



Australian Government

Bureau of Meteorology

Bureau Operational SST Analysis Systems

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Australian Bureau of Meteorology

Satellite Oceanography Users Workshop, Melbourne
9th to 11th November 2015

1: Bureau National Operations Centre (BNOC)

2: Research & Development Branch

3: Retired Bureau member

SST related systems in Operational Frame at BNOC

Weekly & Monthly SST analysis

GAMSSA: Global SST
RAMSSA: Regional SST

The screenshot shows the XCDP interface with a directory tree. The 'ocean_anal' folder is highlighted in green. The tree includes folders like 'guide', 'ACC2ARL', 'access_g', 'access_r', 'access_c', 'access_tc', 'ADMS3', 'EER_COPY', 'agg_sealevel', 'amdiss', 'arforWinds', 'auswave', 'DMO', 'EC_data', 'EC_ensembles', 'EER', 'EER_AUS', 'External_ftpCheck', 'FIRE_WEATHER', 'fuzzyFog', 'gfe_verification', 'gridded_of', 'HYSPLIT', 'local_cloud_drift_winds', 'monitor', 'msas', 'NW_verify', 'ocean', 'ocean_anal', 'oceanmaps2', 'ocf', 'os_models', 'poama_m24', and 'rainfall_analysis'.

Operational SST related suites

	Weekly & Monthly Analysis	GAMSSA	RAMSSA
Domain	Global	Global	Regional (60°E-170°W, 70°S-20°N)
Time	Weekly & Monthly From 2001	Daily From 2008	Daily From 2008
Horizontal Resolution	1°	1/4°	1/12°
Product	SST _{~1m}	Foundation SST	
Methodology	Optimal interpolation (Smith 1995, 1999; Beggs et al. 2006; Beggs, 2007)		

Satellite data

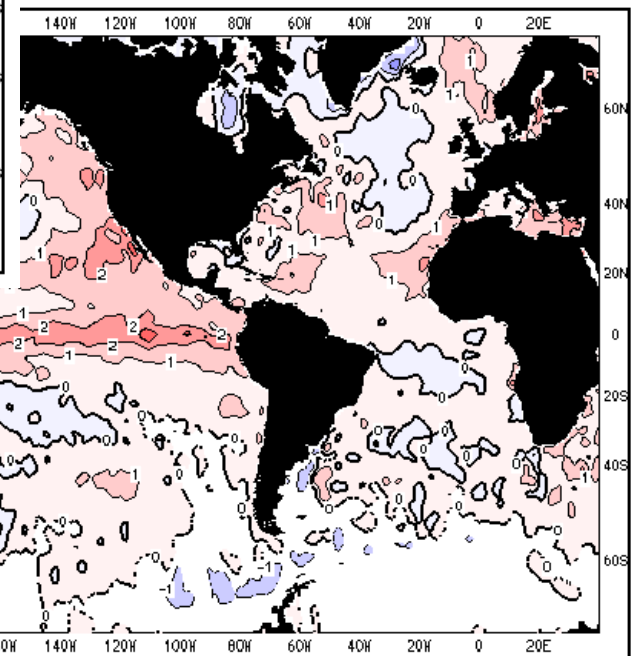
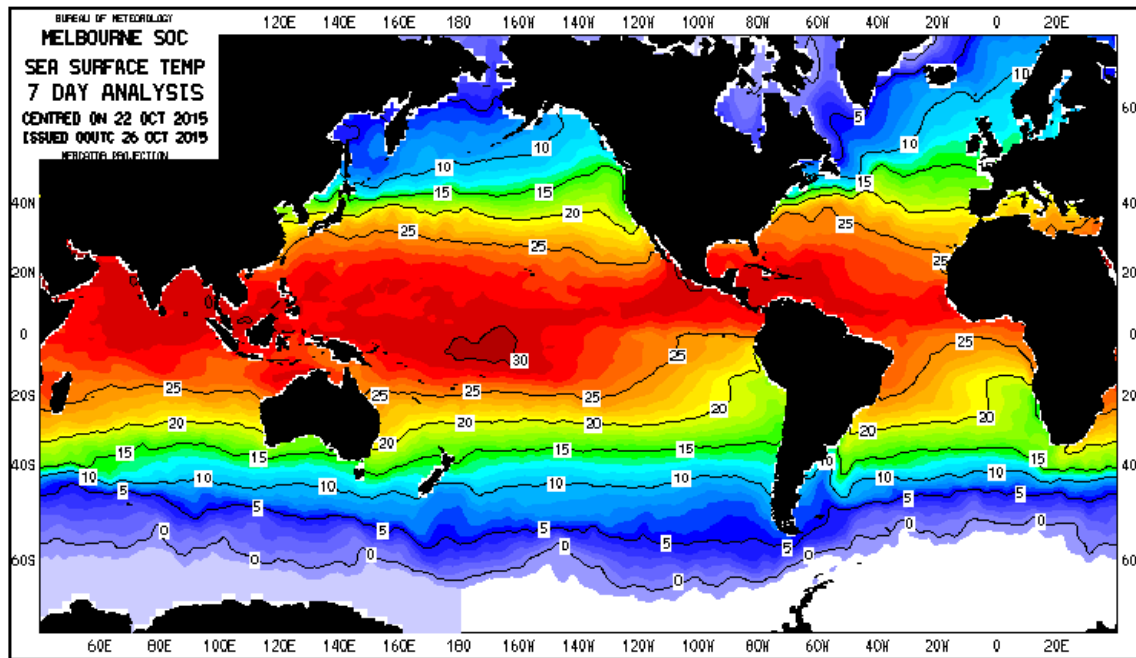
Weekly & Monthly SST Analysis	GAMSSA & RAMSSA
NOAA-18	NOAA-18
NOAA-19	NOAA-19
Metop-A	Metop-A
Metop-B	Metop-B
	AMSR-2
	WindSat
(NAVOCEANO GAC AVHRR GHRSSST-L2P)	(NAVOCEANO GAC AVHRR GHRSSST-L2P, IMOS HRPT AVHRR L2P)

Weekly & Monthly SST analysis

- Optimum interpolation
- Global weekly & monthly 1° spatial resolution
- Provide ocean surface conditions for climate monitoring and prediction, e.g. ENSO prediction, seasonal outlooks and climate analysis.
- Data service:

<http://reg.bom.gov.au/climate/data-services/ocean-data.shtml>

Weekly SST and SSTA analysis



GAMSSA and RAMSSA

- Provide ocean surface condition for NWP systems, better resolve the location of isotherms and ocean eddies, and validate ocean forecasts.
- Foundation SST, free of diurnal variations.
- Products:
 - Graphical products and webpage viewer
 - Data in netcdf format, and also available in original format with observation, QC flags, climatology, statistics information upon request

ftp://podaac-ftp.jpl.nasa.gov/allData/ghrsst/data/L4/AUS/ABOM/RAMSSA_09km/

ftp://podaac-ftp.jpl.nasa.gov/allData/ghrsst/data/L4/GLOB/ABOM/GAMSSA_28km/

<http://reg.bom.gov.au/climate/data-services/ocean-data.shtml>

Downstream products



[Bureau Home](#) > [Climate](#) > [Seasonal Outlooks](#) > [ENSO Wrap-Up](#) > ENSO monitoring graphs

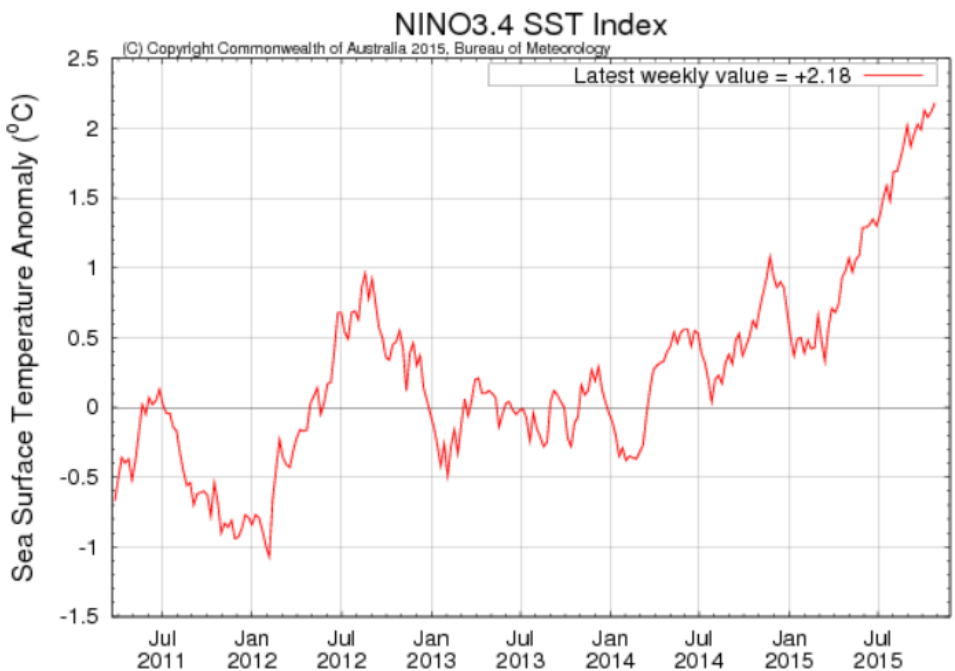
ENSO monitoring graphs

[About ENSO monitoring graphs](#)

Weekly data to 25 Oct 2015.

View Variable:

- Climate
 - Seasonal outlooks
 - Rainfall outlook
 - Temperature outlook
 - El Niño / La Niña**
 - Streamflow outlooks
 - Tropical cyclone outlook
 - Climate model summary
 - Reports & summaries
 - Weather & climate data
 - Maps - recent conditions
 - Maps - average conditions
 - Climate change
 - Extremes of climate
 - About Australian climate



[PostScript version](#)
[Data sorted by date](#)
[ENSO impacts](#)

Downstream service



ENSO Wrap-Up

Current state of the Pacific and Indian Ocean

Overview

Sea surface

Sea sub-surface

SOI

Trade winds

Cloudiness

Outlooks

Indian Ocean



Climate

Outlooks

Rainfall & temperature outlooks

Outlook video

El Niño / La Niña

Streamflow outlooks

Tropical monitoring

Tropical cyclone outlook

Climate model summary

Reports & summaries

Weather & climate data

Long-term temperature record

Data services

Maps – recent conditions

Maps – average conditions

Climate change

Extremes of climate

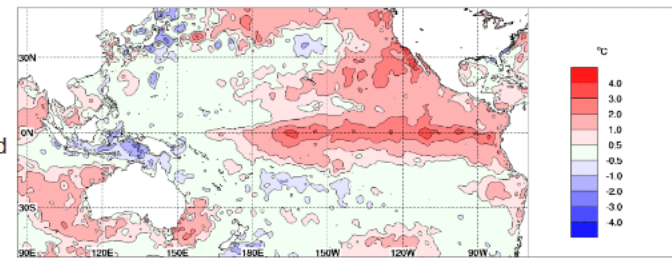
About Australian climate

Weekly sea surface temperatures

Warm anomalies persist along the equator from the South American coastline to around 165°E—well into the central Pacific. Warm anomalies also remain across much of the Pacific Ocean in the northern hemisphere between the equatorial Date Line and the northeast of the Pacific basin, and across far northern latitudes; however, the extent of these warm anomalies has decreased since the beginning of October.

Anomalies for the week ending 25 October exceeded +2 °C across nearly all of the equatorial Pacific east of 170°W and parts of the northeast of the Pacific. Warm anomalies have increased in areas wrapping from Australia's southeast, around the Bight, to Australia's northwest. Warm anomalies also persist across large parts of the Indian Ocean.

Compared to two weeks ago, sea surface temperature (SST) anomalies have decreased slightly in the central equatorial Pacific and across the northeast of the basin. Cool anomalies have decreased in the southern tropics across the Pacific Ocean, but persist across the Indonesian archipelago and waters to Australia's north.



Index	Previous	Current	Temperature change (2 weeks)
NINO3	+2.3	+2.2	0.1 °C cooler
NINO3.4	+2.1	+2.2	0.1 °C warmer
NINO4	+1.1	+1.3	0.2 °C warmer

Baseline period 1961–1990.

Provide SST initial field for NWP and Seasonal Forecast Models

- ACCESS-G
- ACCESS-TC
- POAMA

Predictive Ocean Atmosphere Model for Australia (POAMA)

POAMA, run at the Bureau of Meteorology, generates an eight-month forecast (started on 25 October) suggests the central tropical Pacific Ocean will continue to be in a warm state which is likely to exceed the peak value of the 1997-98 El Niño. The forecast is based on the output of ACCESS-TC for POAMA's NINO3.4 ensemble mean.

November

NINO3.4 forecast value: **+2.89°C**

Range	Category	Frequency distribution
below -0.8 °C:	(Cool)	0.0%
	(Neutral)	0.0%
above +0.8 °C:	(Warm)	100.0%

January

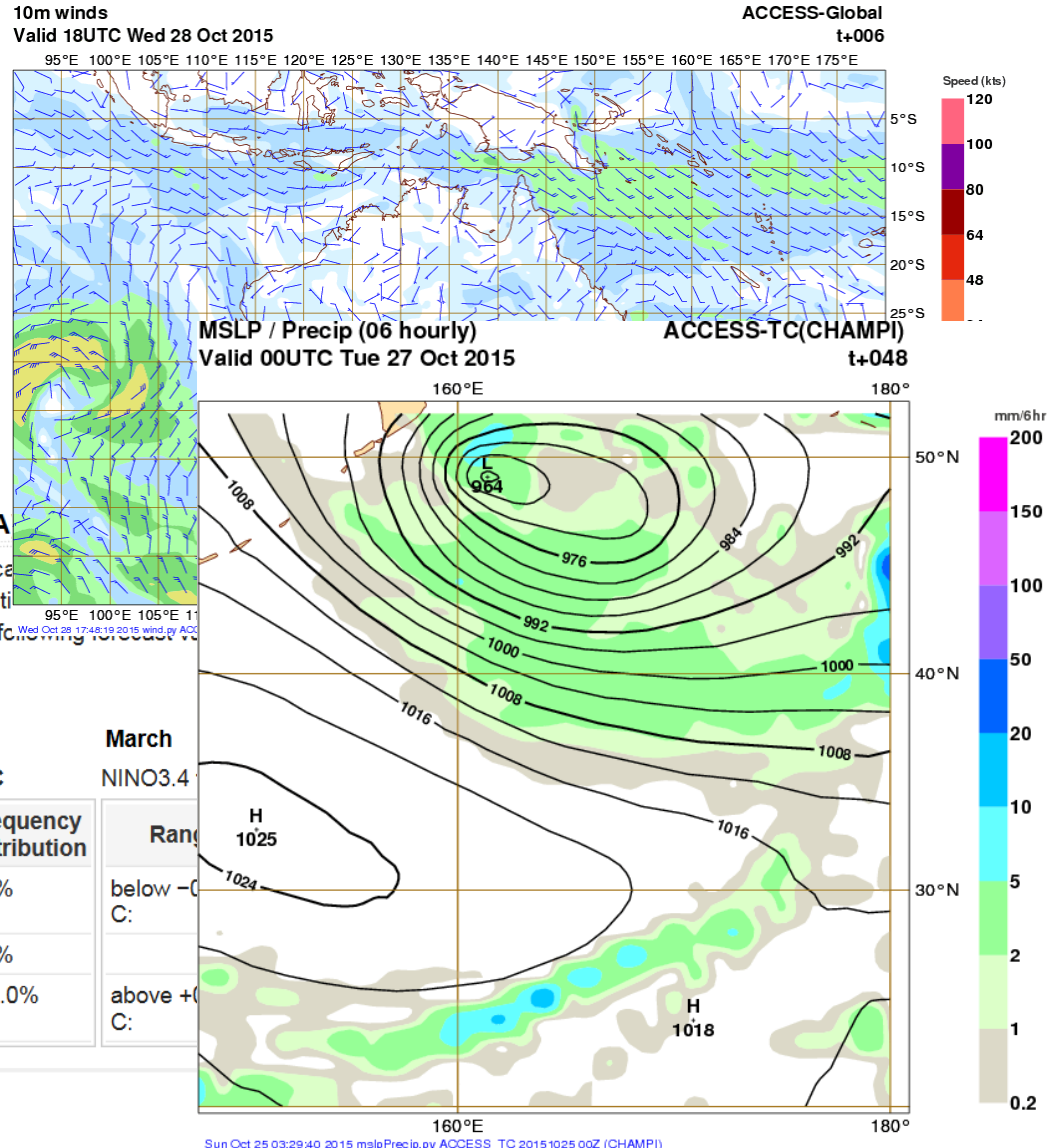
NINO3.4 forecast value: **+2.51°C**

Range	Category	Frequency distribution
below -0.8 °C:	(Cool)	0.0%
	(Neutral)	0.0%
above +0.8 °C:	(Warm)	100.0%

March

NINO3.4

Range	Category	Frequency distribution
below -0.8 °C:	(Cool)	0.0%
	(Neutral)	0.0%
above +0.8 °C:	(Warm)	100.0%



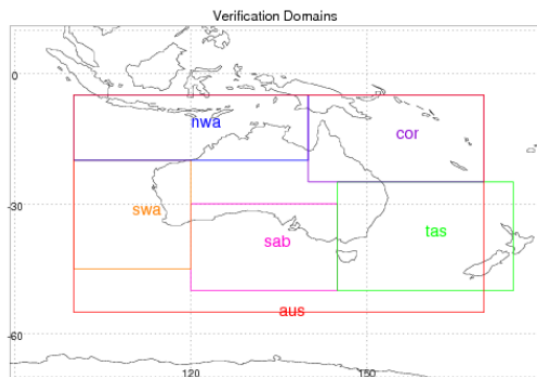
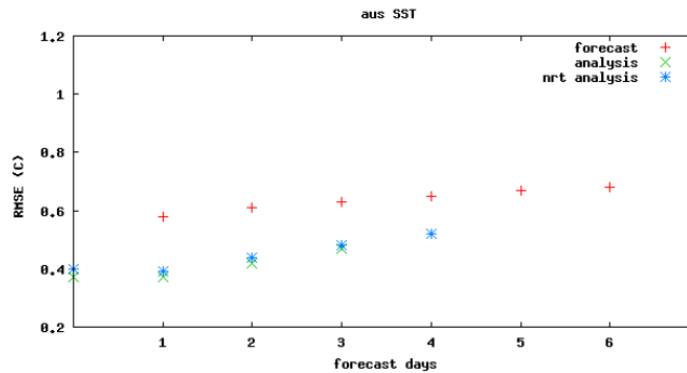
Verification for other forecast system

Verification of OCEANMAPS Sea Surface Temperature (SST)

Average for past 3 months

[back to SST verification](#)

Domain Metric Compare with



Verification Domains:

Region	Abbreviation	Domain
Australia	aus	55°S, 100°E to 5°S, 170°E
Southern Hemisphere	aus	75°S to 0°S
Coral Sea	cor	25°S, 140°E to 5°S, 170°E
Tasman Sea	tas	50°S, 145°E to 25°S, 175°E
South Australia and Great Australia Bight	sab	50°S, 120°E to 30°S, 145°E
South West Australia	swa	45°S, 100°E to 20°S, 120°E
North West Australia	nwa	20°S, 100°E to 5°S, 140°E

Bureau's SST web page



- Marine & Ocean**
- Wind
- Waves
- Tides & Sea Level
- Sea Temperature & Currents**
- Coral Bleaching
- Averages & Trends
- Communication Services

[Bureau Home](#) > [Marine & Ocean](#) > [Sea Temperature Analysis](#)

Sea Temperature Analysis

[About marine weather services](#) | [Safety](#) | [Definitions](#) | [Marine website feedback](#)

Sea Surface Temperature

Weekly/Monthly

- Pacific Region: [7-day Analysis](#) | [7-day Anomaly](#)
- Indian Ocean: [7-day Analysis](#)
- Globe: [Weekly Analysis](#) | [Weekly Anomaly](#)
- Globe: [Monthly Analysis](#) | [Monthly Anomaly](#)

Daily

- [Australia](#)
- [Qld](#) | [NSW](#) | [SA](#) | [SE Aust](#) | [SW WA](#) | [N WA](#) | [NT](#)
- Globe: [Analysis](#) | [Anomaly](#)

Differences

- [Differences in Sea Surface Temperature over last month](#)
- [Differences in Sea Surface Temperature over last three months](#)

Subsurface Ocean Temperature

Recent Subsurface Ocean Temperature

- [Pacific Ocean 150m depth-averaged Temperature](#)
- [Pacific Ocean Equatorial Cross Section](#)
- [Global Ocean 150m depth-averaged Temperature](#)
- [Global Ocean 400m depth-averaged Temperature](#)
- [Depth of 20 deg C isotherm](#)

Sequences of Subsurface Ocean Temperature

- [4-month sequence of 150m depth-averaged temperature anomalies](#)
- [4-month sequence of Pacific Ocean Equatorial temperature anomaly cross sections](#)

Archive

- [Ocean Subsurface Analyses](#)

Marine radio & satcomms

- ▶ [Radio & satcomms services](#)
- ▶ [MarineLite webpages](#)

Telephone services

- ▶ [Telephone voice](#)

Boating safety

- ▶ [Distress & safety services](#)
- ▶ [AMSA Distress beacons](#)

Useful links

- ▶ [Sunrise & Sunset times](#)
- ▶ [Moon phase & Moonrise times](#)

Summary

- Weekly & Monthly SST analysis:
 - Climate monitoring
 - Seasonal outlooks
 - Climate analysis
- Daily SST (GAMSSA and RAMSSA):
 - Global and regional foundation SST
 - Provide initial conditions for NWP systems
 - Verification for other forecast system

Thank you

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