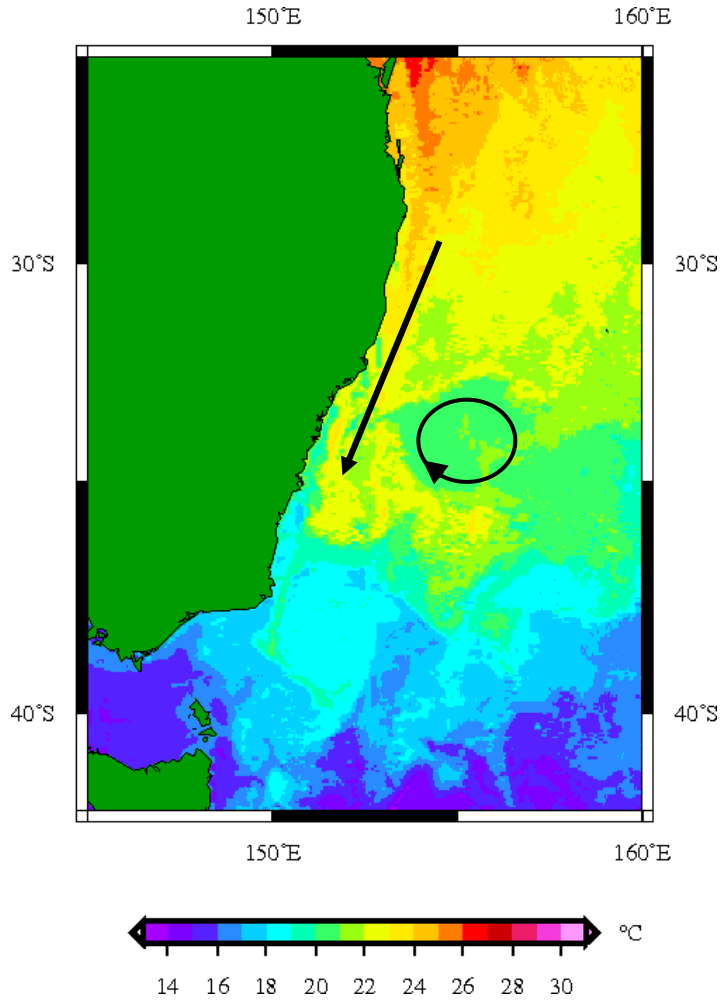
Weekly image: Week 52, 2006

The East-Australian Current



Sea surface temperature observed at December 16, 2006.

The image is part of the Satellite Eye for Galathea 3 project in which it is possible to retrieve new images showing the sea surface temperature in the areas visited by the Galathea 3 expedition.

What can we see?

The figure shows where warm and cool water masses are meeting east of Australia in the East Australian Current. This current is a western boundary current that - similarly to the Gulf Stream - is created from large wind systems. The East Australian Current transports roughly 15 billion cubic meters per second through a vertical cross section near the coast at 30º southern latitude. This transport is somewhat smaller than the Gulf Stream that in some places transports more than 100 billion cubic meters per second.

http:www.satelliteeye.dk

As you can see in the image the warm water flows toward the south along the East coast of Australia and leaves the coast near 34º degree southern latitude. The border between the cool and warm water is called the Tasman Front and it is located between Australia and Tasmania. At times it is hard to locate the front precisely as there is a high degree of variability at the front due to e.g. eddies. The green area near 35º southern latitude and 155º eastern longitude is indeed an eddy that is a couple of degrees cooler than the surrounding water and therefore turns clockwise.

Technical information:

The image is constructed from satellite observations from several different satellites. The thermal infrared observations are limited by clouds and the passive microwave observations have a relatively low spatial resolution. It is therefore necessary to perform an interpolation of the observations before one obtains a sea surface temperature with high spatial resolution and without gaps (missing grid cells). DMI has developed a method that combines satellite observations from different satellites observed at different times, and applies statistics to calculate a best estimate of the sea surface temperature at a resolution of 5 km for the entire area.