GBR environmental conditions report

February 2011

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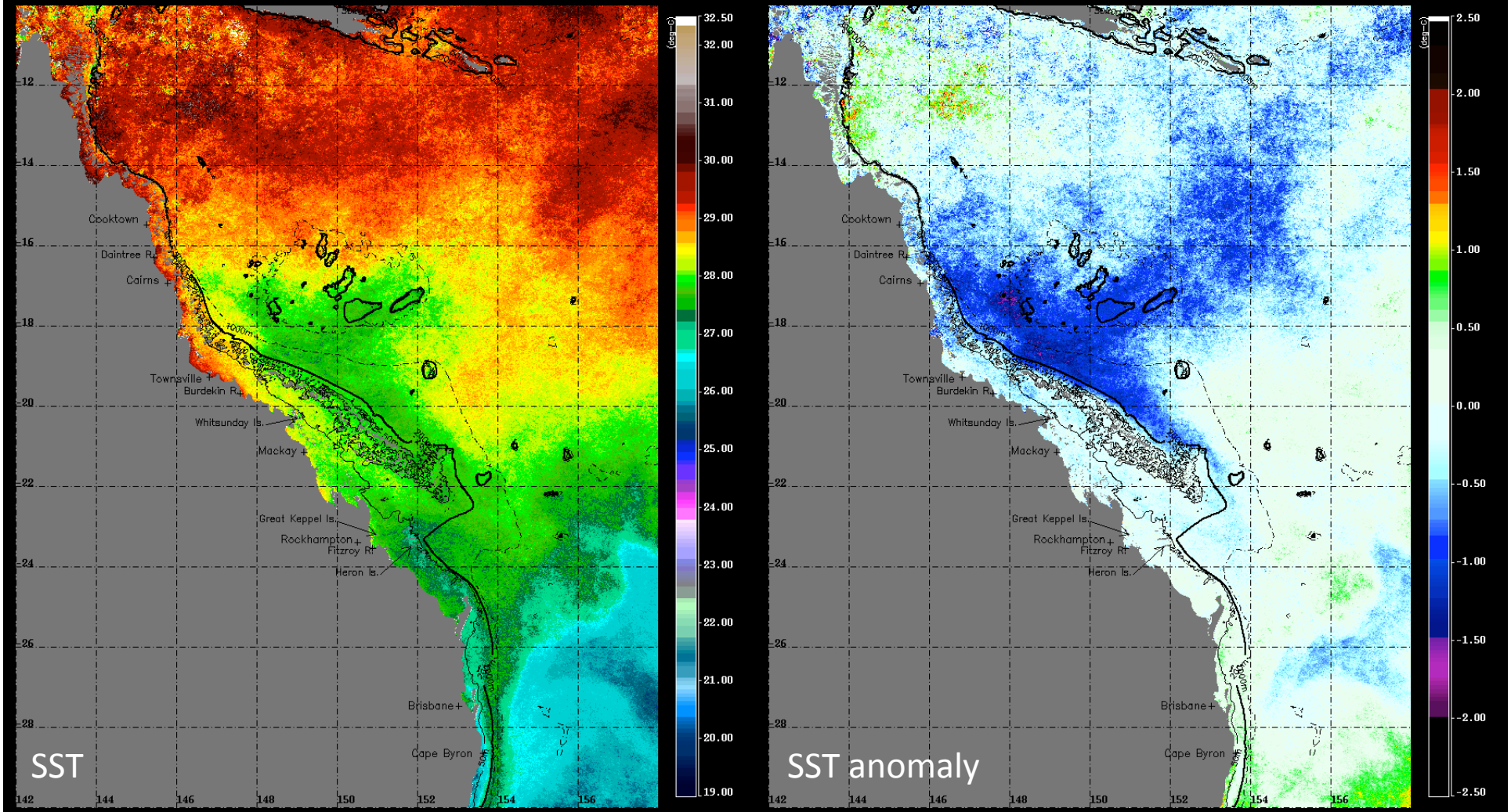
work supervised by Dr. Scarla Weeks

UQ OceanSpace Group

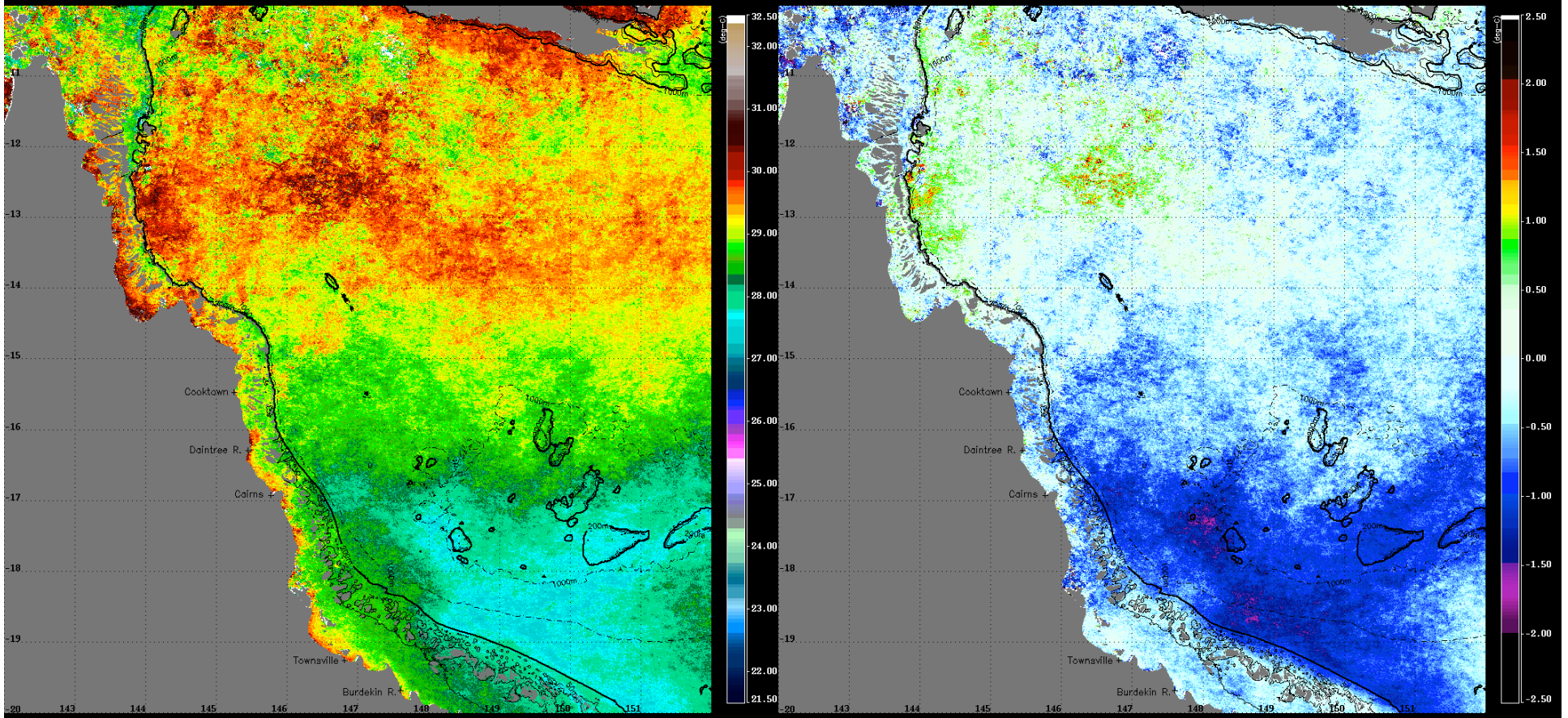
Modis SST (day+night): February 2011



Note:

- The positive anomalies of January have dissipated, with strong negative anomalies present in February between ~16 to 22 deg S. These negative anomalies are associated with TC Yasi, which reached the coast early in the month (see subsequent slides).
- Strong EAC flow along the continental shelf.

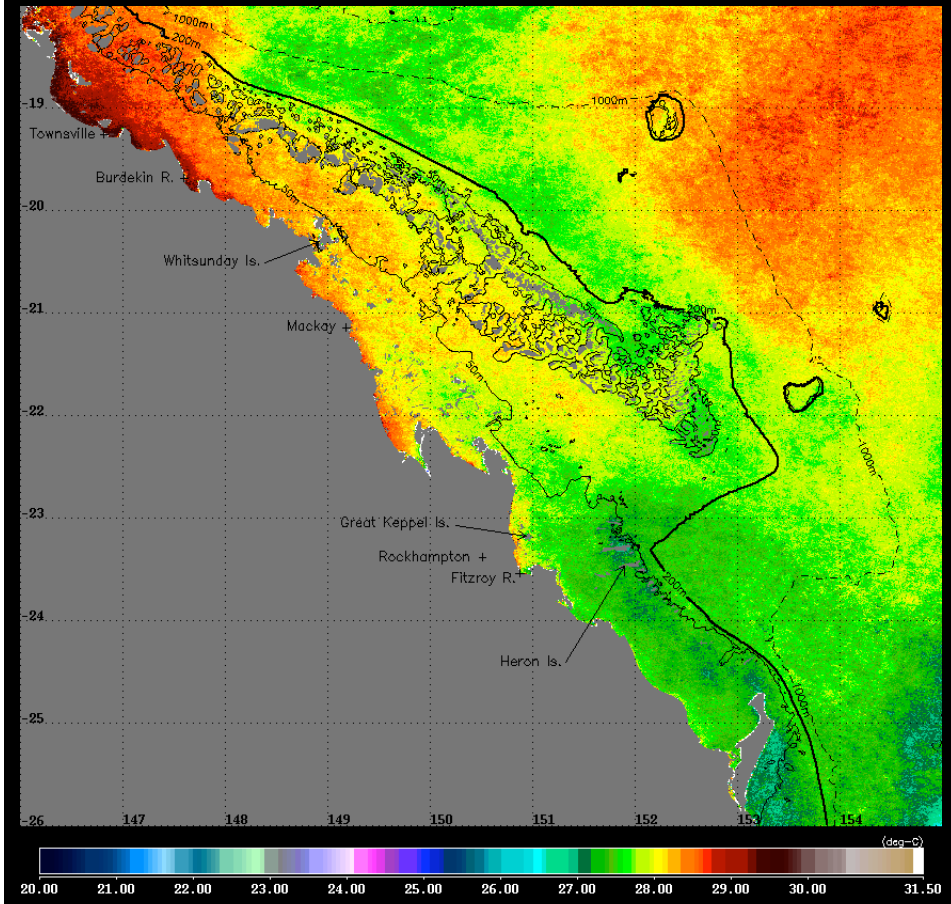
Northern GBR SST: February 2011

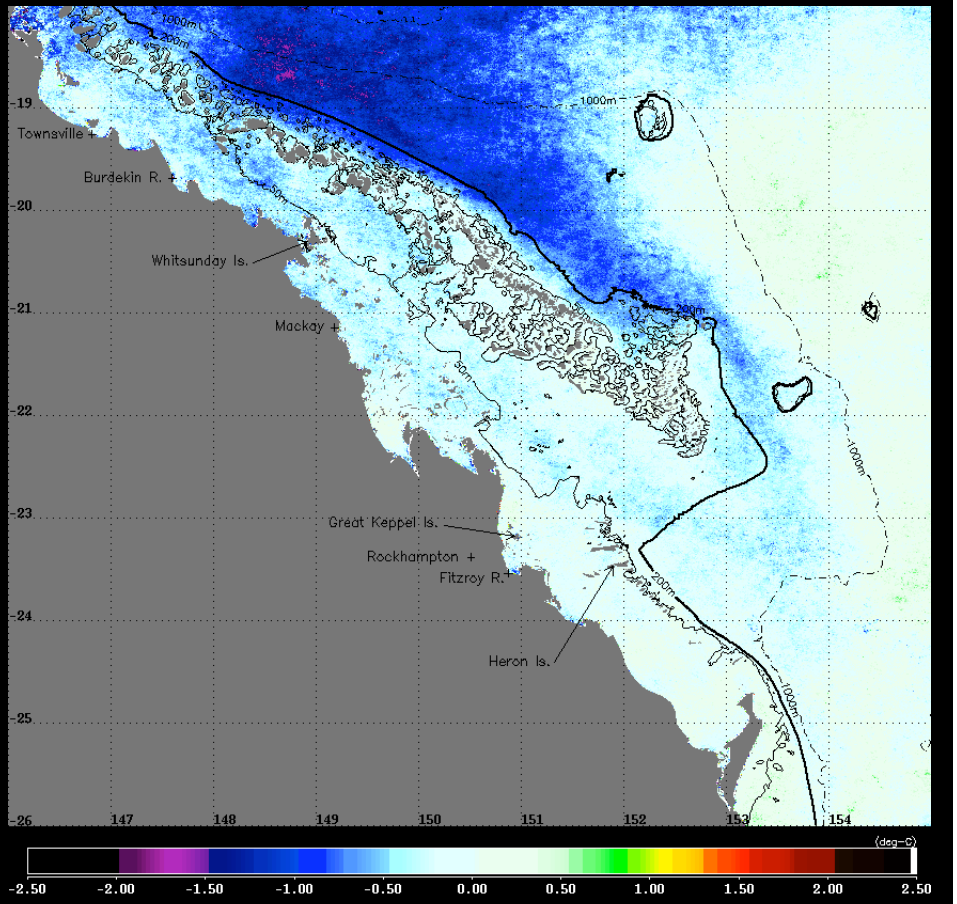


Note:

- Strong negative anomalies dominate the monthly mean south of ~16 deg S in the N-GBR offshore region, directly linked with TC Yasi.
- Weaker negative anomalies on the central GBR shelf, & close to average conditions elsewhere.

Southern GBR SST: February 2011





Note:

- The positive anomalies present in the S-GBR in January have dissipated.
- Instead, strong negative anomalies are apparent along the continental shelf edge north of ~22 deg S.
- Close to average conditions for most of the inner reefs and Capricorn Bunker reefs.

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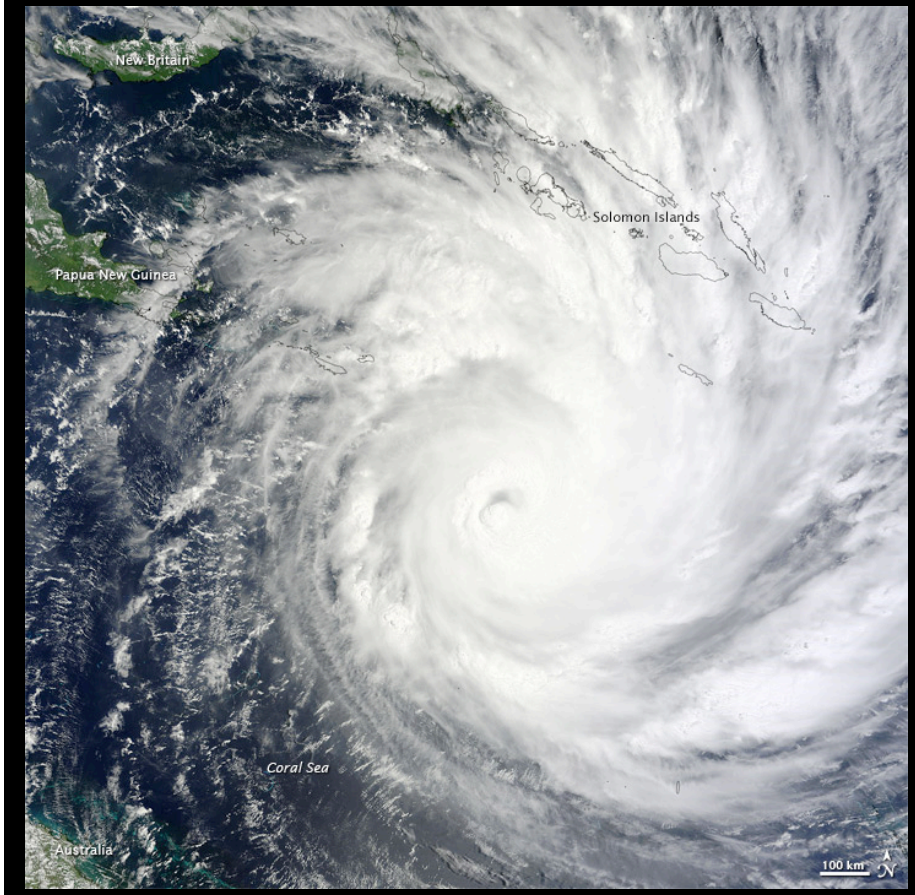
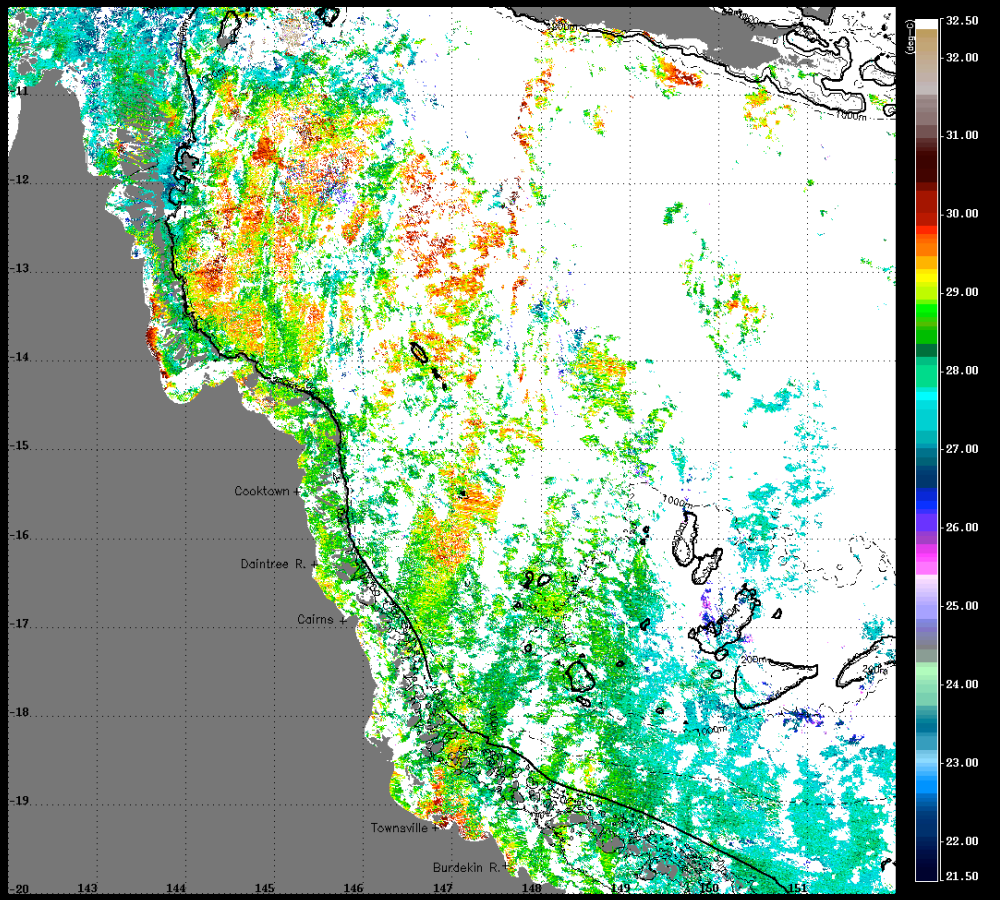
MODIS QUASI-TRUE COLOR : 1st February 2011



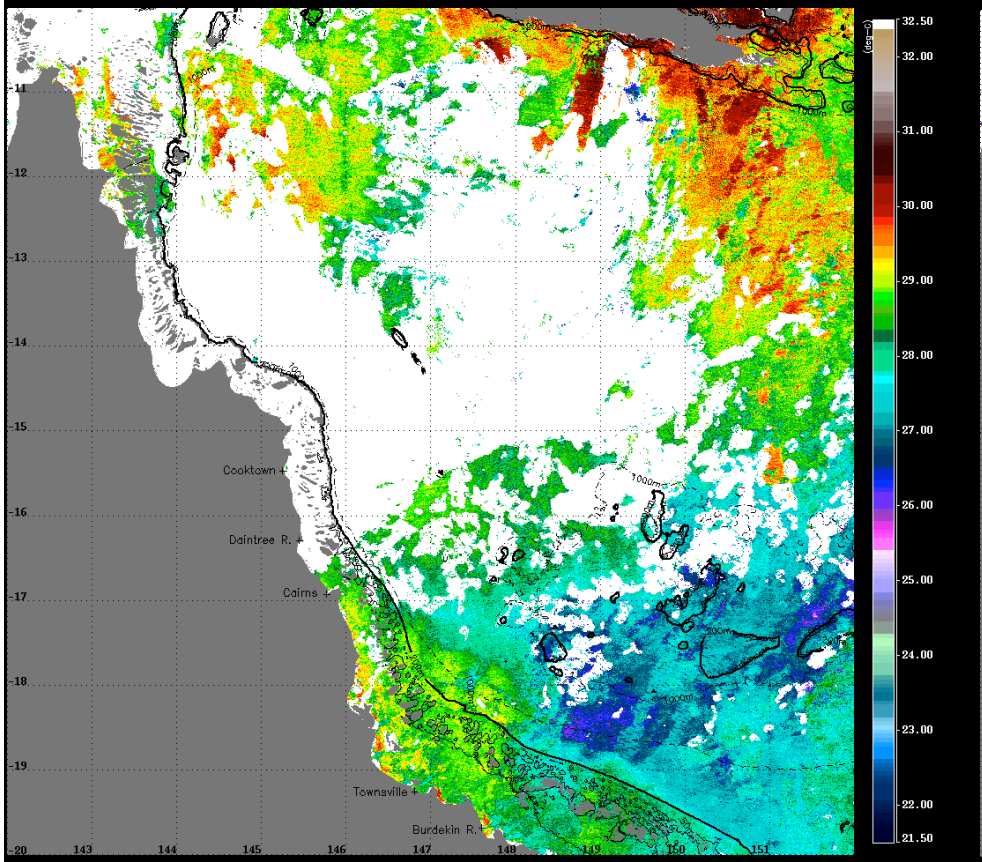
MODIS SST: 3-DAY MEAN 3 Feb 2011



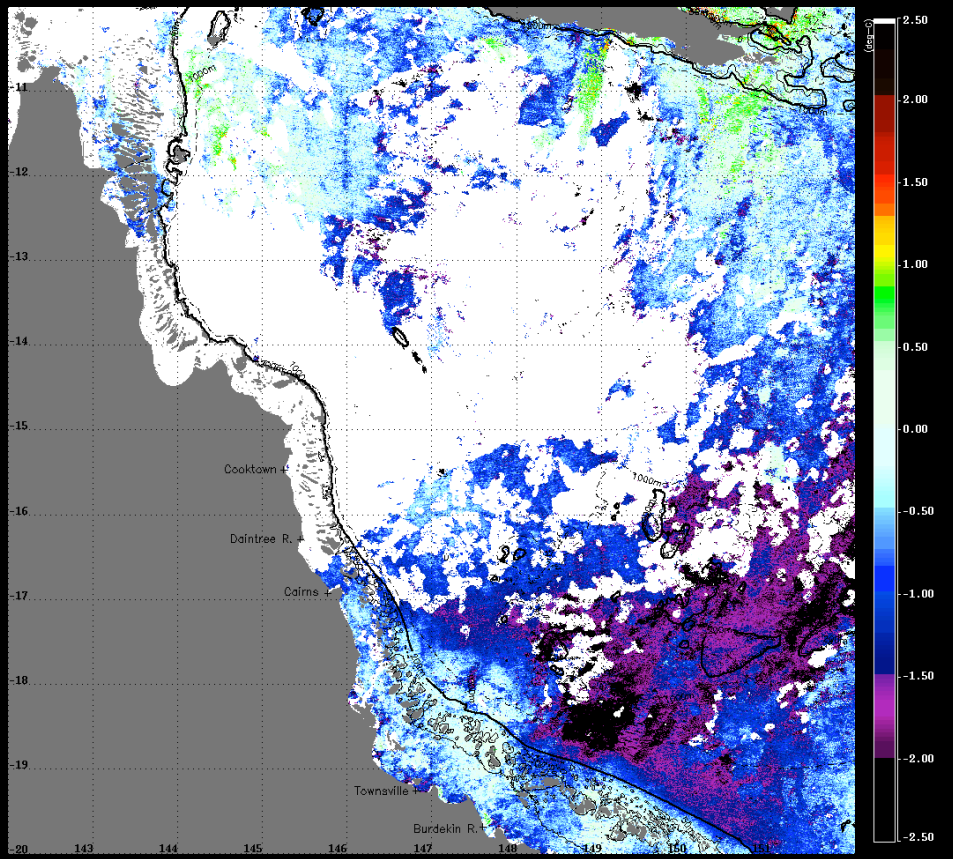
Left: TC Yasi approaching QLD coast on 1 Feb
Right: Extensive cloud contamination 1st to 3rd of February as TC Yasi approached, reaching the coast on 3rd of February

MODIS SST
4th to 6th of February

MEAN (3day)



ANOMALY (3day)



- Extensive cloud cover reduced after TC Yasi reached the coast
- Negative SST anomalies of up to & even exceeding 2.5 deg C in the track of TC Yasi

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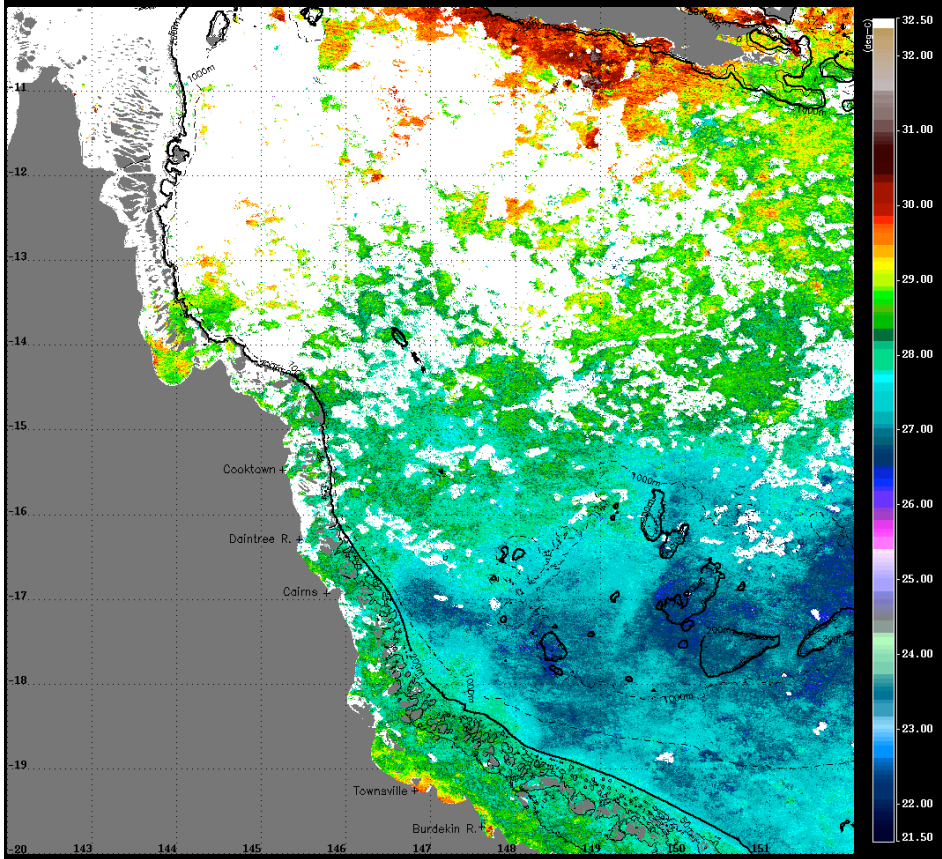
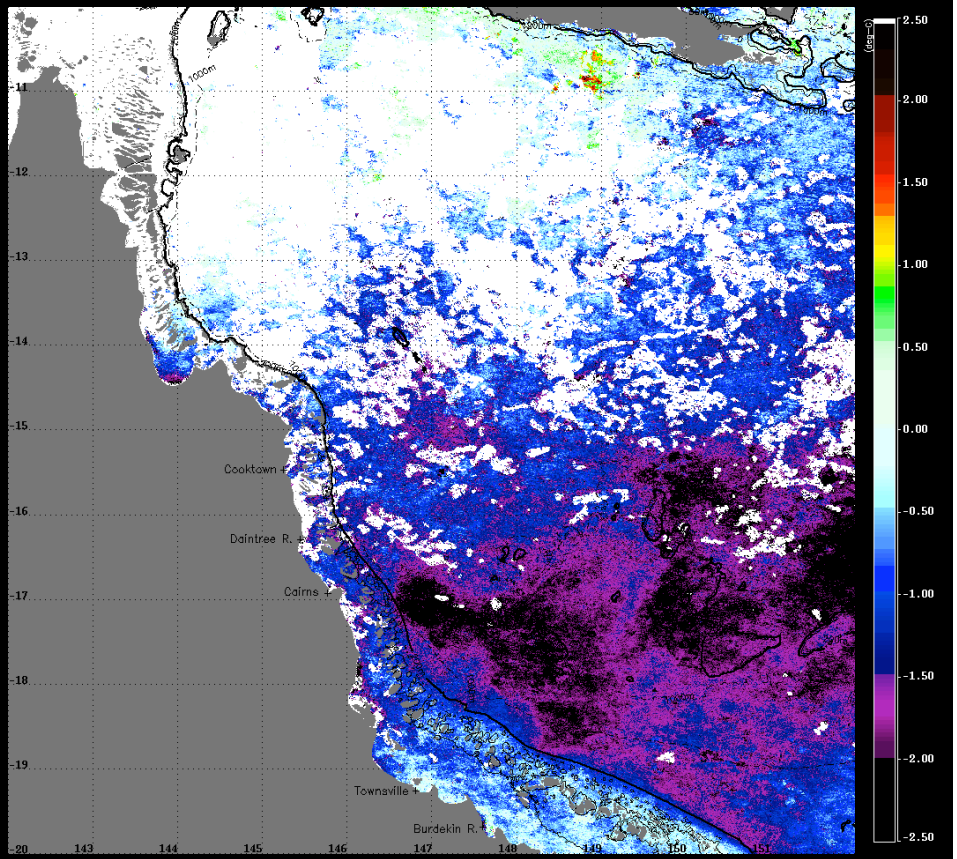
MODIS SST
7th to 9th of February

MEAN (3day)



ANOMALY (3day)



- Persistent intense (> -2.5 deg C) offshore anomalies more apparent as cloud cleared, especially south of ~17°S
- Strong negative anomalies also apparent on central GBR shelf

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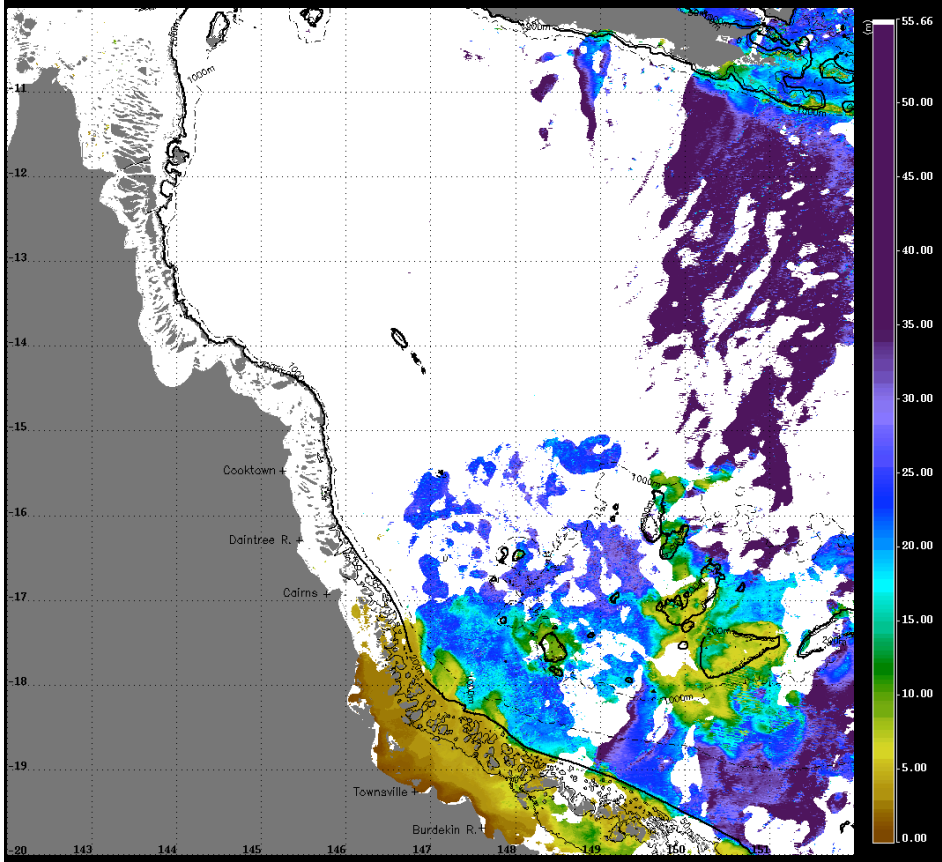
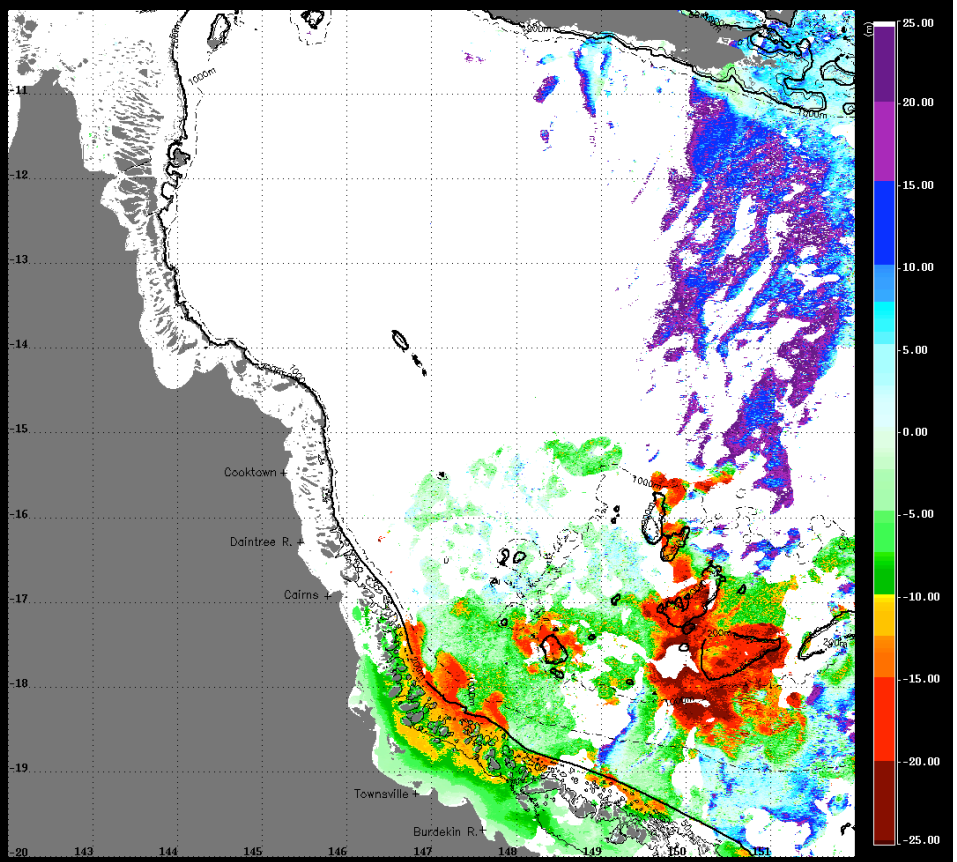
MODIS EUPHOTIC DEPTH (m)
4th to 6th of February

MEAN (3day)



ANOMALY (3day)



- Extremely turbid waters followed the cyclone, both on the shelf and in the QLD plateau region
- Intense anomalies!
- Negative anomalies of up to -20m on the central GBR shelf edge & up to -25m in QLD plateau region!

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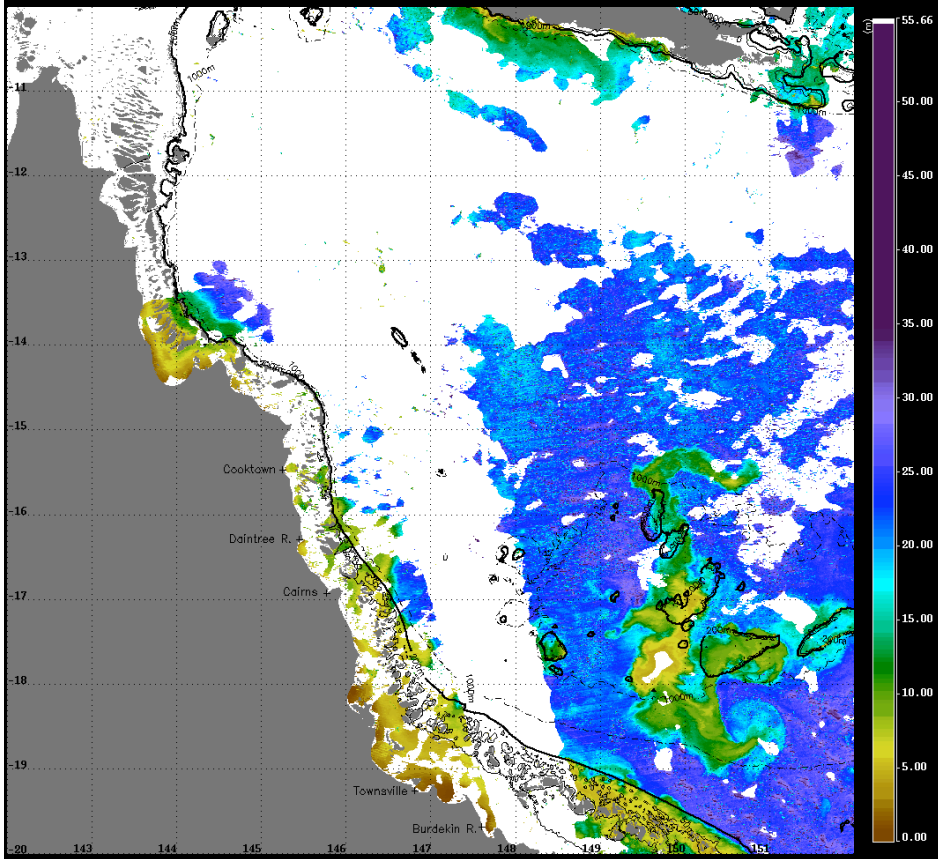
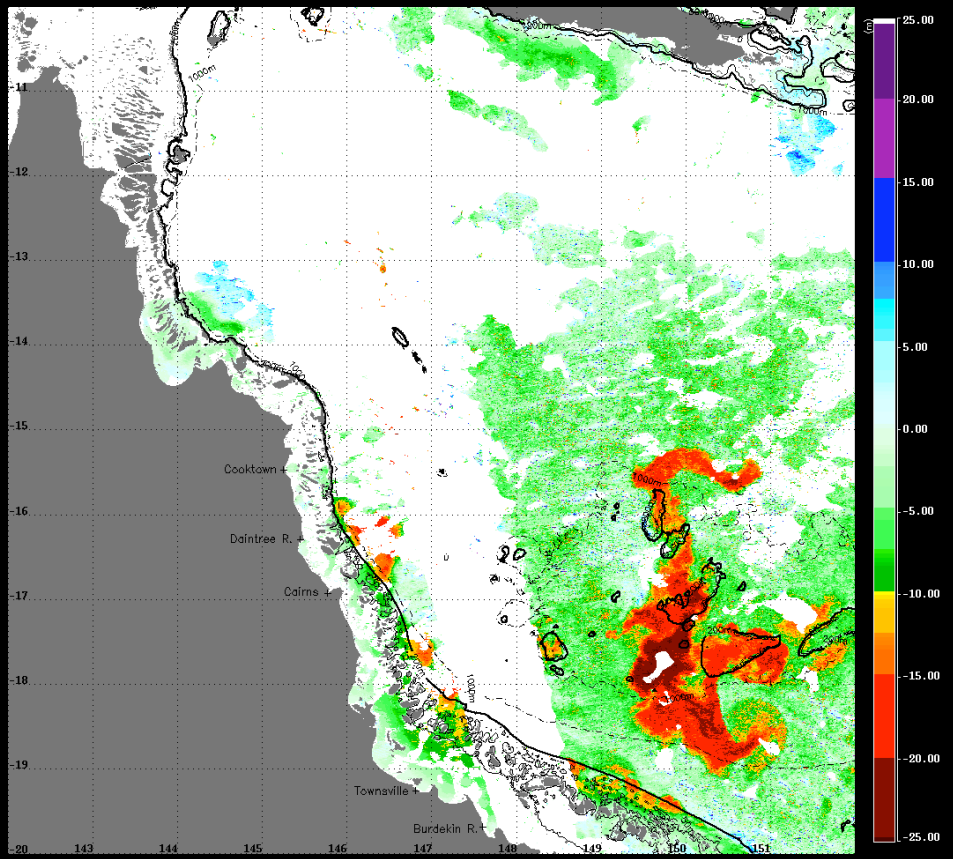
MODIS EUPHOTIC DEPTH
7th to 9th of February

MEAN (3day)



ANOMALY (3day)



- Modis visible band coverage limited 7-9 Feb
- Turbid waters persisted on the shelf & especially in the QLD plateau region
- Distinct pattern of intense anomalies (up to -25m) particularly apparent in the QLD plateau region

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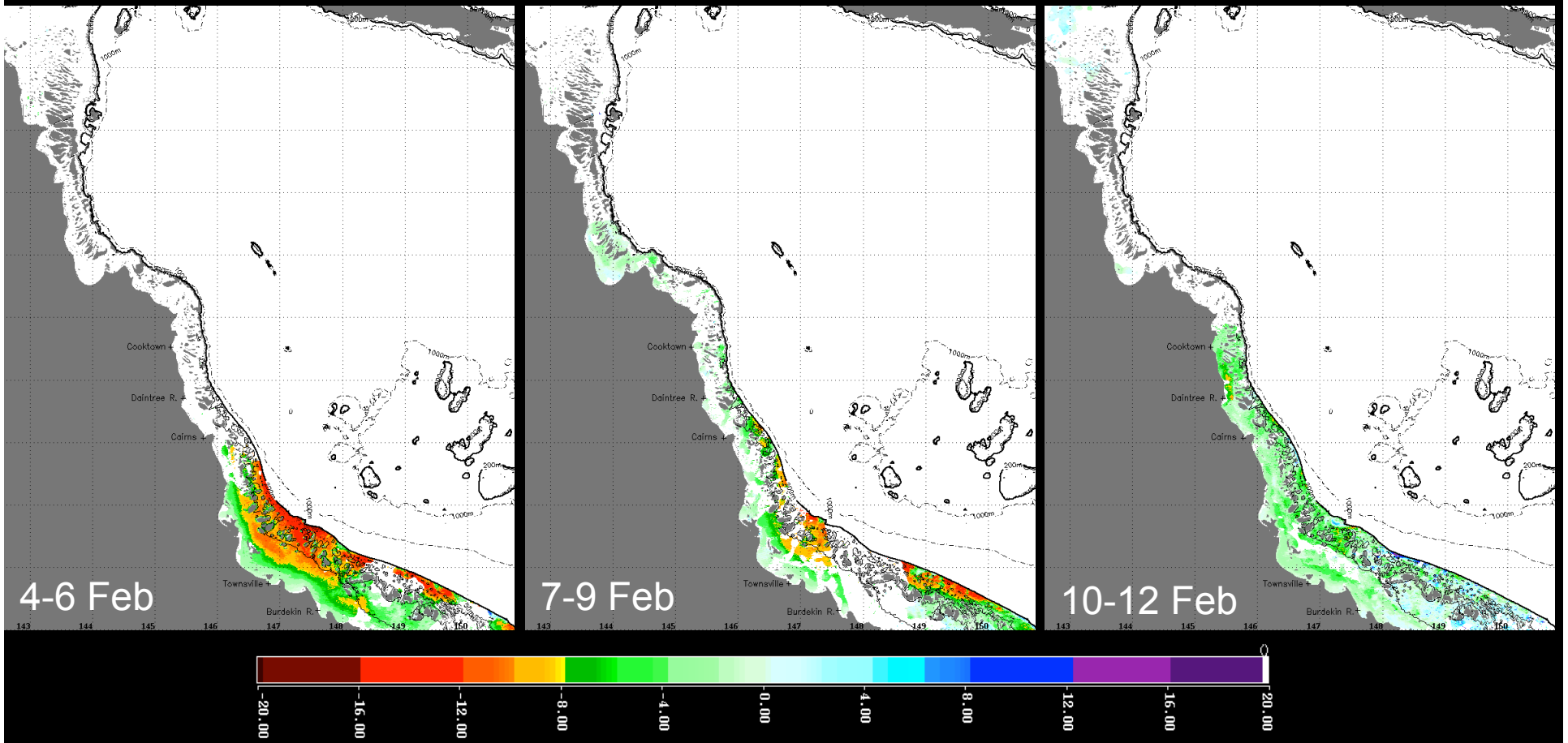
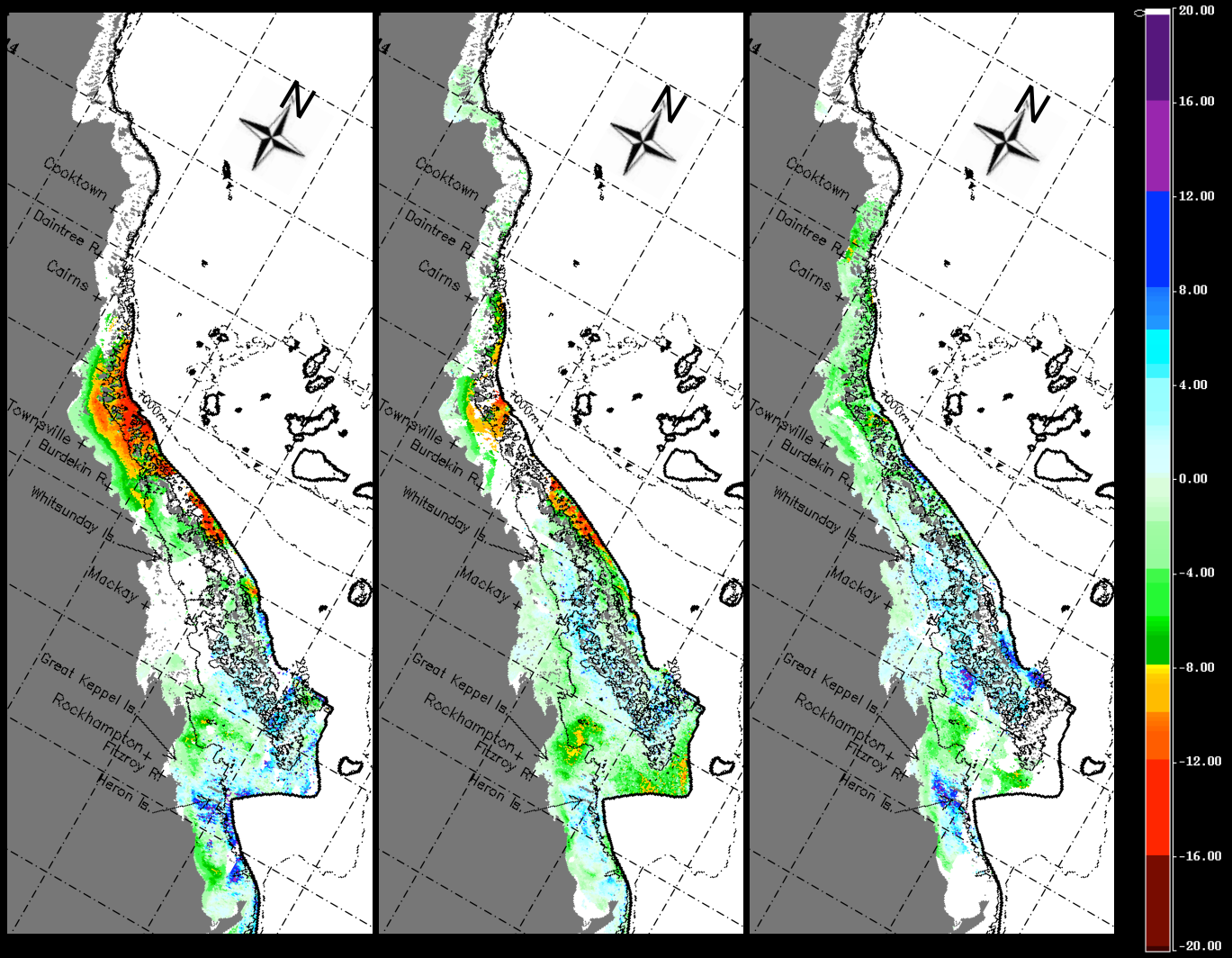
MODIS EUPHOTIC DEPTH
focus on shelf anomalies



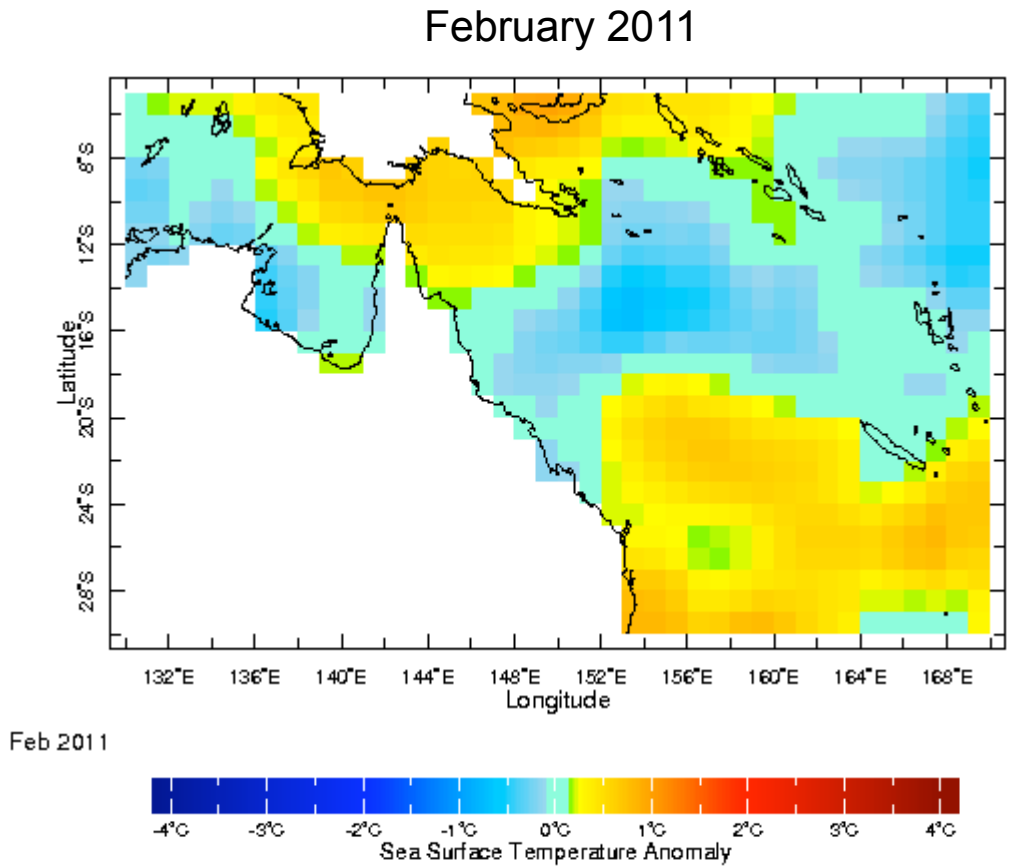
• Focus on shelf anomalies only - pattern of intensely turbid waters intruded onto the central GBR shelf in the period following the cyclone

Euphotic depth shelf anomalies relative to the length of the GBR region



3D anomalies for 4-6 , 7-9 and 10-12 February 2011

NOAA NCEP EMC CMB GLOBAL Reyn_SmithOIv2 monthly SSTA: Sea Surface Temperature Anomaly data



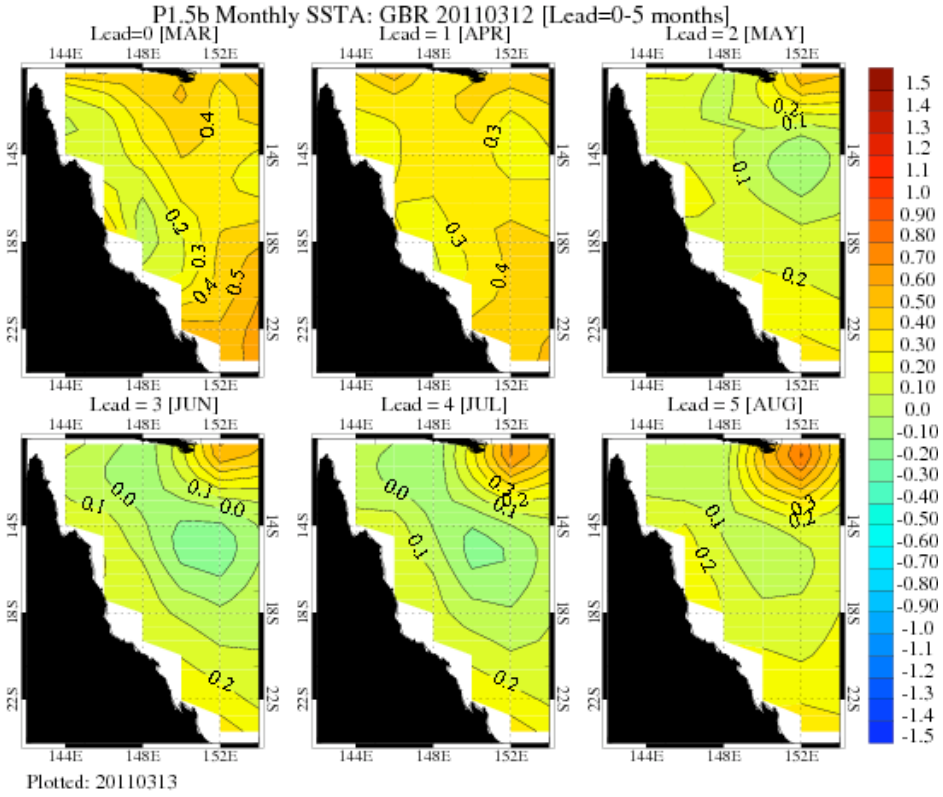
Note:

- Coincident with the MODIS SST data, Reynolds SST anomaly data shows a pattern of lower than average temperatures between ~16-22 deg S.

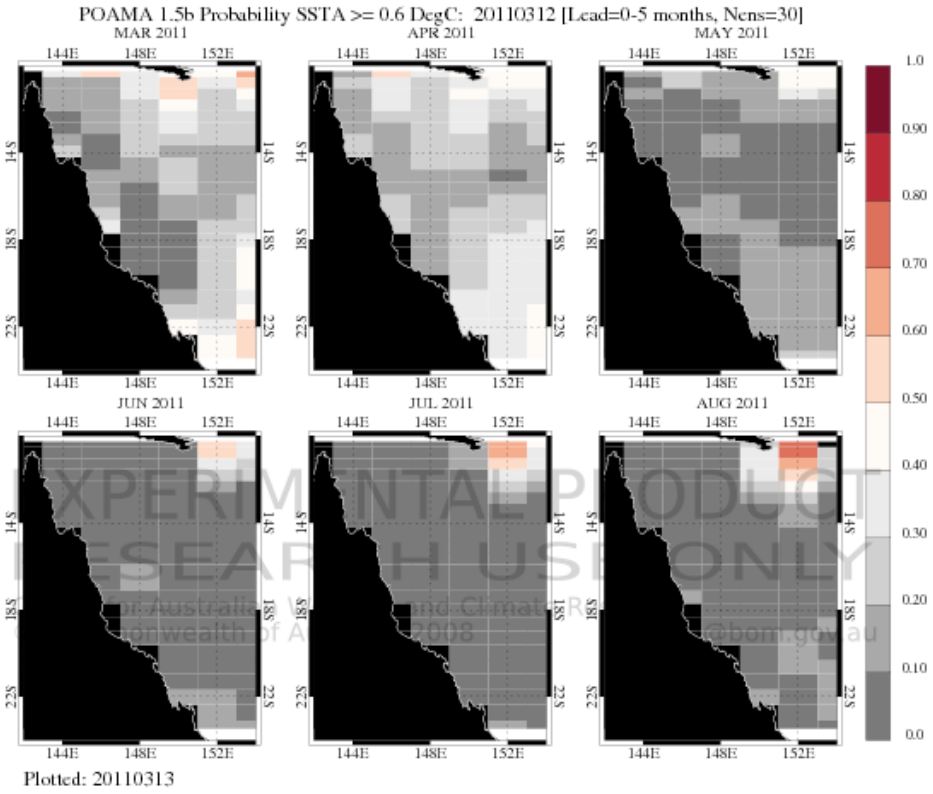
http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.EMC/.CMB/.GLOBAL/.Reyn_SmithOIv2/

Experimental Great Barrier Reef SST Anomaly Forecasts (POAMA)

POAMA SST anomalies forecast for the following 6 months.



New POAMA product highlighting the probability of SST anomalies greater than 0.6 deg C for the following 6 months.



Note:

- POAMA forecast is similar to the January forecast, with anomalies not exceeding 0.6 deg C in the following months.

http://poama.bom.gov.au/experimental/poama15/sp_gbr.htm

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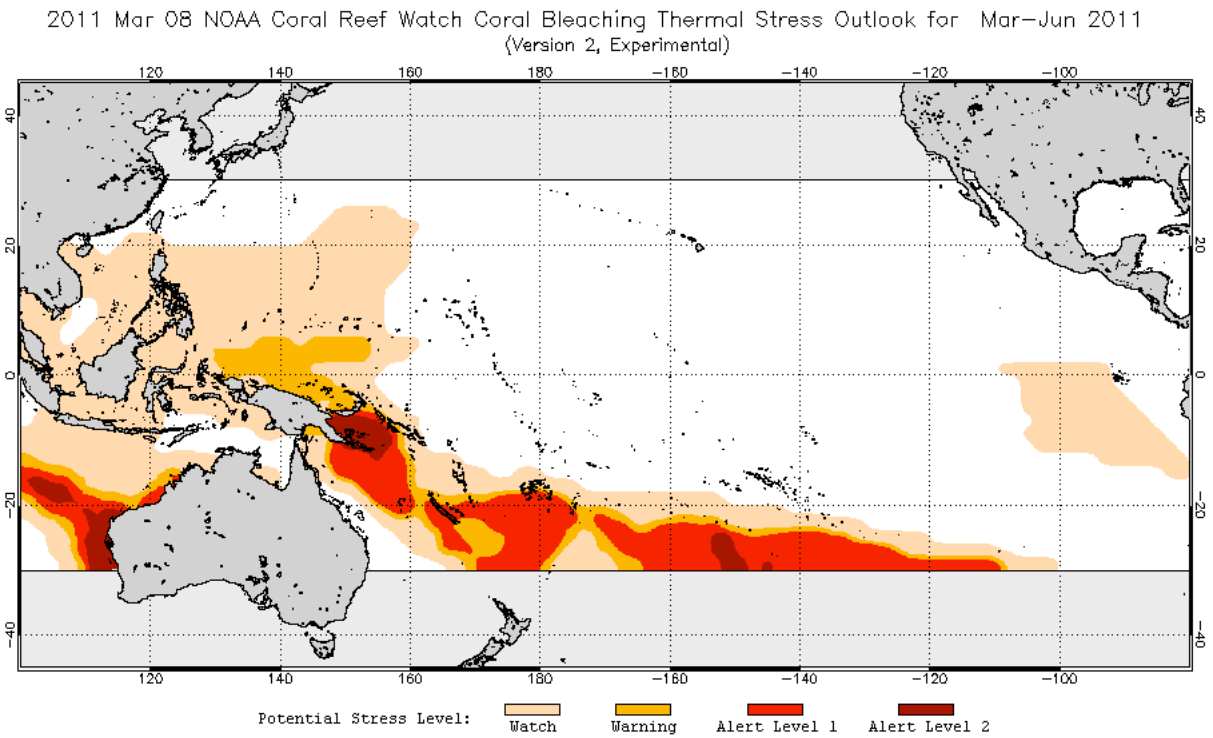
NOAA Coral Reef Watch

Coral Bleaching Thermal Stress Outlook

(Version 2, experimental)

Outlook for March 2011 to June 2011



Note:

- NOAA thermal Stress Outlook no longer shows Alert levels for the GBR region.

http://coralreefwatch.noaa.gov/satellite/bleachingoutlook/

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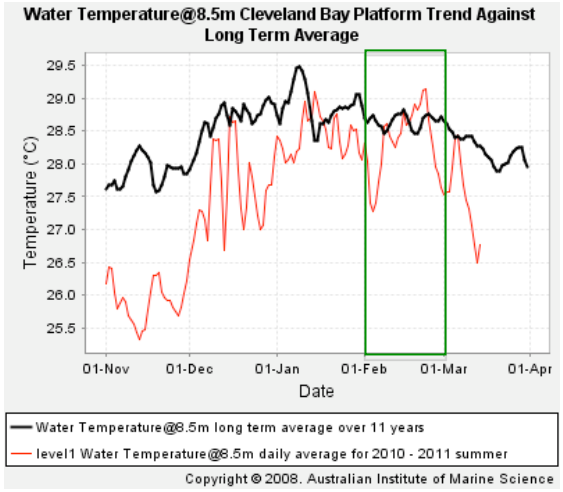
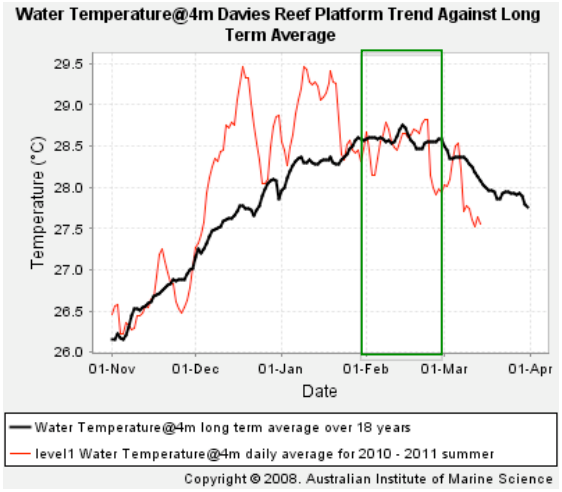
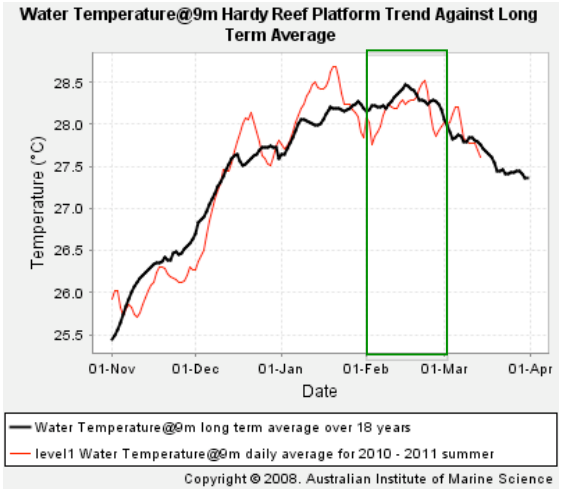
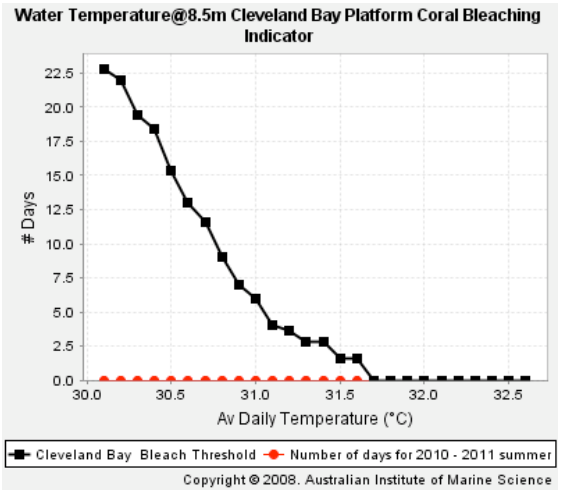
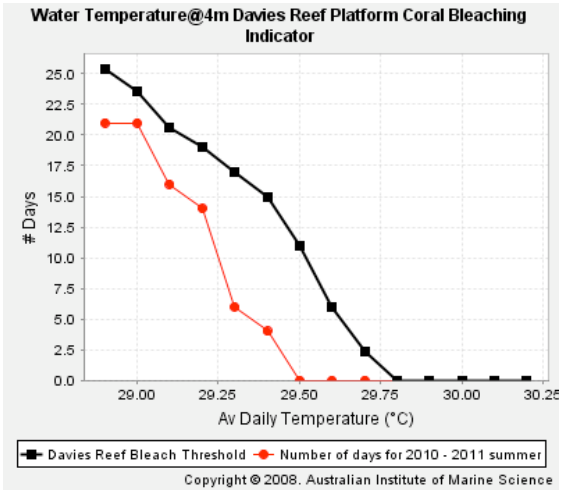
Weather Observing System: AIMS Data Centre

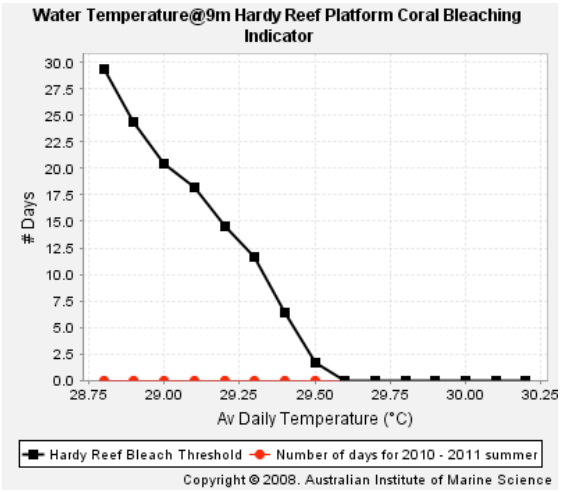




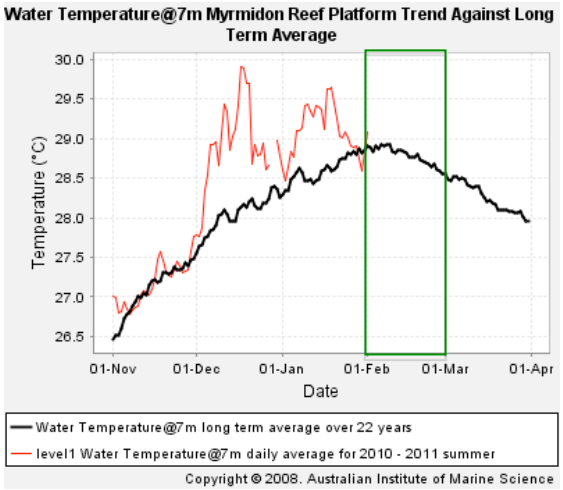


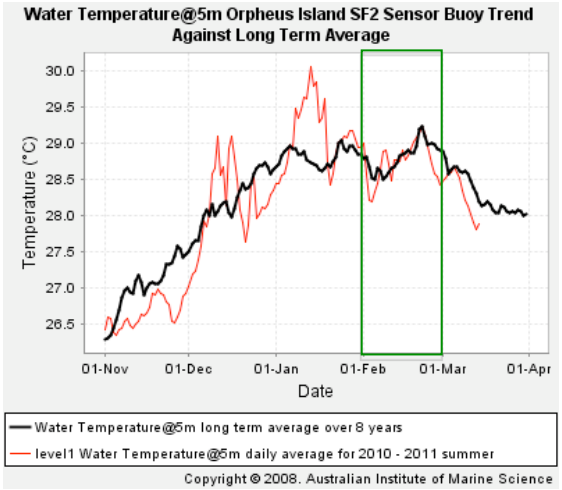


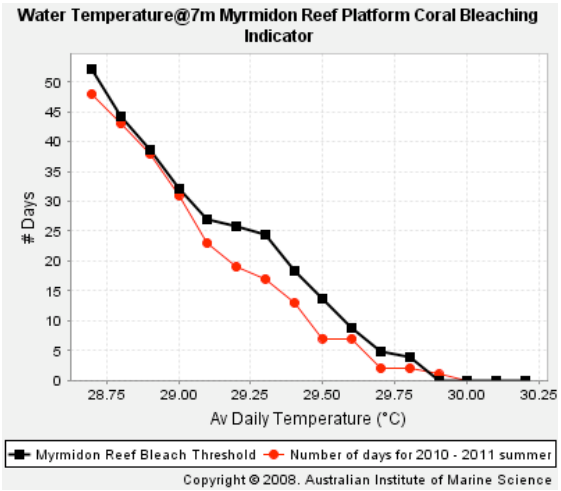


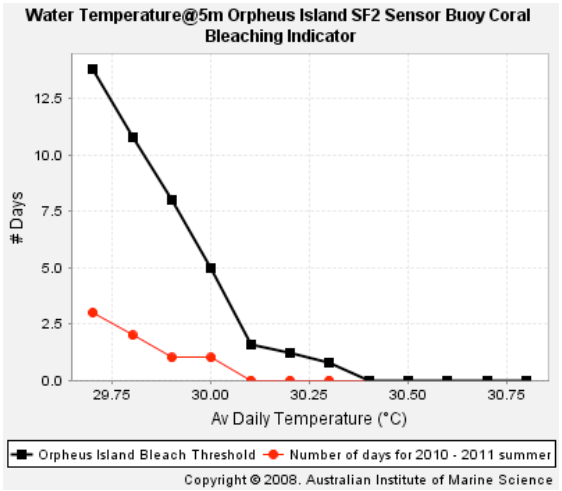


Weather Observing System: AIMS Data Centre





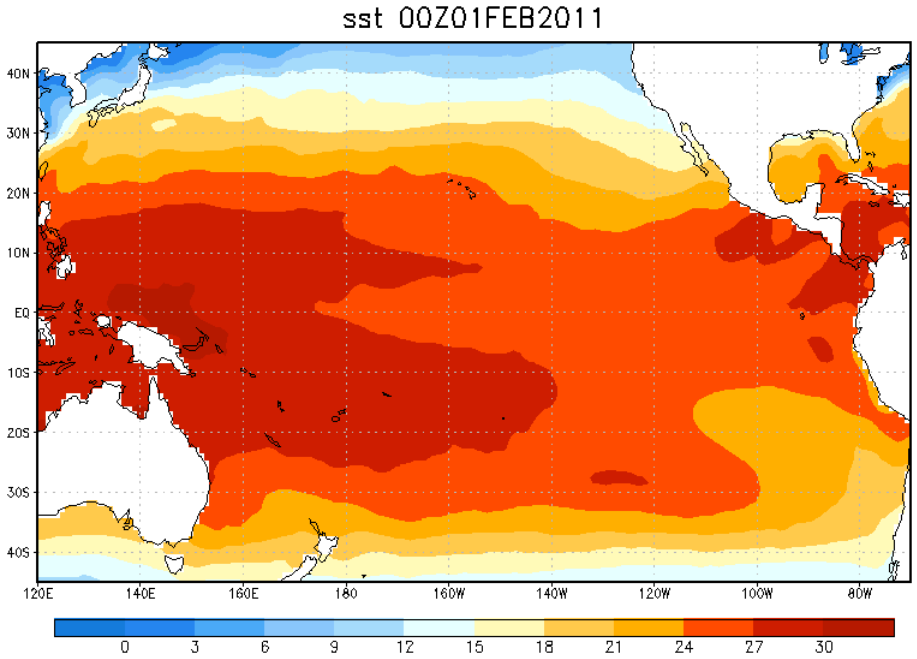




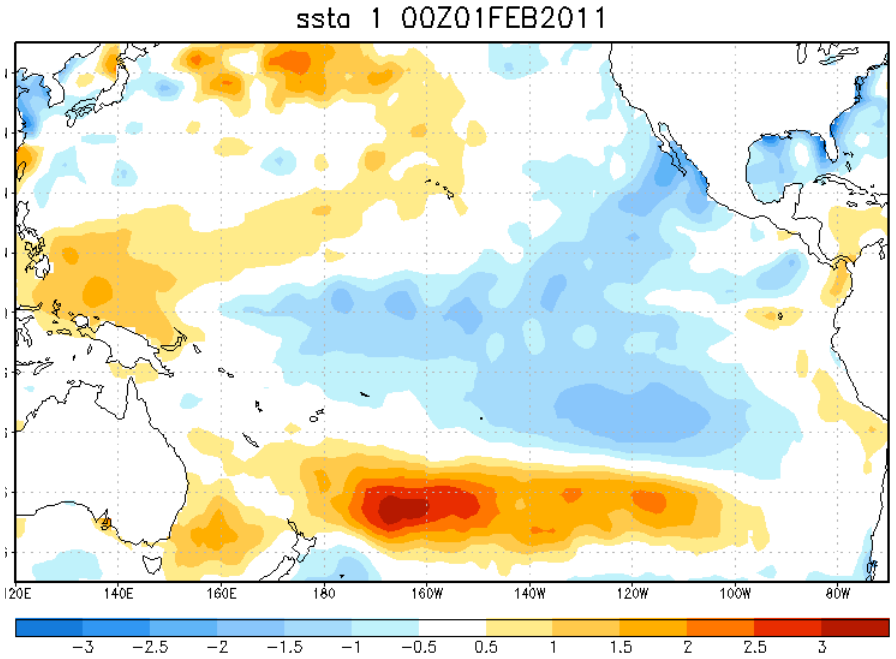
- A considerable decrease in temperatures during February - none of the reefs show temperatures above the average for February.
- (The Myrmidon tower has been damaged by TC Yasi and there will be no updates from this station for a while – Ray Berkelmans)

NOAA Optimum Interpolation Sea Surface Temperature Analysis:

OI SST: FEBRUARY 2011



OI SST ANOMALY: FEBRUARY 2011



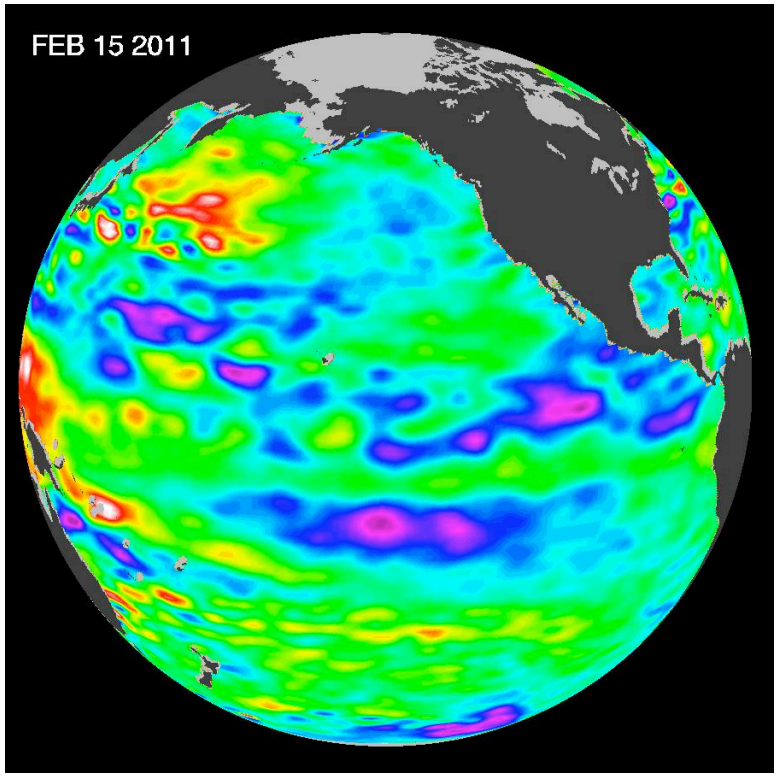
Note:

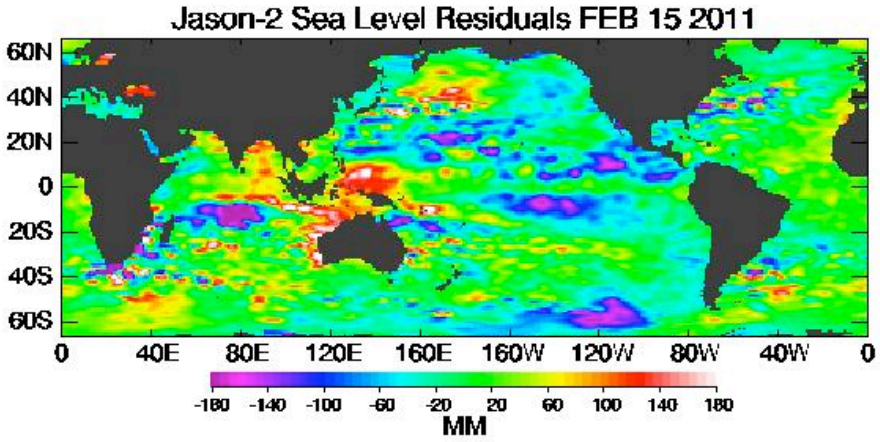
- La Niña signature still present in the equatorial Pacific, with negative anomalies east of the dateline and positive SST anomalies over the WPWP.

http://www.emc.ncep.noaa.gov/research/cmb/sst_analysis/

Sea surface height anomalies from Ocean Surface Topography: Jason-1 and Jason-22 (NASA/French)

10-day data cycle centered around 15 FEBRUARY, 2011.



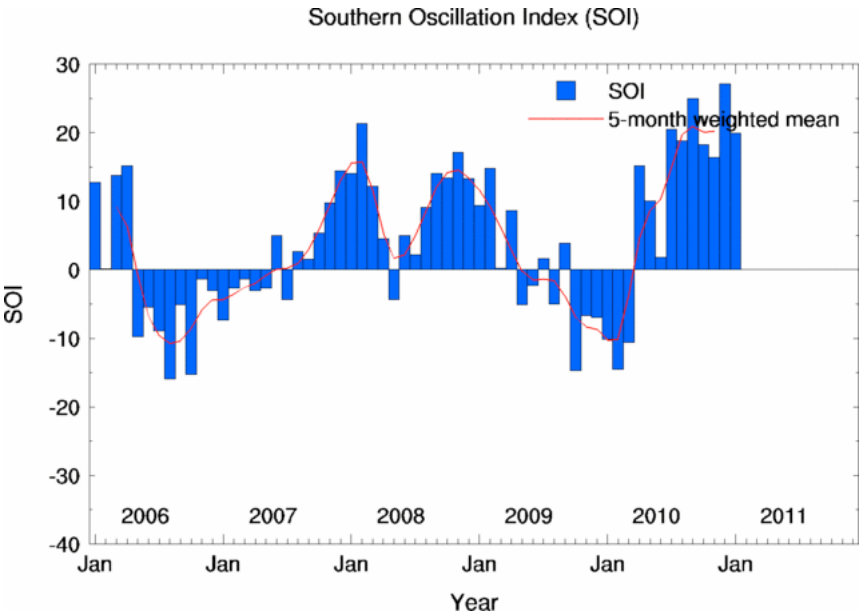


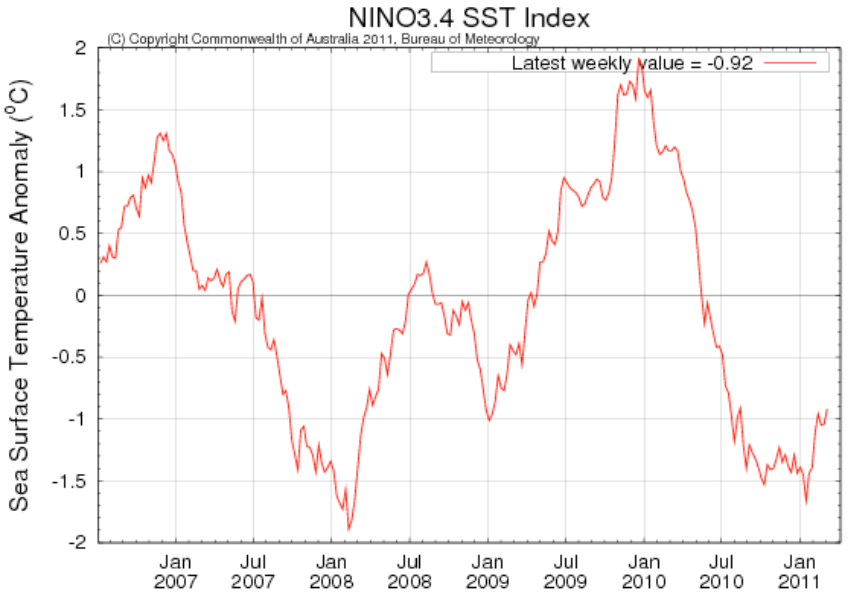
Note:

- Altimeter satellite images still indicate positive SSH anomalies in the western equatorial Pacific and negative SSH in the east.

http://sealevel.jpl.nasa.gov/science/jason1-quick-look/

ENSO index





Positive SOI = La Niña

Negative Nino 3.4 index= La Niña

Note:

- ENSO indices showing lower values, although still in La Niña phase. La Niña is expected to weaken further in the coming months.