

Climate and Oceanographic Summary for the Great Australian Bight No. 14

Kirsten Rough – 25th January 2013

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

Summary:

A section summarizing the results of the CSIRO Aerial Survey was added to this update last week (Issue 13). A total of 2435 tonnes of SBT were sighted over the past 7 days.

Current directions at specific locations have been provided on request; call or email if anyone wants anything further on this.

Sea Surface Temperature (SST) throughout the historic and current fishing areas are generally between 19 – 22°C. These are entirely within the preferred temperature range of our size SBT¹.

Temperature this week in the central western GAB at 131°E 33°S has dropped to 21.9°C and temperature in the central east is 21.1°C at 133°E 34°S. Upwelling of cold water continues and is pushing to the west; and mixing of all water masses continues. The warm band continues below Kangaroo Island and now extends as far as the SA - Victoria border.

The Leeuwin current continues to show a relatively 'normal' progression along the WA coastline. Actual SST out from Exmouth this week is 29.7°C, passing Cape Leeuwin is 21.9°C and passing Esperance is now 21.2°C.

Ocean temperatures adjacent to WA and through the GAB remain warmer than the long-term average; but temperatures to the northwest of WA and in the southern Indian Ocean are now as they should be or cooler.

Moon Phase: The next full moon is on the 27th January.

Sea Surface Temperature and Ocean Currents:

An update of the water temperature across southern Australia and through the fishing grounds to the 24th January 2013 can be seen in Figure 1 and Figure 2. The temperature through the GAB ranges from 19.2 to 22.2°C.

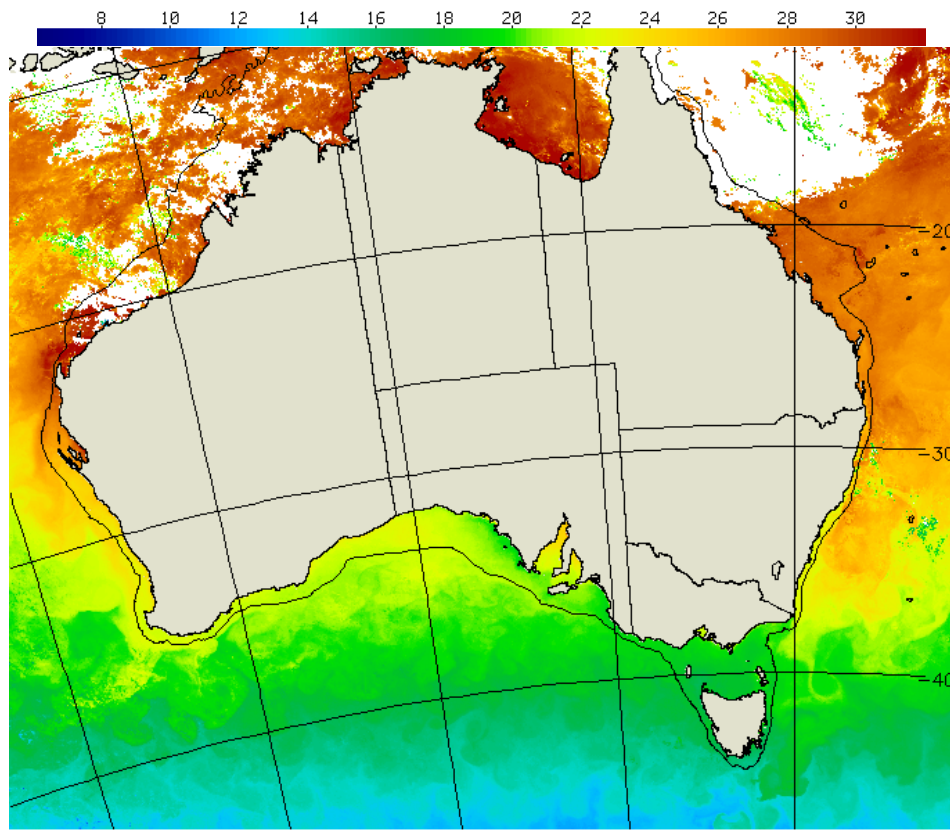
The movement and mixing of water bodies continues over this past week, with warm currents extending to the south of Kangaroo Island across to the south east coast of SA. Upwelling continues to maintain a cool pool along the coast. The cooling influence of the upwelling is pushing to the west so that sea surface temperatures throughout the historic and current fishing areas are entirely within the preferred range for our size SBT¹.

The SST at a number of specific sites averaged from 19th to the 24th January were obtained from the CSIRO (2013):

130°E 32.5°S is 22.2°C ²	131°E 32°S is 21.4°C	131°E 33°S is 21.9°C	132°E 33.5°S is 21.1°C ²
133°E 34°S is 21.1°C	134°E 34.5°S is 20.4°C ²	135°E 35°S is 20.4°C	135.5°E 35°S is 20.6°C ²

¹ Basson, M., Hobday, A.J., Eveson, J.P., Patterson, T.A., 2012. Spatial interactions among juvenile SBT at the global scale: a large scale archival tag experiment. FRDC Report 2003/002. 347pp

² These co ordinates are Degree Decimal Minutes



Mean SST from 19/01/2013 to 24/01/2013
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Figure 1: Sea Surface Temperature around Australia for the 5 days to 24th January 2013 (source: CSIRO 2013 <http://www.marine.csiro.au>)

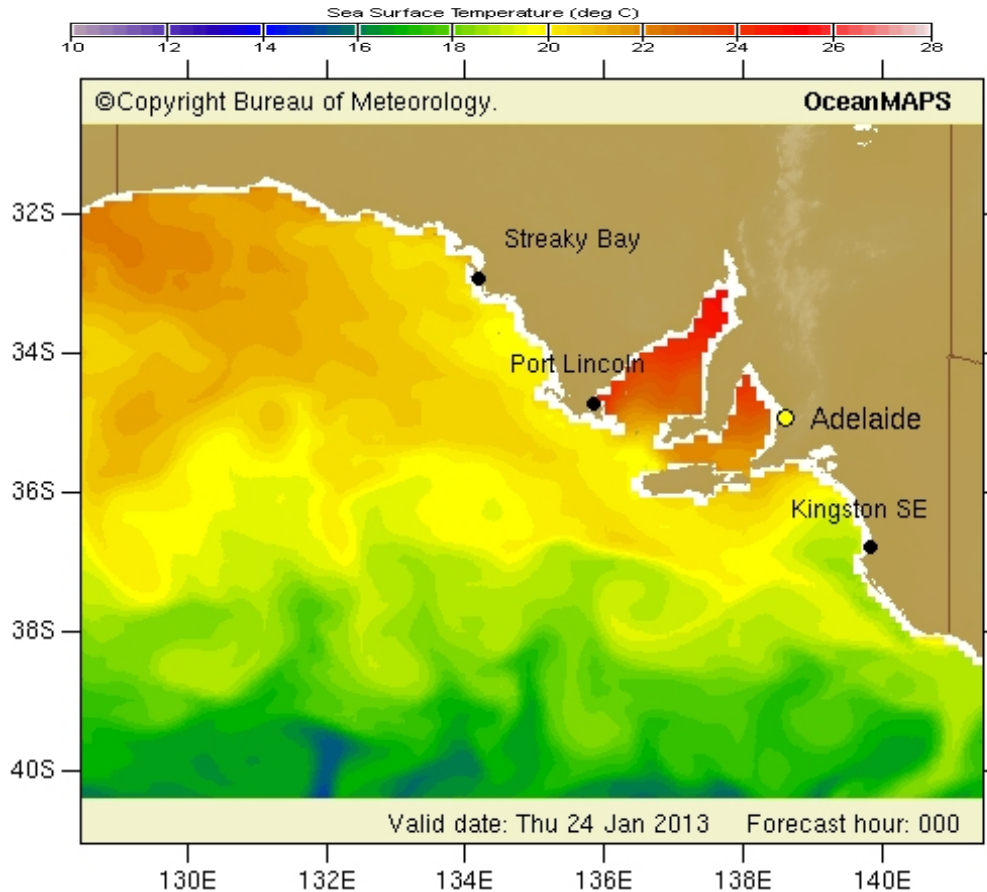


Figure 2: South Australian sea surface temperature and current direction from the Bureau of Meteorology website for the 3 days to the 24th January 2013 (source: Bureau of Meteorology 2013; <http://www.bom.gov.au>).

CSIRO Aerial Survey:

Summary of SBT sightings through this past week are shown by longitude in the table below. Note that the survey lines may not have been flown in full due to weather restrictions – this is only raw data and not calibrated per area covered on any particular day AND includes everything regardless of size.

The western transect lines of the survey were flown on the 21st, and the eastern transect lines were flown on the 24th January.

DATE	129° to 130°	130° to 131°	131° to 132°	132° to 133°	133° to 134°	134° to 135°
21 st Jan	179 tonnes	375 tonnes	250 tonnes			
24 th Jan				40 tonnes	1100 tonnes	500 tonnes

Leeuwin Current:

Sea surface temperatures and ocean currents around the Western Australian coastline on the 20th January for last year and this year are shown below (Figure 3). January 2013 is now very different to this point in time of the 2012 fishing season. This week strong currents continue to peeling off to the southwest of Cape Leeuwin; this is significant as it may divert some of the juvenile SBT to the Indian Ocean rather than into the GAB area. General sea surface temperatures are cooler than at this time in 2012. The actual SST off the coast of North West Cape (Exmouth) is now 29.7°C, out from Cape Inscription (Shark Bay) is 26.2°C, out from Cape Leeuwin (Augusta) is 21.9°C and out from Esperance is 21.2°C (CSIRO 2013).

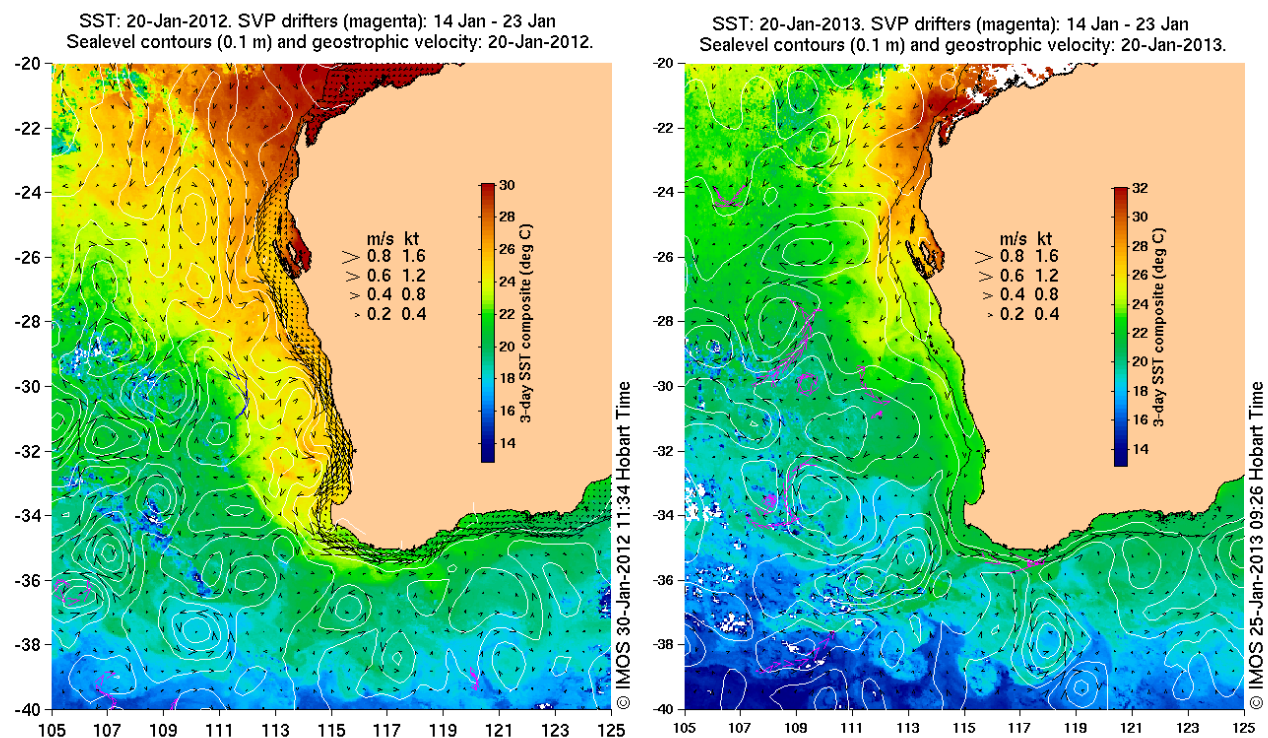


Figure 3: A comparison of the Leeuwin Current sea surface temperature and current speed and direction for the 20th January 2012 (left) and 20th January 2013 (right), note the temperature colour scales differ slightly between plots (Source: IMOS 2013; <http://www.oceancurrent.imos.org.au>).

Chlorophyll / Productivity:

Again there appears to be delays in information available through the IMOS program, so only the Fishtrack plot is included here. Cloud cover when the satellite is passing has also been an issue so

the map of the GAB area (Figure 4) shows only the eastern section on the 23rd January. Productivity remains concentrated around the coastal fringe of this area (as per previous issues).

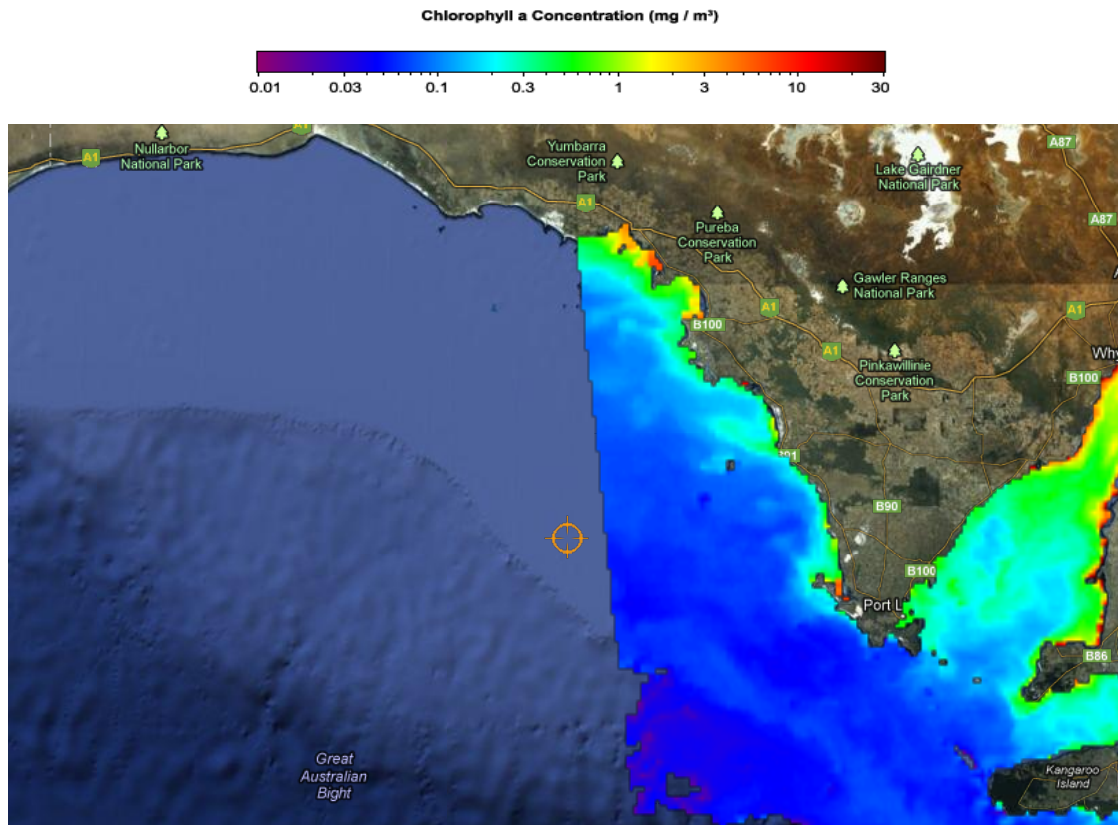


Figure 4: Areas of productivity within the GAB on the 23rd January 2013 (source: <http://www.fishtrack.com>).

GAB Currents:

A general plot of where the water currents are moving within the GAB area can be seen in Figure 5.

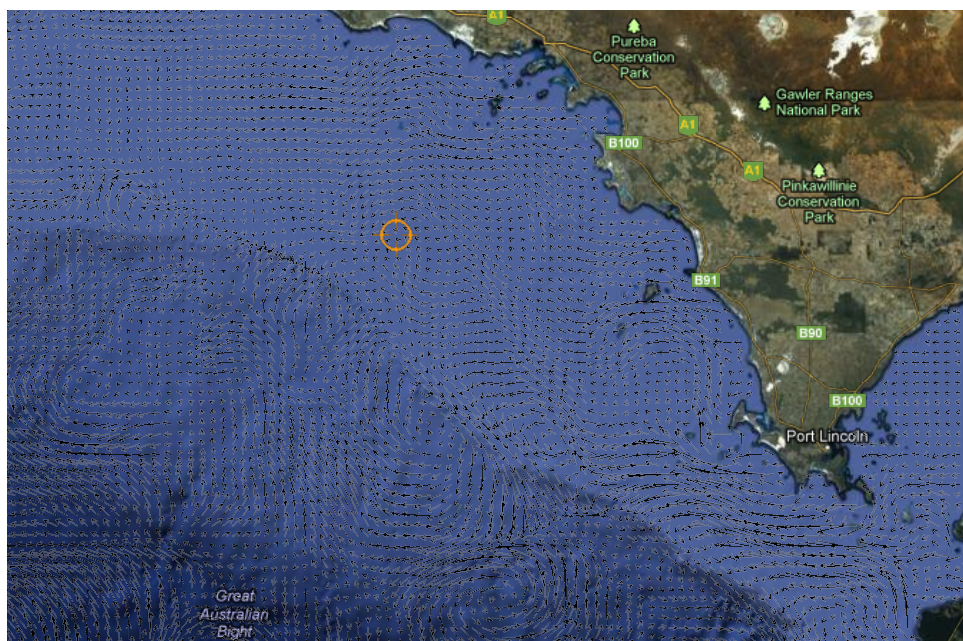


Figure 5: Direction of water movement within the Great Australian Bight on the 23rd January 2013 (source: <http://www.fishtrack.com>)

Climate / Ocean Trends:

The latest plot showing global sea surface temperature anomalies (areas of sea temperature higher or lower than the long-term average) is shown in Figure 7. The area to the west of WA and throughout the GAB remains warmer than the 30-year average, but the area to the northwest of WA and the southern Indian Ocean are now as they should be or cooler. How this looks specifically around Australia can be seen in Figure 7.

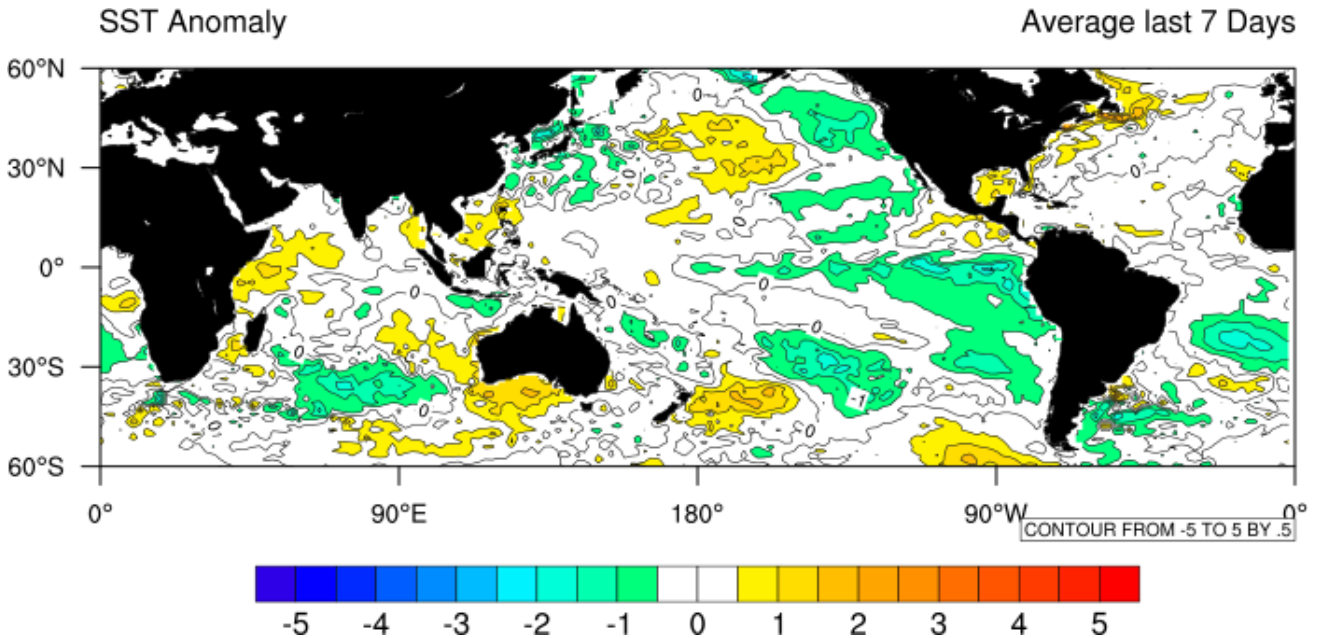


Figure 6: Latest plot showing global sea surface temperature anomalies January 2013 (source: Bureau of Meteorology 2013, <http://www.bom.gov.au>)

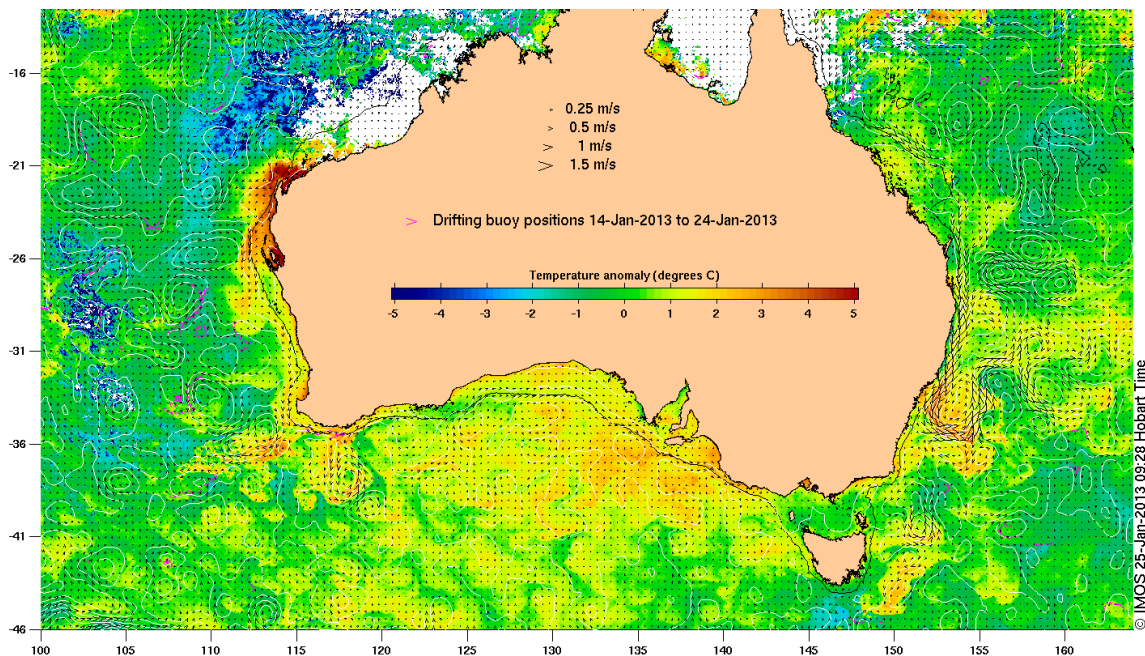


Figure 7: Latest plot showing sea surface temperature anomalies to the 25th January 2013 (source: IMOS 2013, <http://www.oceancurrent.imos.org.au>)

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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