

Climate and Oceanographic Summary for the Great Australian Bight No. 10

Kirsten Rough – 27th December 2012

This is the tenth 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) through the GAB remains within the range of 18 – 21°C.

Temperature this week in the western area of the fishing grounds at 131°E 33°S has increased to 20.3°C and temperature has increased to 19.8°C to the east at 133°E 34°S. There has been a lot of mixing and movement of water masses and a minor upwelling through this past week. Warm pockets of water persist below Eyre Peninsula and are also apparent south east of Kangaroo Island (19.5°C at 138°E 38°S).

The Leeuwin current continues to show a relatively 'normal' progression along the WA coastline, and warmer water continues to pass Cape Leeuwin. Actual SST out from Exmouth this week is generally 28°C, with areas up to 30°C. Water passing Cape Leeuwin is now 21.4°C and passing Esperance is 20.4°C.

There has been a rapid warming of sea temperatures to the northwest of Australia in recent weeks. Whether this will influence this fishing season is unclear at the moment. The latest SST anomaly map indicates that the GAB is currently warmer (by 0.5 to 2.0°C) than the long-term average for this area.

Moon Phase: is currently full.

Sea Surface Temperature and Ocean Currents:

An update of the water temperature across southern Australia to the 25th December and through the fishing grounds for the 27th December can be seen in Figure 1 and Figure 2. The temperature through the GAB remains generally within the range of 18-21°C, although areas close to the coast of upper Eyre Peninsula and in the bays are warmer than this.

The movement and mixing of water bodies continues over this past week, and another minor upwelling has occurred along the west coast of lower Eyre Peninsula.

The SST at a number of specific sites averaged from 20th to 25th December were obtained from the CSIRO (2012):

Streaky Bay has jumped to 25.6°C.

Specific locations across the fishing grounds:

130°E 32.5°S is 20.6°C ¹	131°E 32°S is 20.8°C	131°E 33°S is 20.3°C	132°E 33.5°S is 20.0°C ¹
133°E 34°S is 19.8°C	134°E 34.5°S is 19.3°C ¹	135°E 35°S is 19.2°C	135.5°E 35°S is 18.8°C ¹

¹ These co ordinates are Degree Decimal Minutes

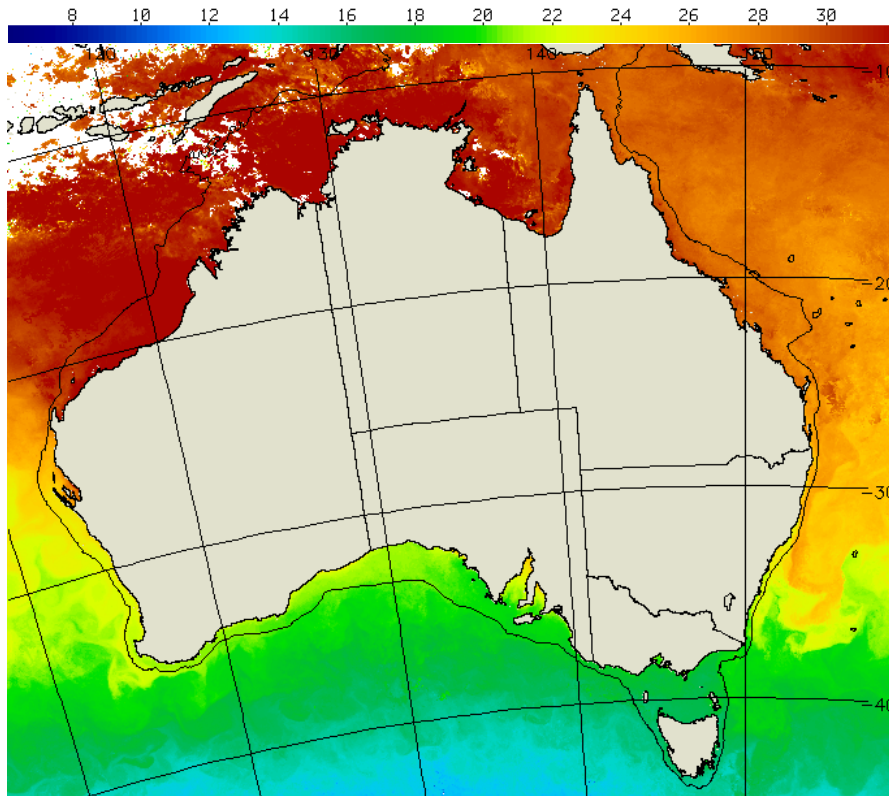


Figure 1: Sea Surface Temperature around Australia to 25th December, general warming through and south of the Bight (source: CSIRO 2012 <http://www.marine.csiro.au>)

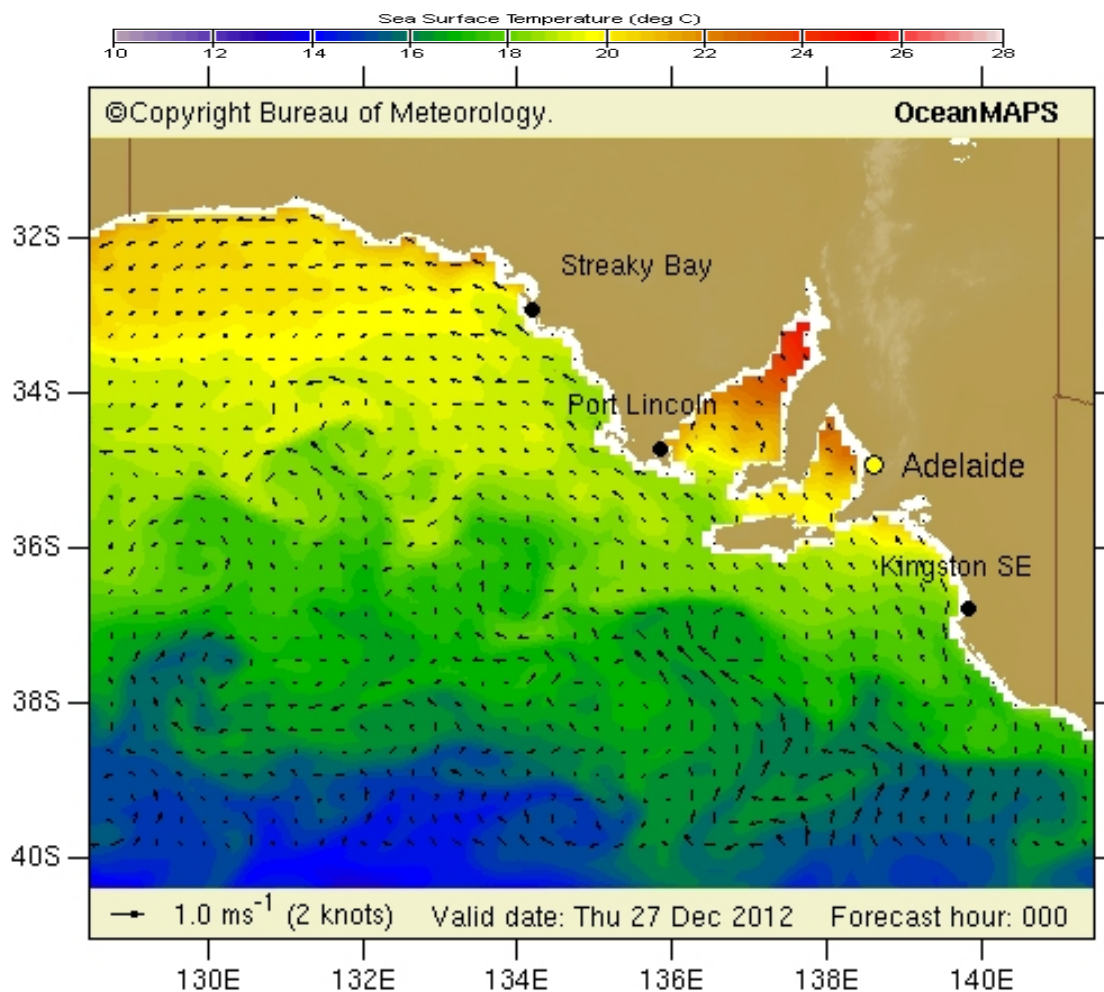


Figure 2: South Australian sea surface temperature and current direction from the Bureau of Meteorology website for the 3 days to the 27th December 2012 (source: Bureau of Meteorology 2012; <http://www.bom.gov.au>).

Leeuwin Current Temperature and Currents:

Sea surface temperatures and ocean currents around the Western Australian coastline on the 23rd and 24th December for this year and last year are shown below (Figure 3). As with the plots in previous updates, December 2012 does not have the intense coast hugging currents that were apparent coming into the previous fishing season. The actual SST off the coast of North West Cape (Exmouth) has jumped to 28.6°C with patches of 30.2°C, out from Cape Inscription (Shark Bay) is 24.3°C, out from Cape Leeuwin (Augusta) is 21.4°C and out from Esperance is 20.4°C (CSIRO 2012).

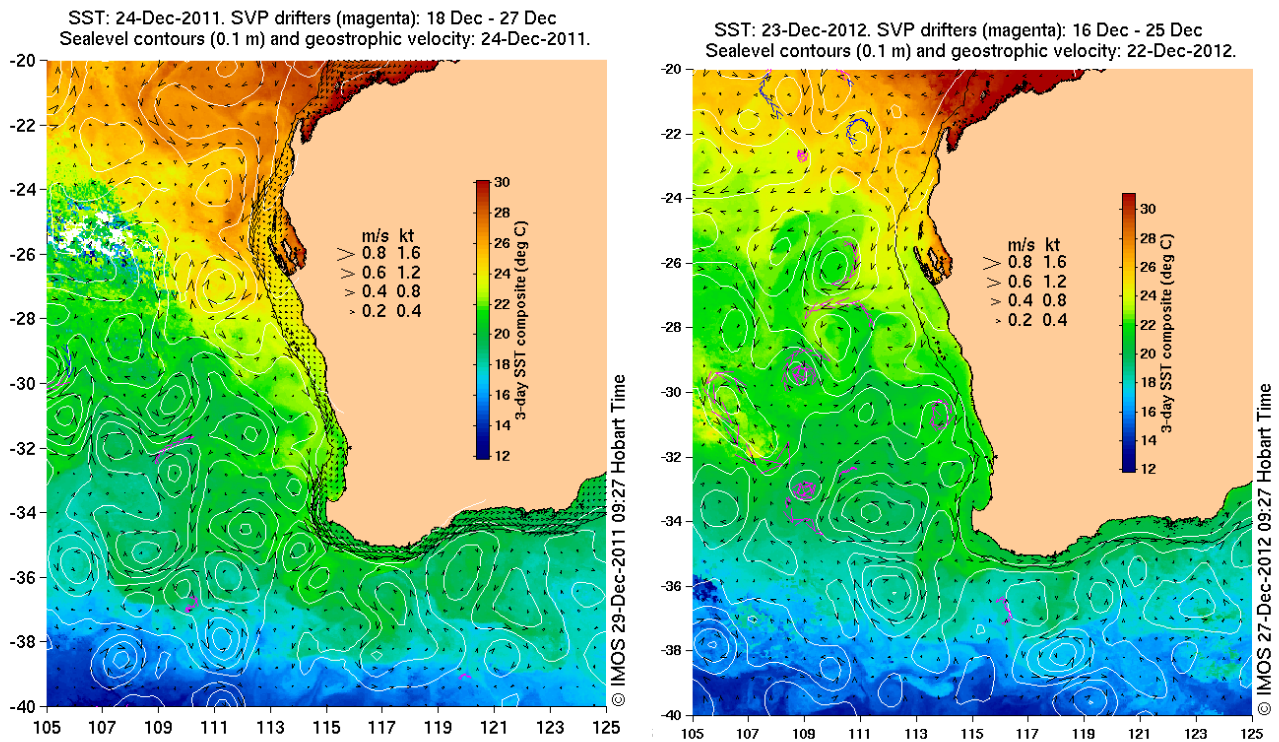


Figure 3: A comparison of the Leeuwin Current sea surface temperature and current speed and direction for the 24th December 2011 (left) and 23rd December 2012 (right) (Source: IMOS 2012; <http://www.oceancurrent.imos.org.au>).

Chlorophyll / Productivity:

Satellite images of the distribution of chlorophyll a give an indication of where food webs are enriched. These patches are often (but not always) associated with prey items (eg. bait fish) that are desirable to SBT.

The broad scale map (Figure 4) shows the area at and to the west of the Head of the Bight remains similar in intensity and area as the previous update.

The low productivity band shown in previous updates continues along the shelf break. A more detailed map of the GAB appears in Figure 5, and is commented on below.

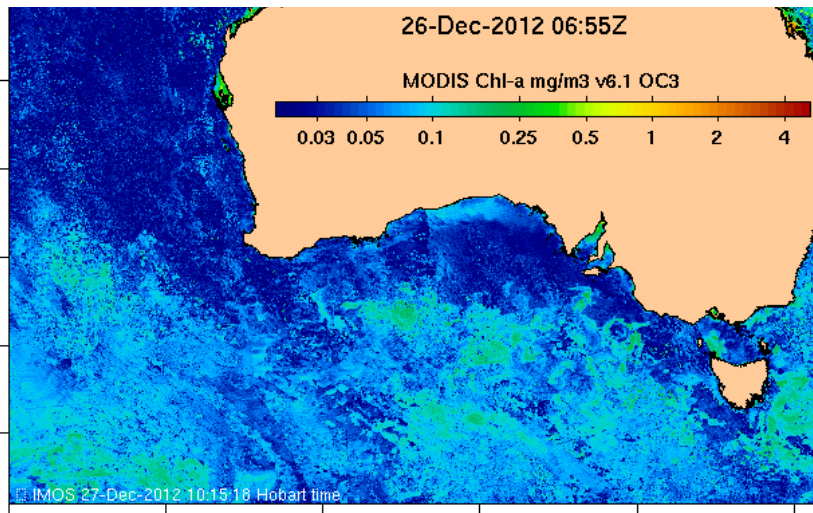


Figure 4: Image showing areas of productivity (chlorophyll a) on the 26th December 2012 (source: IMOS 2012; <http://www.oceancurrent.imos.org.au>)

The map of the GAB area (Figure 5) shows that the Bight is gaining colour throughout. The patch in the coastal areas of Streaky and Ceduna continues to intensify. The Sea Temperature charts of the previous update indicated a minor upwelling at the end of the Coffins Bay Peninsula; there is now an increase in chlorophyll at this location.

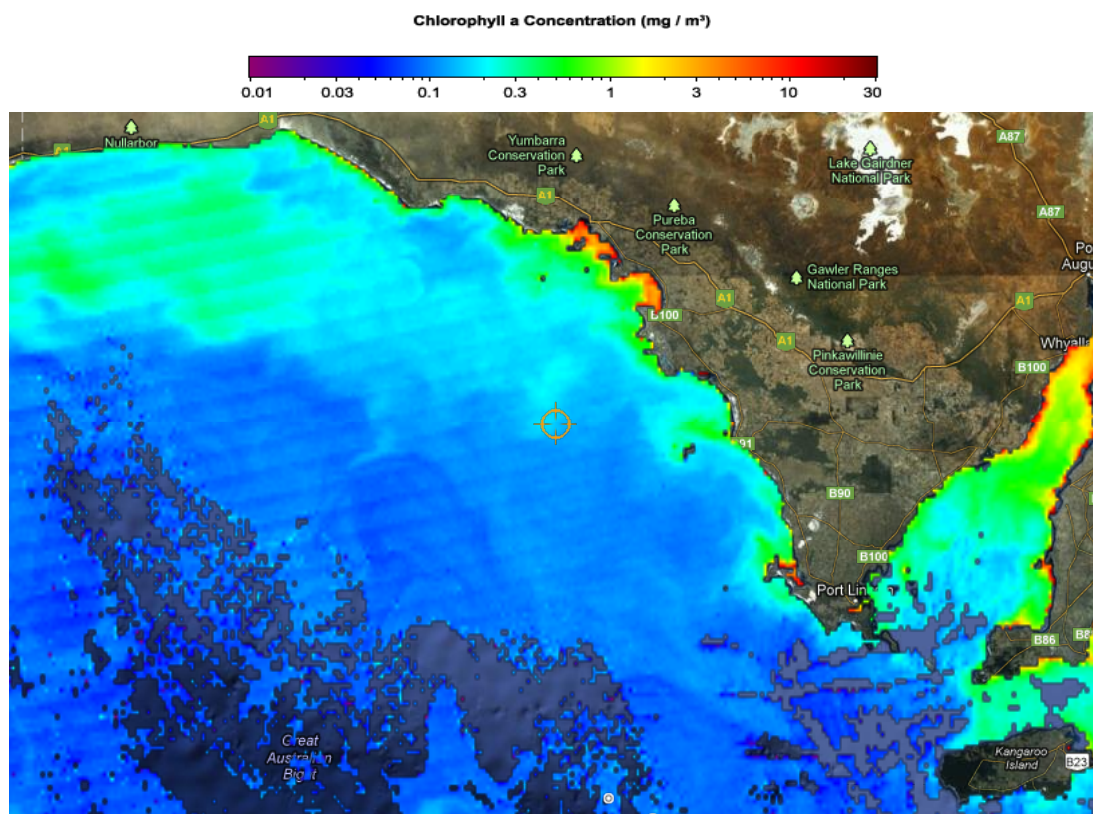


Figure 5: Areas of productivity within and below the GAB on the 26th December 2012 (source: <http://www.fishtrack.com>).

Climate / Ocean Trends:

The latest sea surface temperature anomaly data can be seen in Figure 6. This shows that the Pacific Ocean remains neutral – neither El Niño nor La Niña. Temperatures of the central and eastern tropical Pacific are now close to their long-term average. This is the first ENSO-neutral summer since 2005-06 (Bureau of Meteorology 2012).

The warm SST anomalies of the Indian Ocean, adjacent to the West Australian coast shown in update 6, remain. The temperature of the area to the north west of Australia has increased rapidly over the past two weeks. The area to the southwest of WA appears to have moved eastward so that temperatures through the Great Australian Bight and the southeast of SA are currently warmer than the long-term average (1961-1990).

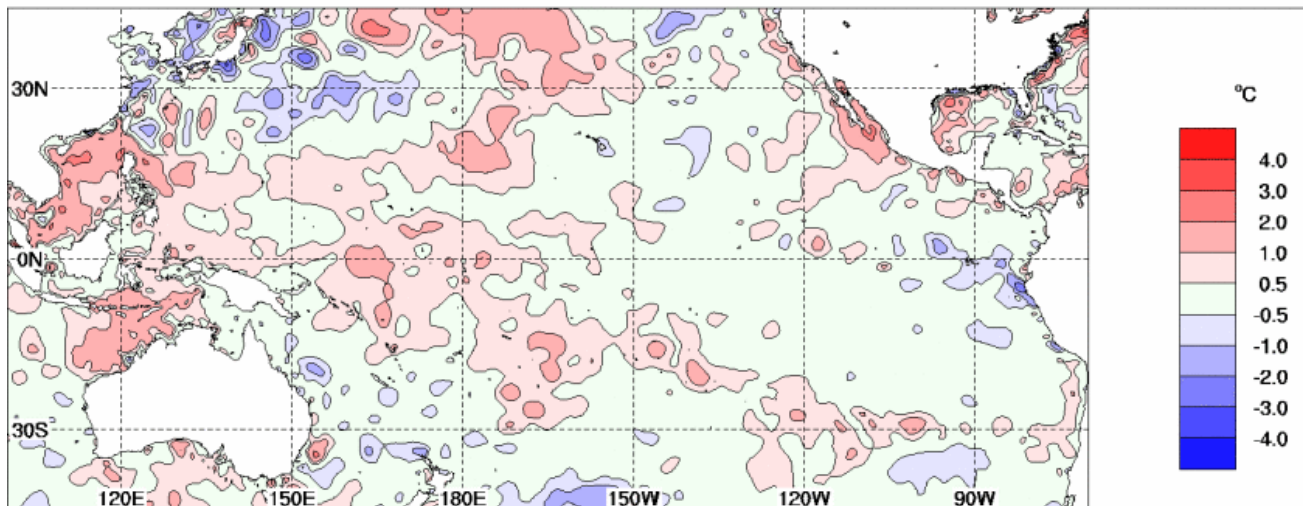


Figure 6: Latest plot showing Sea Surface Temperature anomalies (Source: Bureau of Meteorology 2012, <http://www.bom.gov.au>)

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