

# Climate and Oceanographic Summary, Great Australian Bight 2014 - 13

## Kirsten Rough – 30<sup>th</sup> December 2013

This is the thirteenth 2014-season update of sea surface temperature, ocean currents and chlorophyll distribution in the Great Australian Bight (GAB). If anyone has any questions or further suggestions please call or email (details appear at the end of this document).

### Summary:

The general GAB sea temperatures remain between 17 and 21°C. Cold water from upwellings continues to keep temperatures cooler along the coastal fringe of Eyre Peninsula, than they are along the shelf break.

#### Actual Sea Surface Temperature (SST) this past week:

- Western GAB at 130°E 33°S is 19.4°C
- Central GAB at 133°E 34°S is 18.5°C
- Eastern GAB at 135°E 35°S is 17.7°C

The Leeuwin Current (LC) now extends along the south coast of WA to about Esperance. A warm water mass to the north of Australia may push the current a bit faster through January and into February, but not as strong as occurred through the 2012-fishing season.

The Southern Ocean continues to be the main influence on weather and ocean conditions through this fishing season.

The next full moon is on the 18<sup>th</sup> January.

### GAB Sea Surface Temperature (SST):

An update of the most recent water temperatures through the GAB fishing grounds to the 29<sup>th</sup> December 2013 can be seen in Figure 1 and Figure 2. Temperatures range from 17 to 21°C. The usual image across Australia was not available this week, so a satellite image was sourced through IMOS - this clearly shows the extent of the cold upwelling water along the west coast of Eyre Peninsula (Figure 1)

The SST at the specific sites routinely monitored across the fishing grounds, on the 29<sup>th</sup> December are shown in Table 1. Note these are from a different satellite source to the one usually accessed for this information - there may be some difference between the two, will check this when both are next available.

**Table 1: Sea Surface Temperatures at specific locations along the shelf and shelf break of the Great Australian Bight, co-ordinates as degrees, minutes, seconds (FishTrack 2013).**

130°E 33°S is 19.4°C	131°E 32°S is 20.1°C	131°E 33°S is 19.1°C	132°E 33°30'S is 18.8°C
133°E 34°S is 18.5°C	134°E 34°30'S is 17.7°C	135°E 35°S is 17.7°C	136°E 35°30'S is 17.6°C

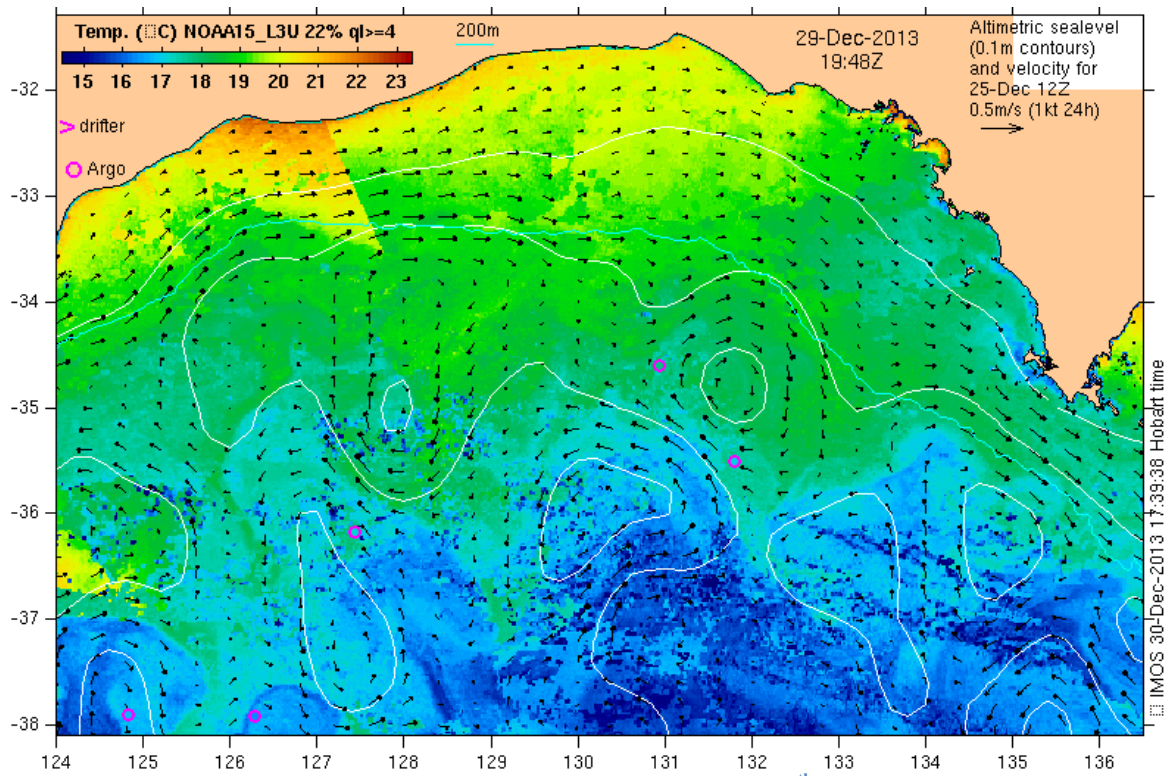


Figure 1: Sea Surface Temperature and currents across the Bight on the 29<sup>th</sup> December 2013 (source: IMOS 2013).

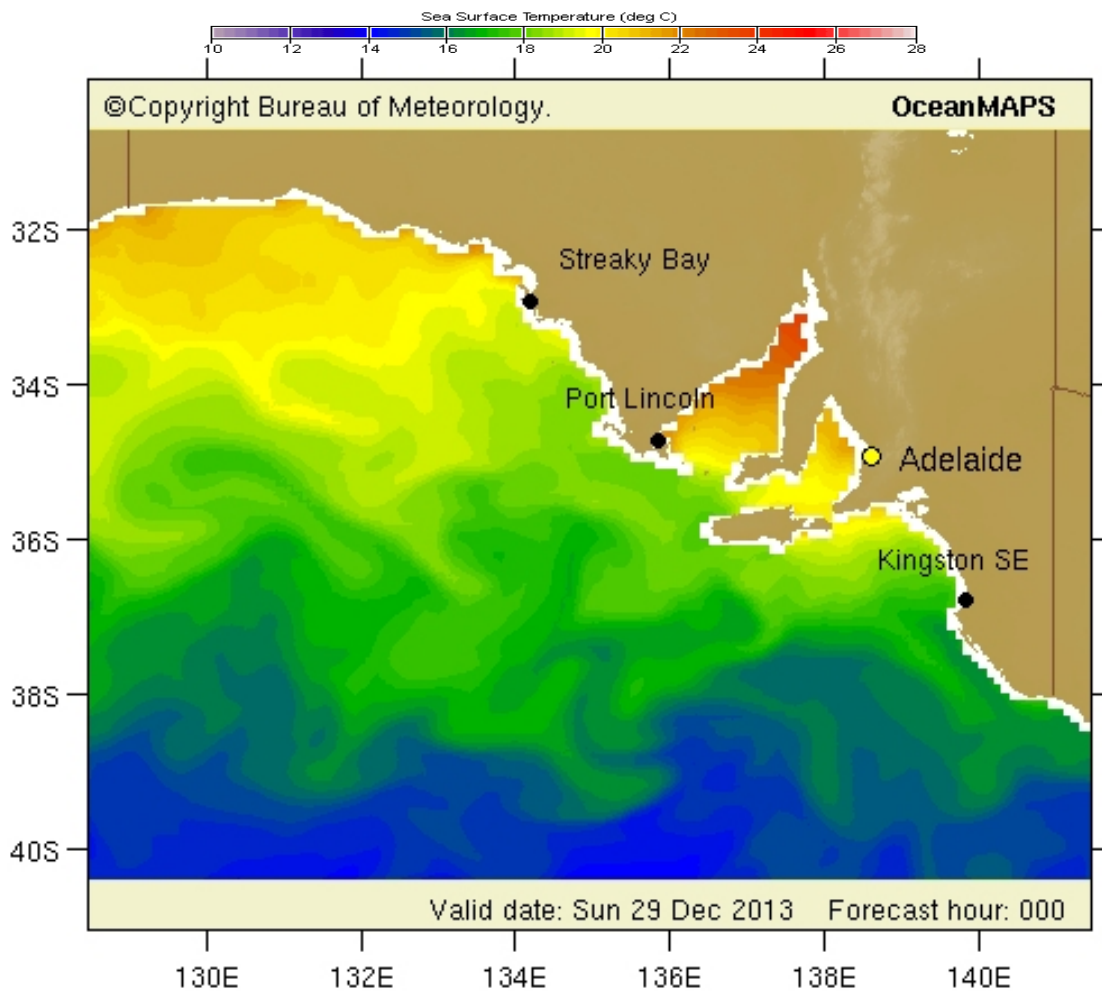


Figure 2: South Australian sea surface temperature from the Bureau of Meteorology website for the 3 days to the 29<sup>th</sup> December 2013 (source: Bureau of Meteorology 2013; <http://www.bom.gov.au>).

### **Leeuwin Current Temperature:**

Sea surface temperatures and ocean currents around the Western Australian coastline for the 25<sup>th</sup> December 2012 and 2013 are shown below (Figure 3). The actual SST off the coast of North West Cape (Exmouth) is 28.5°C, out from Cape Inscription (Shark Bay) is 23.6°C, out from Cape Leeuwin (Augusta) is 20.5°C and out from Esperance is 19.9°C (FishTrack 2013). Again, note that these temperatures are from a different satellite source than used for previous updates.

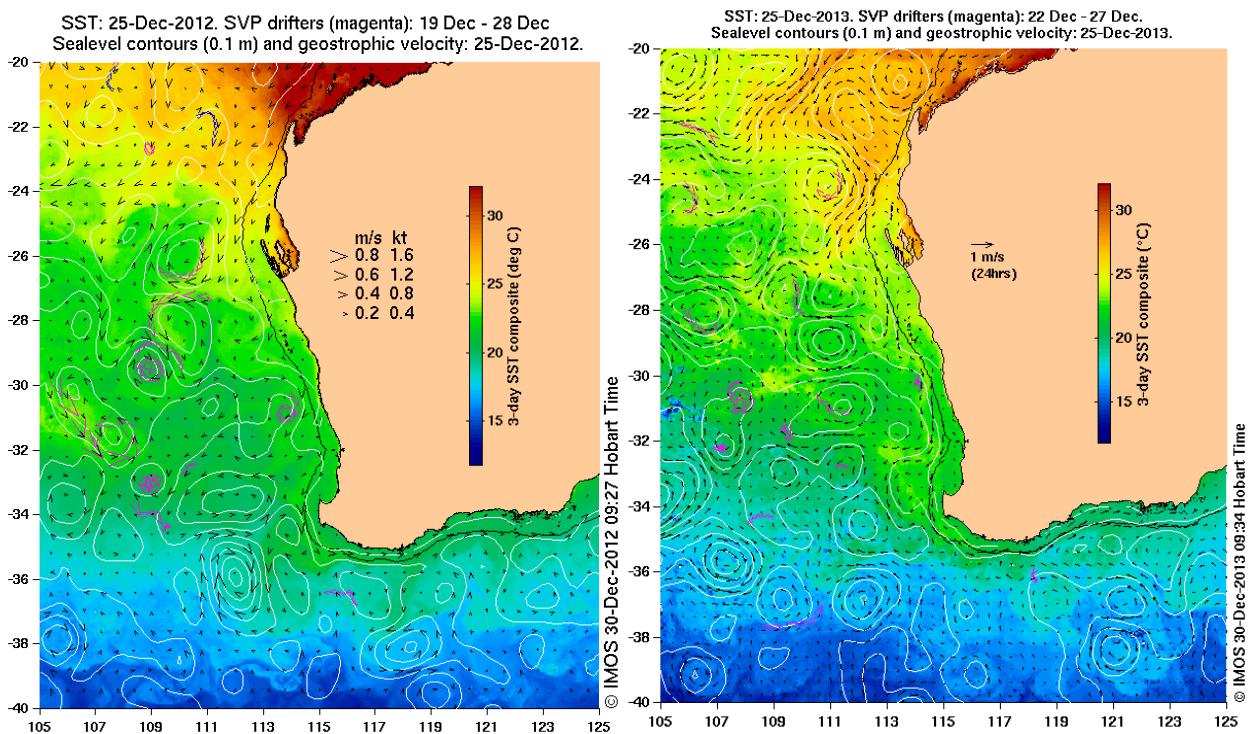


Figure 3: A comparison of the Leeuwin Current sea surface temperature and current speed and direction for the 25<sup>th</sup> December 2012 (left), 2013 (right) (Source: IMOS 2013; <http://www.oceancurrent.imos.org.au>).

### **Chlorophyll / Productivity:**

A clear satellite image of the GAB was taken on the 29<sup>th</sup> December (Figure 4). Productivity is highest along the coastal fringe, and the area surrounding the Coffin Bay Peninsula - where the cooler water from the upwelling is located. There is also a large band of high productivity on the shelf, extending from the West Australian border right through to Elliston. Clearer water is feeding in along and south of the shelf break.

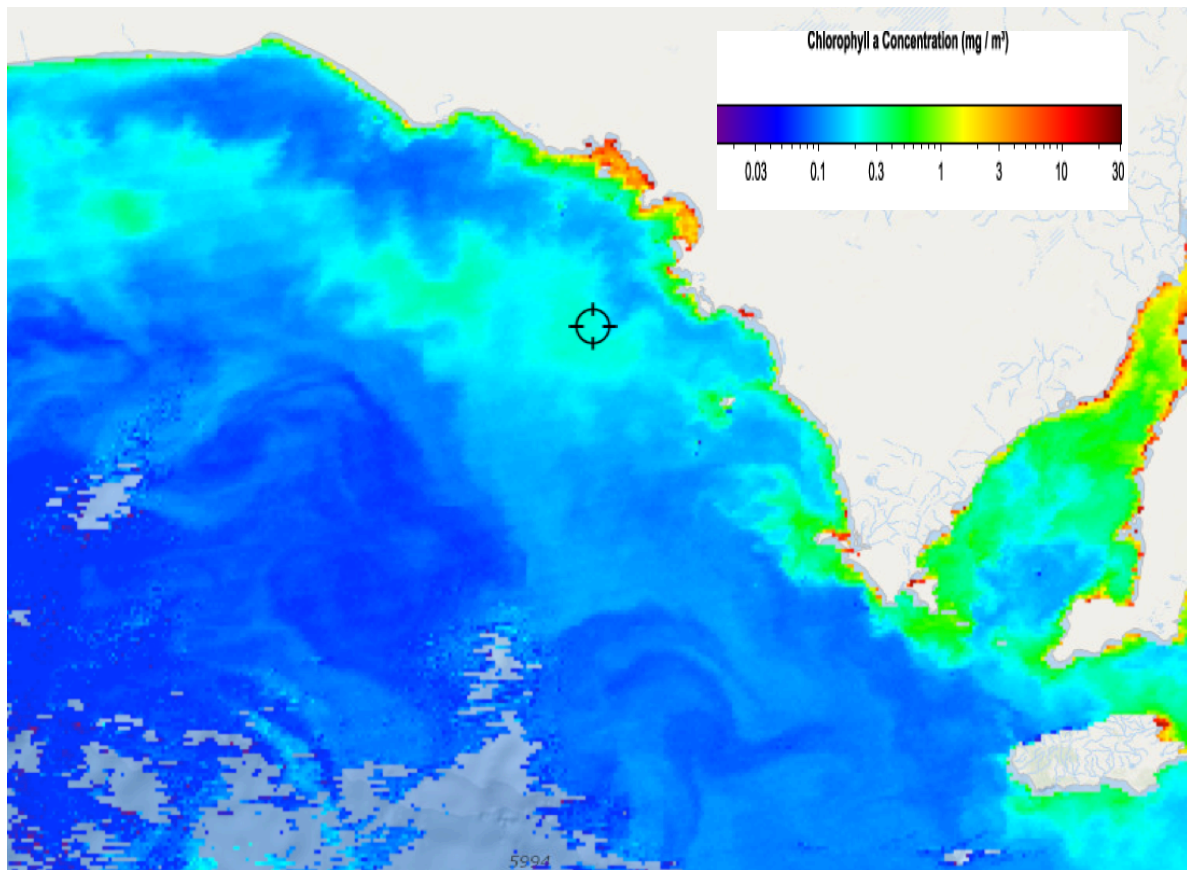


Figure 4: Areas of productivity within the GAB on the 29<sup>th</sup> December 2013 (source: <http://www.fishtrack.com>).

### **Climate and Ocean Trends:**

The Pacific Ocean climate system continues in the “neutral” phase, but warm water persists on the Australian side. Over the past 7 days a large pool of warm water has accumulated along the north coast of Australia - a very similar situation to December 2012, but this pool is not as large as December 2011 (coming into the 2012-fishing season). This situation of the Pacific Ocean at the moment is likely to increase the strength of the Leeuwin Current through January and into February, but not to the same extent that occurred in the 2012-fishing season.

The warmest water masses of the Indian Ocean remain on the African side, however there is an area out from central WA that is about 1 degree warmer than the longer-term average for that location. This is to the north of the location that influenced conditions through the last fishing season.

The Southern Ocean also has some water masses that are about 1 degree warmer than the longer-term average; these are located to the southwest of WA. At least one of these water masses is likely to move into the GAB area through this fishing season. Will continue reporting on the progress of this water mass.

#### **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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