

Climate and Oceanographic Summary for the Great Australian Bight No. 12

Kirsten Rough – 11th January 2013

This is the twelfth 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) is generally between 20 – 22.5°C.

Temperature this week in the central western GAB at 131°E 33°S has increased to 21.6°C and temperature in the central east is 20.8°C at 133°E 34°S. There continues to be a lot of mixing and movement of water masses and more upwelling through this past week. Warm pockets of water persist below Eyre Peninsula and a warm band continues to extend to the Southeast of SA.

The Leeuwin current continues to show a relatively 'normal' progression along the WA coastline, and warmer water continues to pass Cape Leeuwin and extends into the GAB. Actual SST out from Exmouth this week has increased to 31.5°C. Water passing Cape Leeuwin is now 24°C and passing Esperance is 21.7°C.

There continues to be a rapid warming of sea temperatures to the northwest and to the west of Australia in recent weeks.

Early climate model projections are suggesting the warm water mass of the Indian Ocean will return to Australia's northwest through July – August. ENSO will remain neutral through this time.

Moon Phase: it is currently a new moon. 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 10th January 2013 can be seen in Figure 1 and Figure 2. The temperature through the GAB ranges between 20-22.5°C, although areas close to the coast of upper Eyre Peninsula (EP) and in the bays are warmer than this.

The movement and mixing of water bodies continues over this past week, and upwelling continues along the west coast of lower Eyre Peninsula and below EP. In these locations water temperature is generally 1°C lower.

The SST at a number of specific sites averaged from 5th to the 10th January were obtained from the CSIRO (2013):

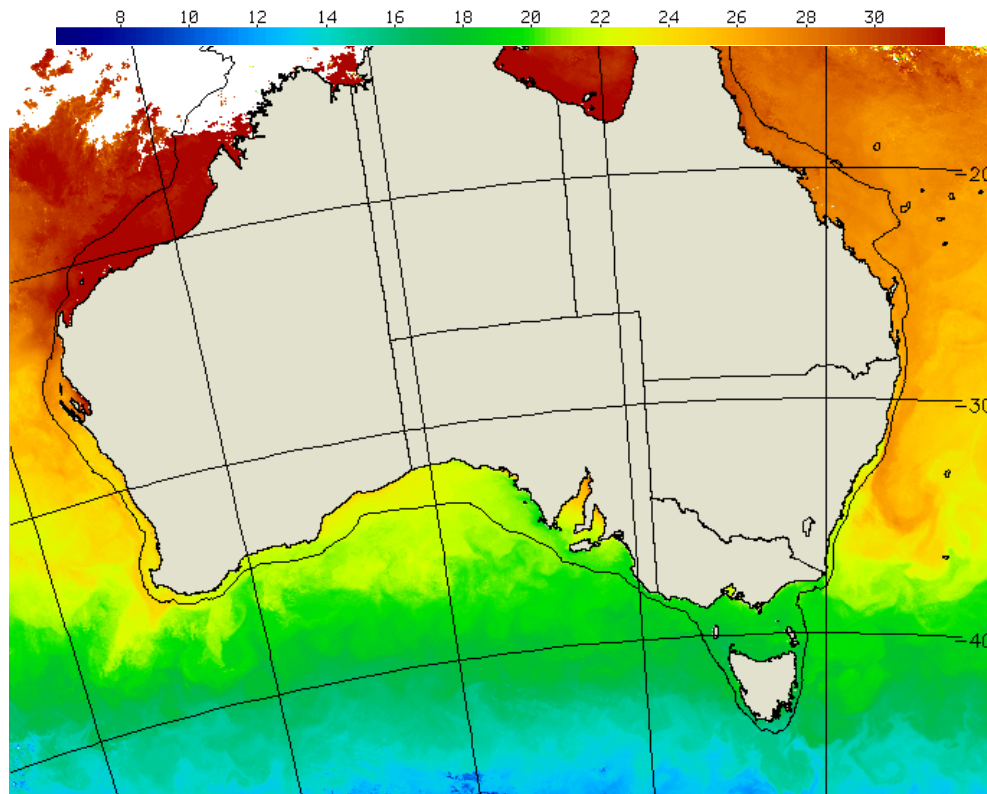
Streaky Bay not available.

Specific locations across the fishing grounds:

130°E 32.5°S is 22.0°C ¹	131°E 32°S is 21.7°C	131°E 33°S is 21.6°C	132°E 33.5°S is 21.2°C ¹
133°E 34°S is 20.8°C	134°E 34.5°S is 20.6°C ¹	135°E 35°S is 20.1°C	135.5°E 35°S is 20.0°C ¹

Please note that in the western GAB these temperatures extend from the surface to the sea floor on the shelf. In the middle to eastern sectors of the GAB the temperatures extend from 20 to 50m depth from the surface.

¹ These co ordinates are Degree Decimal Minutes



Mean SST from 05/01/2013 to 10/01/2013
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Figure 1: Sea Surface Temperature around Australia for the 5 days to 10th January 2013 (source: CSIRO 2012 <http://www.marine.csiro.au>)

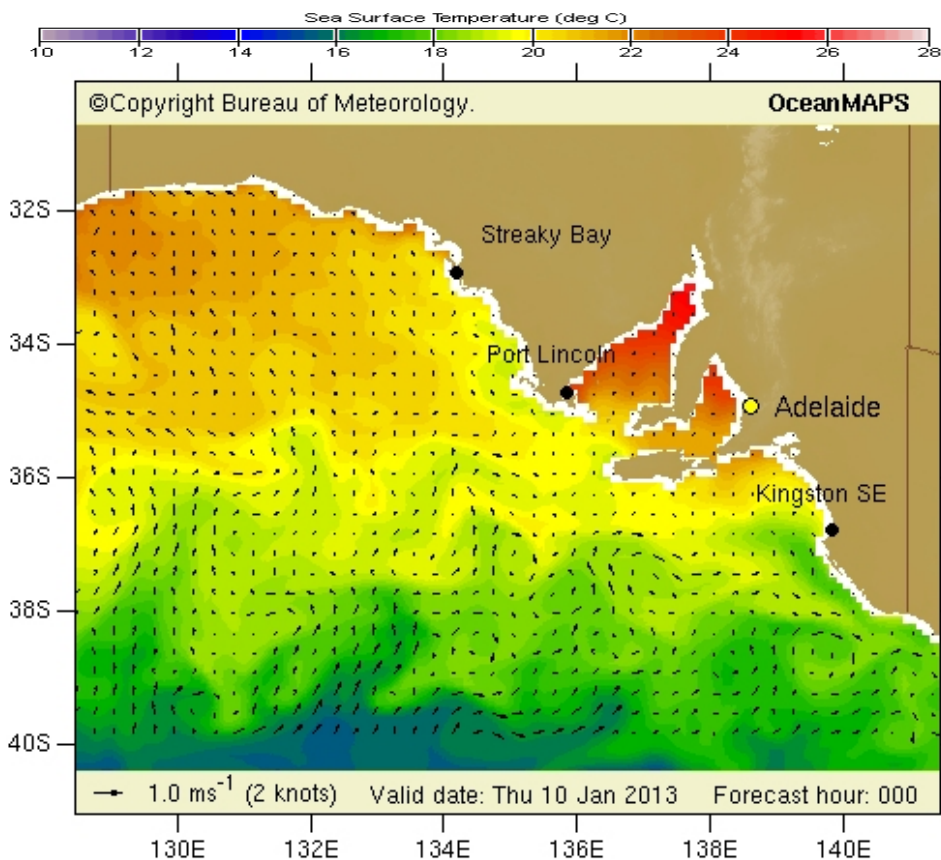


Figure 2: South Australian sea surface temperature and current direction from the Bureau of Meteorology website for the 3 days to the 10th January 2013 (source: Bureau of Meteorology 2012; <http://www.bom.gov.au>).

Leeuwin Current Temperature and Currents:

Sea surface temperatures and ocean currents around the Western Australian coastline on the 6th January for last year and this year are shown below (Figure 3). As with the plots in previous updates, January 2013 does not have the intense coast hugging currents that were apparent coming into the previous fishing season; however general sea surface temperatures are similar to this time in 2012. The actual SST off the coast of North West Cape (Exmouth) has increased to 31.5°C, out from Cape Inscription (Shark Bay) is 24.9°C, out from Cape Leeuwin (Augusta) is 24.0°C and out from Esperance is 21.7°C (CSIRO 2013).

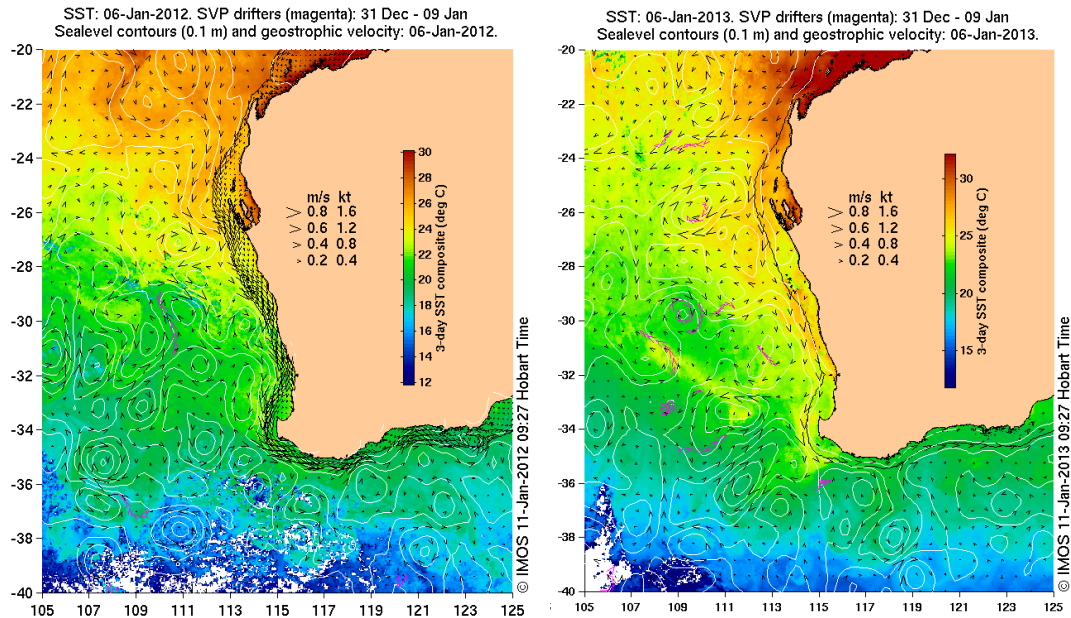


Figure 3: A comparison of the Leeuwin Current sea surface temperature and current speed and direction for the 6th January 2012 (left) and 6th January 2013 (right) (Source: IMOS 2013; <http://www.oceancurrent.imos.org.au>).

Chlorophyll / Productivity:

Due to cloud cover the most recent broad scale map this week from the IMOS site is on the 9th January 2013. There is a lot of productivity below Australia extending across to New Zealand, and also in the western GAB (Figure 4).

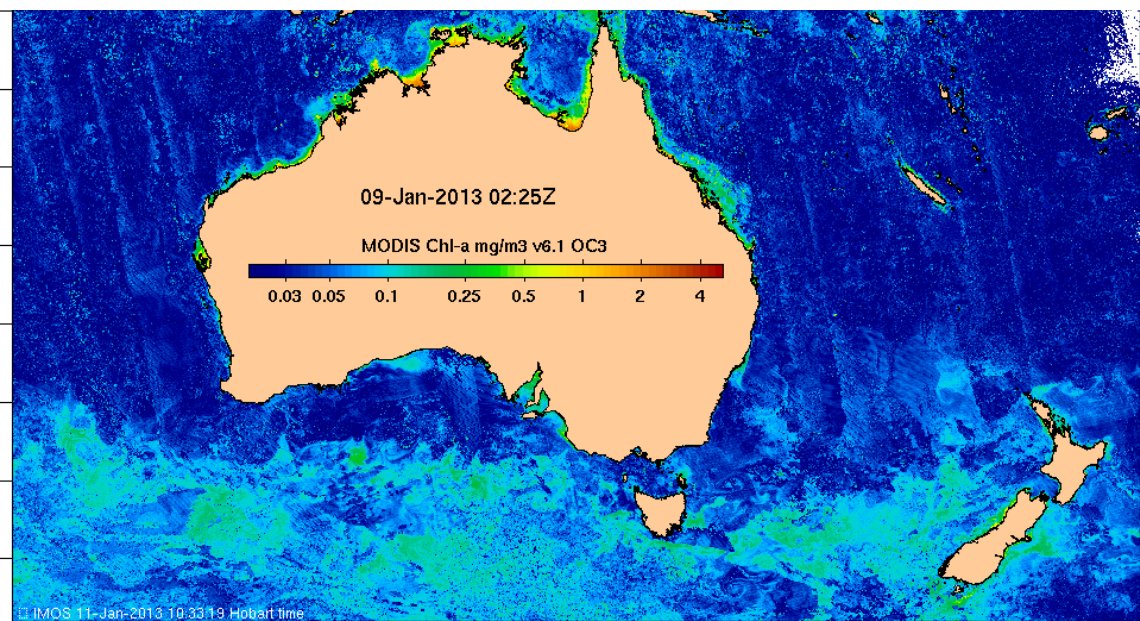


Figure 4: Chlorophyll levels across southern Australia 9th January 2013 (source: IMOS 2013; <http://oceancurrent.imos.org.au>)

The map of the GAB area (Figure 5) shows that the Bight is continuing to gain colour throughout. There is a large area of increased chlorophyll through the central Bight (green patch to south west of the head of the Bight) and this now extends along the entire coastal fringe.

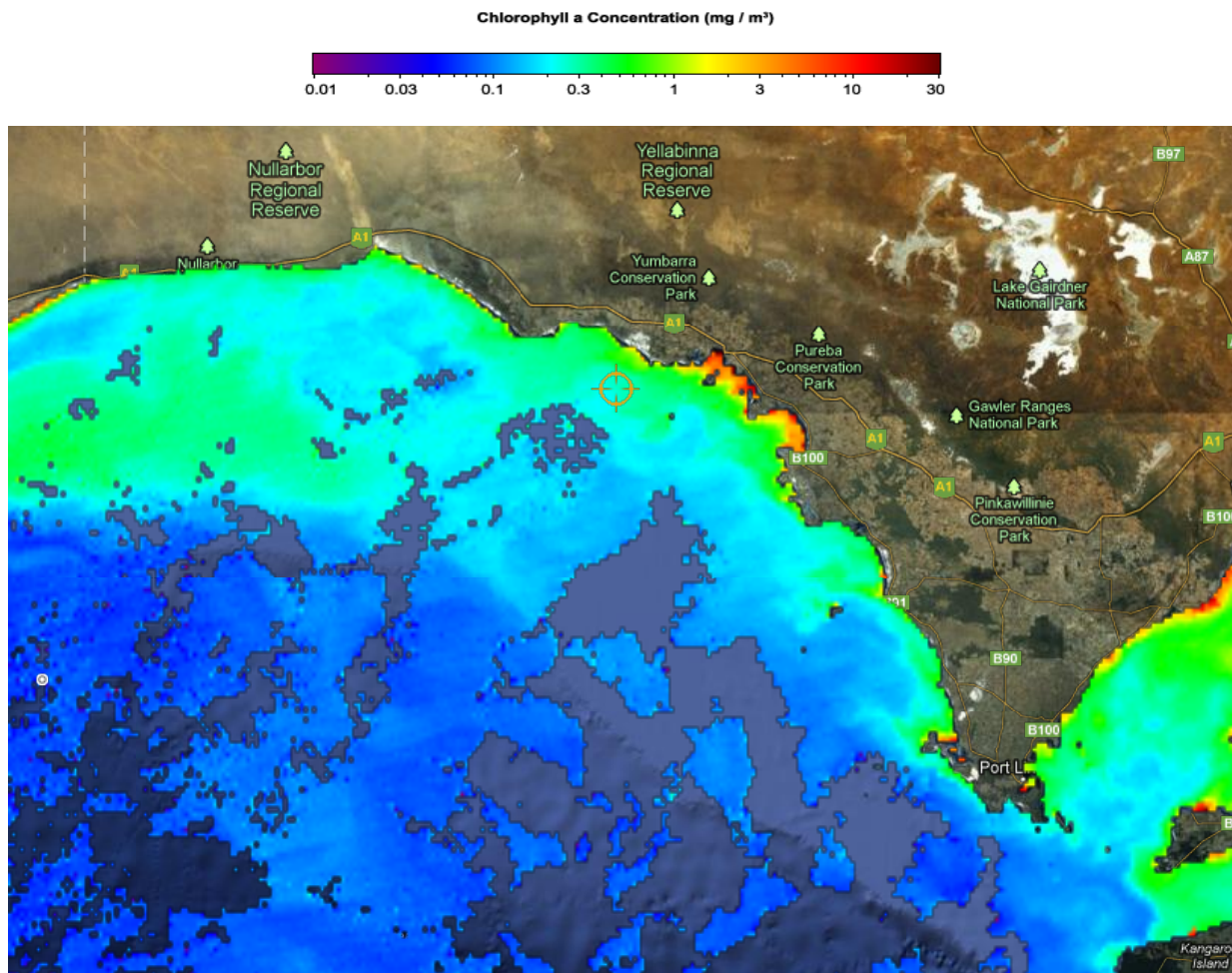


Figure 5: Areas of productivity within the GAB on the 9th January 2013 (source: <http://www.fishtrack.com>).

Climate / Ocean Trends:

The latest model projections for the Indian Ocean are predicting a return to a negative Indian Ocean Dipole (IOD) by around July to August 2013. This means the Indian Ocean warm water mass will be located to the North West of Australia; potentially feeding the Leeuwin Current.

The latest El Nino Southern Oscillation (ENSO) model projections remain neutral through this time. However, the warm water mass of the Pacific Ocean remains on the Australian side of this ocean.

Note the 2011-2012 fishing season had negative IOD and positive ENSO.

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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