

# Climate and Oceanographic Summary, Great Australian Bight 2014 - 24

Kirsten Rough – 17<sup>th</sup> March 2014

## Summary:

The upwelling continues to influence water temperatures with conditions cooler along the inshore regions of the GAB with temperatures between 16 to 18°C. Along the shelf-break water temperatures remain suitable for SBT anywhere westwards of longitude 135°E, although these temperatures are probably on the cooler side of what the fish prefer.

### Actual Sea Surface Temperature (SST) this past week:

- Western GAB at 130°E 33°30'S is 20.4°C
- Central GAB at 133°E 34°S is 19.5°C
- Eastern GAB at 135°E 35°S is 19.3°C

The strong upwelling continues to influence the productivity in the sea around Eyre Peninsula, the patches of highest chlorophyll levels in previous weeks continue to disperse. Water discolorations may still be evident from some of the beaches along the west coast of Eyre Peninsula.

CSIRO Aerial Survey SBT sightings from 1<sup>st</sup> January 2014 to date (17<sup>th</sup> Mar) tonnage per longitude:

128°	129°	130°	131°	132°	133°	134°
156 tonnes	1365 tonnes	1316 tonnes	2675 tonnes	7846 tonnes	2320 tonnes	5217 tonnes

### Climate projections for 2015 fishing season:

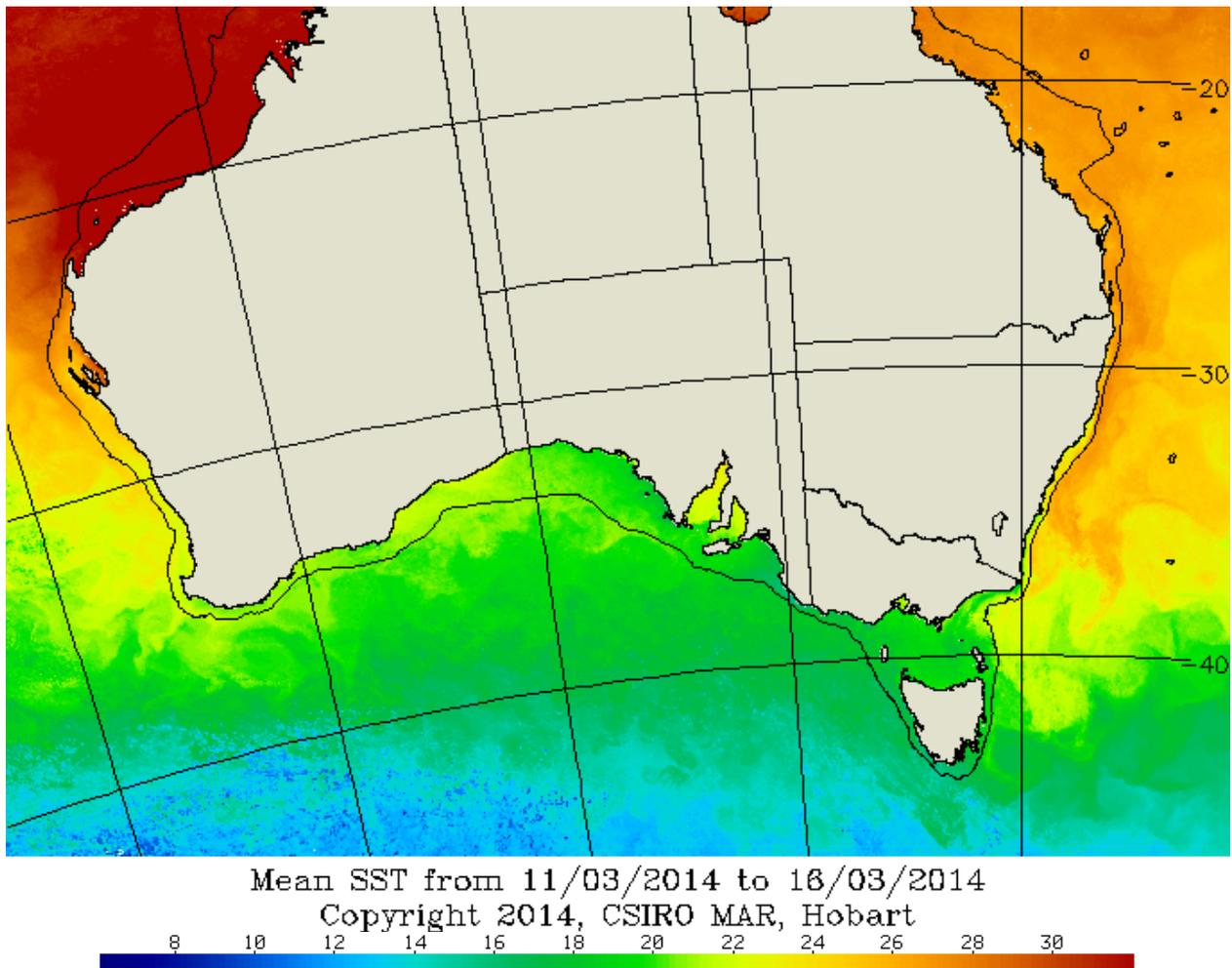
The Pacific Ocean is likely to be going into an El Niño phase - a situation similar to 2010. The Indian Ocean is likely to be slightly negative over winter, but not as pronounced as through 2013, and be in a neutral phase by next summer - a situation similar to this (2014) fishing season. If both of these climate projections follow the forecasted predications the 2015-fishing season is likely to be back towards the more traditional fishing area.

## GAB Sea Surface Temperature (SST):

Sea temperatures around Australia and through the Great Australian Bight are shown in Figure 1 and Figure 2. The coastal fringe remains cool as upwelling continues to influence water temperatures. The cool water from upwelling continues to extend along the coast all the way to the West Australian border. Water temperatures remain suitable for SBT along the shelf break to longitude 135°E.

**Table 1: Sea Surface Temperatures at specific locations along the shelf and shelf break of the Great Australian Bight on the 16<sup>th</sup> March 2014, co-ordinates as degrees, minutes, seconds (CSIRO 2014).**

130°E 33°30'S is 20.4°C	131°E 32°S is 19.8°C	131°E 33°S is 20.1°C	132°E 33°30'S is 20.0°C
133°E 34°S is 19.5°C	134°E 34°30'S is 19.6°C	135°E 35°S is 19.3°C	136°E 35°30'S is 19.6°C
136°30'E 36°30'S is 18.5°C	137°E 36°30'S is 18.8°C	138°E 37S is 17.2°C	139°E 37S is 17.6°C



Mean SST from 11/03/2014 to 18/03/2014  
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Figure 1: Sea Surface Temperature across southern Australia for the 5-days to the 17<sup>th</sup> March 2014 (source: CSIRO 2014).

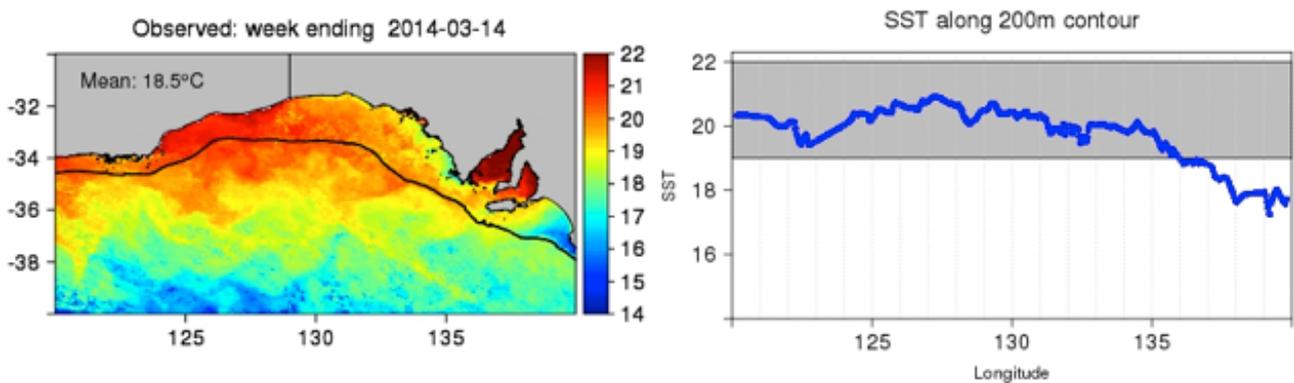


Figure 2: Snapshot of GAB water temperatures for the previous week (left) and corresponding graph of Sea Surface Temperature along the shelf break (right). Where the blue dotted line is within the gray band, conditions are within the range that archival tags suggest SBT prefer (source: CSIRO-ASBTIA TRF project web site 2014).

**SA Water Currents and Tide Times:**

The IMOS radar on Cape Catastrophe has not worked through the past week.

Local tide times for the next week in the SBT ranching lease area are shown in table 2.

**Table 2: Tide times for Port Lincoln for the next 2 weeks (local daylight savings time). Note that Taylors Landing and Reevesby Island tides are 20-28 minutes behind Lincoln tides, so minus this to make these more representative of the Tuna Lease Zone.**

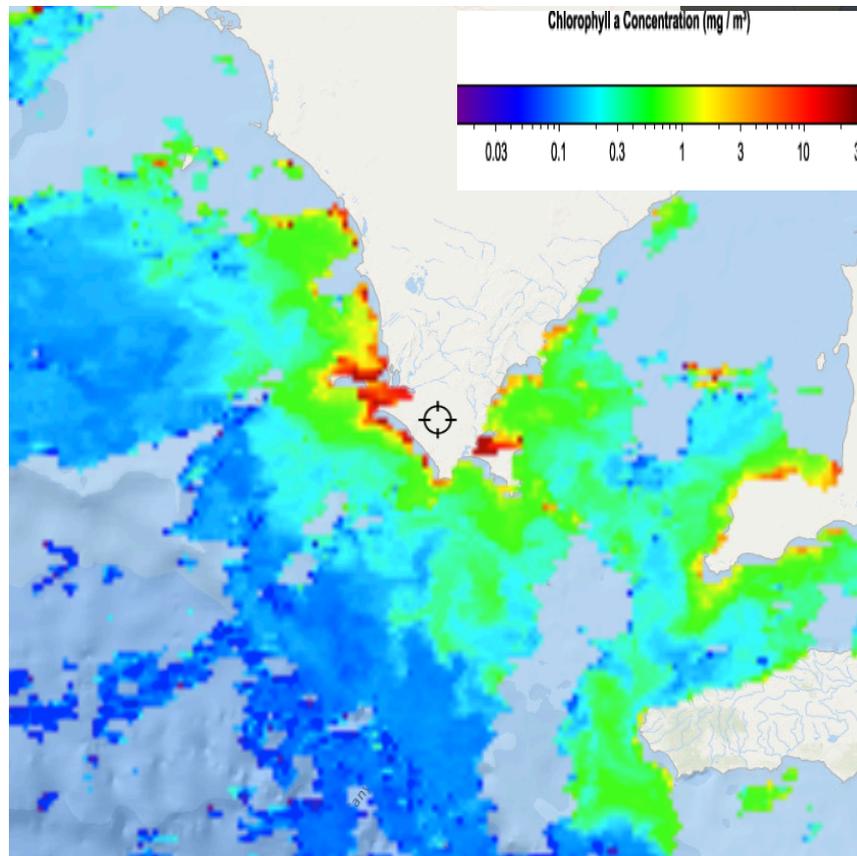
TUE 18 MAR		WED 19 MAR		THU 20 MAR		FRI 21 MAR		SAT 22 MAR		SUN 23 MAR		MON 24 MAR	
HIGH	3:53 am 1.37 m	HIGH	4:14 am 1.31 m	HIGH	4:34 am 1.22 m	HIGH	4:51 am 1.10 m	HIGH	5:05 am 0.98 m	LOW	12:10 am 0.52 m	LOW	12:46 am 0.67 m
LOW	10:02 am 0.14 m	LOW	10:17 am 0.15 m	LOW	10:29 am 0.17 m	LOW	10:38 am 0.20 m	LOW	10:45 am 0.24 m	HIGH	5:13 am 0.86 m	HIGH	3:22 am 0.76 m
HIGH	4:06 pm 1.44 m	HIGH	4:26 pm 1.49 m	HIGH	4:46 pm 1.51 m	HIGH	5:07 pm 1.50 m	HIGH	5:30 pm 1.45 m	LOW	10:48 am 0.30 m	LOW	10:44 am 0.36 m
LOW	10:21 pm 0.19 m	LOW	10:47 pm 0.22 m	LOW	11:13 pm 0.29 m	LOW	11:40 pm 0.39 m			HIGH	5:55 pm 1.36 m	HIGH	6:22 pm 1.23 m

TUE 25 MAR		WED 26 MAR		THU 27 MAR		FRI 28 MAR		SAT 29 MAR		SUN 30 MAR		MON 31 MAR	
LOW	10:00 am 0.41 m	LOW	8:47 am 0.40 m	HIGH	1:02 am 1.16 m	HIGH	1:53 am 1.25 m	HIGH	2:28 am 1.29 m	HIGH	2:57 am 1.28 m	HIGH	3:22 am 1.24 m
HIGH	6:51 pm 1.06 m	HIGH	6:34 pm 0.87 m	LOW	8:28 am 0.36 m	LOW	8:37 am 0.32 m	LOW	8:53 am 0.30 m	LOW	9:08 am 0.28 m	LOW	9:22 am 0.27 m
LOW	8:37 pm 1.03 m	LOW	7:33 pm 0.87 m	HIGH	2:56 pm 0.90 m	HIGH	2:51 pm 1.02 m	HIGH	3:01 pm 1.15 m	HIGH	3:15 pm 1.28 m	HIGH	3:29 pm 1.40 m
HIGH	10:50 pm 1.06 m			LOW	7:59 pm 0.67 m	LOW	8:29 pm 0.51 m	LOW	8:56 pm 0.38 m	LOW	9:23 pm 0.29 m	LOW	9:49 pm 0.25 m

**Chlorophyll and Productivity:**

The best image of the past week was taken on the 14<sup>th</sup> March (Figure 3). Chlorophyll levels are higher along the coastal fringe and in the areas being fed by the recent upwelling.



**Figure 3: Areas of productivity around Eyre Peninsula on the 14<sup>th</sup> March 2014 - note the gray areas are where the satellites view is blocked by cloud cover (Fish Track 2014).**

## Climate / Ocean Trends:

Over the past few weeks a very large mass of warm water ( $>5^{\circ}\text{C}$  higher than that of the surrounding water) has been consolidating at 100m-depth in the Pacific Ocean. If this warm water reaches the surface, 2015 will be either directly under the influence or off-the-back of an El Niño event. The 2010-fishing season is the most recent that was under an El Niño influence. For SBT in the GAB this is likely to mean a shift back to the more traditional fishing area historically (ie in the central GAB around longitudes 132-133). Note a similar situation did occur around this point in time through 2013 but the El Niño did not eventuate.

Longer term forecasts of the Indian Ocean are indicating slightly negative conditions for much of winter and a return to neutral conditions for the next fishing season (a similar situation to this fishing season).

Around Australia, warm water temperature anomalies (ie warmer than long-term average) can be seen to the Northwest of WA ( $+4$  to  $5^{\circ}\text{C}$ ) and to a lesser extent ( $+1$  to  $1.5^{\circ}\text{C}$ ) in southeast of the Great Australian Bight (Figure 4). A much smaller area of slightly warmer water than would be expected at this time of year remains along the shelf edge below Eyre Peninsula.

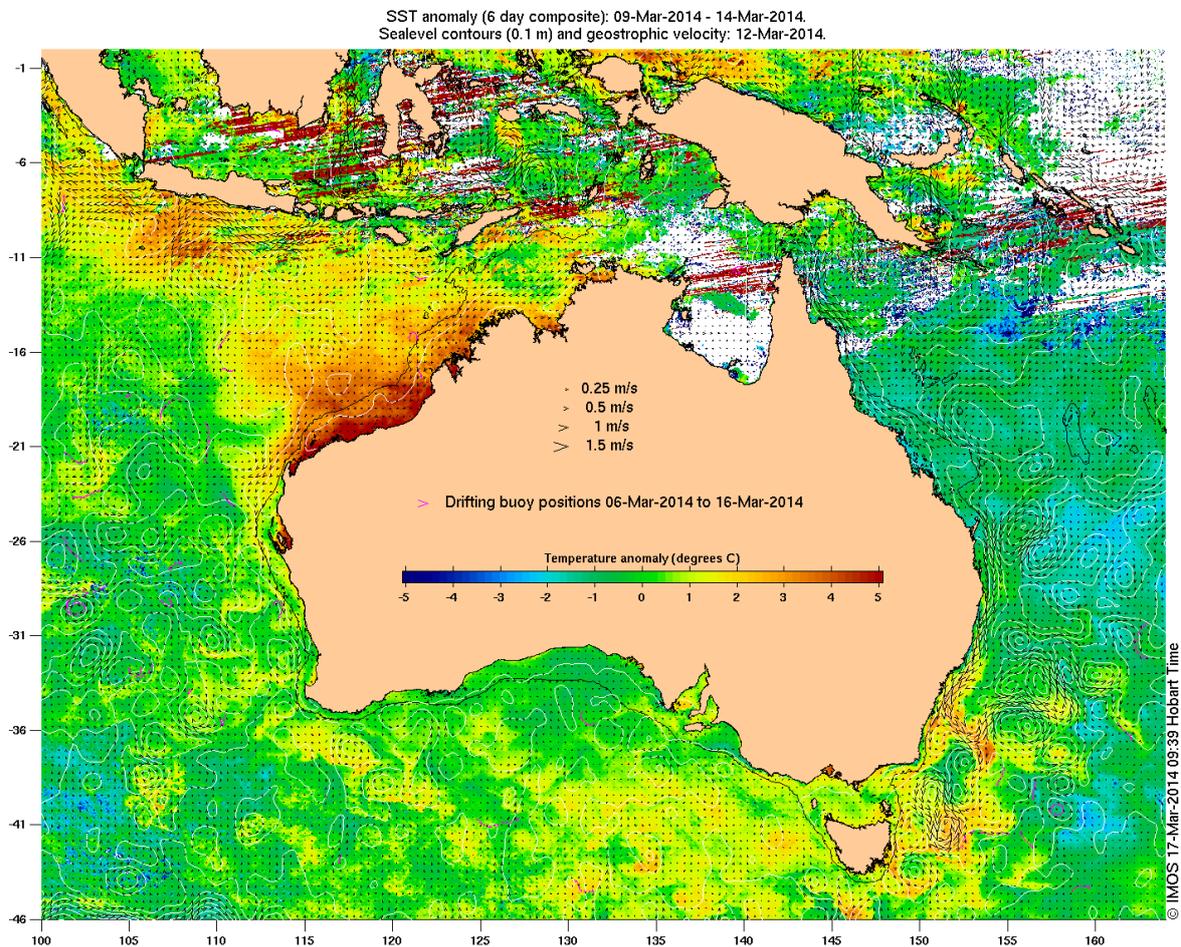


Figure 4: water temperature anomalies around Australia over the past week (IMOS 2014).

### Useful Websites:

<http://www.bom.gov.au>  
<http://www.csiro.au>  
<http://www.fishtrack.com>  
<http://imos.org.au>

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