NERP

Torres Strait / GBR environmental conditions report:

Recent status and predictions

11 March 2013

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UQ-GPEM Biophysical Oceanography Group

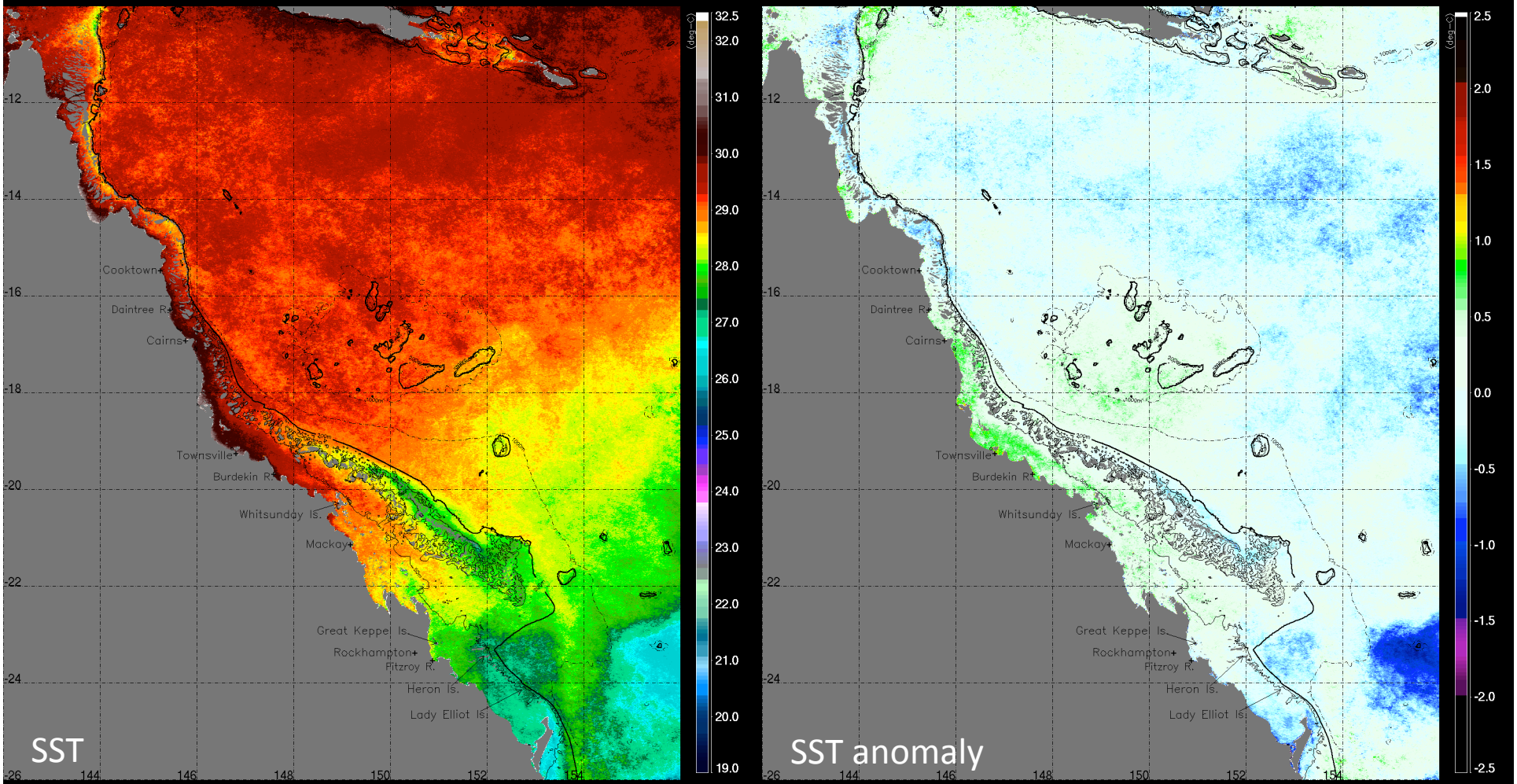
Outline

- 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 temperature conditions prevalent over the Torres Strait and the entire GBR
- Forecast of close to average SST along the GBR and Torres Strait for the upcoming months, except for the central GBR which present higher probability of SST anomalies exceeding 0.6°C during March.
- The NOAA Coral Reef Watch suggest only 'Watch' for the Torres Strait and northern GBR regions.
- ENSO-neutral conditions continued in the Pacific during February, and expected to persist in the upcoming months.

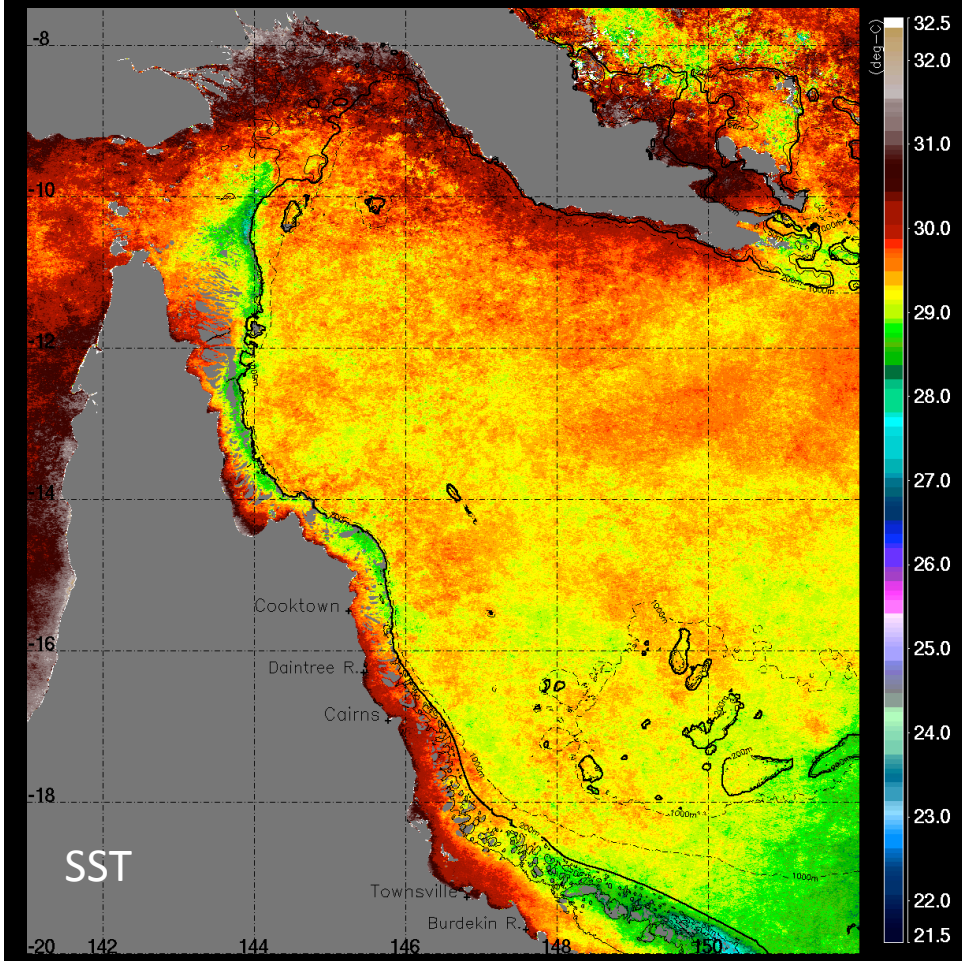
Modis SST (day+night): February 2013



Note:

- Extreme cloudy conditions in February due to severe weather –SST data in Torres Strait / N-GBR severely impacted by cloud contamination
- Mostly average conditions shown in the MODIS SST data along the GBR, with slightly positive anomalies in the inner reefs of the central GBR.

Torres Strait / far northern GBR MODIS SST: February 2013

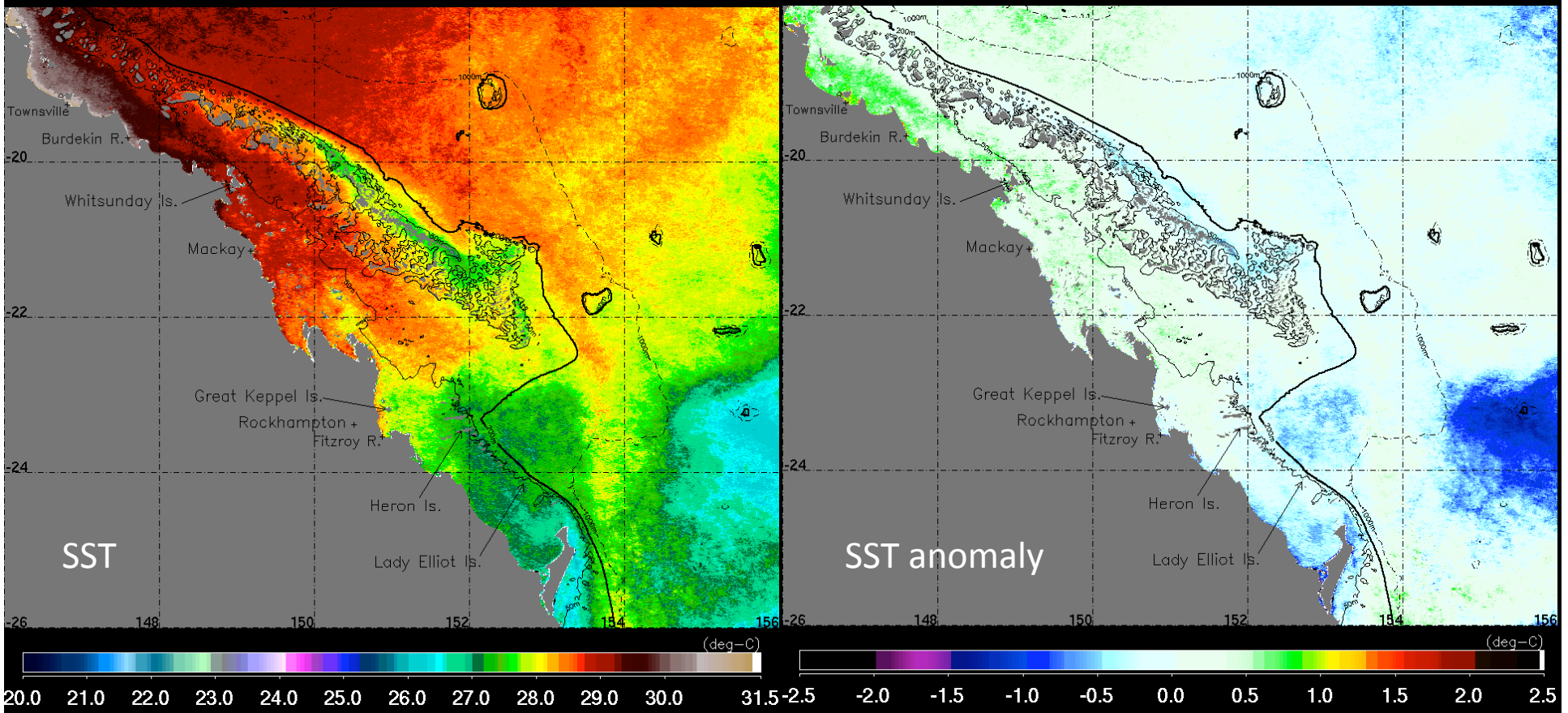


SST data in Torres Strait / N-GBR severely impacted by cloud contamination masking values of accurate anomalies – hence, SST Anomaly image not included as not truly representative of the month

Note:

- Intense shelf-edge upwelling (lower SST) present on the northern GBR.

Southern GBR MODIS SST: February 2013



Note:

- Similar to previous months, mostly neutral conditions persisted for the entire S-GBR during February, with the exception of the inner reefs north of ~20°S, which show slightly positive anomalies
- The area of negative anomalies present offshore during January displaced southwards during February.

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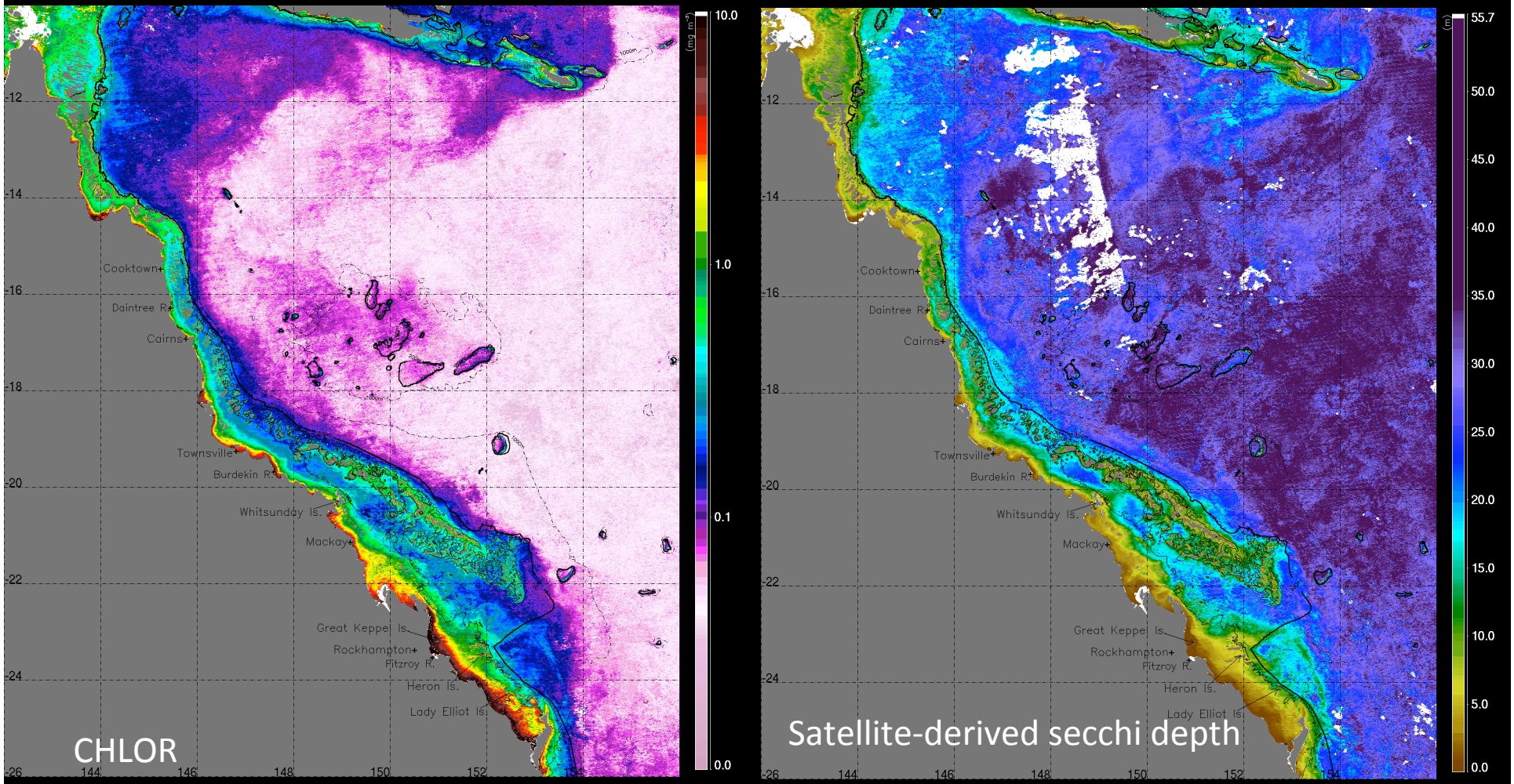
MODIS Chlorophyll-*a* concentration: February 2013



Note:

- Extreme cloudy conditions in February due to severe weather: Data in Torres Strait and GBR areas severely impacted by cloud contamination (monthly mean is a composite of a limited number of days during February – anomaly not included as not truly representative of the month).
- High outflow off Fitzroy River due to intense river discharge shown in both the Chlorophyll-a concentration and Secchi depth (1-7th Feb).

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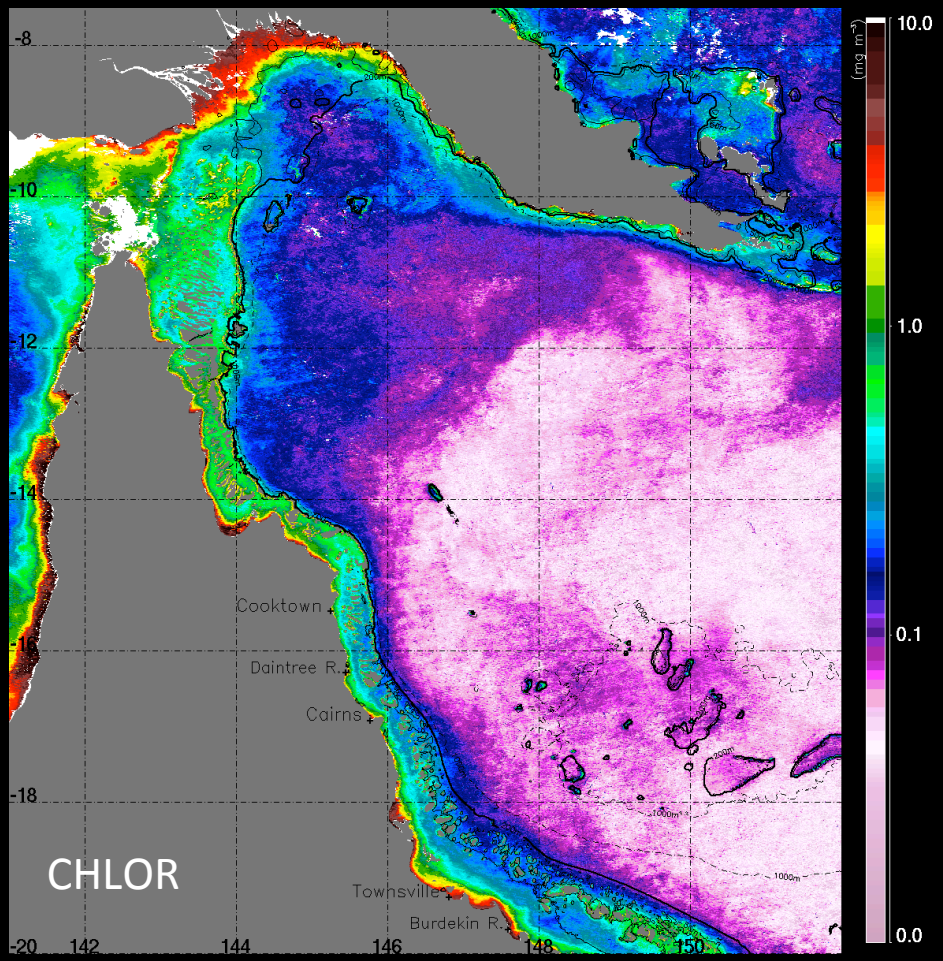
Torres Strait / far northern GBR Chlorophyll-*a* concentration February 2013

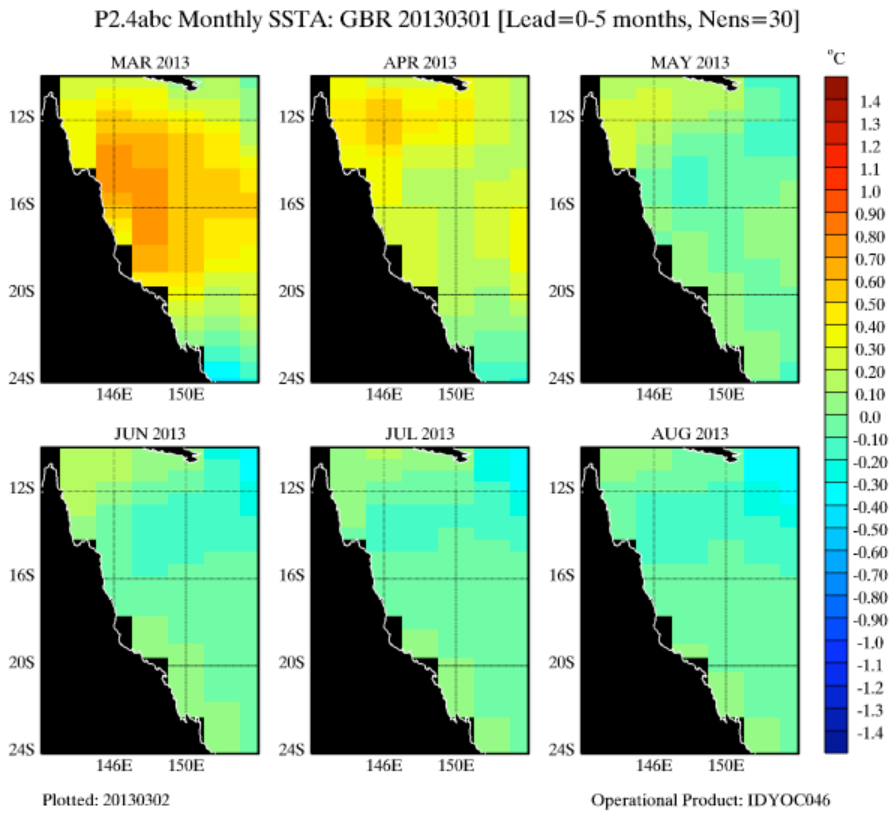


Note:

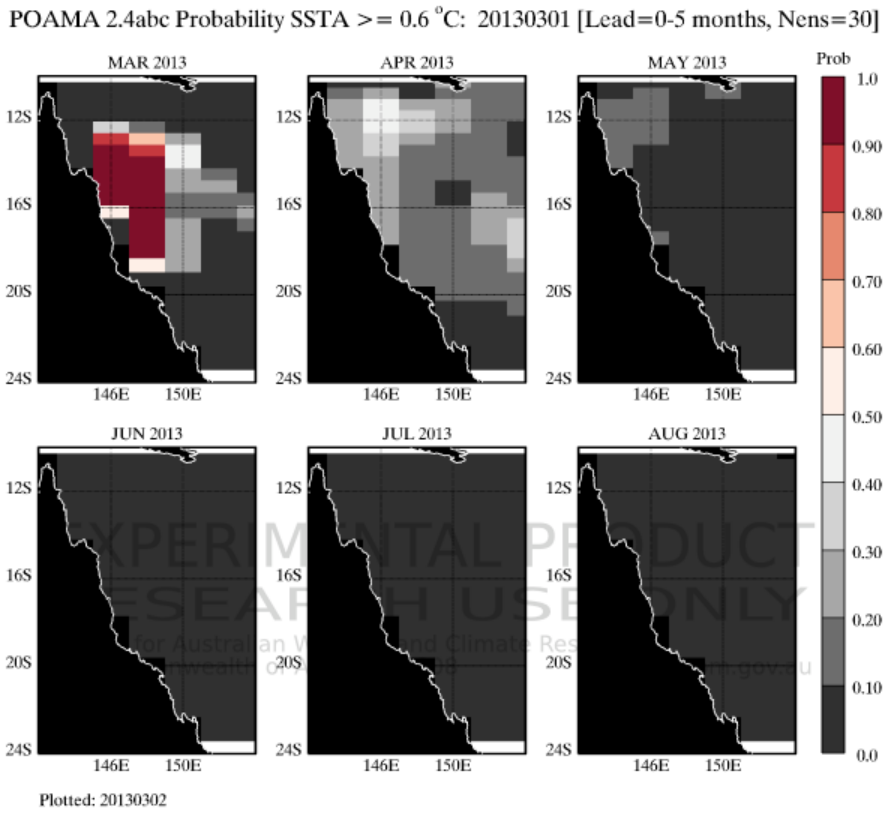
- Chlorophyll image represents only a limited number of days in January due to the extreme cloud contamination, especially in the Torres Strait / far-northern GBR. Hence, this is not a true representation of conditions for the full month and caution should be applied in the interpretation. For the same reason, the anomaly image is not included in this report.

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:

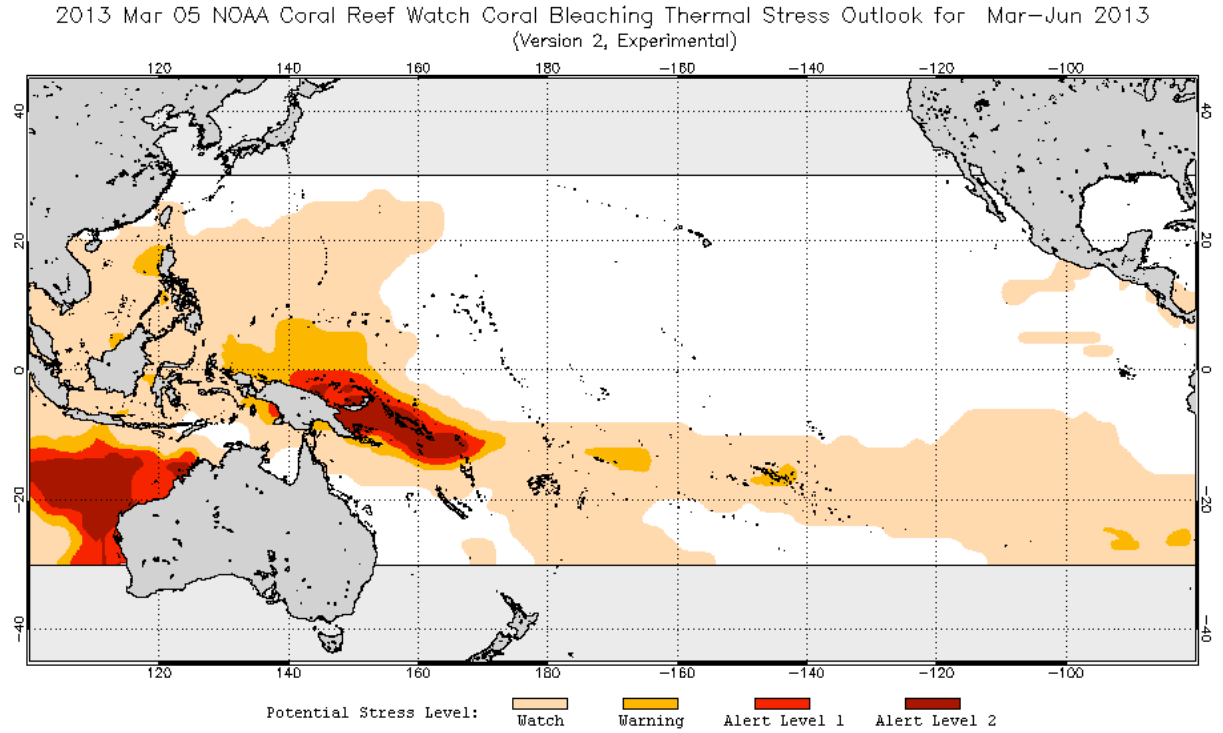
- POAMA is currently forecasting higher temperatures for March, with high probability of temperature anomalies exceeding 0.6°C centered around 16°S. The anomalies would dissipate in the upcoming months

NOAA Coral Reef Watch

Seasonal Coral Bleaching Thermal Stress Outlook (LIM-based)

(Version 2, experimental, weekly, 2x2 degree spatial resolution)

Outlook for March to June 2013



Note:

- The NOAA Coral Reef Watch forecast 'Watch' for the Torres Strait and northern GBR region only.
- This outlook is based on SST prediction from CRW's experimental statistical Linear Inverse Model (LIM)

NEW!

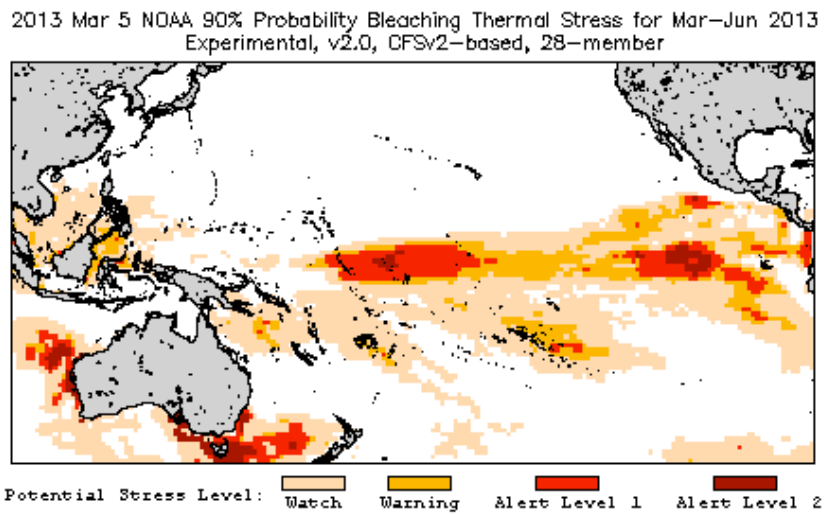
NOAA Coral Reef Watch

Seasonal Coral Bleaching Thermal Stress Outlook (CFS-based)

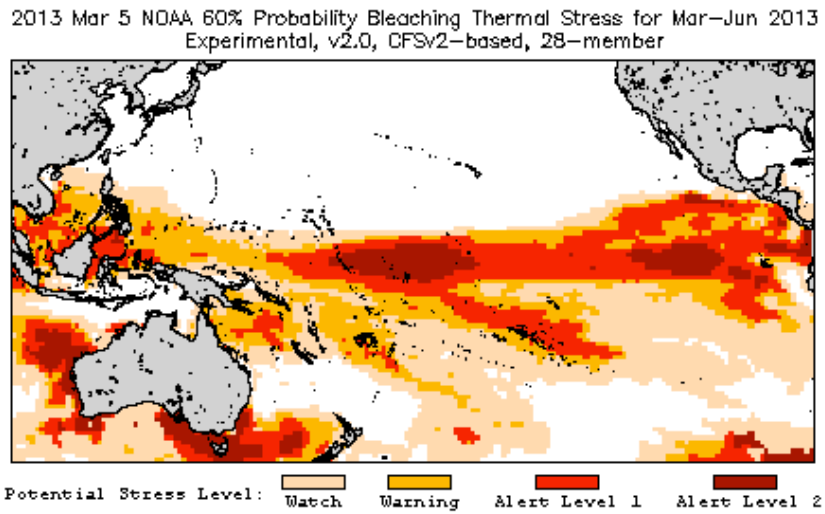
(Version 2.0, experimental, weekly, 1x1 degree spatial resolution)

Probability of bleaching thermal stress for Mar-Jun 2013:

90%



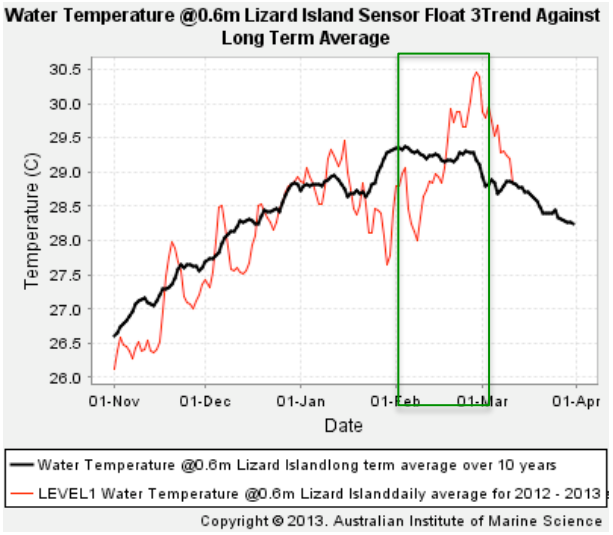
60%

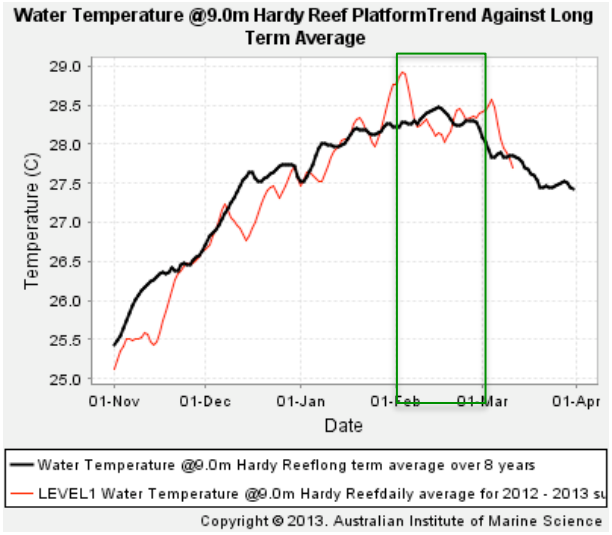


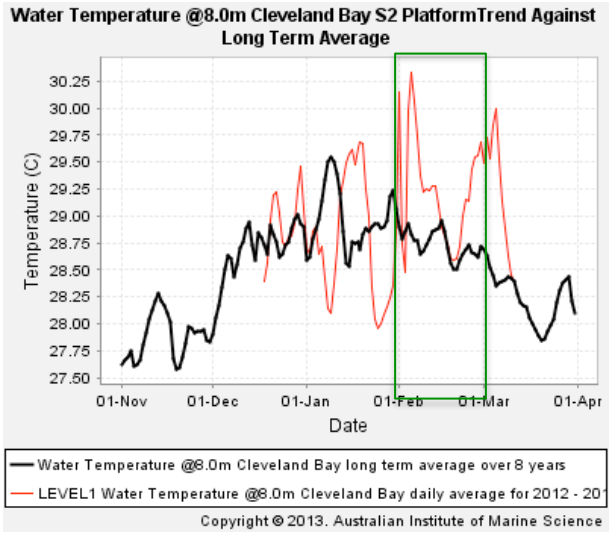
Note:

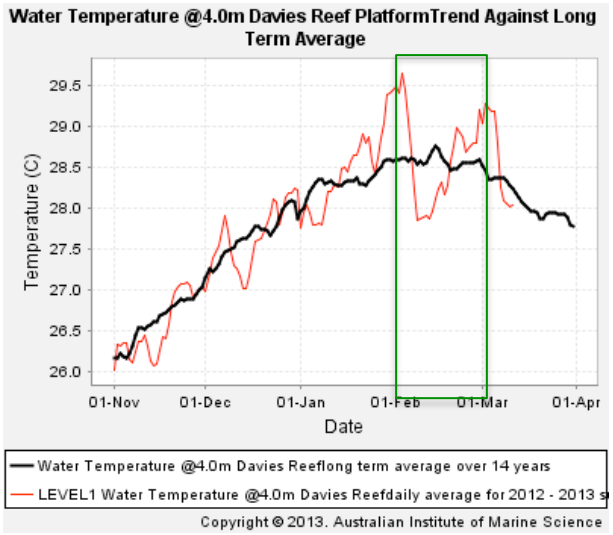
• NOAA Cora Reef Watch has developed a new seasonal outlook system based on NOAA's operational climate forecast system (CFS). These outlooks predict the probability of thermal stress events capable of causing large-scale, mass coral bleaching, using a weekly 28-member ensemble of SST forecast from the CFS. The second version of the CFS-based Thermal Stress Outlook was released in December 2012.

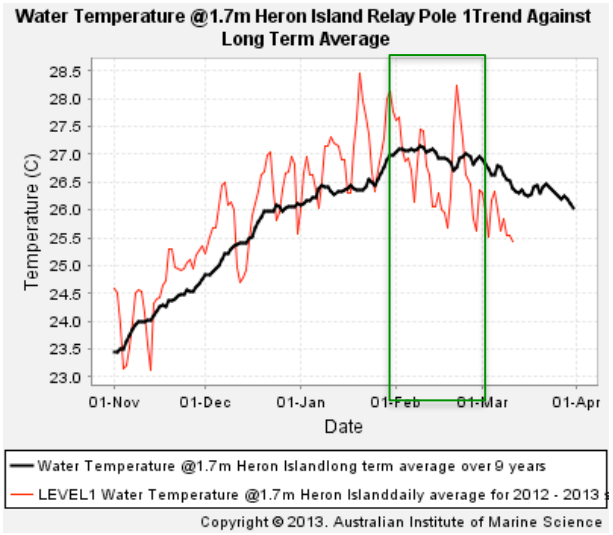
Weather Observing System: AIMS Data Centre

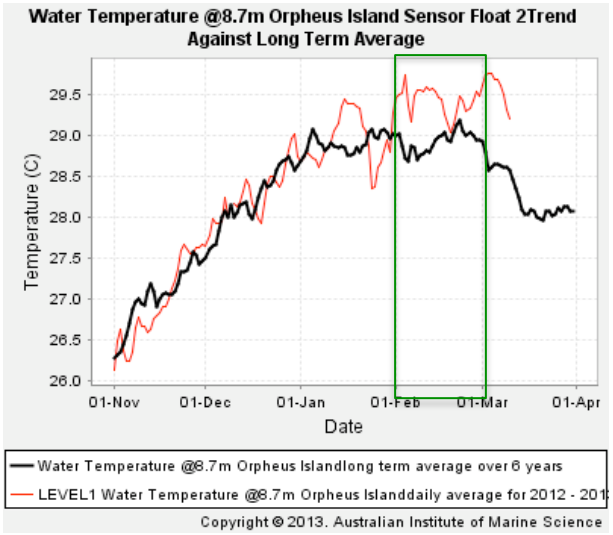








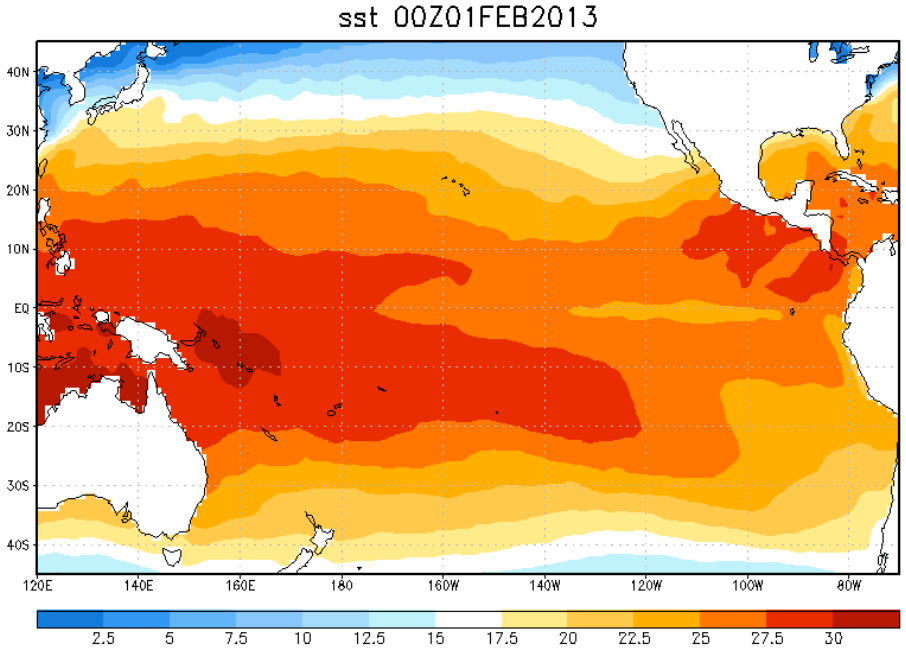




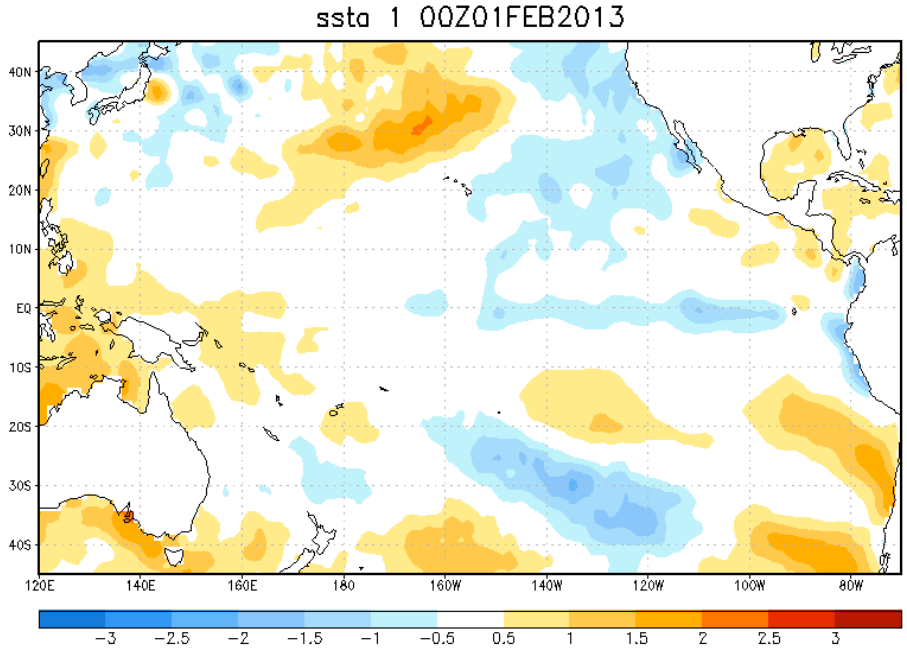
- Most of the AIMS weather stations show temperatures oscillating above and below the long-term mean for February, with the exception of Orpheus Island and Cleveland Bay (located on the inner reefs of the central GBR area). Both stations present temperatures mostly above the long-term mean, coincident with the MODIS SST anomalies.

NOAA Optimum Interpolation Sea Surface Temperature Analysis:

OI SST: FEBRUARY 2013



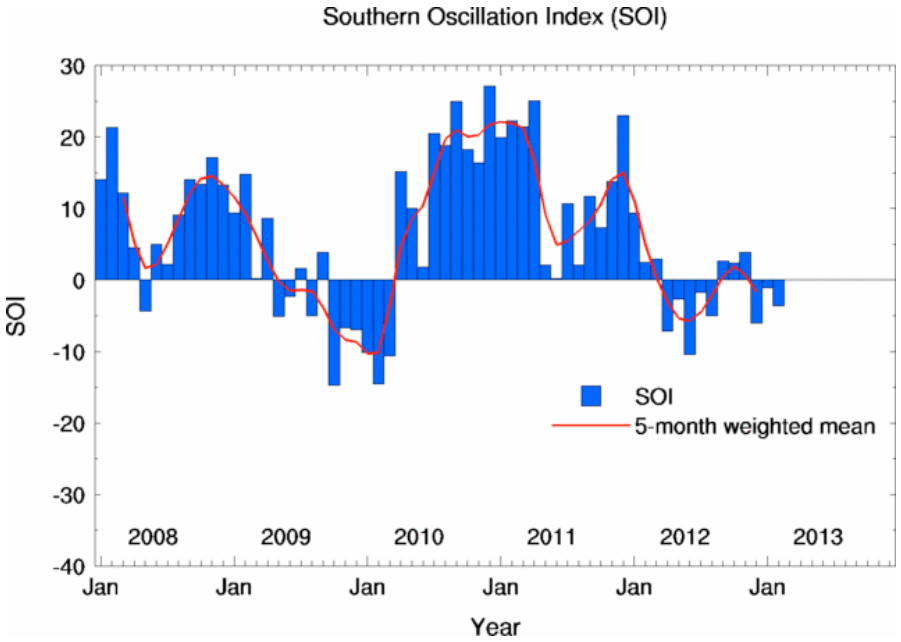
OI SST ANOMALY: FEBRUARY 2013



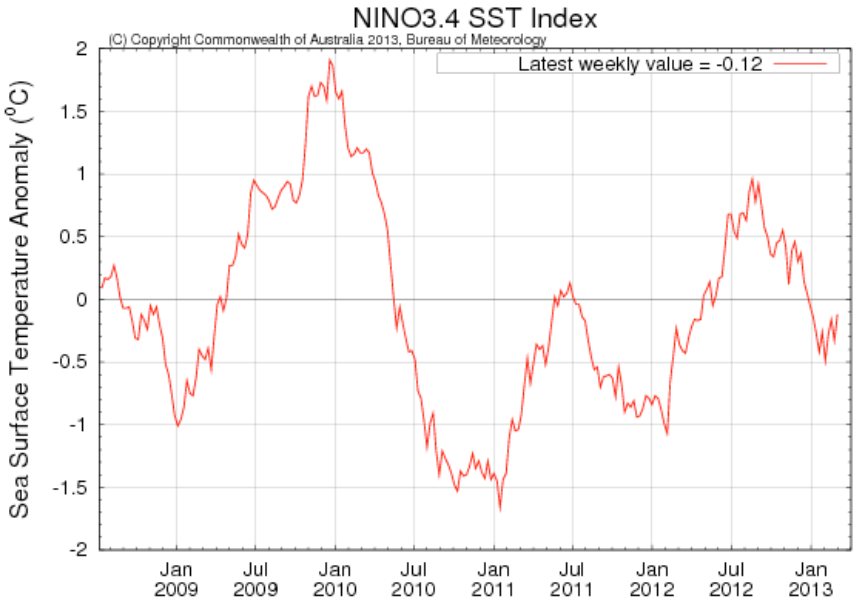
Note:

- Mostly average temperatures for the equatorial Pacific during February. Weak negative anomalies persisted in the east equatorial Pacific.

ENSO index



Negative SOI = El Niño



Positive Nino 3.4 index= El Niño

Note:

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