

NERP

Torres Strait / GBR environmental conditions report: Recent status and predictions

13 April 2012

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UQ-GPEM Biophysical Oceanography Group

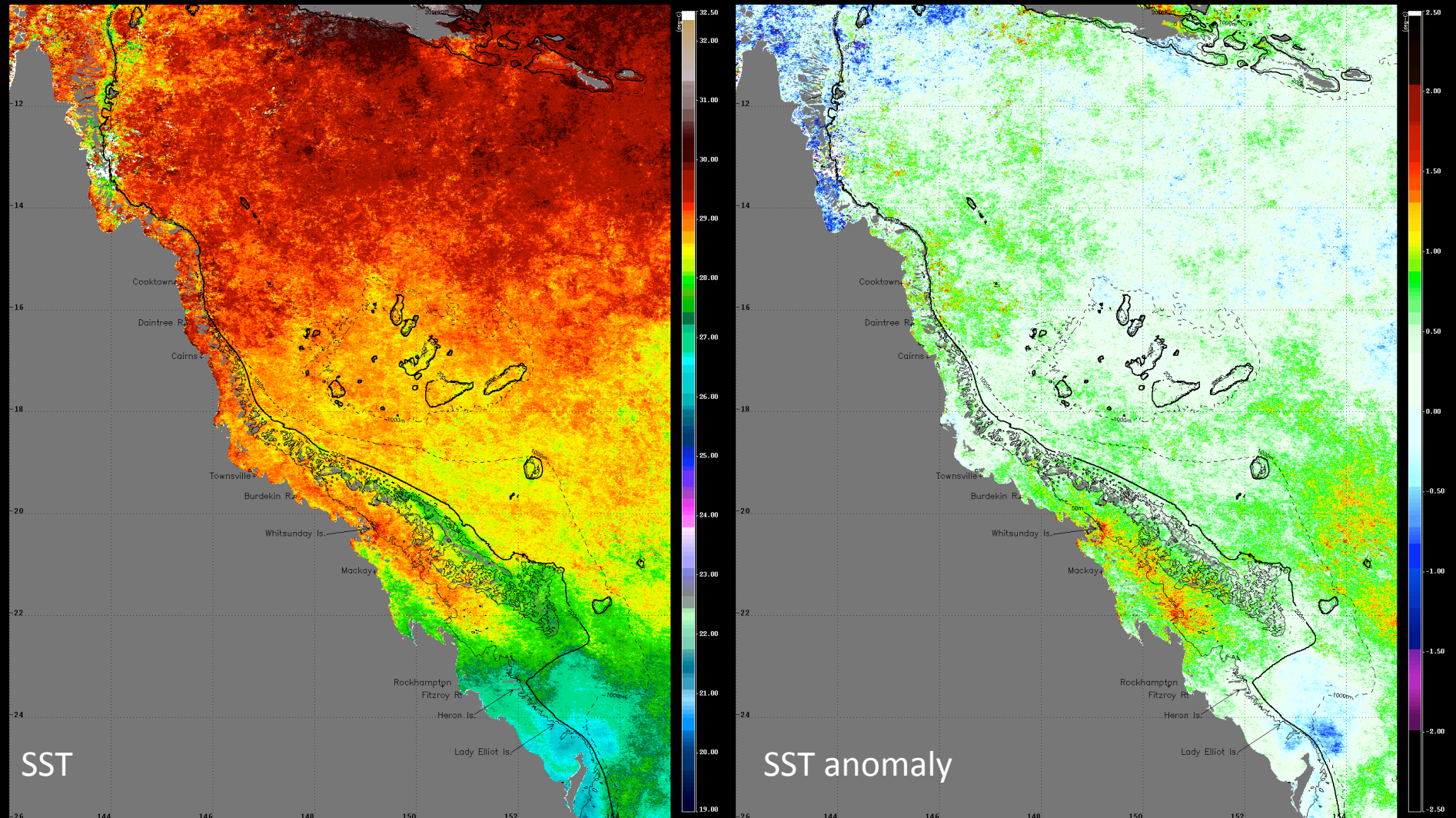
Outline

- 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 average SST along Torres Strait and the length of the GBR, with the exception of the inner reefs south of 20°S
- Forecast of close to neutral SST anomalies along the GBR and Torres Strait area for the upcoming months.
- No bleaching alert for GBR and Torres Strait as we head into winter.
- La Niña weakened in the Pacific and expected neutral conditions.

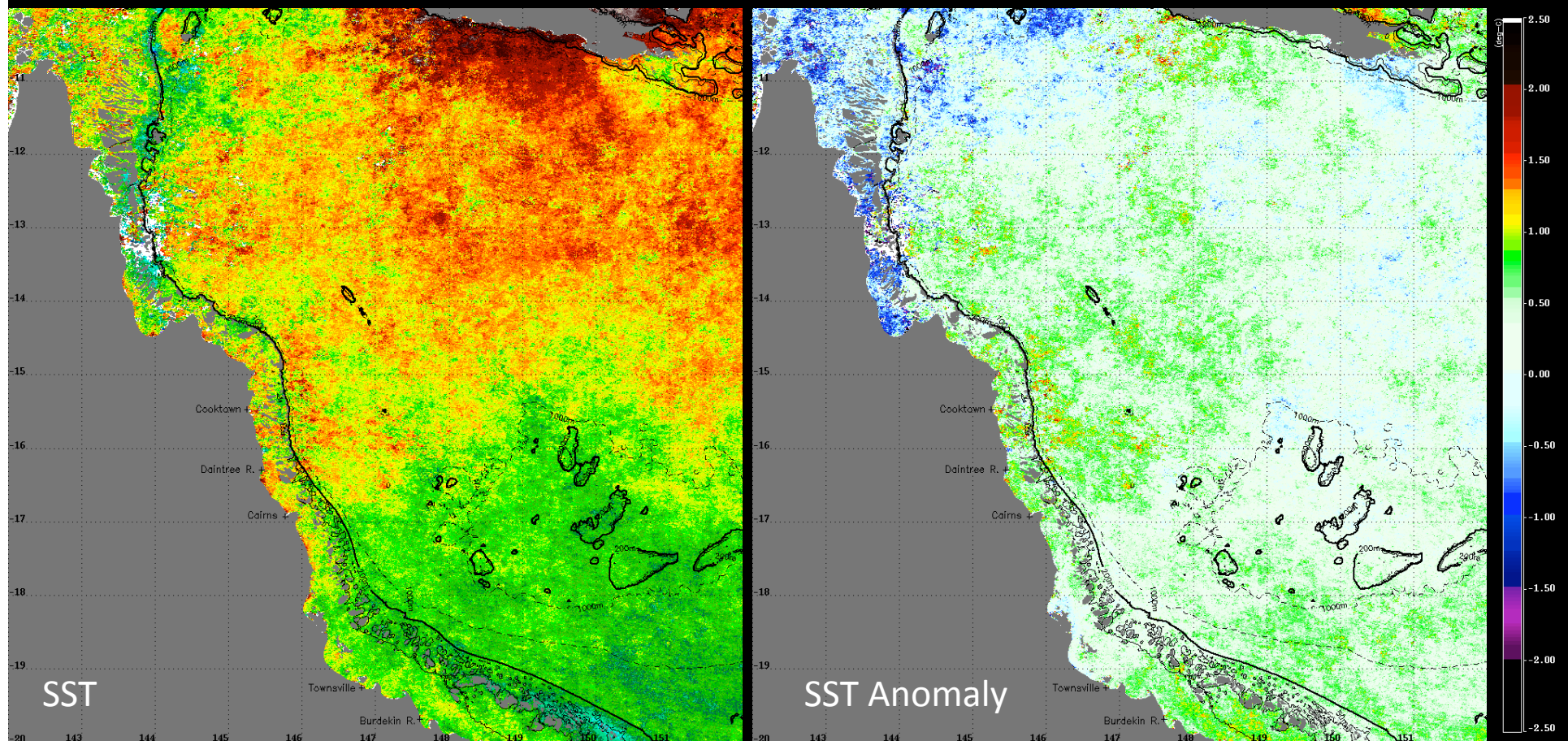
Modis SST (day+night): March 2012



Note:

- Southward movement of the positive anomalies in the central GBR region since February
- Due to cloud contamination, especially north of ~18S, the monthly mean is not indicative of mean conditions for the full month and caution should be applied in interpretation of the monthly anomalies.

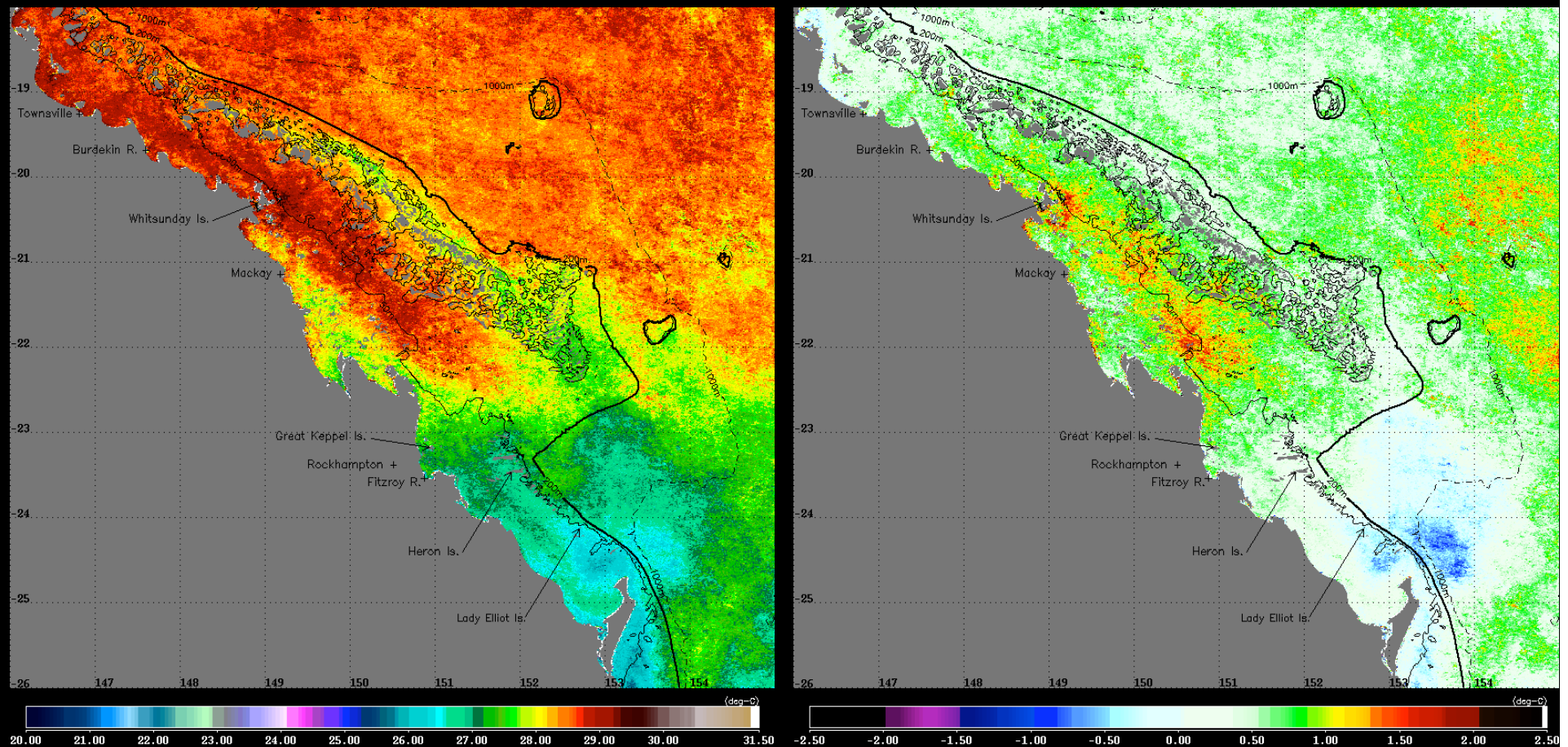
Torres Strait / northern GBR MODIS SST: March 2012



Note:

- The strong positive anomalies present south of ~18S during the month of February have dissipated, with closer to average conditions for the whole N-GBR.
- Notable cloud contamination in the Torres Strait/N-GBR during March, limiting the representation of accurate monthly SST anomalies data north of ~18S

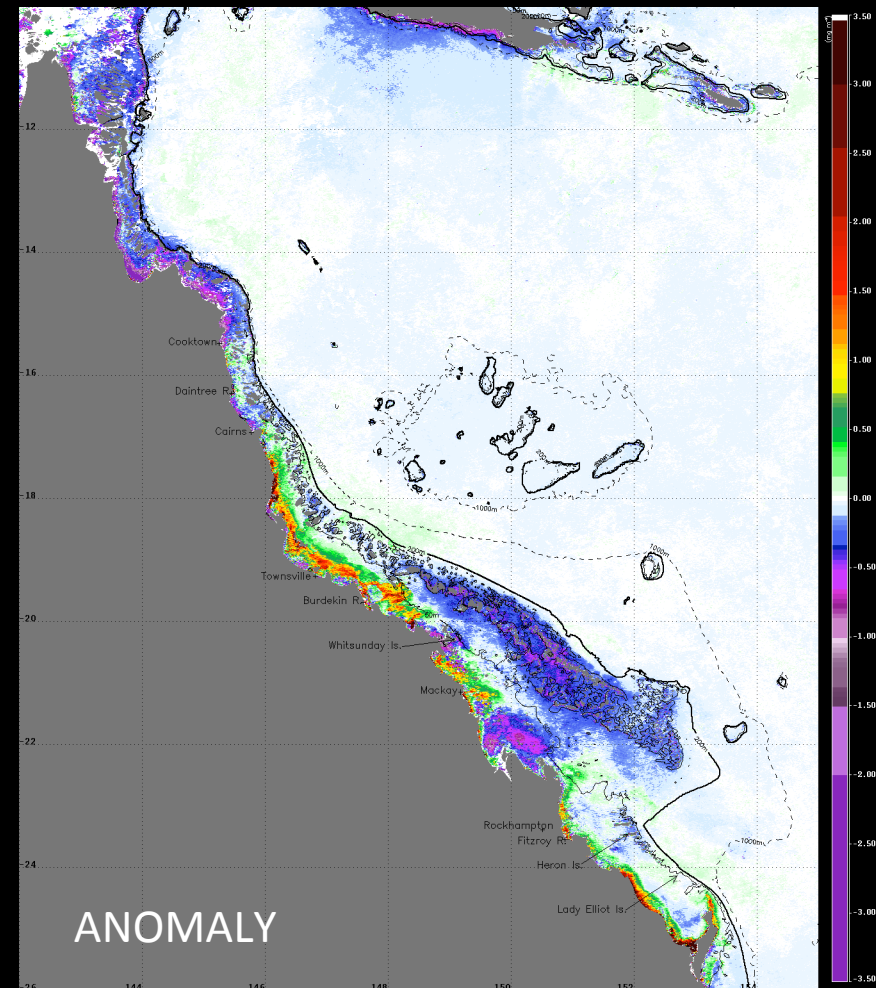
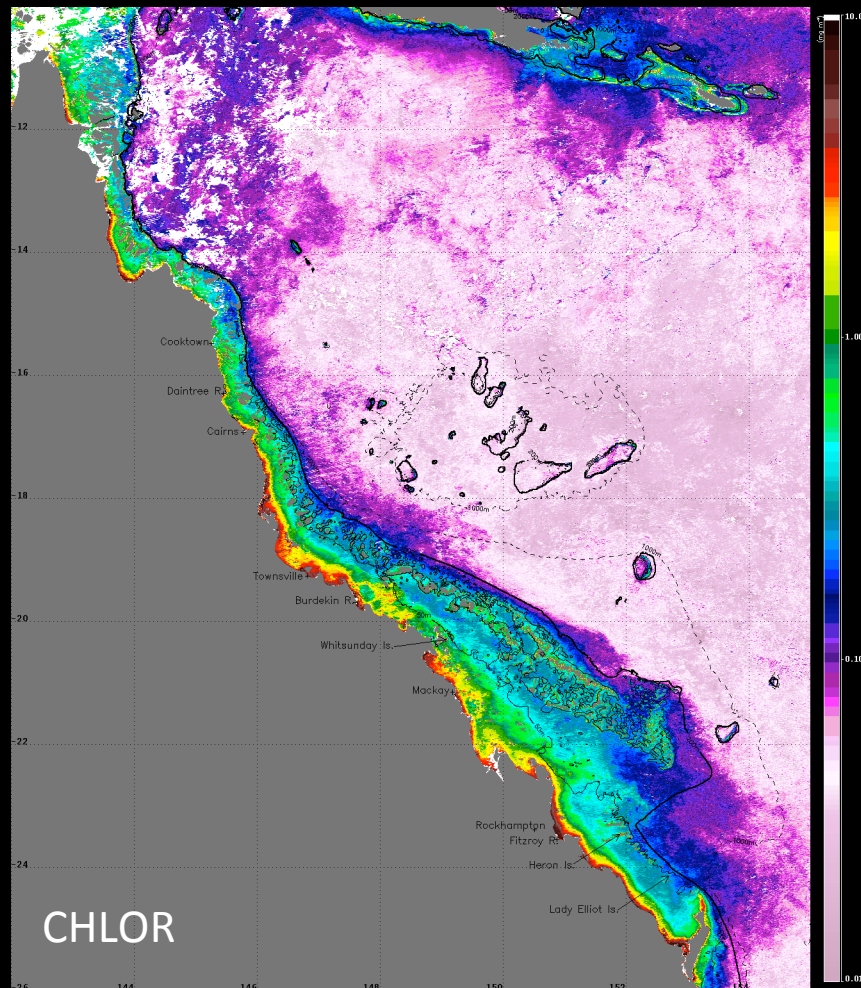
Southern GBR MODIS SST: March 2012



Note: (SST scale adjusted for S-GBR)

- Positive anomalies across almost entire S-GBR region, especially in the mid-shelf area coincident with southward flow of warmer waters here
- A patch of negative anomalies in the Fraser Island region

Modis Chlorophyll-a concentration: March 2012

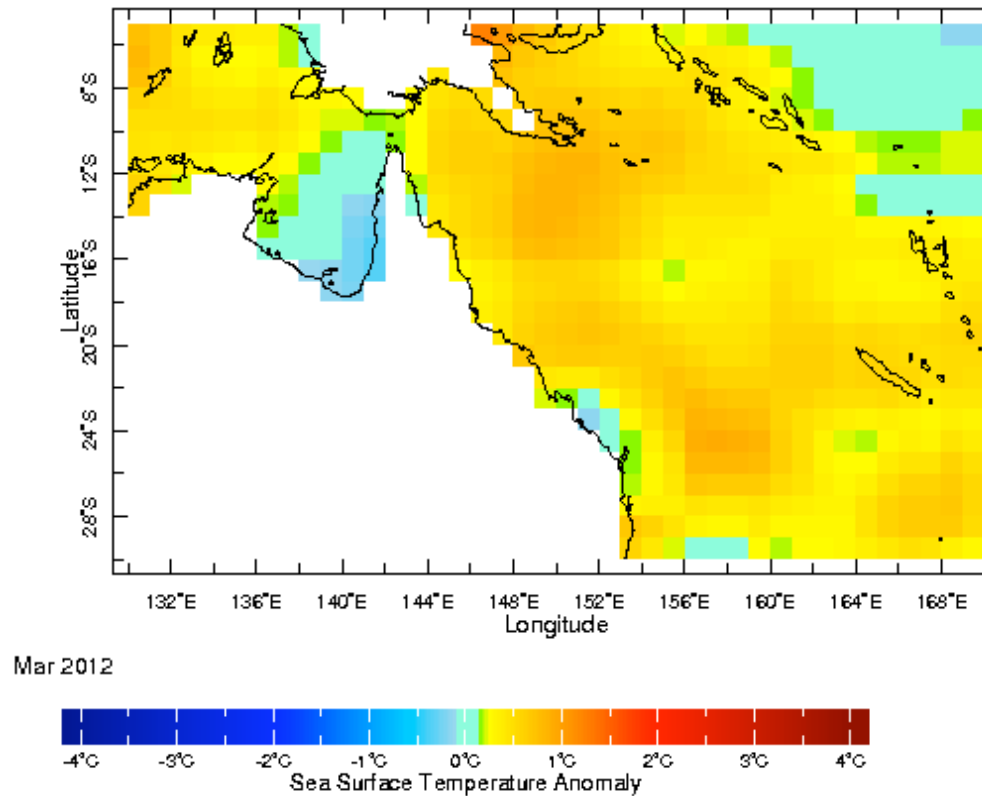


Note:

- Positive chlorophyll anomalies along inshore reefs due to high rainfall (anomalies in excess of 400mm) and associated strong river outflow
- Negative anomalies along outer shelf reefs in the S-GBR
- Due to extreme cloud contamination, especially north of ~18S, the values do not represent the monthly mean conditions

NOAA NCEP EMC CMB GLOBAL Reyn_SmithOlv2 monthly SSTA: Sea Surface Temperature Anomaly data

March 2012



Note:

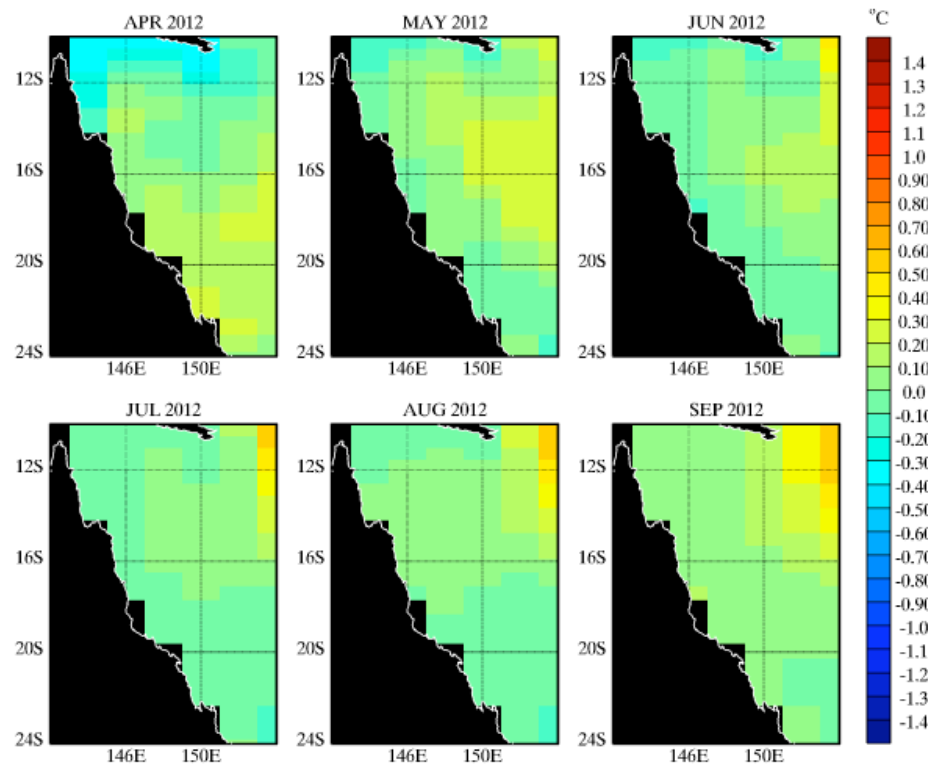
- Positive SST anomalies occurred along the length of the GBR during March except for an area of negative anomalies in the Fraser Island region, as indicated in the MODIS data

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)

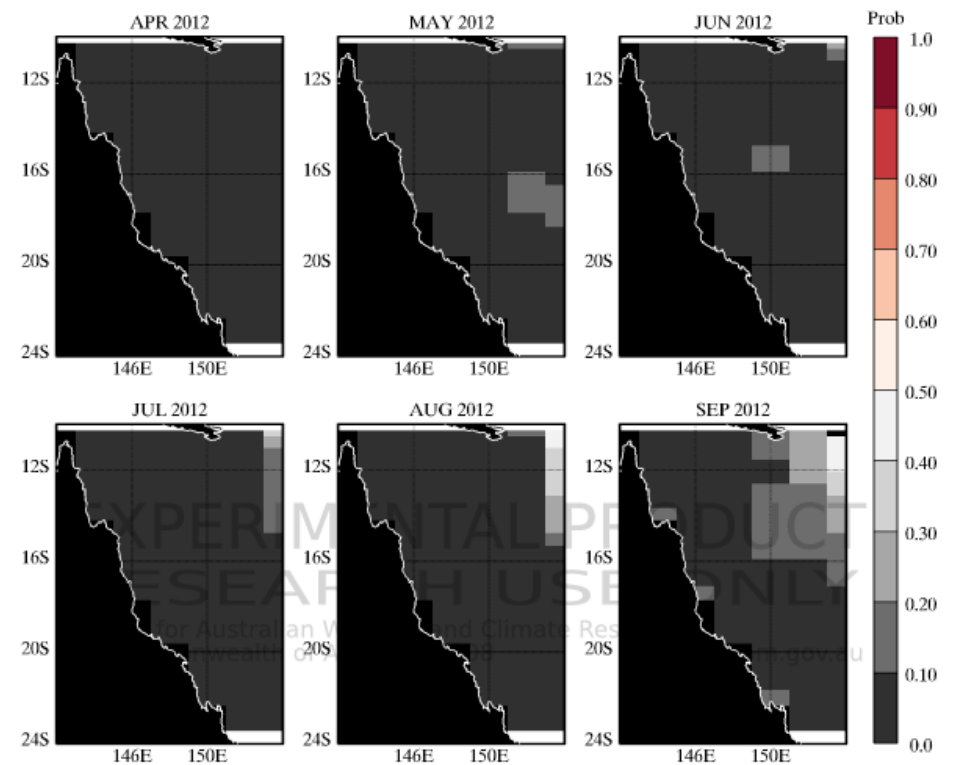
P2.4abc Monthly SSTA: GBR 20120401 [Lead=0-5 months, Nens=30]



Plotted: 20120411

Operational Product: IDYOC046

POAMA 2.4abc Probability SSTA ≥ 0.6 °C: 20120401 [Lead=0-5 months, Nens=30]



Plotted: 20120411

Note:

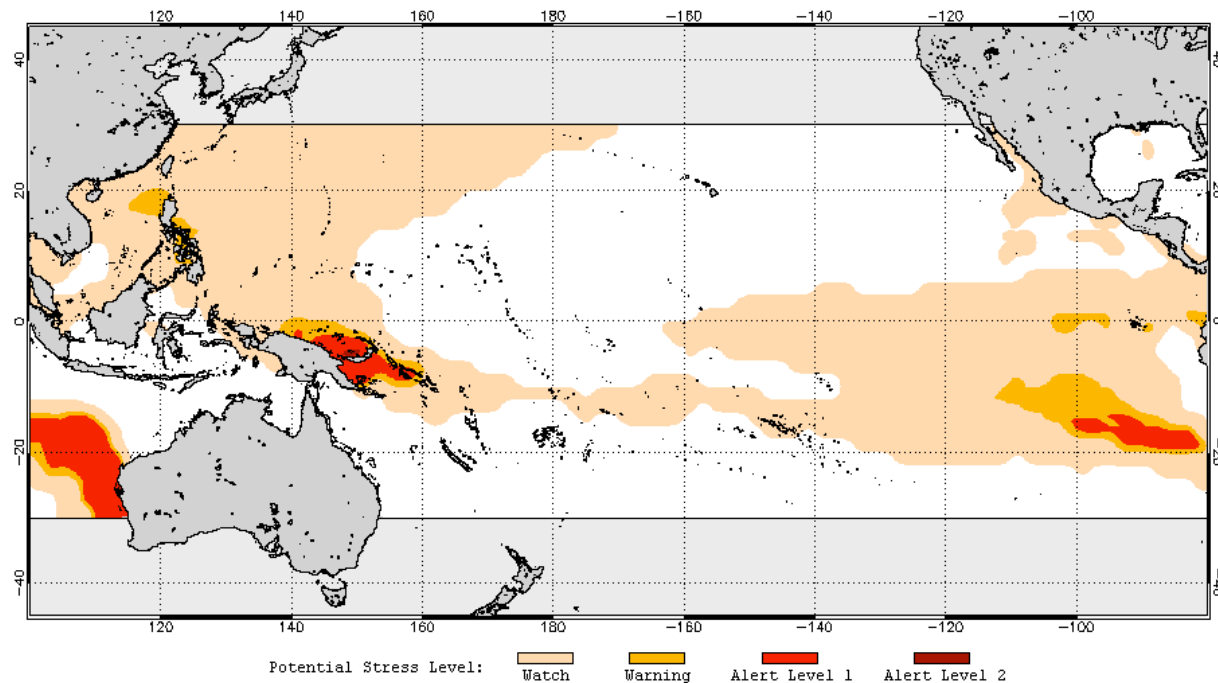
- Forecast of SST anomalies for the upcoming months shows SST close to/slightly above-average conditions through the winter months.

NOAA Coral Reef Watch

Coral Bleaching Thermal Stress Outlook (Version 2, experimental)

Outlook for April 2012 to July 2012

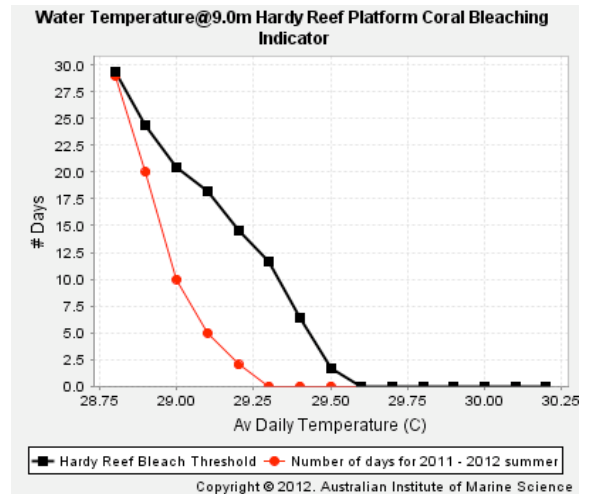
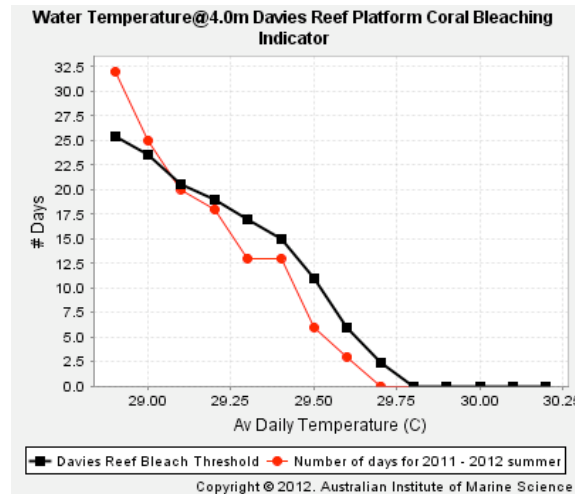
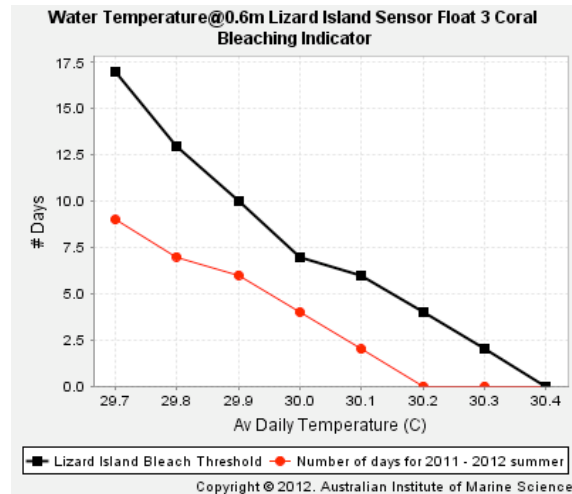
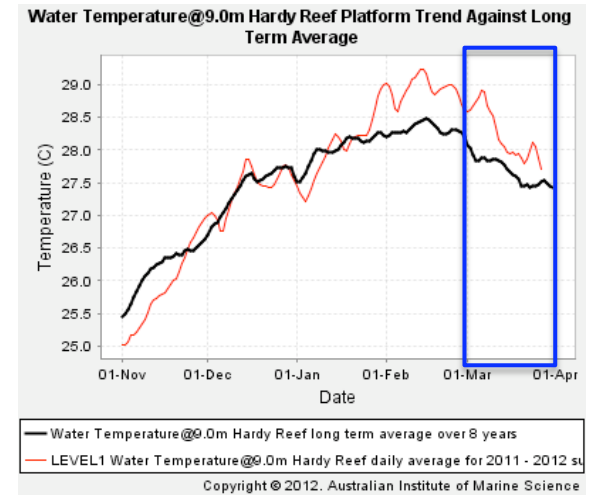
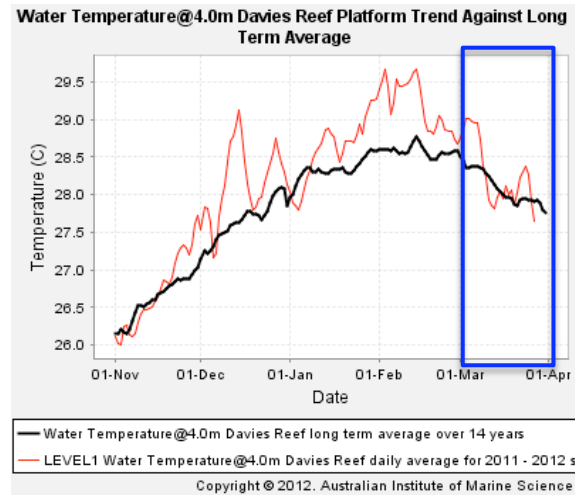
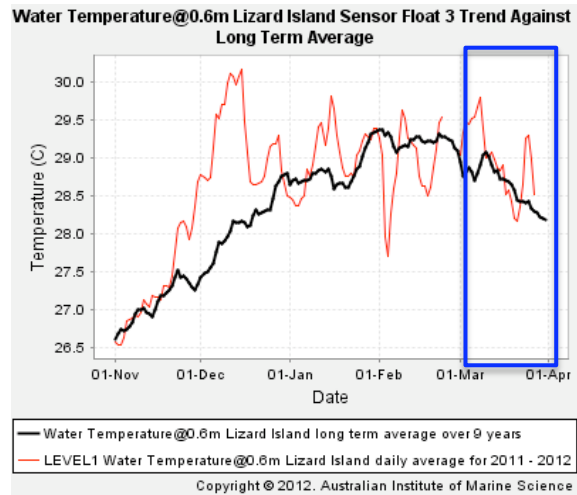
2012 Apr 03 NOAA Coral Reef Watch Coral Bleaching Thermal Stress Outlook for Apr–Jul 2012
(Version 2, Experimental)



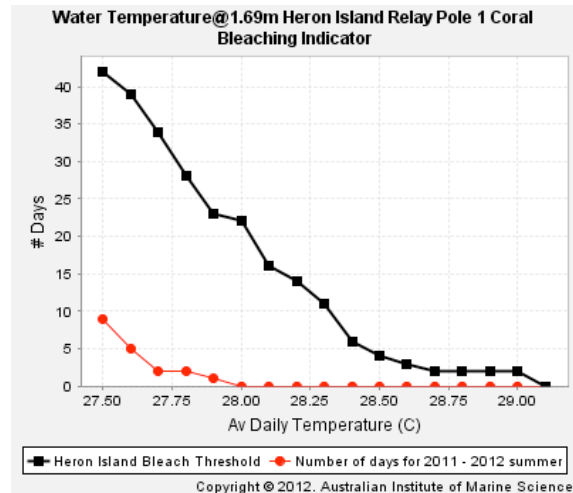
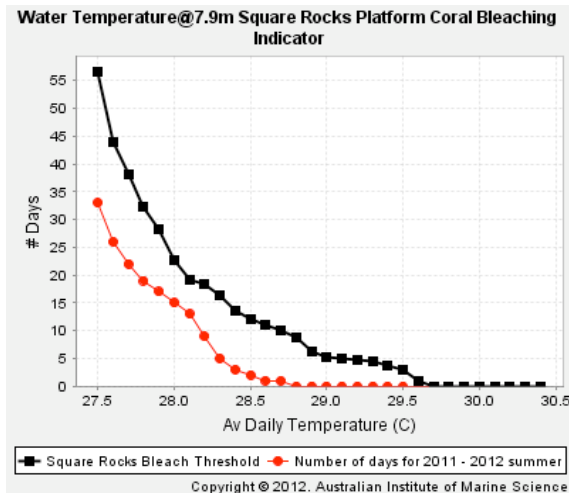
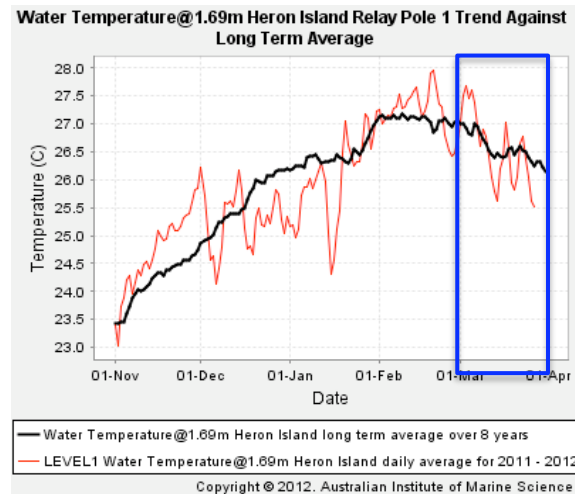
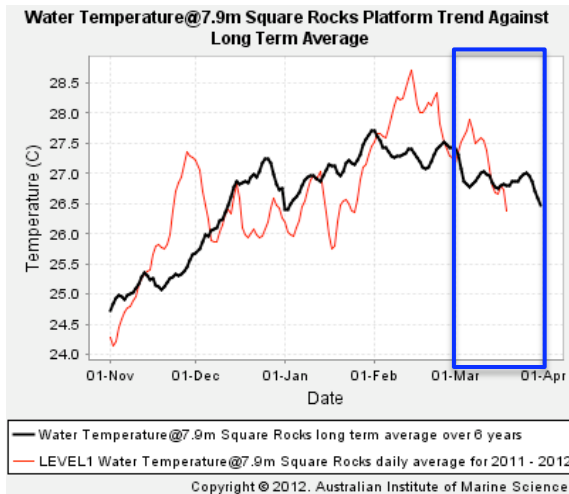
Note:

- NOAA CRW thermal stress outlook showing no alert levels on the GBR as we head into winter

Weather Observing System: AIMS Data Centre



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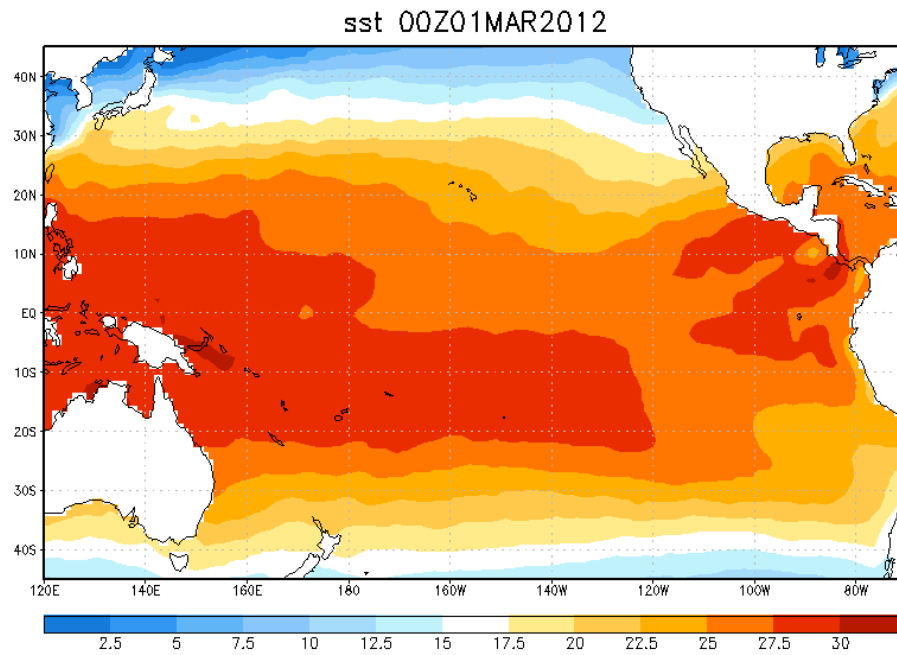


Note:

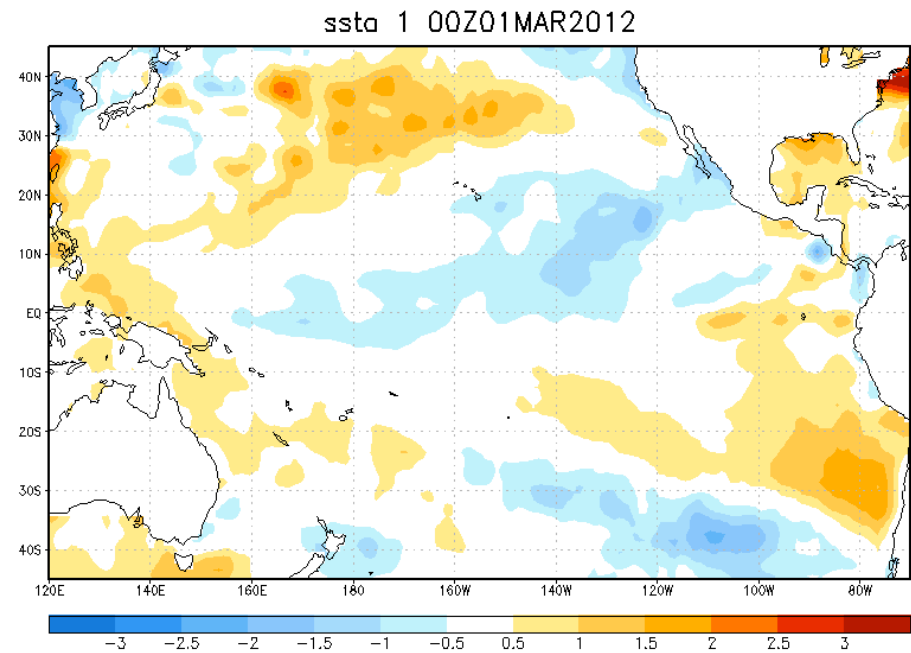
- In situ data also showing primarily average temperatures for most of the reefs, with the exception of Hardy Reef and Square Rocks Platforms, which show temperatures above the long-term mean. Both reefs are located in the areas of high SST anomalies shown by MODIS.

NOAA Optimum Interpolation Sea Surface Temperature Analysis:

OI SST: MARCH 2012



OI SST ANOMALY: MARCH 2012

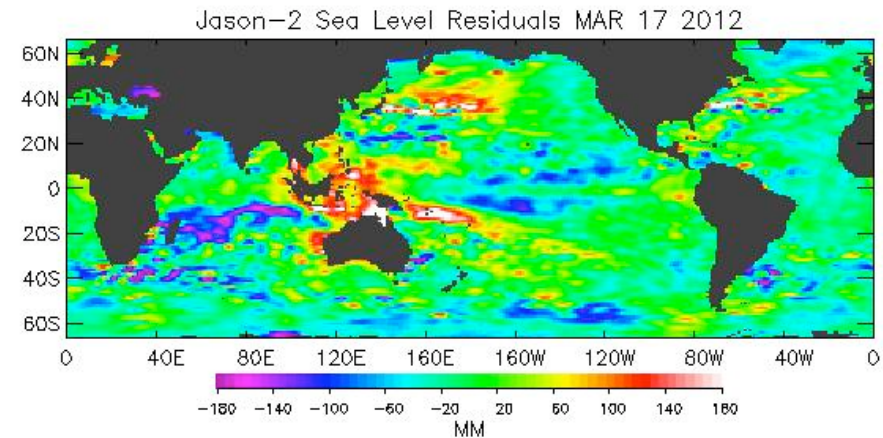
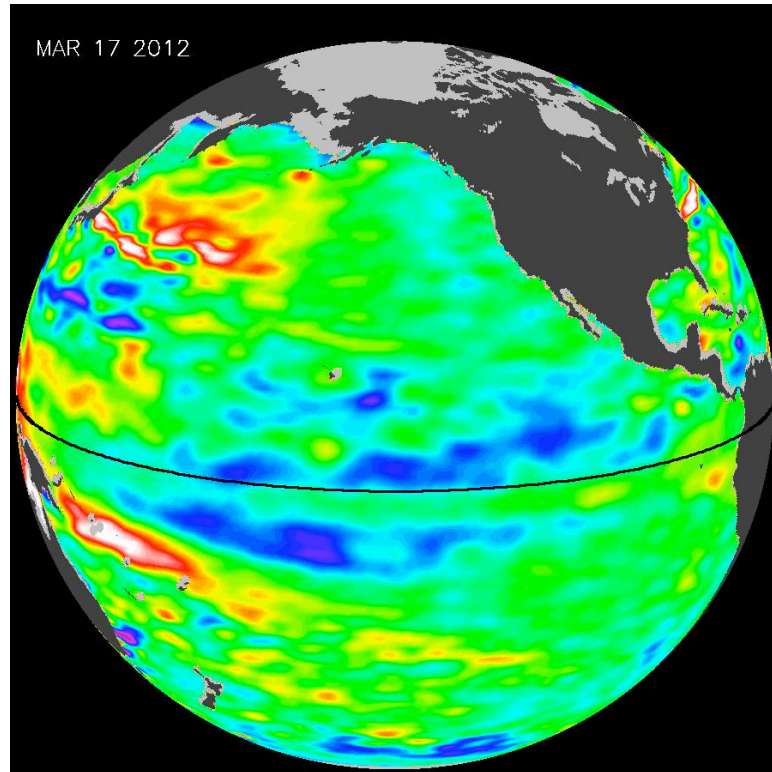


Note:

- The negative anomalies in the the equatorial Pacific continued to weaken during March, coincident with a weakening of La Niña.

Sea surface height anomalies from Ocean Surface Topography: Jason-1 and Jason-2 (NASA/French)

10-day data cycle centered around 17 March, 2012.



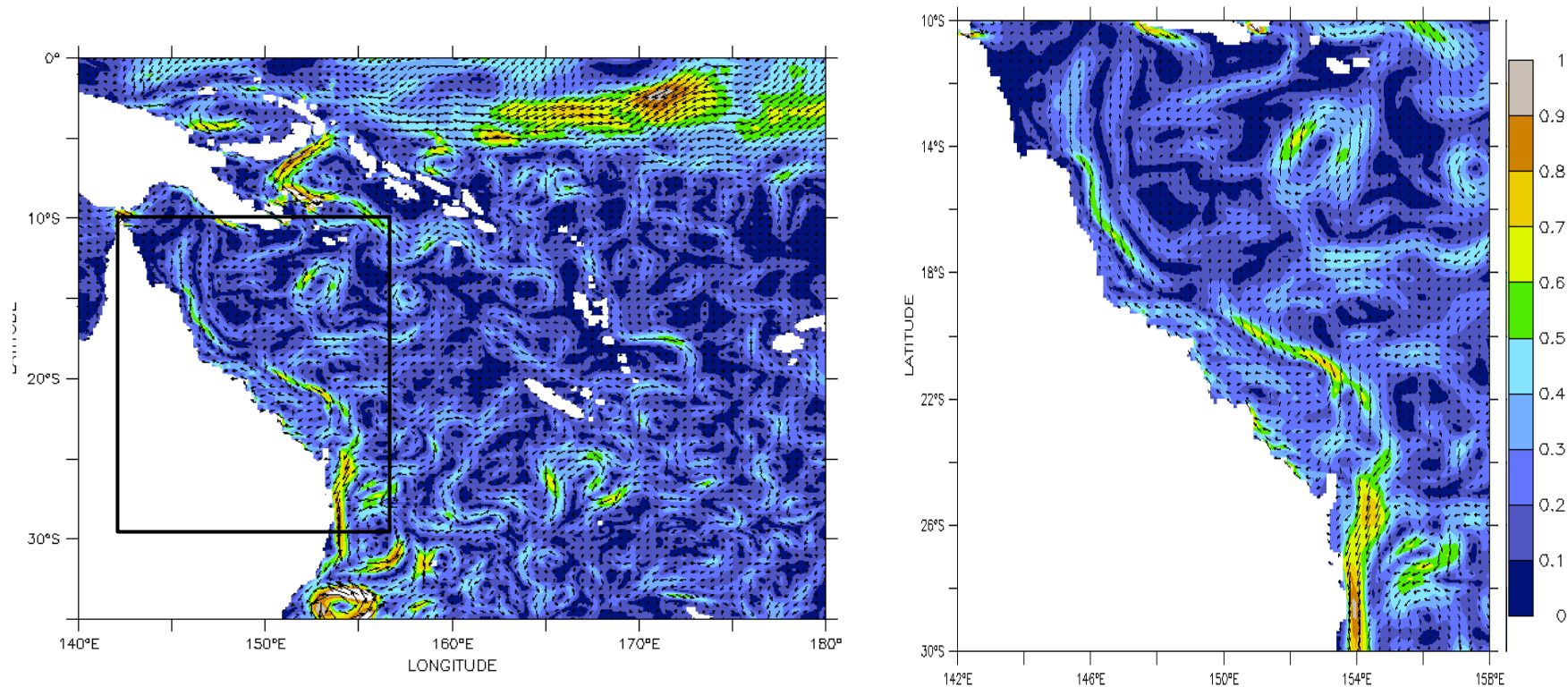
Note:

- Coincident with a weakening La Niña, the SSH anomalies remain negative along the central equatorial Pacific only, but returning to normal conditions in the far eastern Pacific.

OceanMAPS 15m Depth-Average Currents

March 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.

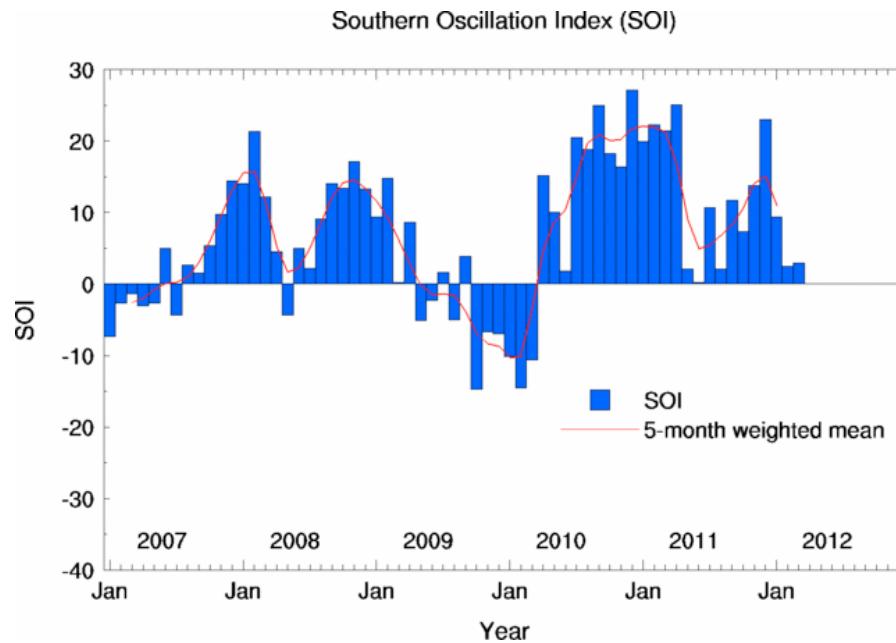


Behind Real Time analysis
15 m Depth-Averaged Currents (m/s).

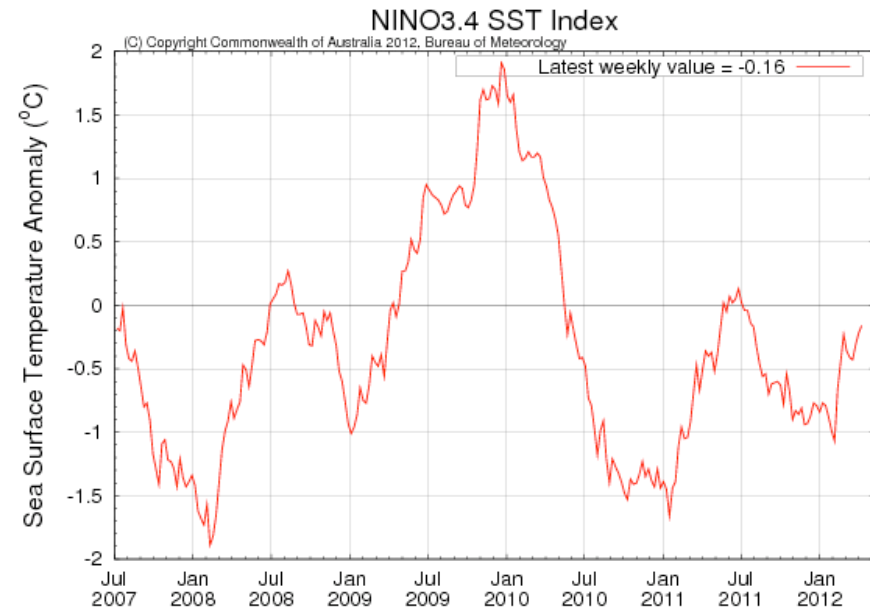
Note:

- Strong EAC flow adjacent to the GBR.
- The southward flow is apparent along the length of the GBR from as far north as ~10°S

ENSO index



Positive SOI = La Niña



Negative Nino 3.4 index= La Niña

Note:

- Although La Niña patterns continue in the tropical Pacific, it is weakening and expected to turn into an ENSO-neutral phase during the month of April