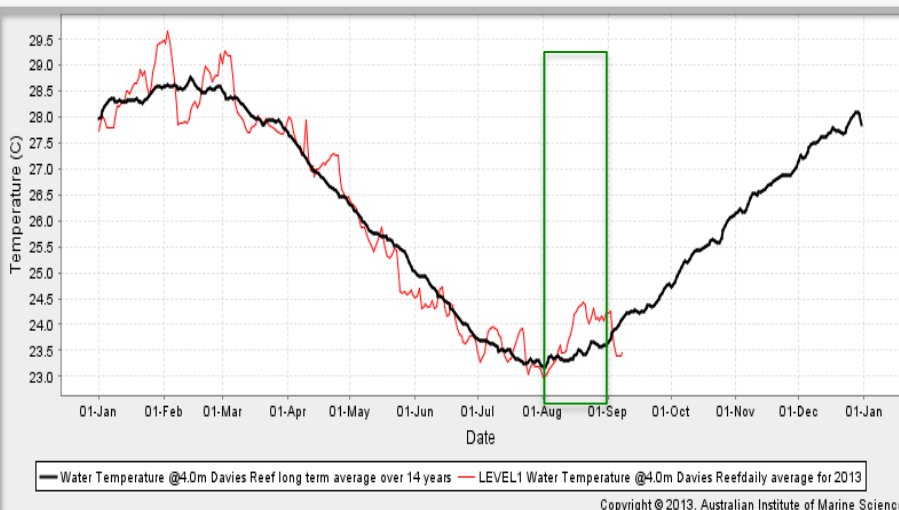
Water temperature @0.6m Lizard Island sensor float trend against longterm average



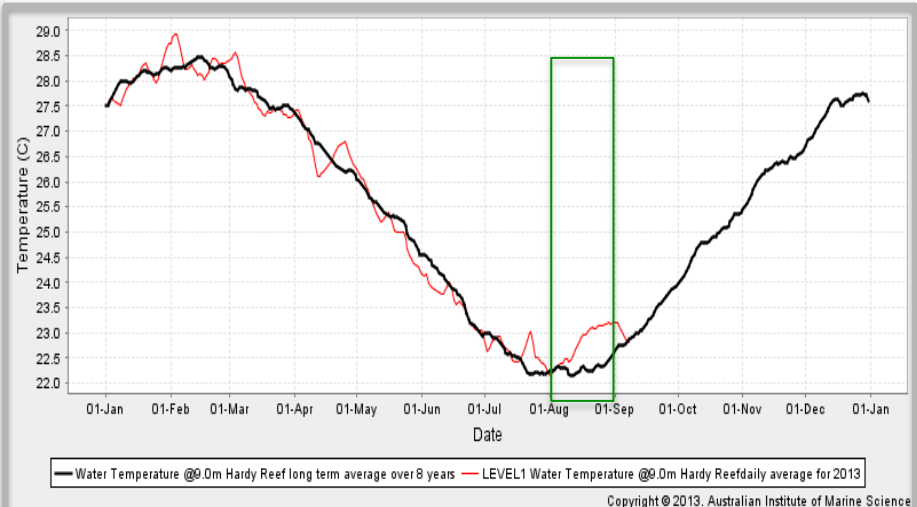
Water temperature @5.0m Myrmidon sensor float trend against longterm average



Water temperature @4.0m Davies Reef Platform trend against longterm average

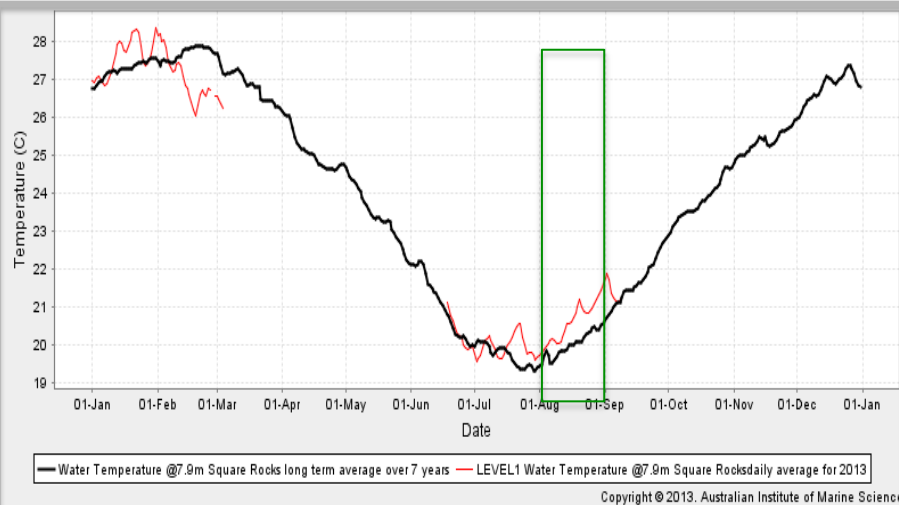


Water temperature @9.0m Hardy Reef Platform trend against longterm average

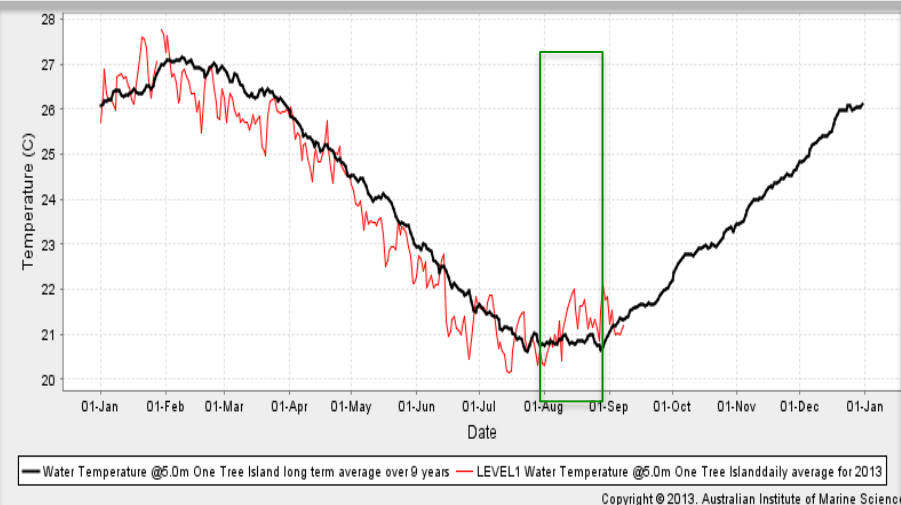


Water temperatures from IMOS Sensor Network (FAIMMS) (AIMS operated)

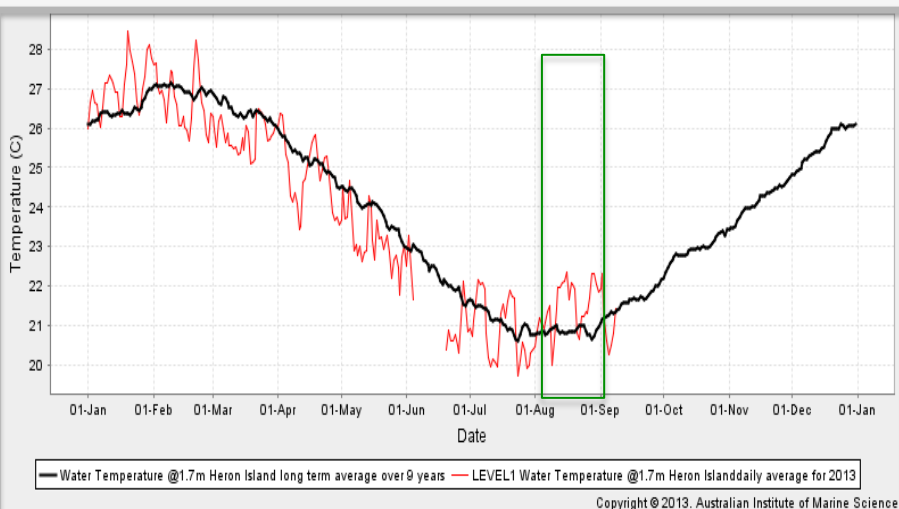
temperature @7.9m Square Rocks Platform trend against longterm average



Water temperature @5.0m One Tree Island Relay Pole 3 trend against longterm average



Water Water temperature @1.7m Heron Island Relay Pole 1 trend against longterm average

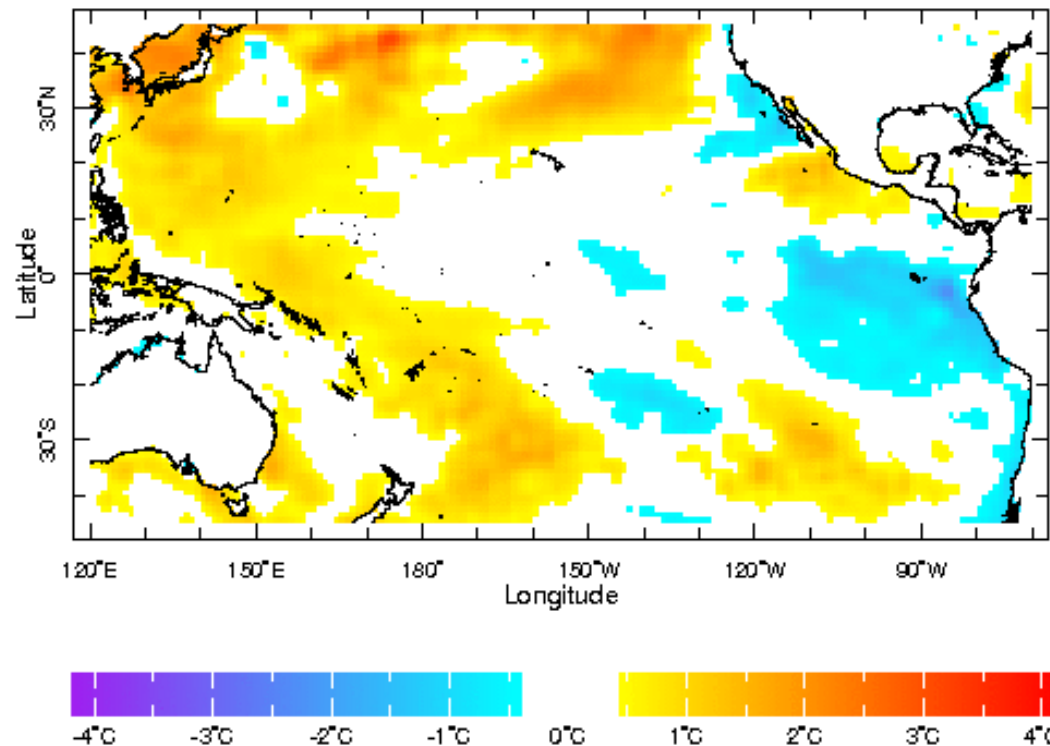


- All of the GBR locations show water temperatures higher than the longterm mean.

Sea Surface Temperature Anomaly

from NOAA NCEP EMC CMB GLOBAL Reyn_SmithOlv2

August 2013



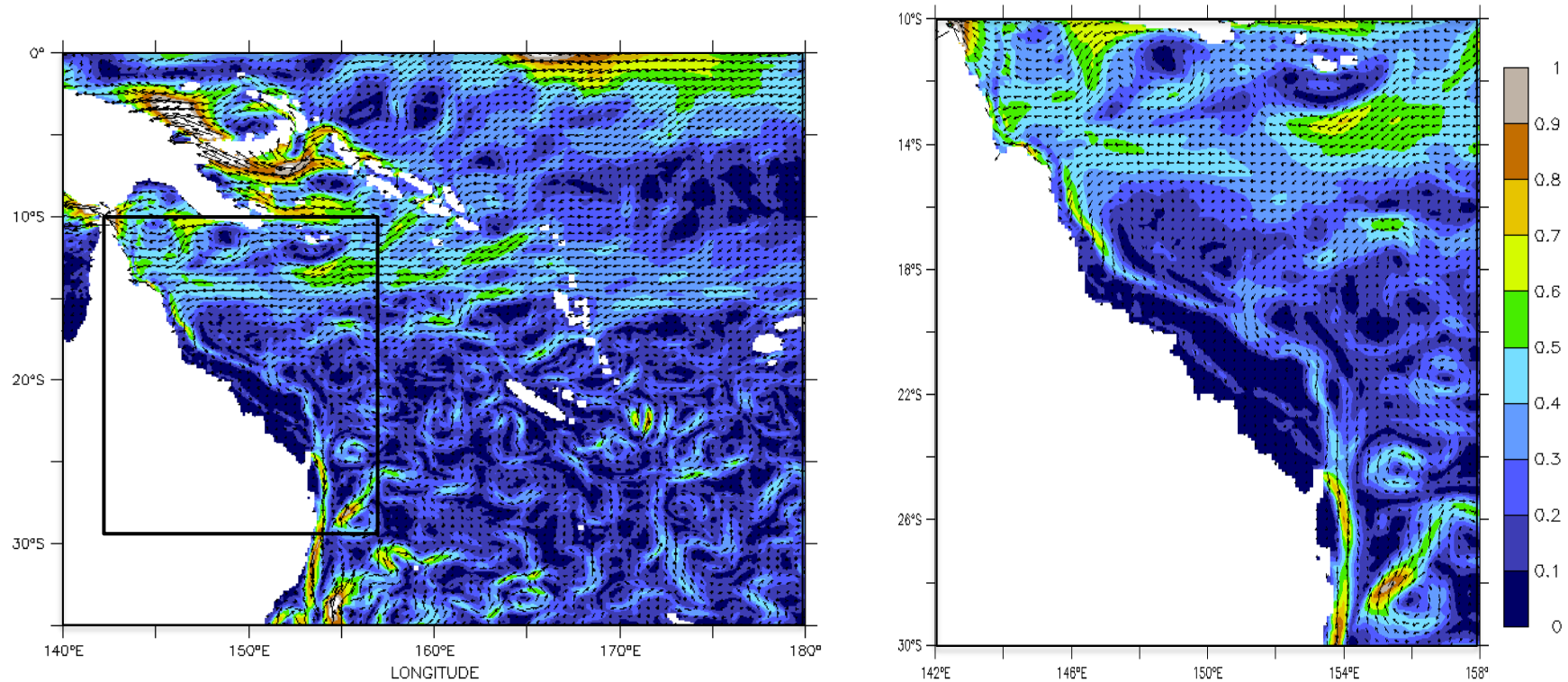
Note:

- Over the Pacific, the consistent SST anomaly pattern of the last months is still maintained during August, with positive/near average SST in the western/central equatorial Pacific and negative SST anomalies in the East

OceanMAPS 15m Depth-Average Currents

August 2013

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.

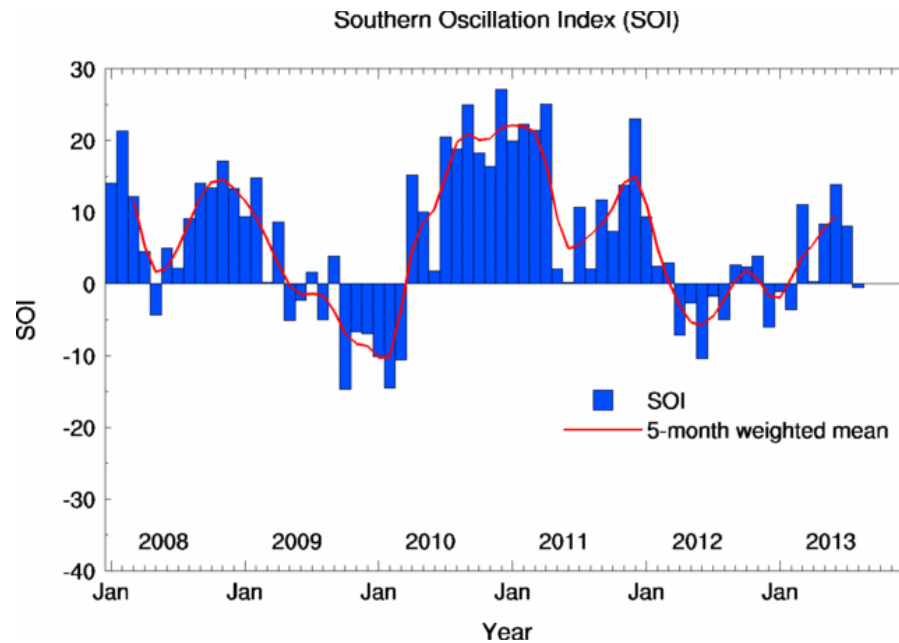


Behind Real Time analysis
15 m Depth-Averaged Currents (m/s).

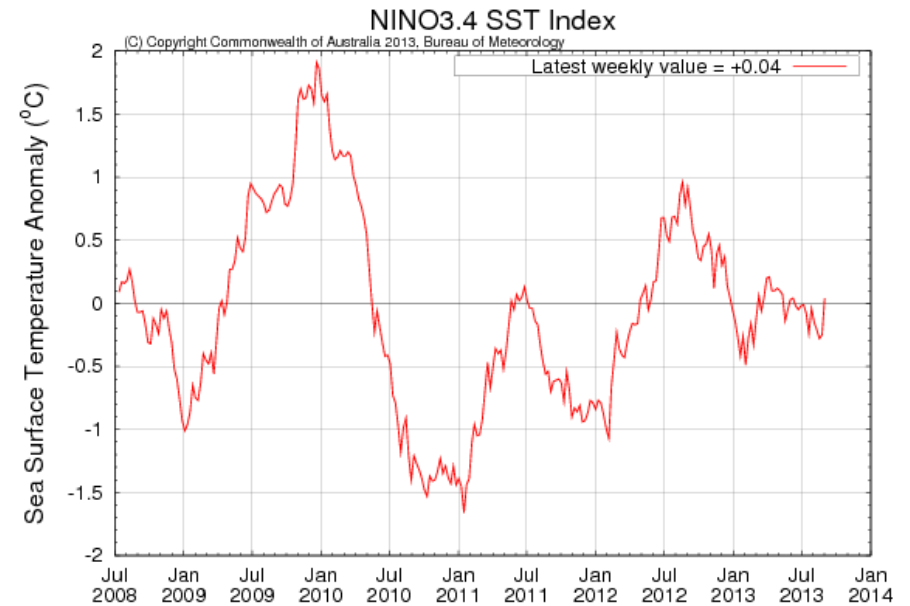
Note:

- The PNG gyre is still apparent during August although less strong than the previous month.
- The EAC is clearly visible as a narrow southward flow adjacent to the GBR, which intensifies considerably south of Fraser Island.

ENSO Index



Negative SOI = El Niño



Positive Nino 3.4 index= El Niño

Note:

- ENSO-neutral conditions continued during August and are expected to persist for the upcoming months.