

NERP

Torres Strait / GBR environmental conditions report:

Recent status and predictions

10 January 2013

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Outline

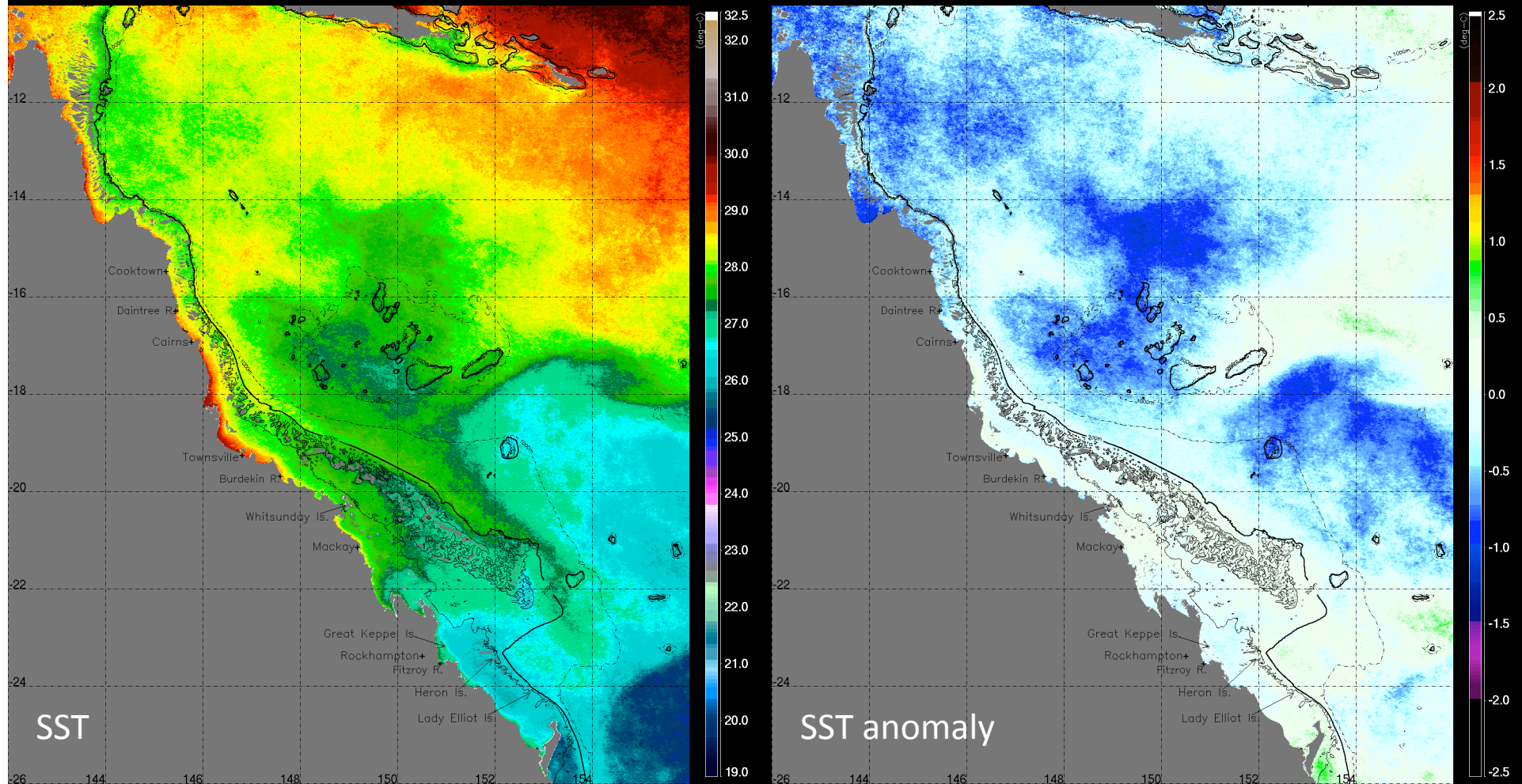
- Overview
- Recent SST and in situ Temperature evolution
- GBR SST forecast (POAMA)
- Coral Bleaching Outlook (NOAA:CRW)
- Surface conditions in the tropical Pacific
- ENSO evolution and predictions

Overview

Note: Torres Strait / far northern GBR region extended north- and westward to cover full Torres Strait area

- Negative SST anomalies for Torres Strait and north GBR. Neutral SST conditions elsewhere.
- Forecast of close to average SST along the GBR and Torres Strait for the upcoming months.
- The NOAA Coral Reef Watch forecast suggests 'Warning' for the Torres Strait and N-GBR regions.
- ENSO-neutral conditions observed in the Pacific during December, and expected to continue in the upcoming months.

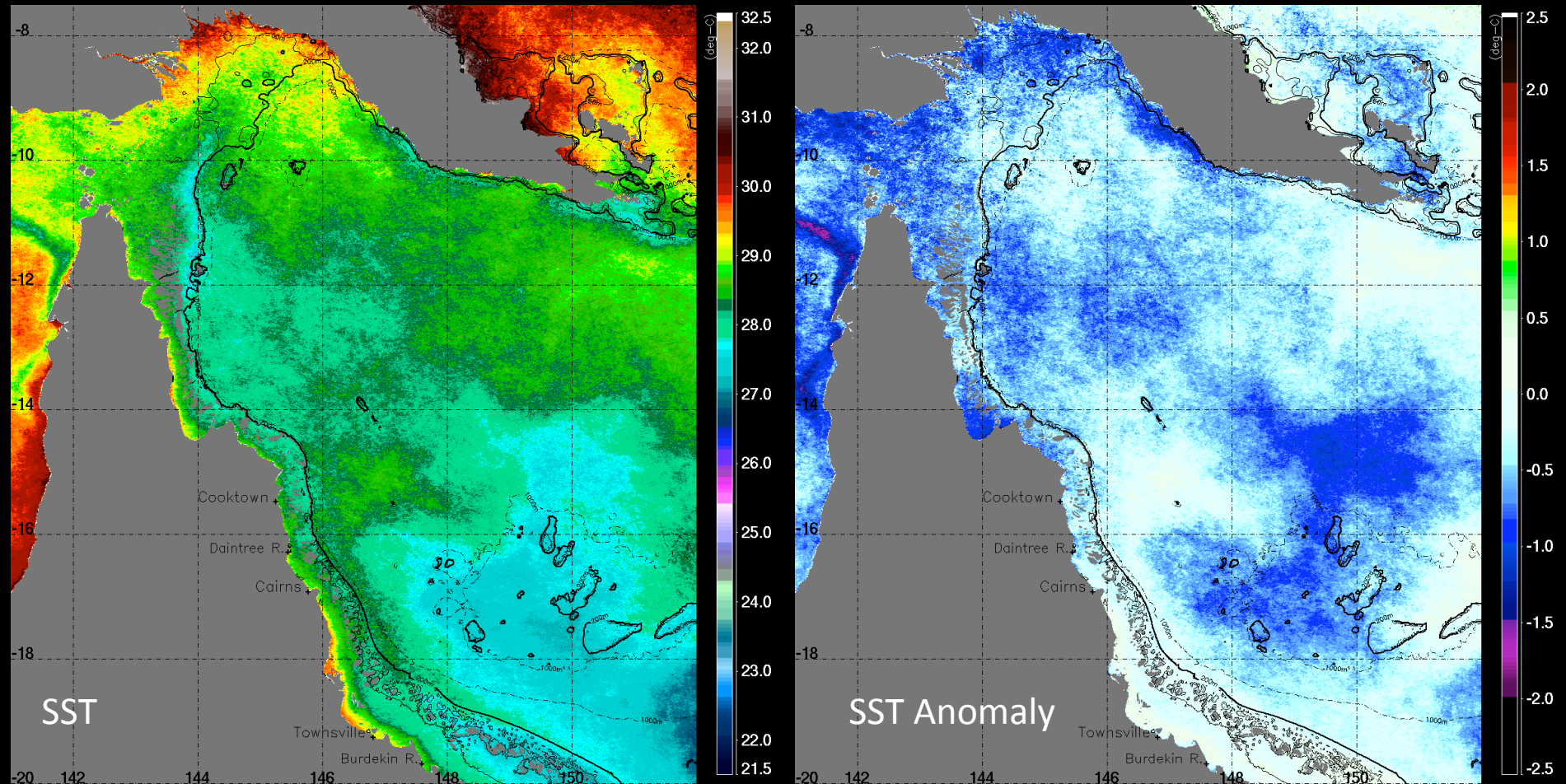
Modis SST (day+night): December 2012



Note:

- The negative SST anomalies present on previous months on the inshore reefs south of ~21°S dissipated during November. In contrast, the negative anomalies strengthened for the Torres Strait and N-GBR regions.
- Strong negative anomalies present over the Coral Sea.

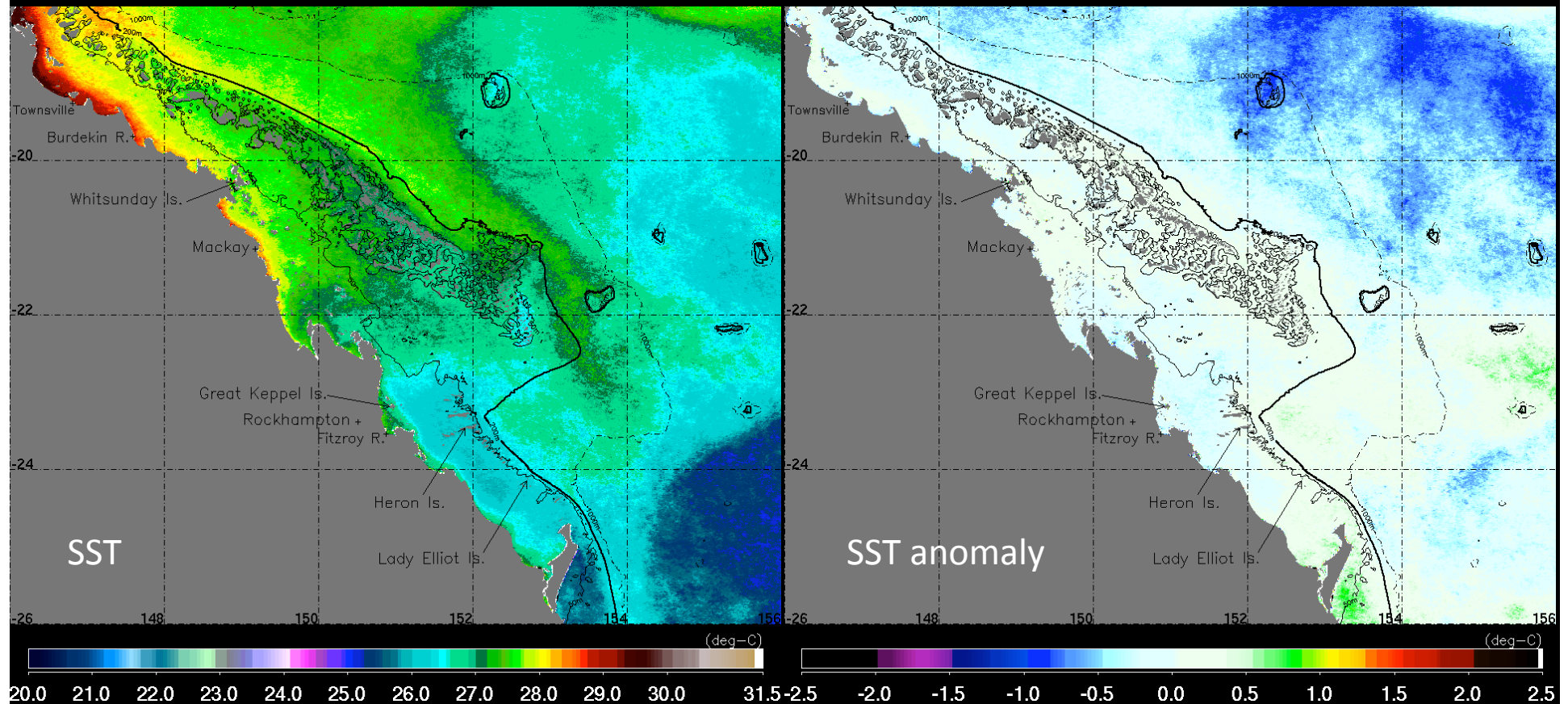
Torres Strait / far northern GBR MODIS SST: December 2012



Note:

- The moderate negative SST anomalies present during November for the Torres Strait and far N-GBR areas strengthened during December.
- Average conditions persisted south of $\sim 14^{\circ}\text{S}$.

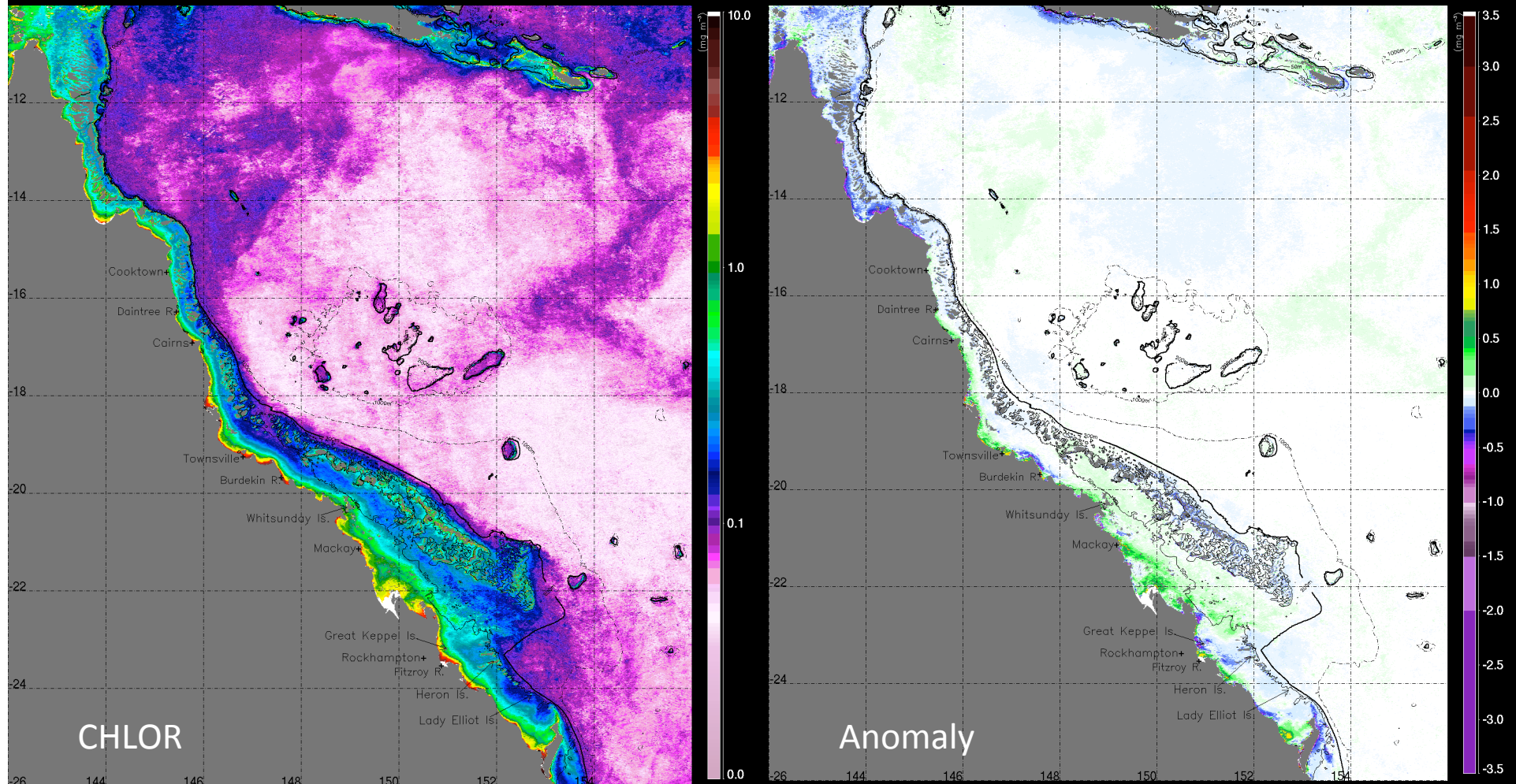
Southern GBR MODIS SST: December 2012



Note:

- The negative anomalies present on the inner reefs south of $\sim 21^{\circ}\text{S}$ during November dissipated, leading to neutral conditions for the entire S-GBR during December.
- Negative anomalies present offshore.

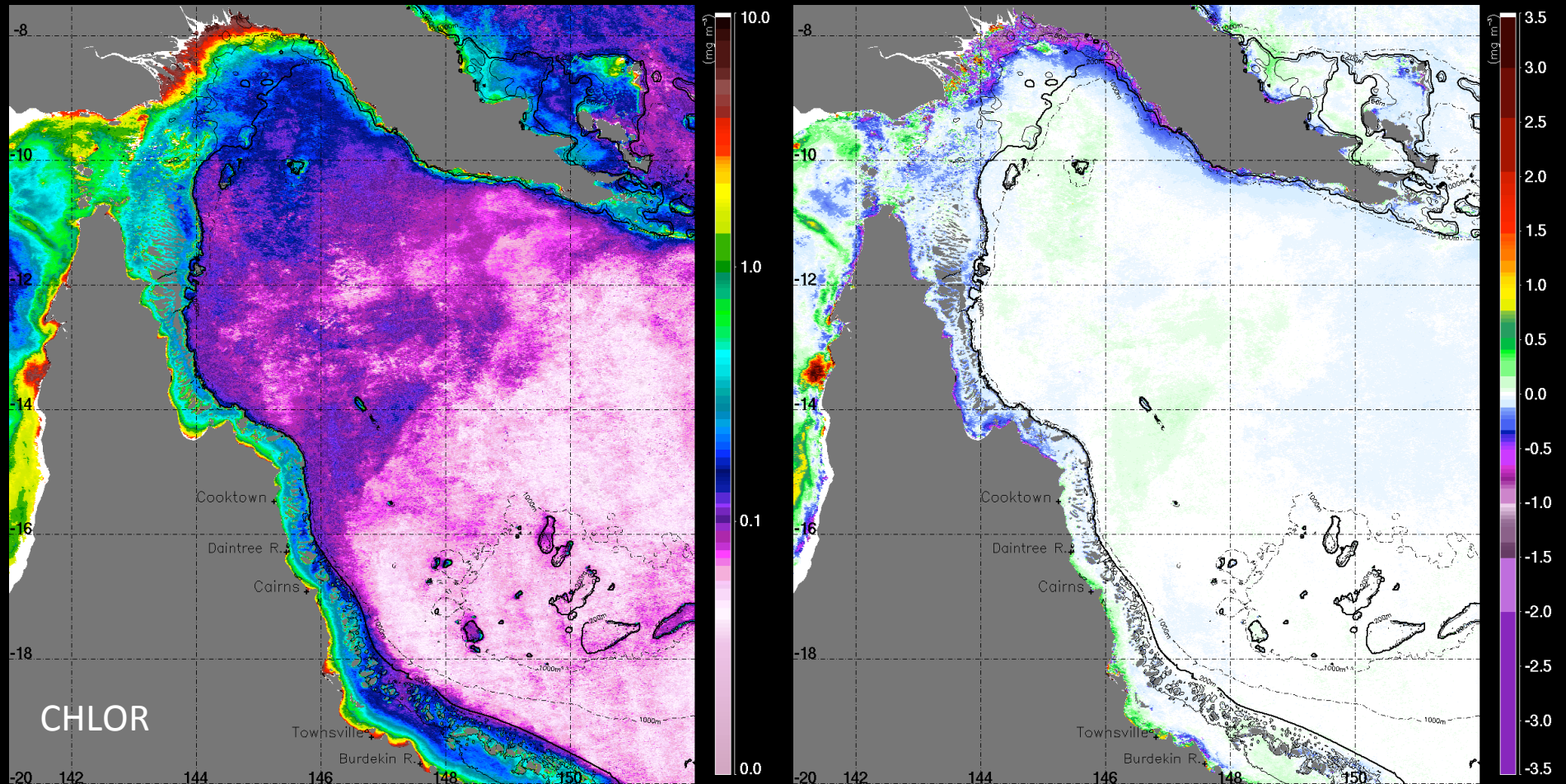
MODIS Chlorophyll- a concentration: December 2012



Note:

- Negative anomalies of Chlorophyll- a concentration present on the inshore reefs north of ~16°S, in contrast to the weak positive anomalies that are dominant south of 16°S during December.

Torres Strait / far northern GBR Chlorophyll-*a* concentration December 2012



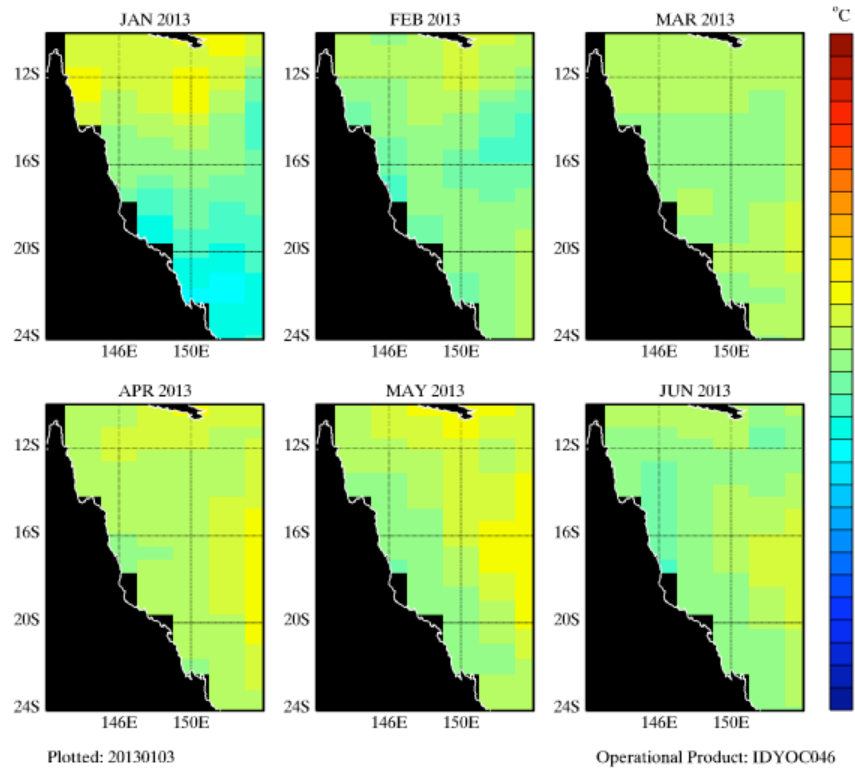
Note:

- Mostly negative anomalies present on the inshore reefs of the far north GBR and Torres Strait areas
- Less intense chlorophyll signal in the Fly River than previous months, with negative anomalies suggesting lower than average outflow. However, due to cloud contamination in this area, the monthly mean is not indicative of average conditions for the full month and caution should be applied in the interpretation of the anomalies.

Great Barrier Reef SST Anomaly Forecast (POAMA-2)

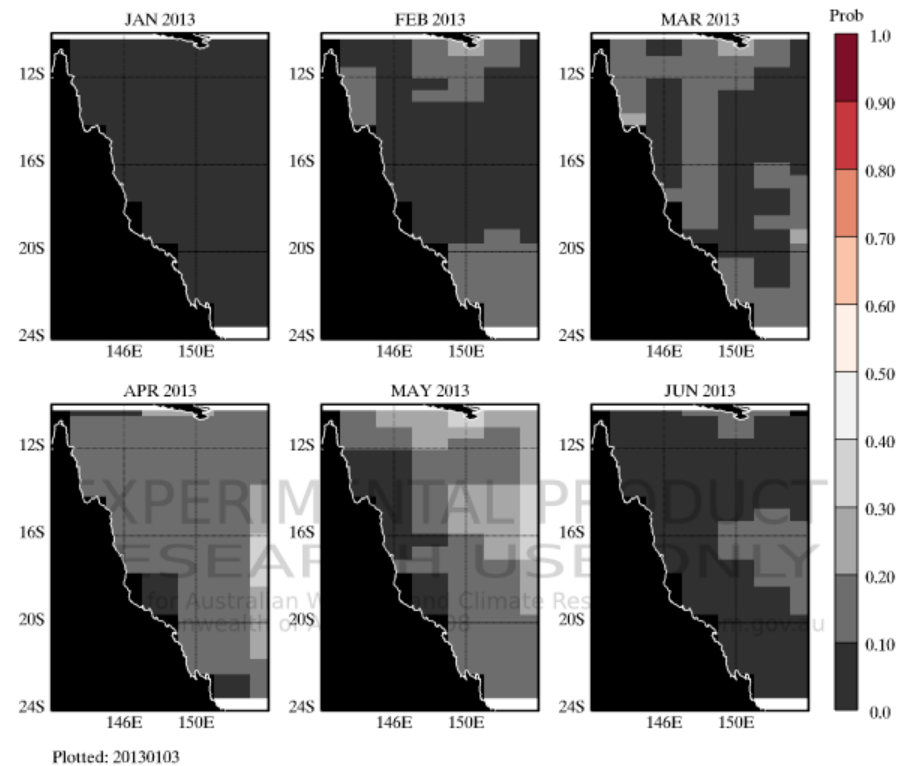
POAMA SST anomaly forecast for the next 6 months
(Operational)

P2.4abc Monthly SSTA: GBR 20130101 [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: 20130101 [Lead=0-5 months, Nens=30]



Note:

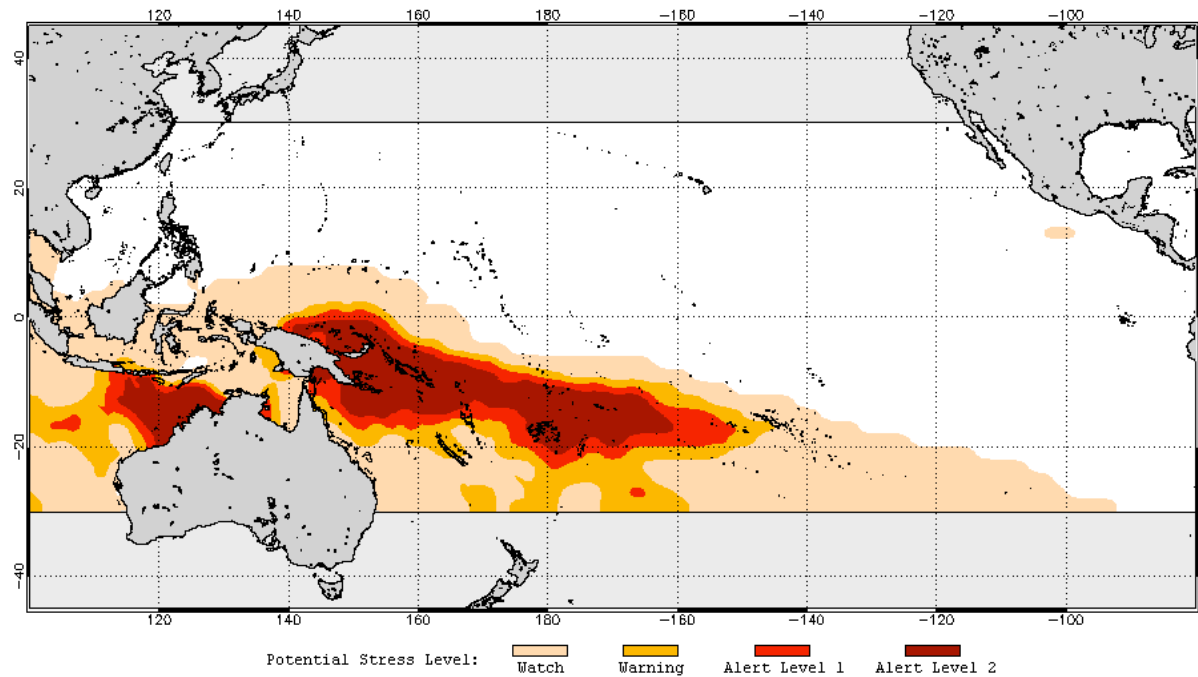
- POAMA is currently forecasting slightly higher temperatures for January to May compared to previous months, but with very low probability of SST anomalies expected to be greater than 0.6°C.

NOAA Coral Reef Watch

Coral Bleaching Thermal Stress Outlook (Version 2, experimental)

Outlook for January to April 2013

2013 Jan 08 NOAA Coral Reef Watch Coral Bleaching Thermal Stress Outlook for Jan–Apr 2013
(Version 2, Experimental)

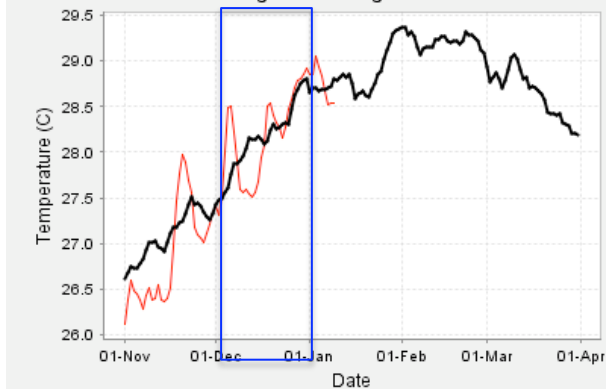


Note:

- The NOAA Coral Reef Watch forecast continues suggesting 'Alert level 1' south of PNG, and 'Warning' for the Torres Strait and N-GBR regions.

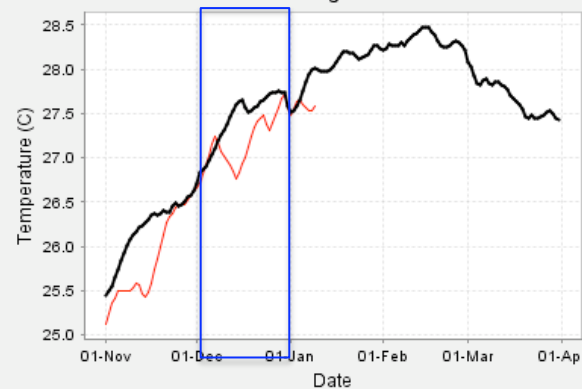
Weather Observing System: AIMS Data Centre

Water Temperature@0.6m Lizard Island Sensor Float 3Trend Against Long Term Average



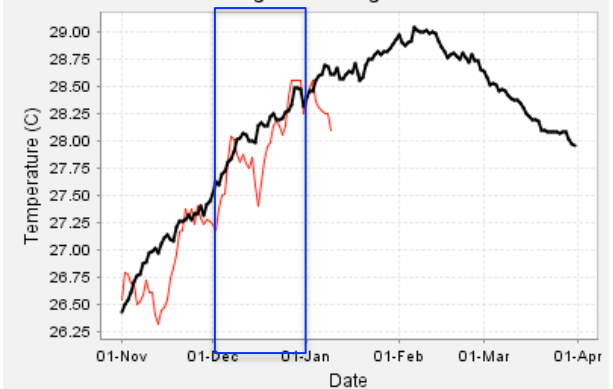
— Water Temperature@0.6m Lizard Island long term average over 9 years
— LEVEL1 Water Temperature@0.6m Lizard Island daily average for 2012 - 2013
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Water Temperature@9.0m Hardy Reef PlatformTrend Against Long Term Average



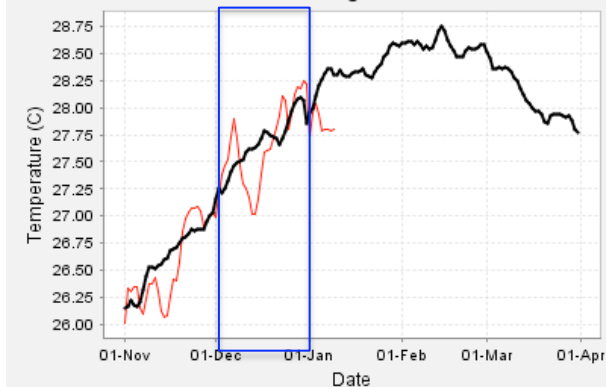
— Water Temperature@9.0m Hardy Reef long term average over 8 years
— LEVEL1 Water Temperature@9.0m Hardy Reef daily average for 2012 - 2013
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Water Temperature@5.0m Myrmidon Sensor Float 1Trend Against Long Term Average



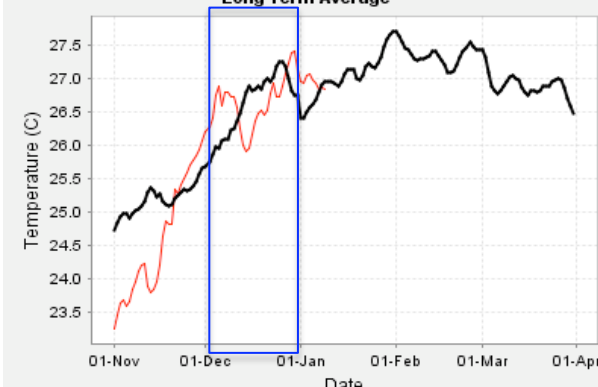
— Water Temperature@5.0m Myrmidon Reef long term average over 18 years
— LEVEL1 Water Temperature@5.0m Myrmidon Reef daily average for 2012 - 2013
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Water Temperature@4.0m Davies Reef PlatformTrend Against Long Term Average



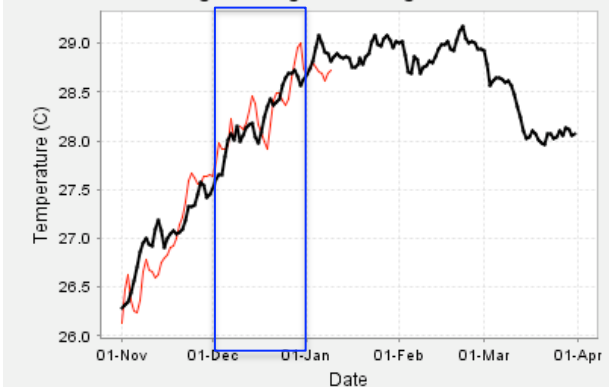
— Water Temperature@4.0m Davies Reef long term average over 14 years
— LEVEL1 Water Temperature@4.0m Davies Reef daily average for 2012 - 2013
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Water Temperature@7.9m Square Rocks PlatformTrend Against Long Term Average



— Water Temperature@7.9m Square Rocks long term average over 6 years
— LEVEL1 Water Temperature@7.9m Square Rocks daily average for 2012 - 2013
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Water Temperature@8.6m Orpheus Island Sensor Float 2Trend Against Long Term Average

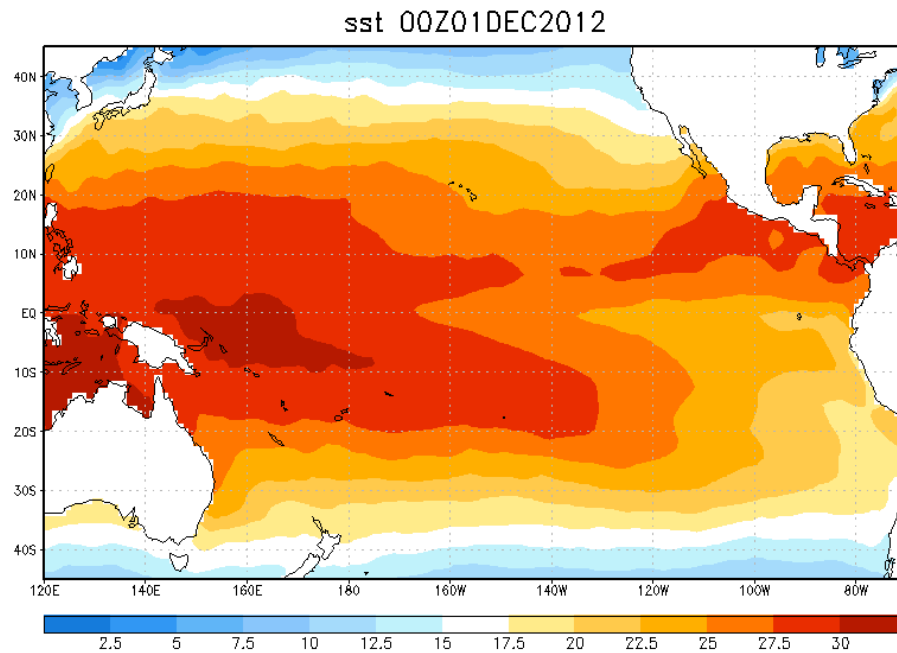


— Water Temperature@8.6m Orpheus Island long term average over 6 years
— LEVEL1 Water Temperature@8.6m Orpheus Island daily average for 2012 - 2013
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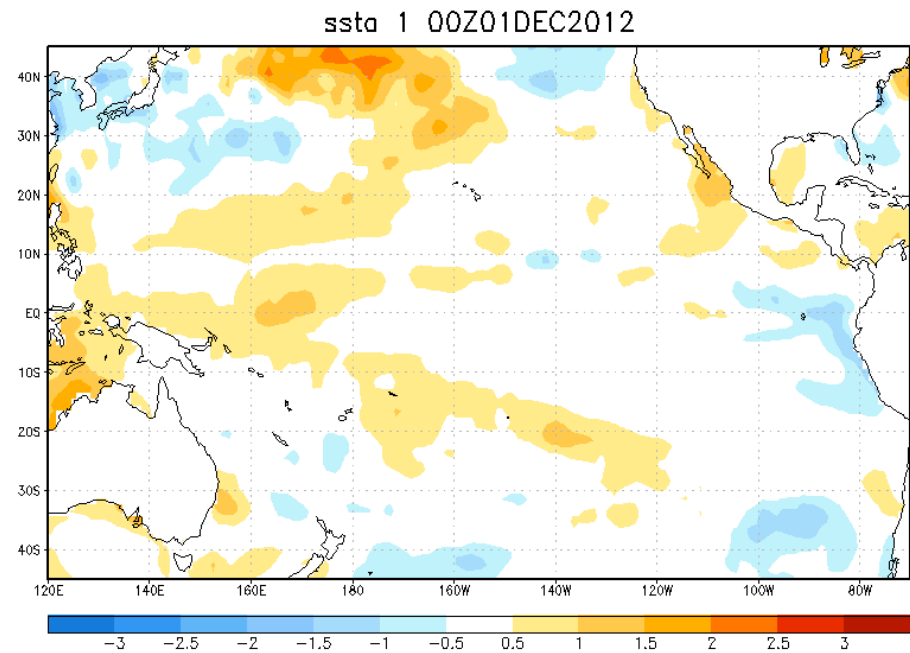
- Most of the AIMS weather stations show mainly average and/or below average temperatures for December, with temperatures above the long-term mean present at the beginning of the month for some of the stations.

NOAA Optimum Interpolation Sea Surface Temperature Analysis:

OI SST: DECEMBER 2012



OI SST ANOMALY: DECEMBER 2012



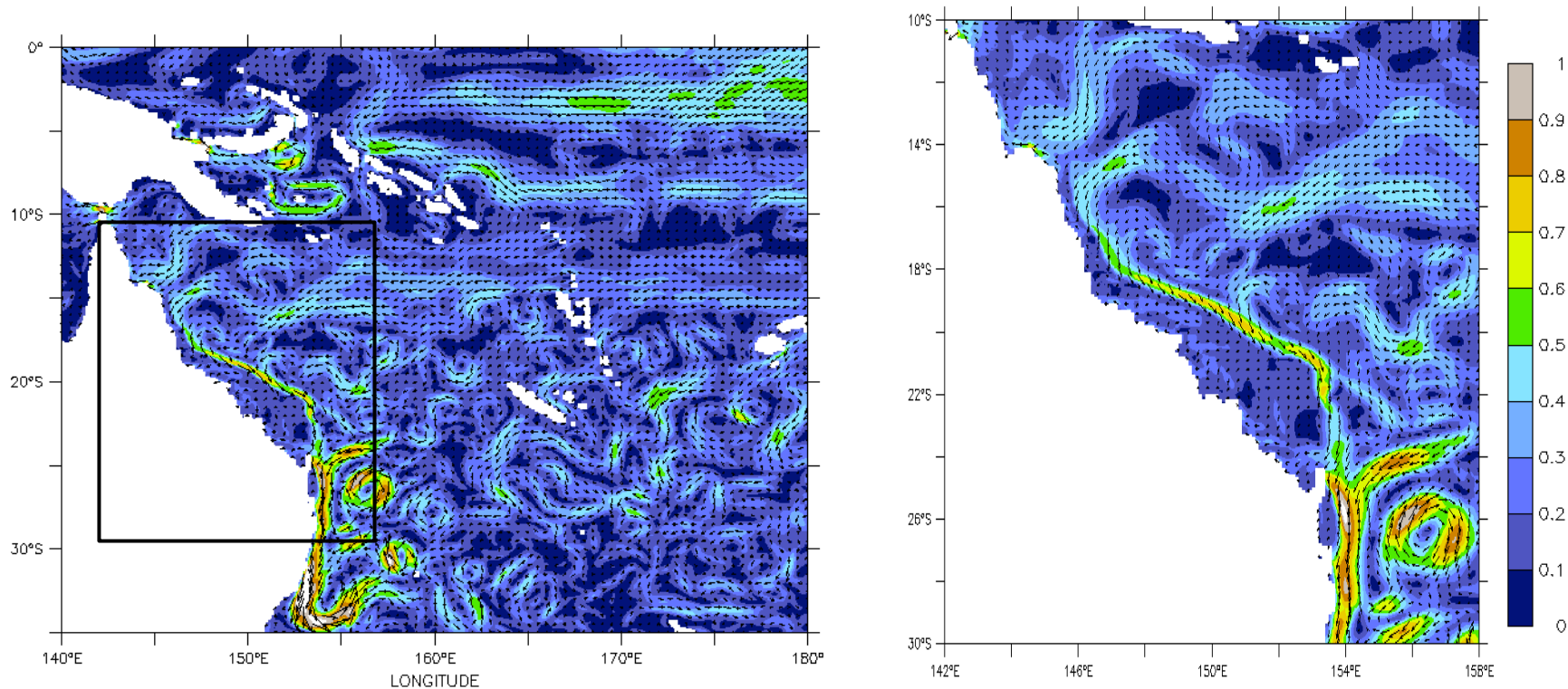
Note:

- The positive SST anomalies present along the equatorial Pacific continue to weaken whereas the eastern most areas of the equatorial Pacific present weak negative anomalies.

OceanMAPS 15m Depth-Average Currents

December 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.

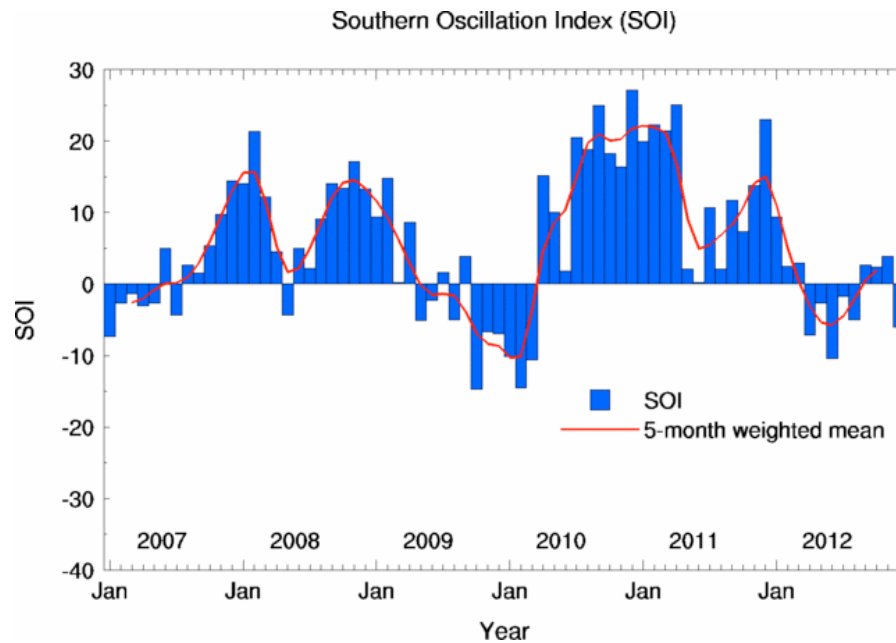


Behind Real Time analysis
15 m Depth-Averaged Currents (m/s).

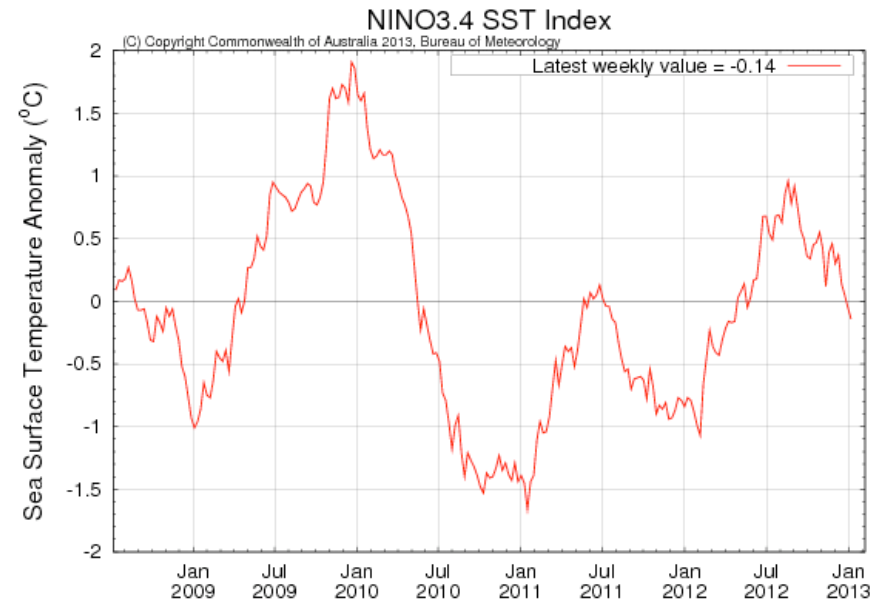
Note:

- Strong and well defined EAC clearly apparent along the GBR shelf-edge south of $\sim 16^{\circ}\text{S}$, although less intense than previous month.
- Strong eddy activity off SE Queensland

ENSO index



Negative SOI = El Niño



Positive Nino 3.4 index= El Niño

Note:

- ENSO-neutral conditions observed during December and expected to continue for the upcoming months.
- The weakening of the positive SST anomalies for the equatorial Pacific is reflected in the lower Niño 3.4 SST index.