

Climate and Oceanographic Summary for the Great Australian Bight No. 20

Kirsten Rough – 8th March 2013

This is the twentieth update of sea surface temperature, ocean currents and chlorophyll distribution. If anyone has any questions or further suggestions please call or email.

Summary:

Sea Surface Temperature (SST) throughout the historic and current fishing areas has increased substantially with the past week of warm to hot weather. SST is now between 21.1 to 25°C all areas of the GAB and below KI to the Victorian border are within the preferred temperature range for our size SBT¹, some of the warmer pockets may not be that desirable for larger size SBT.

Temperature this week in the central western GAB at 131°E 33°S is 22.8°C and temperature in the central east at 133°E 34°S is 24.4°C. Upwelling continues to moderate temperature in the eastern GAB and warm water continues along and below the shelf break, below Kangaroo Island and across to the SA - Victoria border.

The Leeuwin current continues to show a relatively 'normal' progression along the WA coastline. Actual SST out from Exmouth is 28°C, passing Cape Leeuwin is around 22.7°C and passing Esperance is now 22°C.

Water currents along the shelf break are again travelling from the northwest toward the southeast.

CSIRO Aerial Survey flew 2 days since the previous update. Conditions were favourable both days. Flights were in the central and western area of the GAB. A total of 1460-tonnes were sighted.

Sea Surface Temperature and Ocean Currents:

An update of the water temperature across southern Australia and through the fishing grounds to the 7th March 2013 can be seen in Figure 1 and Figure 2. The temperature through and south of the GAB has risen considerably after a week of warm to hot conditions across SA. Temperature ranges between 21.1°C and 26°C the cooler areas are closer to the coast where the upwelling is occurring.

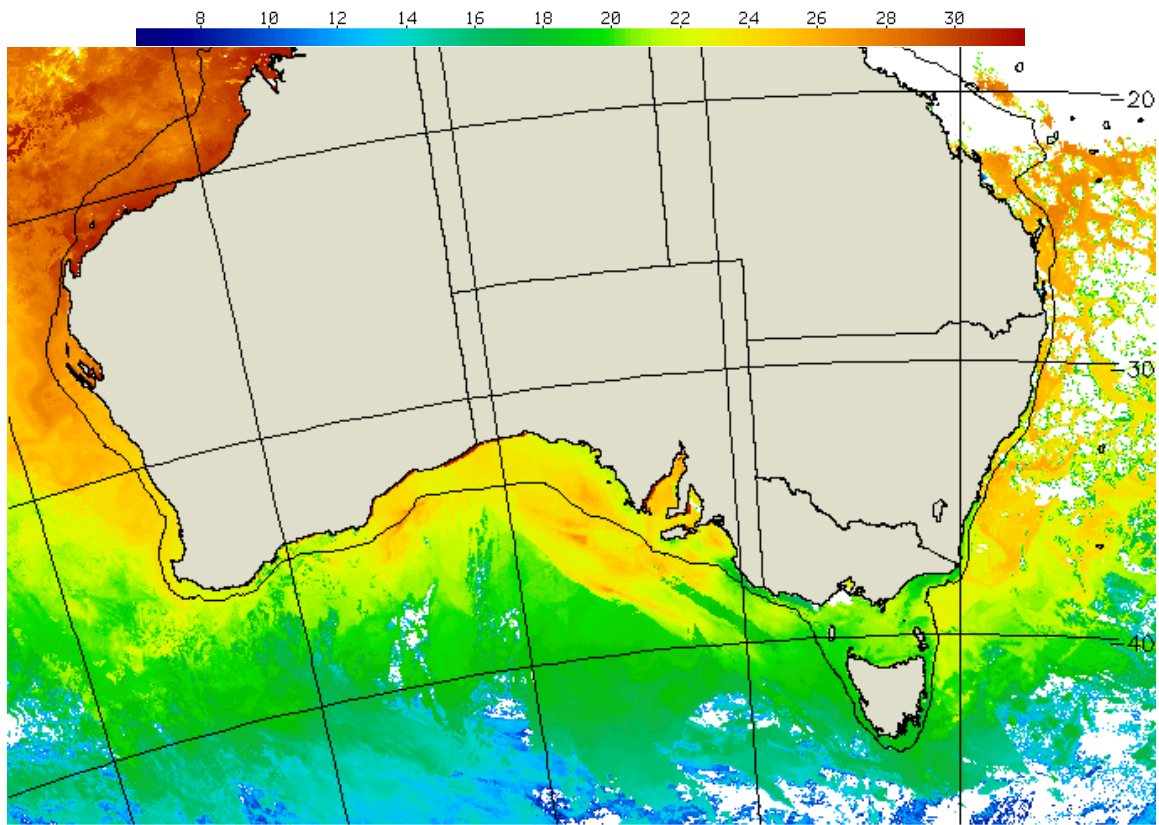
Warm currents continue to extend along and beyond the shelf break to the south of Kangaroo Island and across to the southeast coast of SA. The warmer pockets of water south of the GAB are up to 26°C (wasn't able to check how deep this temperature goes down to). Upwelling continues to moderate the temperature along the west coast of Eyre Peninsula to 130°E (Figure 1).

The SST at a number of specific sites averaged from 2nd to 7th March were obtained from the CSIRO (2013):

130°E 32.5°S is 23°C ²	131°E 32°S is 22.5°C	131°E 33°S is 22.8°C	132°E 33.5°S is 23°C ²
133°E 34°S is 24.4°C	134°E 34.5°S is 25.2°C ²	135°E 35°S is 23.8°C	135.5°E 35°S is 22.2°C ²

¹ Basson, M., Hobday, A.J., Eveson, P., Patterson, T.A., 2012. Spatial interactions among juvenile SBT at the global scale:

² These coordinates are in Degree Decimal Minutes



Mean SST from 02/03/2013 to 07/03/2013
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Figure 1: Sea Surface Temperature around Australia for the 5 days to 7th March 2013 (source: CSIRO 2013 <http://www.marine.csiro.au>)

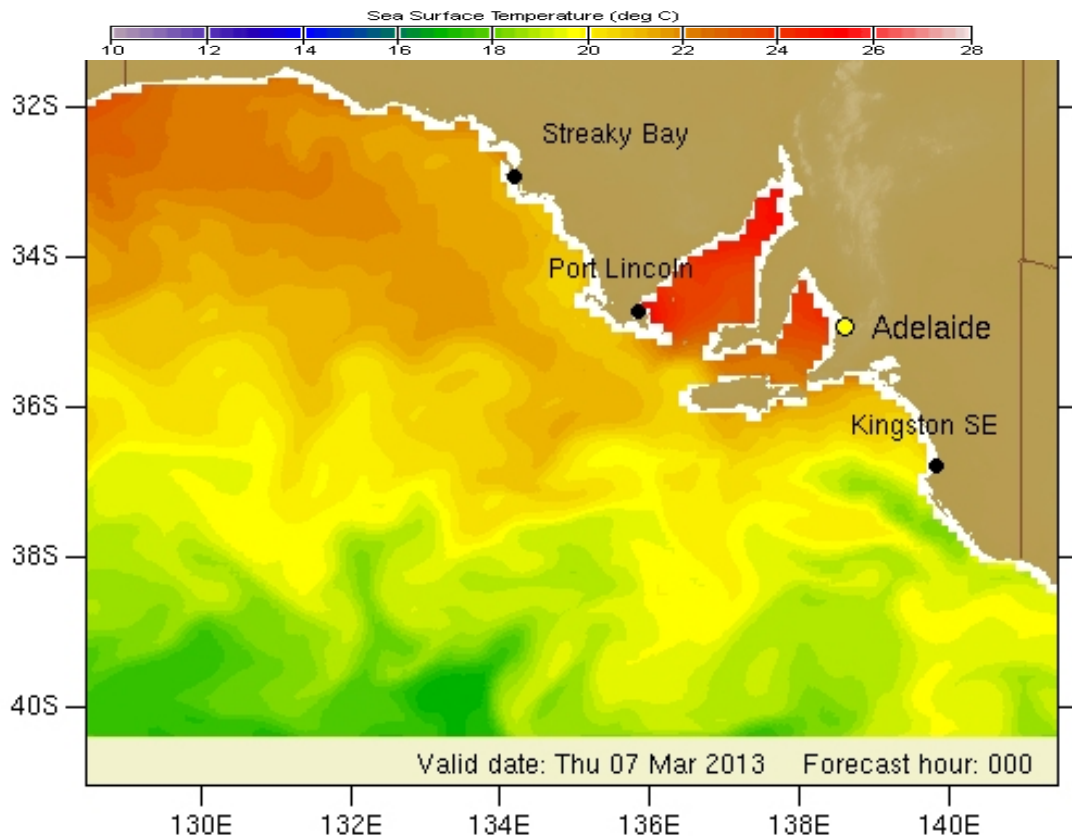


Figure 2: South Australian sea surface temperature and current direction from the Bureau of Meteorology website for the 3 days to the 7th March 2013 (source: Bureau of Meteorology 2013; <http://www.bom.gov.au>).

Leeuwin Current:

The status of sea surface temperature patterns off WA can be seen in Figure 1 above. The actual SST off the coast of North West Cape (Exmouth) is 30°C, out from Cape Inscription (Shark Bay) is 26.8°C, out from Cape Leeuwin (Augusta) is 22.7°C and out from Esperance is 22°C (CSIRO 2013).

GAB Currents:

A general plot of where the water currents are moving within the eastern GAB area can be seen in Figure 3; the position of the orange cursor is 34°32'S 134°46'E. The area covered by the image spans from Streaky Bay to Kangaroo Island. The current directions and positions this week have moderated considerably compared to those of last week. Along the shelf break currents are generally tending from the northwest towards the southeast.

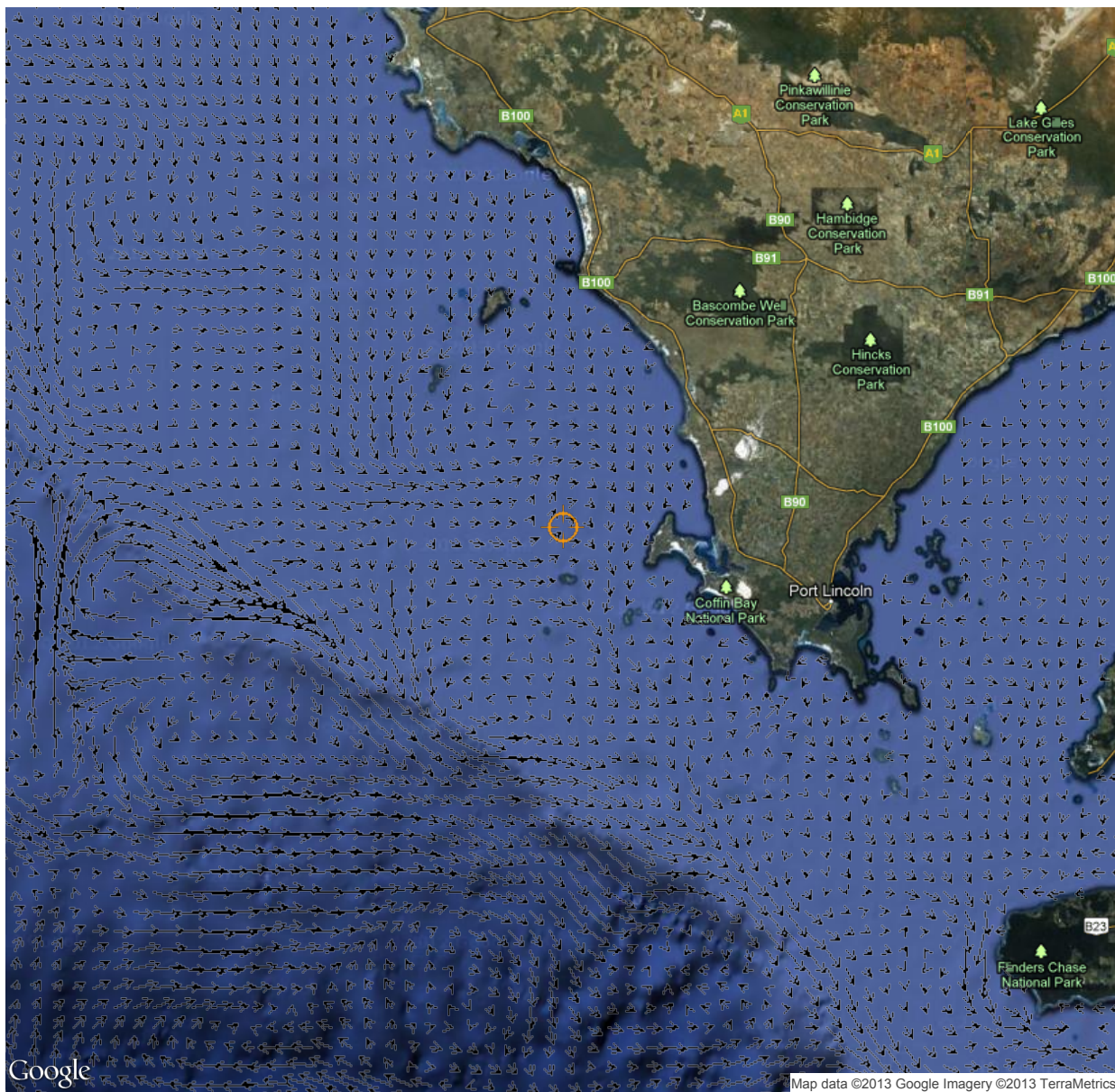


Figure 3: Direction of water movement within the eastern section of the Great Australian Bight, Streaky Bay to Kangaroo Island, on the 6th March 2013 (source: <http://www.fishtrack.com>).

Local tides and moon cycle:

Tide times for Port Lincoln for the next week can be seen in Table 1 below, note these are in Central Standard Time – therefore add 1 hour (for daylight savings). To make this more representative of the Tuna Ranching zone minus between 20-28 minutes from the time that is listed. Taylors Landing tide times are minus 20 minutes; Reevesby Island tide times are minus 28 minutes. Figure 4 shows the moon phase over the next week, full moon is on the 27th March.

Table 1: Tide times for Port Lincoln for the week of 8th to 14th of March 2013. Add 1 hr to allow for daylight savings.

Friday 8		Saturday 9		Sunday 10		Monday 11		● Tuesday 12		Wednesday 13		Thursday 14	
Time	Height	Time	Height	Time	Height	Time	Height	Time	Height	Time	Height	Time	Height
0017	1.16	0100	1.27	0131	1.33	0156	1.35	0219	1.33	0238	1.30	0255	1.25
0802	0.30	0759	0.27	0809	0.25	0820	0.23	0834	0.20	0848	0.17	0902	0.14
1431	0.79	1411	0.87	1413	0.99	1424	1.11	1438	1.24	1451	1.35	1507	1.44
1859	0.70	1925	0.54	1950	0.40	2015	0.30	2041	0.23	2106	0.21	2130	0.23

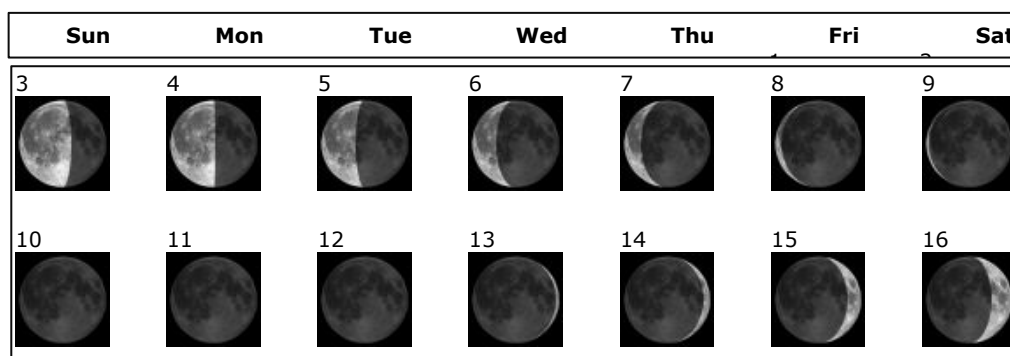


Figure 4: Moon phases over the next week.

Chlorophyll / Productivity:

The amount of chlorophyll around southern Australia can be seen on the IMOS image 6th March (Figure 5). And within the GAB area and below KI on the Fishtrack image 6th March (Figure 6). Both show chlorophyll concentrated in the coastal and inshore regions of the central and western Bight, within Spencers Gulf and some denser patches along the shelf break of the GAB.

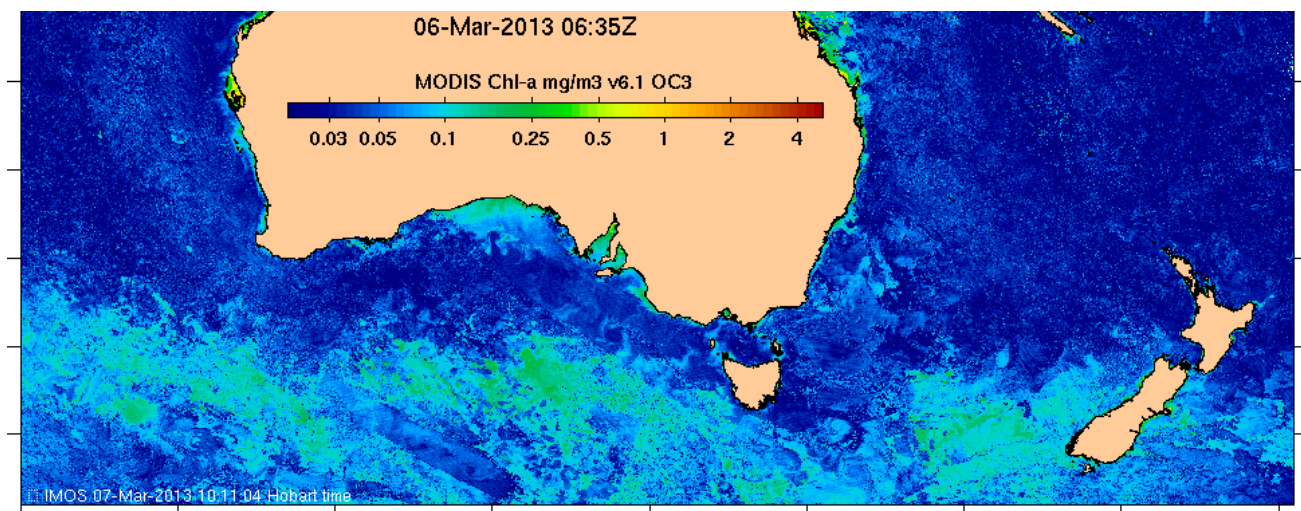


Figure 5: Productivity across southern Australia on the 6th March 2013 (IMOS 2013).

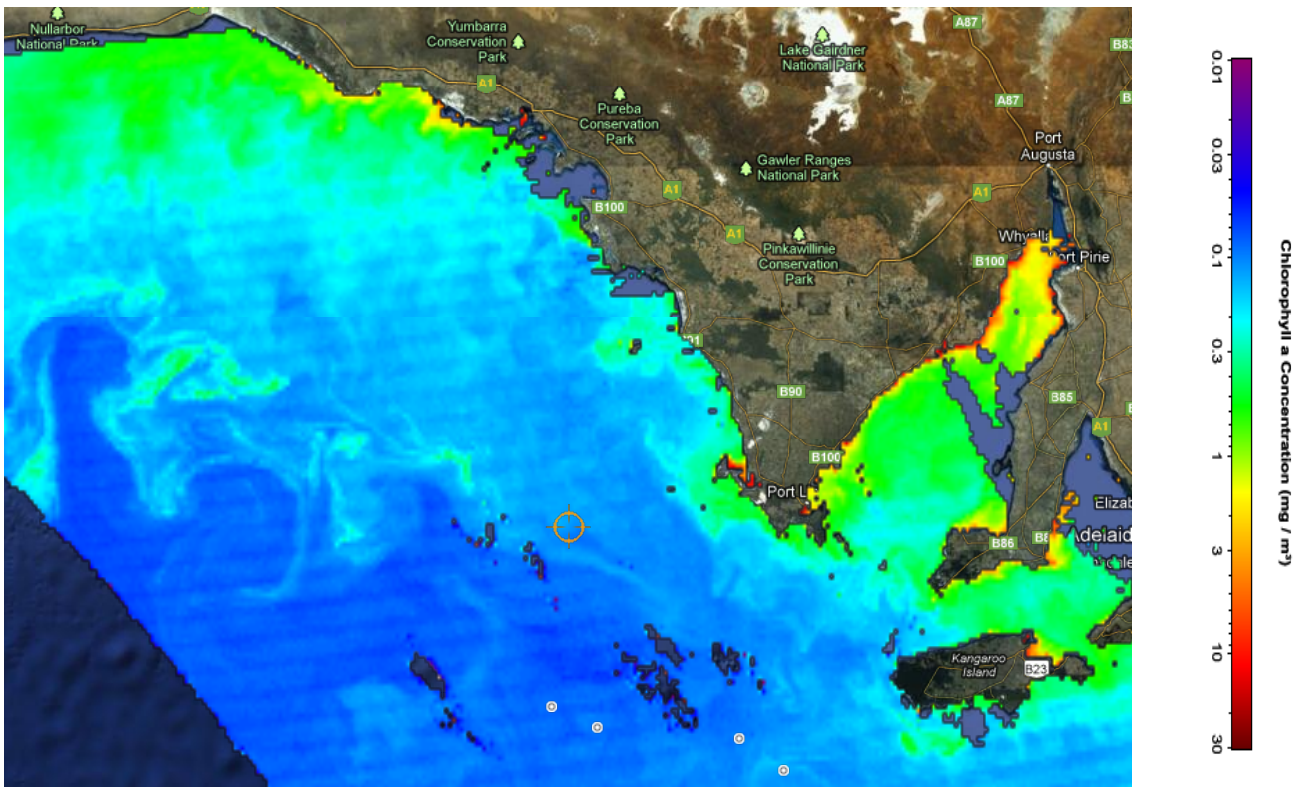


Figure 6: Areas of productivity within the eastern GAB on the 6th March 2013 the orange cursor is located at 133°58'E 35°1'S (source: <http://www.fishtrack.com>).

CSIRO Aerial Survey:

Summary of SBT sightings through this past week are shown by longitude in Table 2 below. Note this is only raw data, therefore not calibrated per area covered on any particular day or weather conditions AND includes SBT of all sizes.

Four full lines in the western section of the GAB were flown on the 5th March. Three full lines in the central section of the GAB were flown on the 6th March. Weather conditions were favourable on both days

Table 2: Summary of CSIRO Aerial Survey raw sightings over the past week. Note that the sightings are in tonnes, and include all sizes of SBT; cells are left blank for longitudes not covered by transects flown (CSIRO 2013).

DATE	128° - 129°	129° - 130°	130° - 131°	131° - 132°	132° - 133°	133° - 134°	134° - 135°
05/03/2013	30	0	280				
06/03/2013				220	930		

Useful Websites:

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

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