Climate and Oceanographic Summary for the Great Australian Bight No. 15

Kirsten Rough – 1st February 2013

This is the fifteenth 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 are generally between 18.5 to 21.5°C. This is within the preferred temperature range of our size SBT[1].

Temperature this week in the central western GAB at 131°E 33°S has dropped to 21.1°C and temperature in the central east is 20.6°C at 133°E 34°S. Upwelling of cold water onto the shelf continues and is pushing along the coast further to the west. The warm water band along the shelf break 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 30.2°C, passing Cape Leeuwin is 21.6°C and passing Esperance is now 21.1°C.

Current directions at specific locations have been provided on request; call or email if anyone wants anything further on this. A zoomed in map can be generated and sent to you - this will have the orange curser in the position of your vessel to make it easier to see where the desired current is in relation to you.

CSIRO Aerial Survey flew 1 day in the past week. Conditions were cold hence no SBT were sighted.

Moon Phase: is currently 'waning gibbous', 72% of full. The next full moon is on the 25th February.

Sea Surface Temperature and Ocean Currents:

An update of the water temperature across southern Australia and through the fishing grounds to the 31st January 2013 can be seen in Figure 1 and Figure 2. The temperature through the GAB ranges from 18.8 to 21.4°C.

The movement and mixing of water bodies continues over this past week, with warm currents extending along the shelf break to the south of Kangaroo Island and across to the south east coast of SA. Upwelling continues along the west and southern coast of Eyre Peninsula; this cool water now extends westward to 130°E (Figure 1). The area of suitable sea surface temperatures for our size SBT[1] now extends from the coast at 132°E south to 36°S and eastward to the southeast coast of SA. To the west of 132°E would be suitable for smaller size SBT.

The SST at a number of specific sites averaged from 26th to the 31st January were obtained from the CSIRO (2013):

130°E 32.5°S is 21.4°C[2]	131°E 32°S is 21.1°C	131°E 33°S is 21.1°C	132°E 33.5°S is 21.1°C[2]
133°E 34°S is 20.6°C	134°E 34.5°S is 20.3°C[2]	135°E 35°S is 20.3°C	135.5°E 35°S is 18.8°C[2]

[1] Basson, M., Hobday, A.J., Eveson, 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

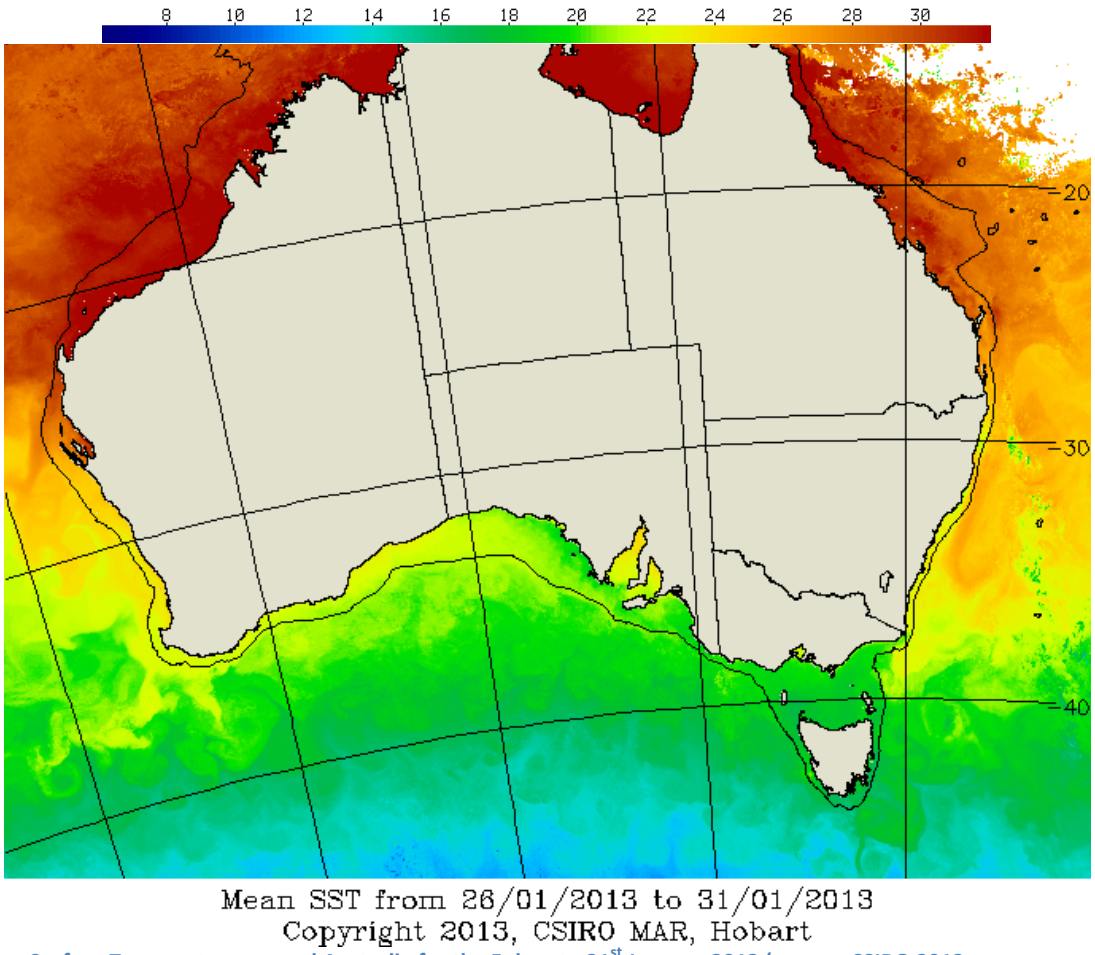

Figure 1: Sea Surface Temperature around Australia for the 5 days to 31st January 2013 (source: CSIRO 2013 http://www.marine.csiro.au)

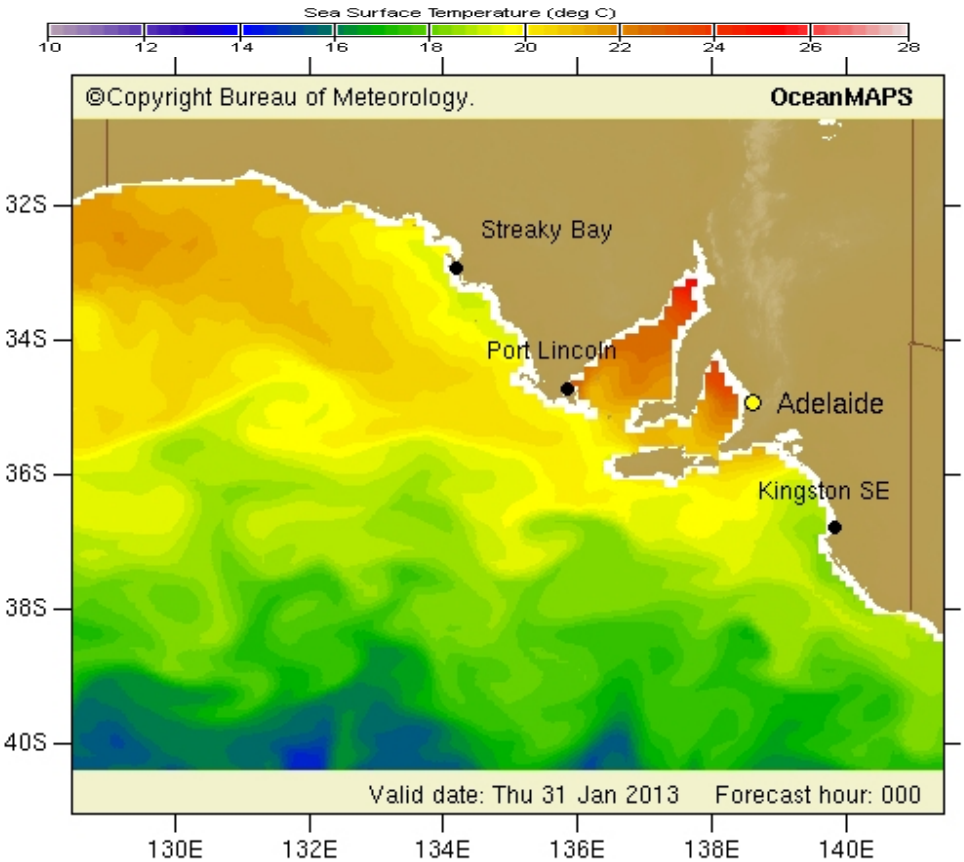

Figure 2: South Australian sea surface temperature and current direction from the Bureau of Meteorology website for the 3 days to the 31st January 2013 (source: Bureau of Meteorology 2013; http://www.bom.gov.au).

CSIRO Aerial Survey:

The eastern transect lines were flown on the 29th January, but since the weather was cool there were no sightings of SBT.

Leeuwin Current:

Sea surface temperatures and ocean currents around the Western Australian coastline on the 27th 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 30.2°C, out from Cape Inscription (Shark Bay) is 27.3°C, out from Cape Leeuwin (Augusta) is 21.6°C and out from Esperance is 21.1°C (CSIRO 2013).

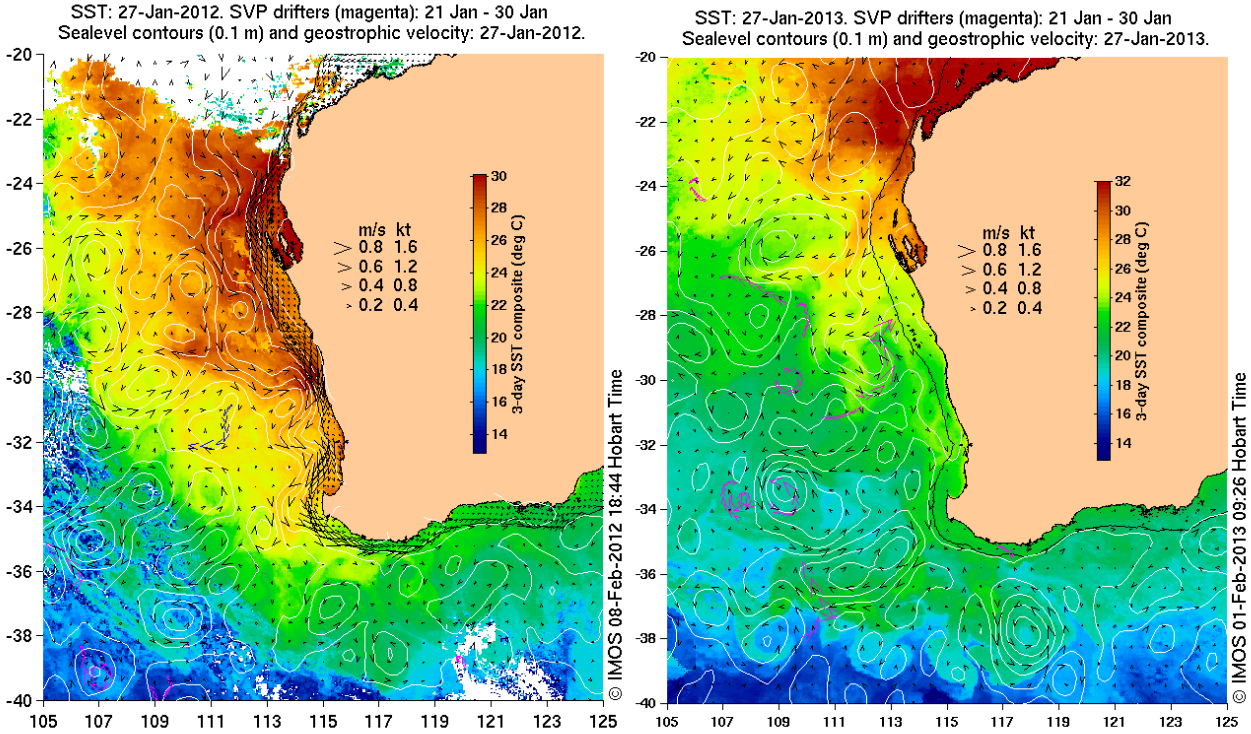

Figure 3: A comparison of the Leeuwin Current sea surface temperature and current speed and direction for the 27th January 2012 (left) and 27th January 2013 (right), note the temperature colour scales differ slightly between plots (Source: IMOS 2013; http://www.oceancurrent.imos.org.au).

Chlorophyll / Productivity:

The amount of chlorophyll around southern Australia can be seen on the IMOS image (Figure 4), concentrations are increased well south of Australia as well as in the western Bight and Spencer Gulf. Cloud cover has been an issue for the Fishtrack localized maps so that the best image for the GAB area was on the 29th January (Figure 5). This shows chlorophyll concentrated in the coastal regions and denser patches within Spencers Gulf. The entire shelf of the GAB has some degree of colour with clearer areas following the shelf break.

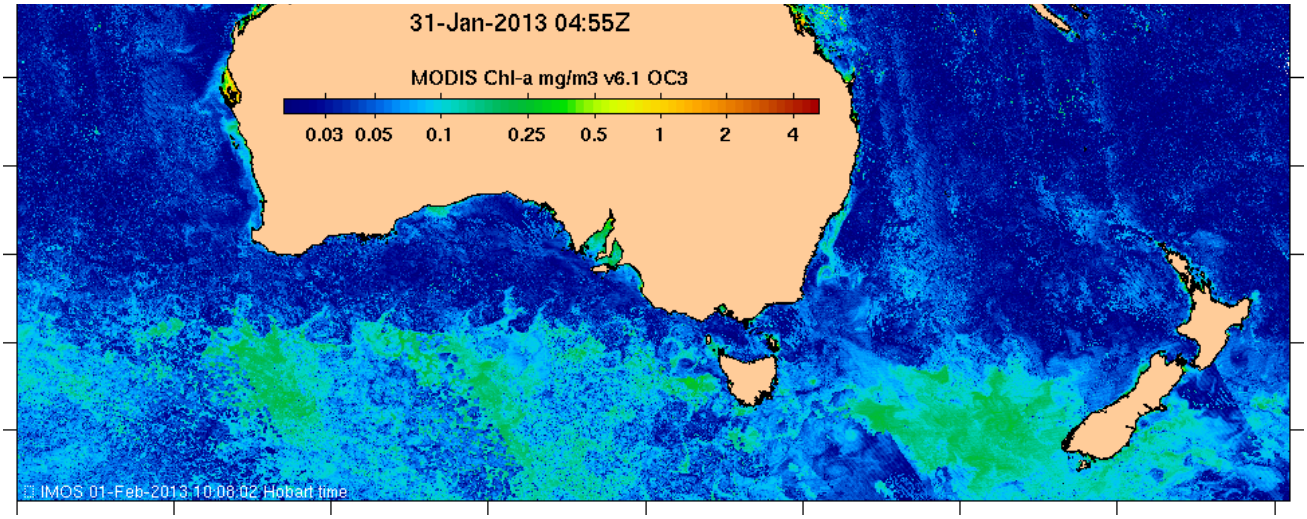

Figure 4: Productivity across southern Australia on the 31st January 2013 (IMOS 2013).

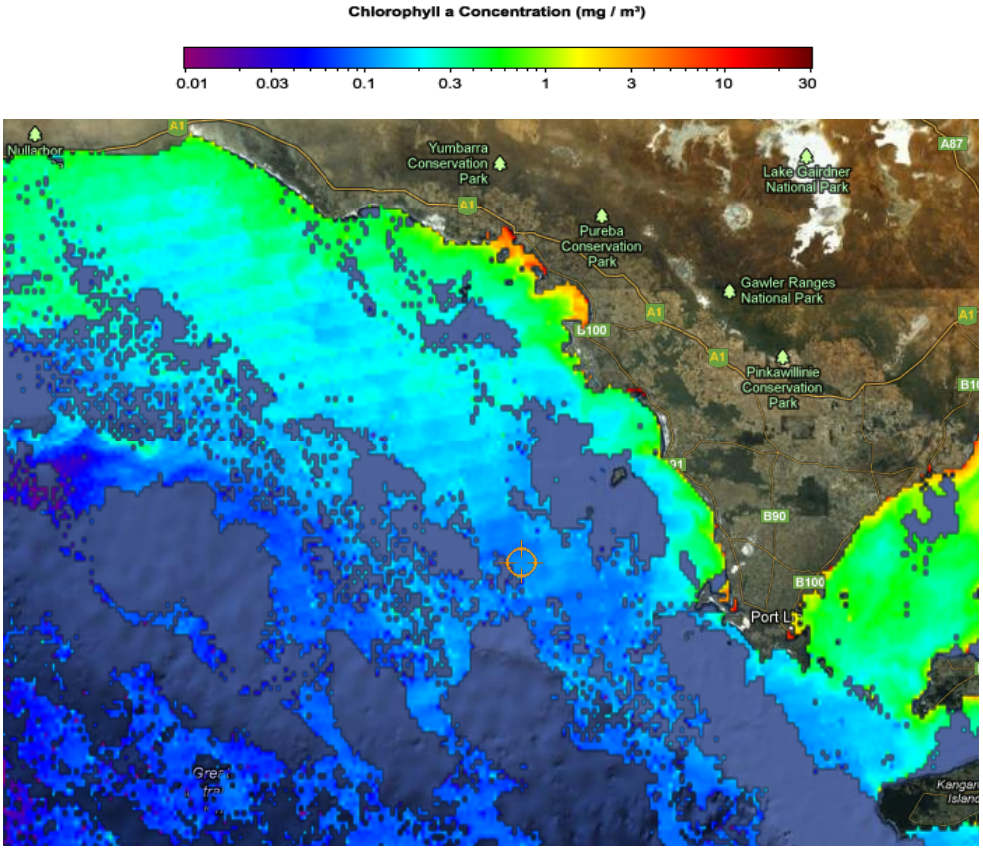

Figure 5: Areas of productivity within the GAB on the 29th January 2013 (source: http://www.fishtrack.com).

GAB Currents:

A general plot of where the water currents are moving within the GAB area can be seen in Figure 6; the orange curser position is 34°17'34.8"S 134°32'13.2"E. The area covered by the image spans from St Francis Islands to Kangaroo Island. The most notable change from last week is that the currents below Eyre Peninsula are no longer flowing from the northwest to the southeast along the shelf break. There appears to be a strong push of water from the south over the canyon system and onto the shelf at this location this week. Currents along the west coast of Eyre Peninsula continue to move from the south to the north.

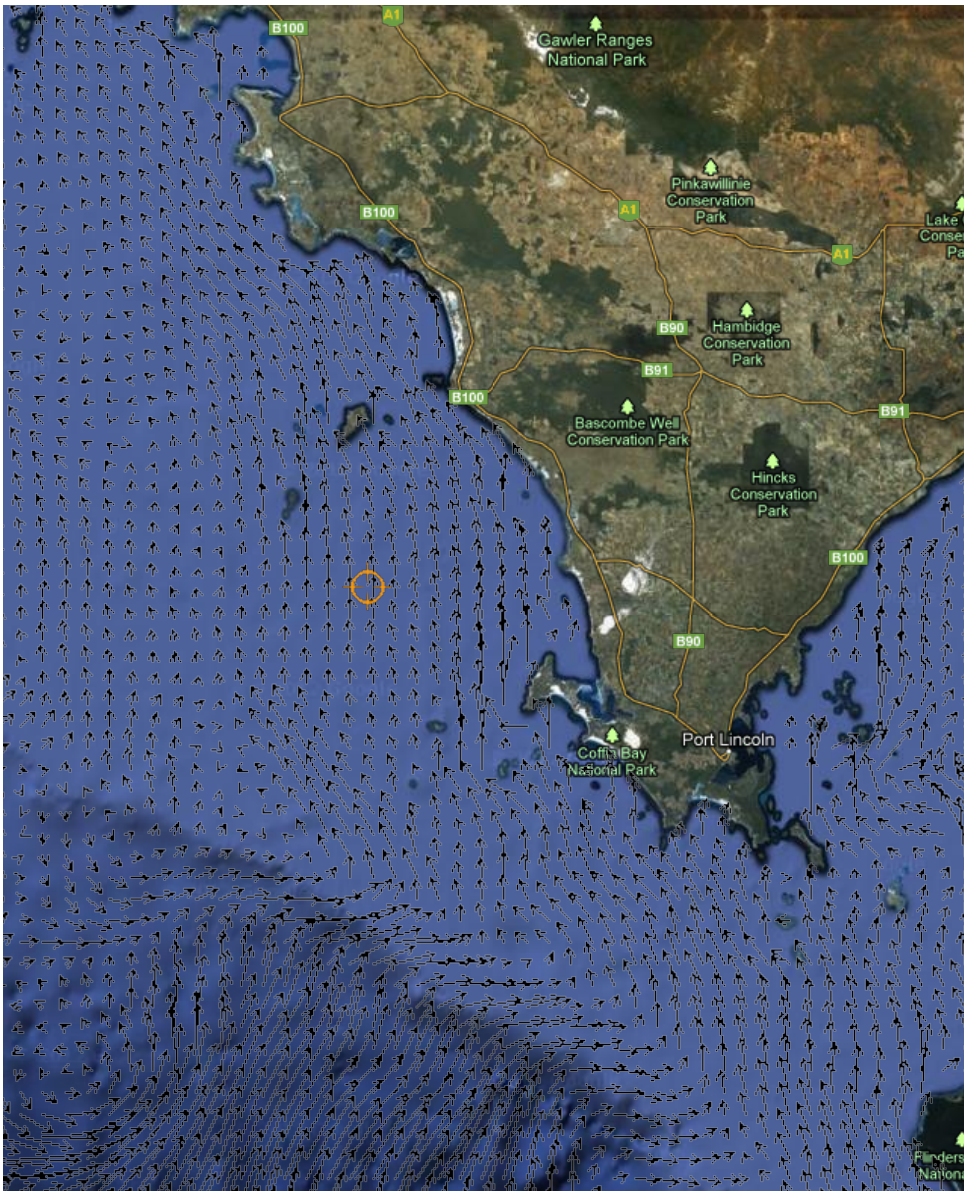

Figure 6: Direction of water movement within the eastern section of the Great Australian Bight, St Francis Islands to Kangaroo Island, on the 31st January 2013 (source: http://www.fishtrack.com)

Useful Websites:

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

Further details contact:

Kirsten Rough 0429 833 697
ASBTIA – Research Office
Port Lincoln SA 5606
Email: SBT_Research@bigpond.com