

NERP

Torres Strait / GBR environmental conditions report:

Recent status and predictions

11 February 2014

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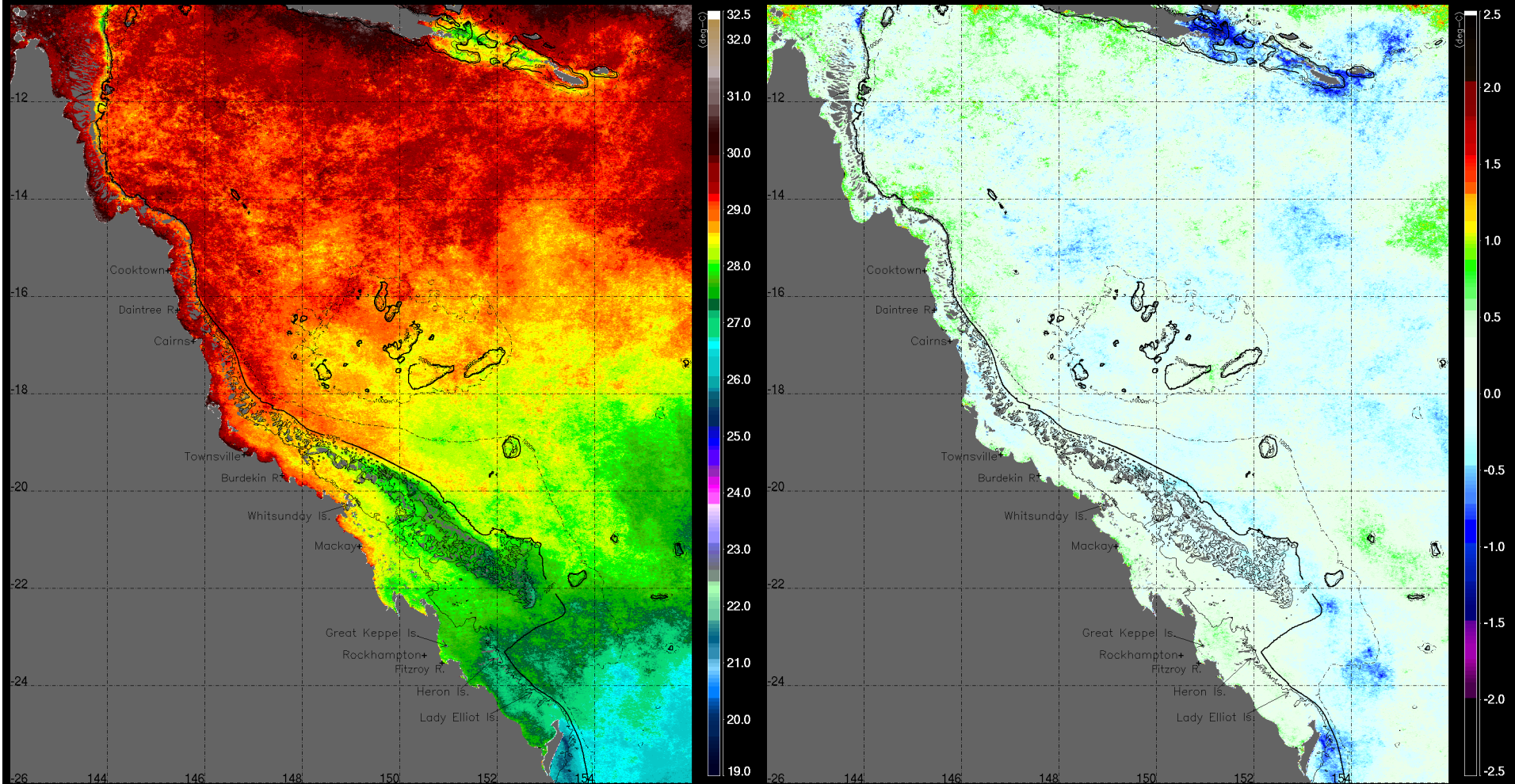
Outline

- 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 the Torres Strait and GBR areas for January 2014.
- *In situ* data showed water temperatures oscillating around the long term mean during January, related to stormy, cyclonic conditions during the month.
- POAMA forecasts negative/neutral SST anomalies for the upcoming months, with virtually null probabilities of temperatures exceeding 0.6°C. Accordingly, the CFS-based NOAA Coral Reef Watch bleaching thermal outlook shows no bleaching alerts. However, the LIM-based outlook still shows “Warning” to “Alert Level 1” over the Torres Strait and N-GBR areas.
- ENSO-neutral conditions continued in the Pacific during December and are expected to persist in the upcoming months.

MODIS sea surface temperature (day+night) January 2014



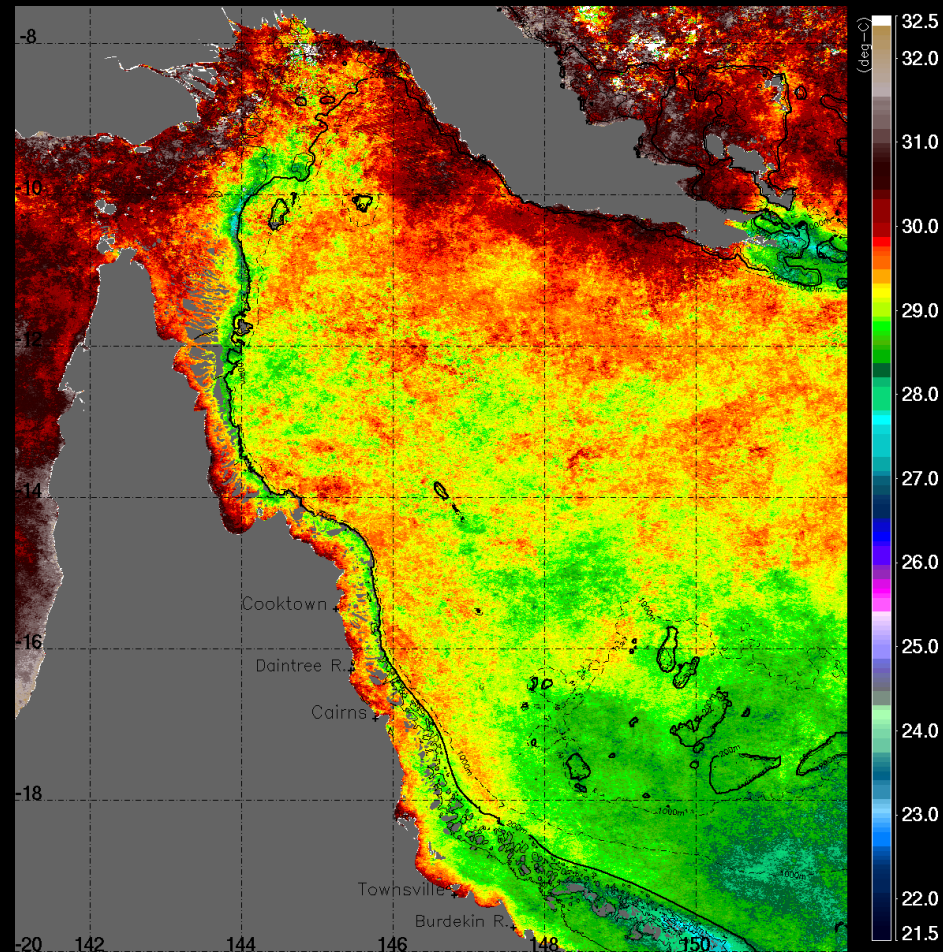
Note:

- MODIS data show mostly neutral SST conditions along the GBR and Torres Strait areas during January.
- Extensive cloud contamination present in the latter half of January, hence images mainly representative of the first half of the month.

Torres Strait / far northern GBR

MODIS sea surface temperature (day+night)

January 2014



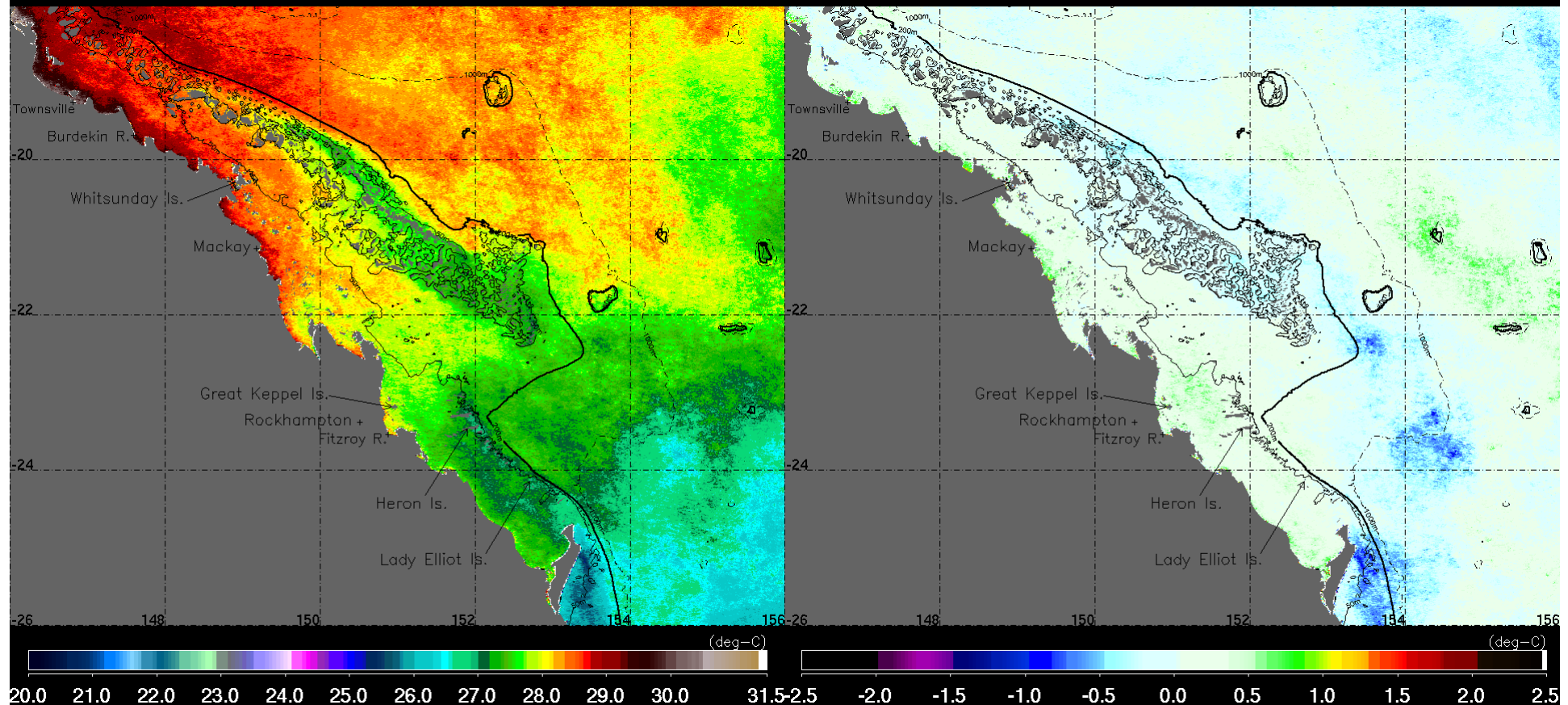
Note:

- SST data in Torres Strait/N-GBR severely impacted by cloud contamination during January, hence accurate anomalies cannot be determined – SST anomaly image (showing values close to average) therefore not included.

Southern GBR

MODIS sea surface temperature (day+night)

January 2014



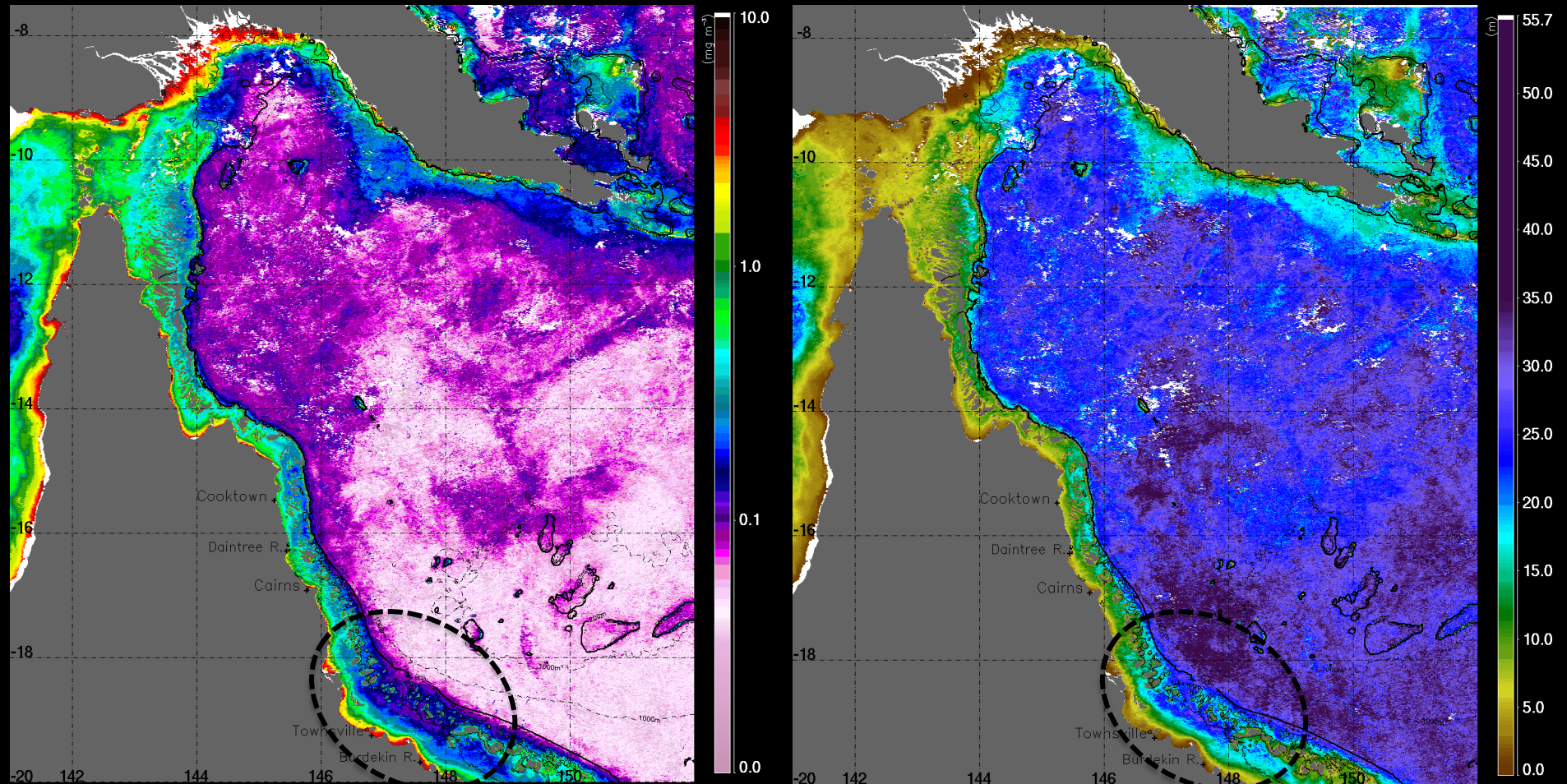
Note:

- Similar to the previous month (Dec 2013), mostly neutral conditions persisted along the entire S-GBR during January.
- The S-GBR anomaly map shows only marginally cooler temperatures along the path of the core East Australian Current

Torres Strait / far northern GBR

MODIS chlorophyll-*a* concentration & 10% photic depth

January 2014

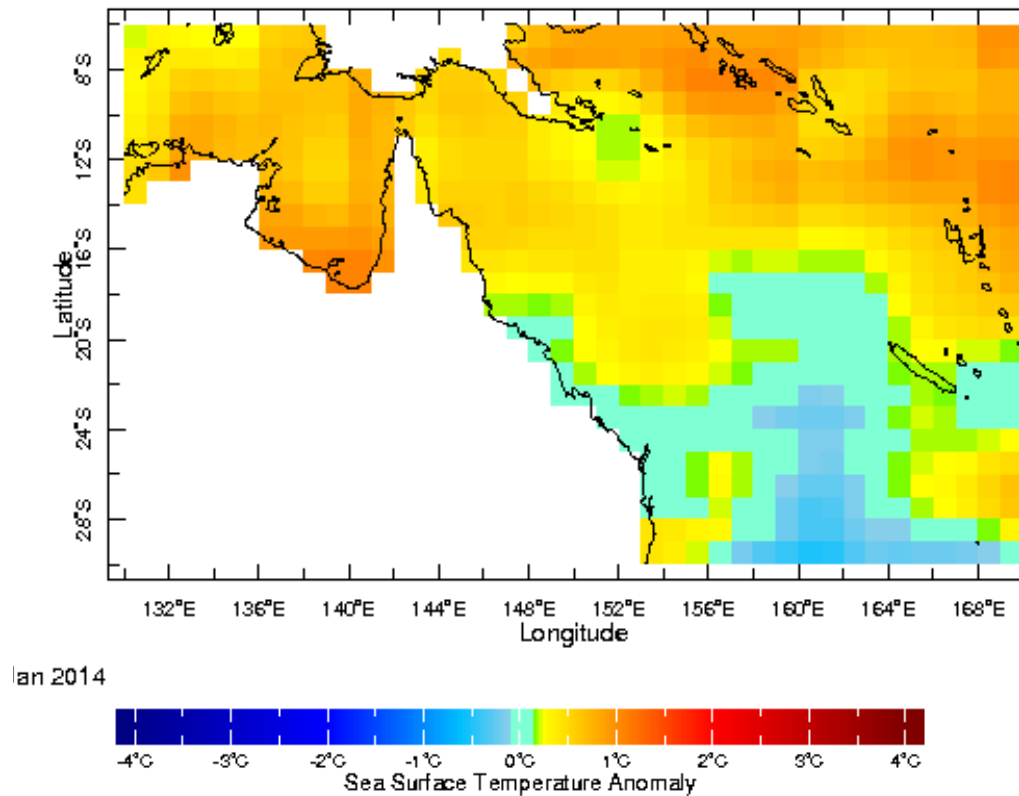


Note:

- As per previous month, both MODIS chlorophyll-*a* and 10% photic depth products show strong intrusions of oceanic waters onto the central GBR shelf (low chlorophyll-*a* / high water clarity) through the Myrmidon and Palm Passages.

Sea Surface Temperature Anomaly

from NOAA NCEP EMC CMB GLOBAL Reyn_SmithOlv2



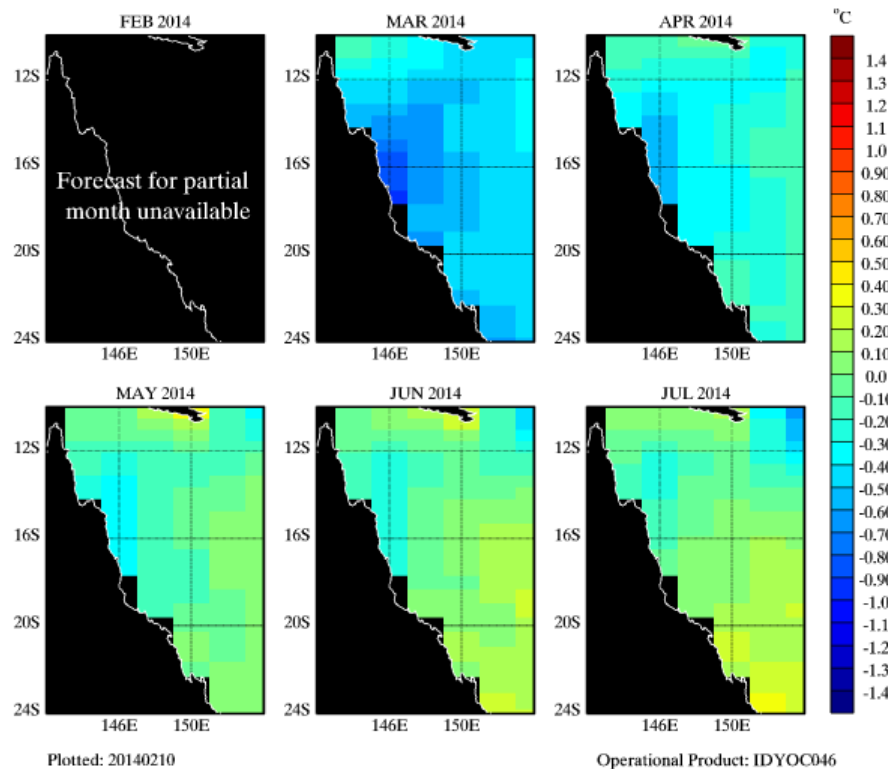
Note:

- Reynolds SST anomalies show low positive values for the N-GBR and Torres Strait areas and neutral values for the S-GBR during January.

Sea surface temperature anomaly forecast (POAMA-2)

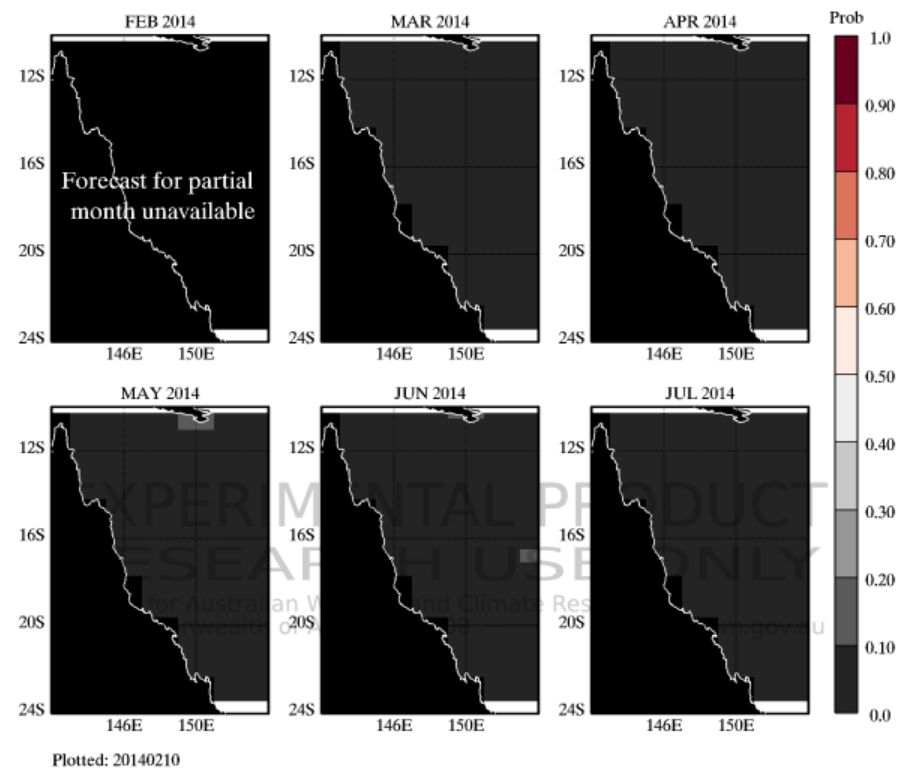
POAMA SST anomaly forecast for the next 6 months (operational)

M2.4abc Monthly SSTA: GBR 20140209 [Lead=0-5 months, Nens=33]



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

POAMA M2.4abc Probability SSTA $\geq 0.6^\circ\text{C}$: 20140209 [Lead=0-5 Nens=33]



Note:

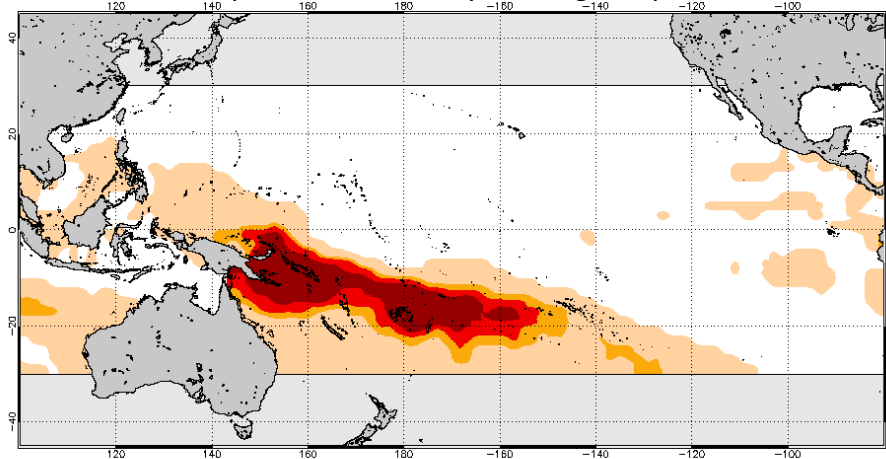
- POAMA forecast negative SST anomalies for March and April, with virtually null probability of SST anomalies exceeding 0.6°C.
- Mostly neutral conditions are expected for the remainder of the months included in the forecast.

NOAA Coral Reef Watch

Seasonal coral bleaching thermal stress outlook February to May 2014

LIM-based

Version 2, experimental, weekly 2x2 degree spatial resolution



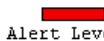
Potential Stress Level:



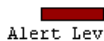
Watch



Warning



Alert Level 1



Alert Level 2

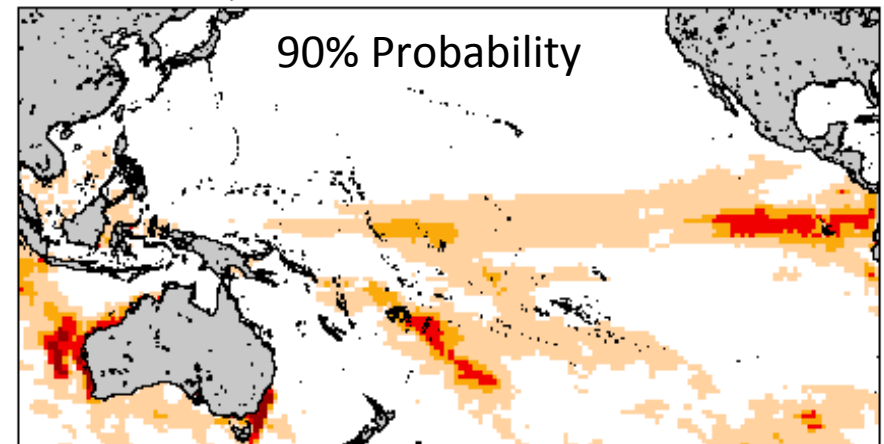
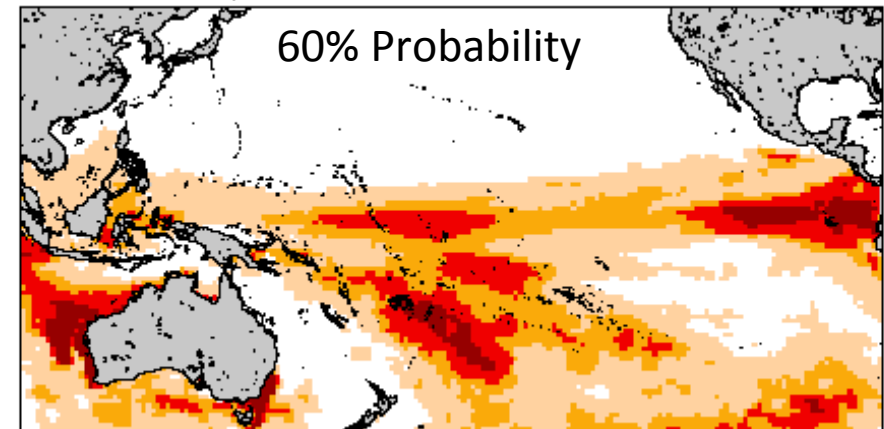
Note:

[These outlooks are based on SST predictions from: CRW's experimental statistical Linear Inverse Model (LIM-based – left panel) and the NCEP climate forecast system (CFS-based; right panels) systems]

- The LIM-based NOAA CRW bleaching thermal outlook still showing “warning” to “Alert Level 1” over the Torres Strait and Northern GBR areas.
- The CFS-based outlook shows no bleaching alerts (at probabilities of 90%; bottom right and 60%; top right) over the GBR and Torres Strait areas.

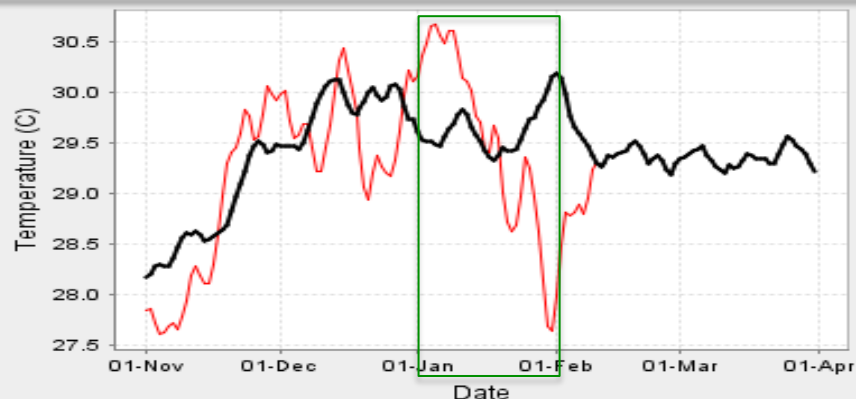
CFS-based

Version 2, experimental, weekly 1x1 degree spatial resolution



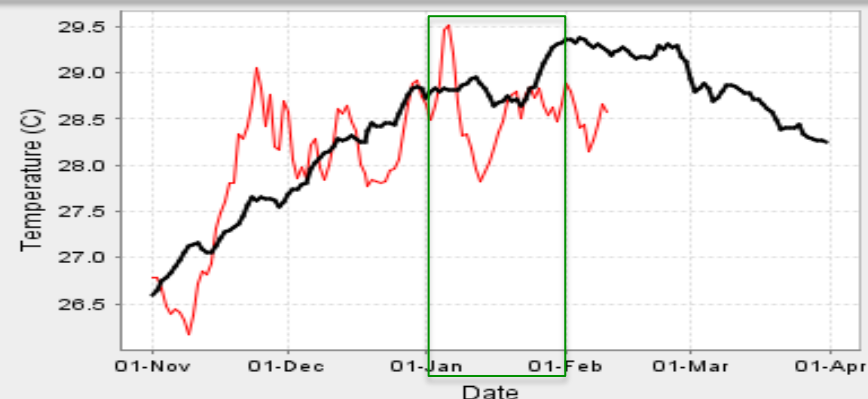
Water temperatures from IMOS Sensor Network (FAIMMS) (AIMS operated)

Water temperature @6.8m Thursday Island Weather Station trend against longterm average



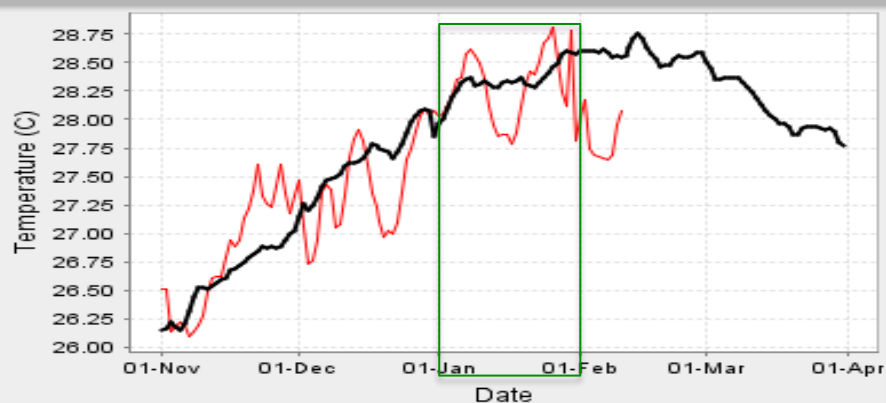
— Water Temperature @6.8m Thursday Island long term average over 8 years
— LEVEL1 Water Temperature @6.8m Thursday Island daily average for 2013 - 2014
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Water temperature @0.6m Lizard Island sensor float trend against longterm average



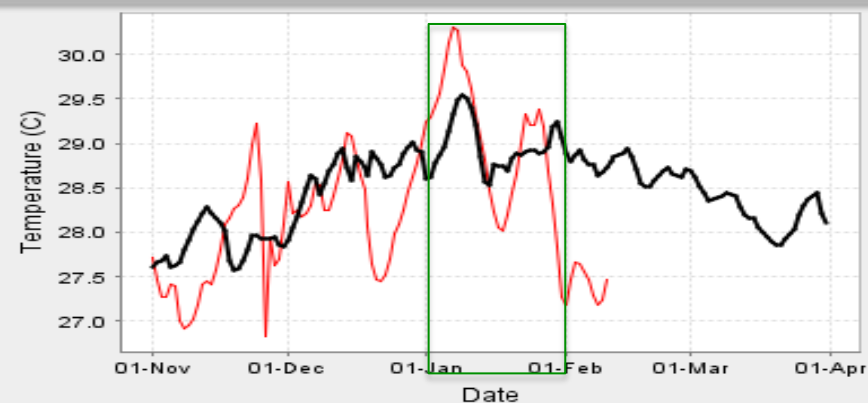
— Water Temperature @0.6m Lizard Island long term average over 10 years
— LEVEL1 Water Temperature @0.6m Lizard Island daily average for 2013 - 2014
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Water temperature @4.0m Davies Reef Platform trend against longterm average



— Water Temperature @4.0m Davies Reef long term average over 14 years
— LEVEL1 Water Temperature @4.0m Davies Reef daily average for 2013 - 2014
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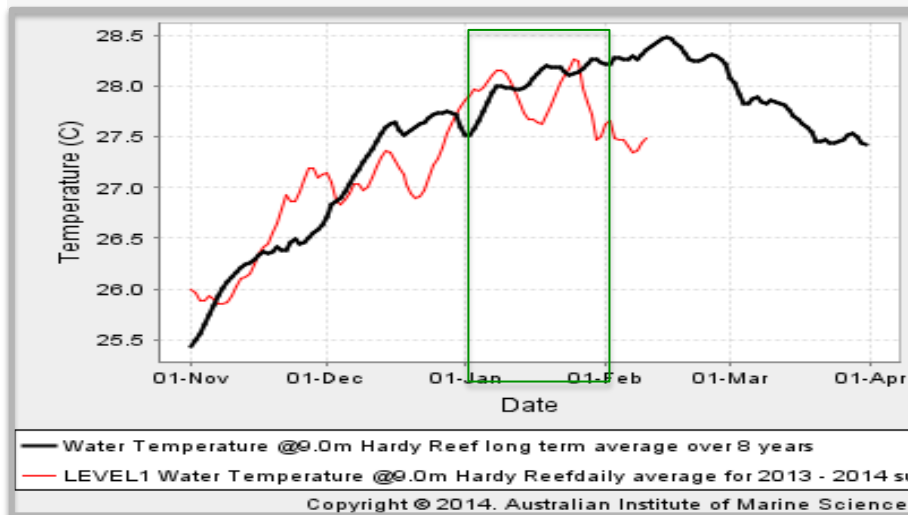
Water temperature @8.0m Cleveland Bay S2 Platform trend against longterm average



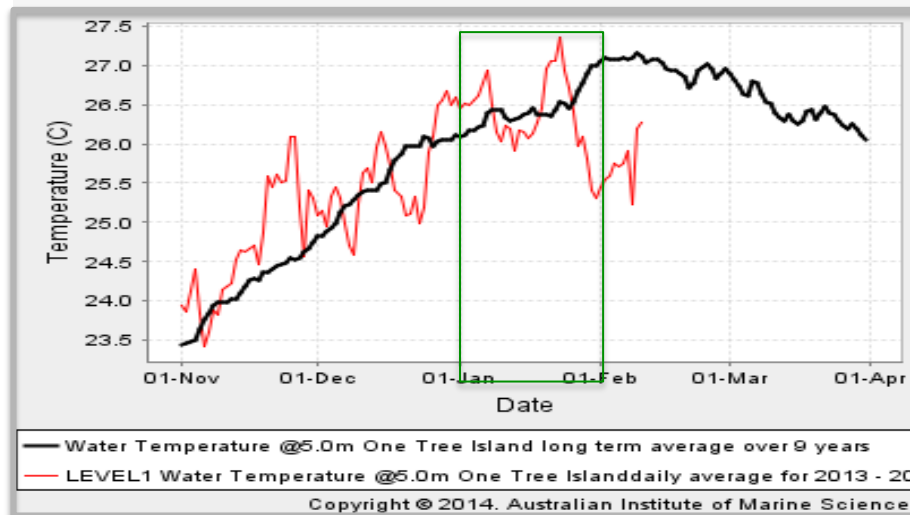
— Water Temperature @8.0m Cleveland Bay long term average over 8 years
— LEVEL1 Water Temperature @8.0m Cleveland Bay daily average for 2013 - 2014
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Water temperatures from IMOS Sensor Network (FAIMMS) (AIMS operated)

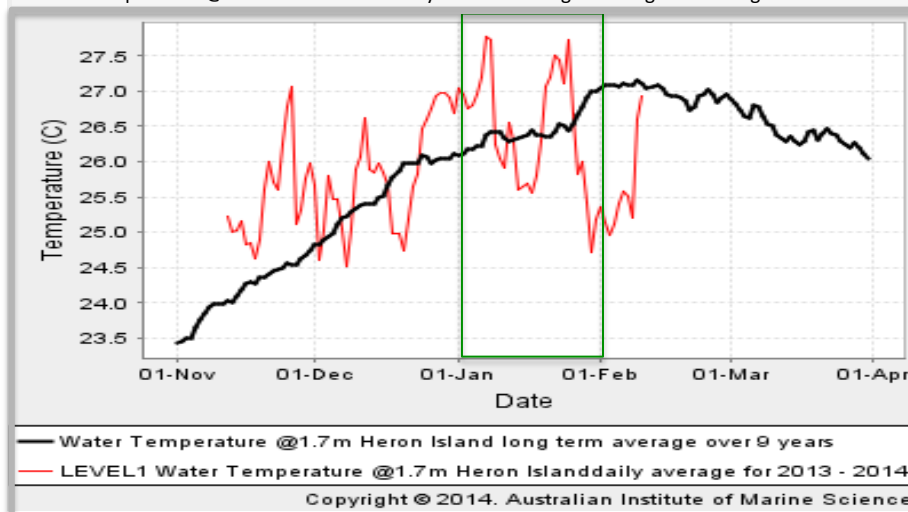
Water temperature @9.0m Hardy Reef Platform trend against longterm average



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



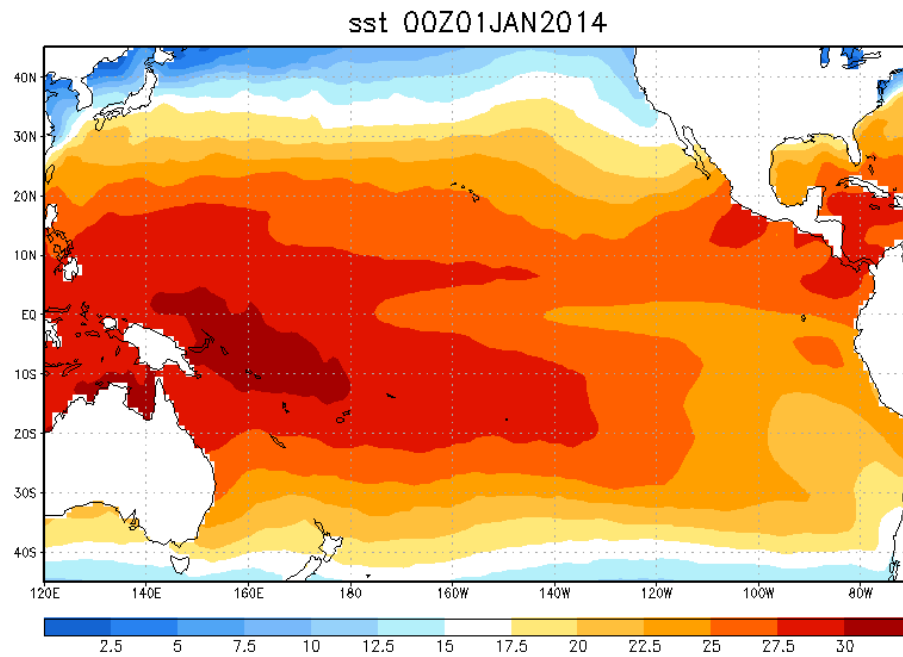
Water temperature @1.7m Heron Island Relay Pole 1 trend against longterm average



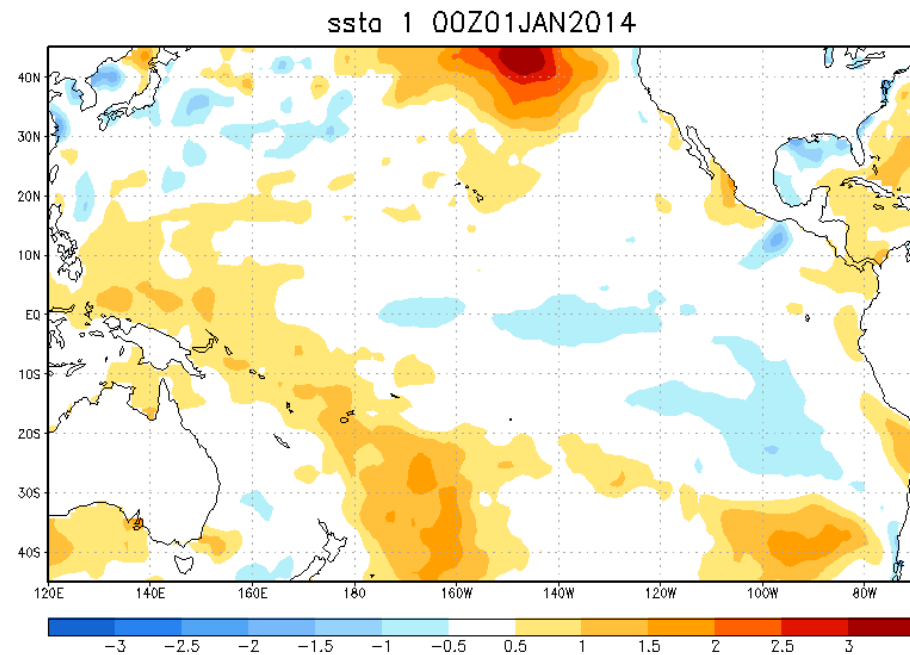
- Most of the stations showed *in situ* water temperatures fluctuating considerably (up to ~3°C) around the long-term mean during January; related to stormy, cyclonic conditions during the month.

NOAA optimum interpolation sea surface temperature

OISST JAN 2014



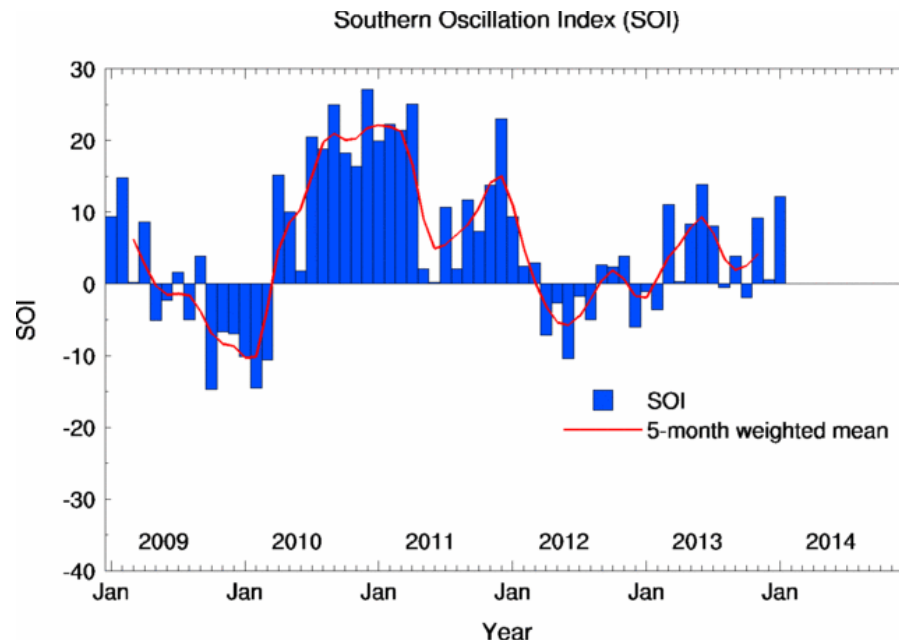
OISST anomaly JAN 2014



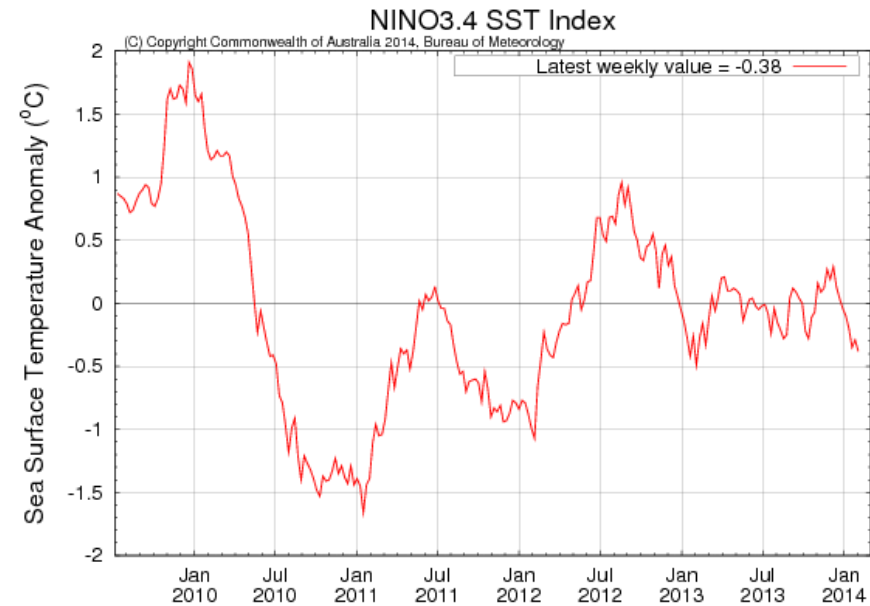
Note:

- As per previous months, positive but low SST anomalies continued in the western equatorial Pacific during January, while the eastern and central Pacific presented mostly neutral SST conditions.

ENSO Index



Negative SOI = El Niño



Positive Nino 3.4 index= El Niño

Note:

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