South Brazil Shelf

Overview

The South Brazil Shelf extends from central Brazil (15°S, 38°W) down to end of Uruguay (35°S, 55°W). The area contains a continental shelf reaching up to 200 km and is influenced by southern branch of the Brazil Current. In addition to internal wave activity, the region experiences relatively intense shelf edge and wind-driven coastal upwellings [Hubold, 1980a,b; Bakun and Parrish, 1991], microtides and outflow of the Patos and La Plata estuaries [LME 2004].

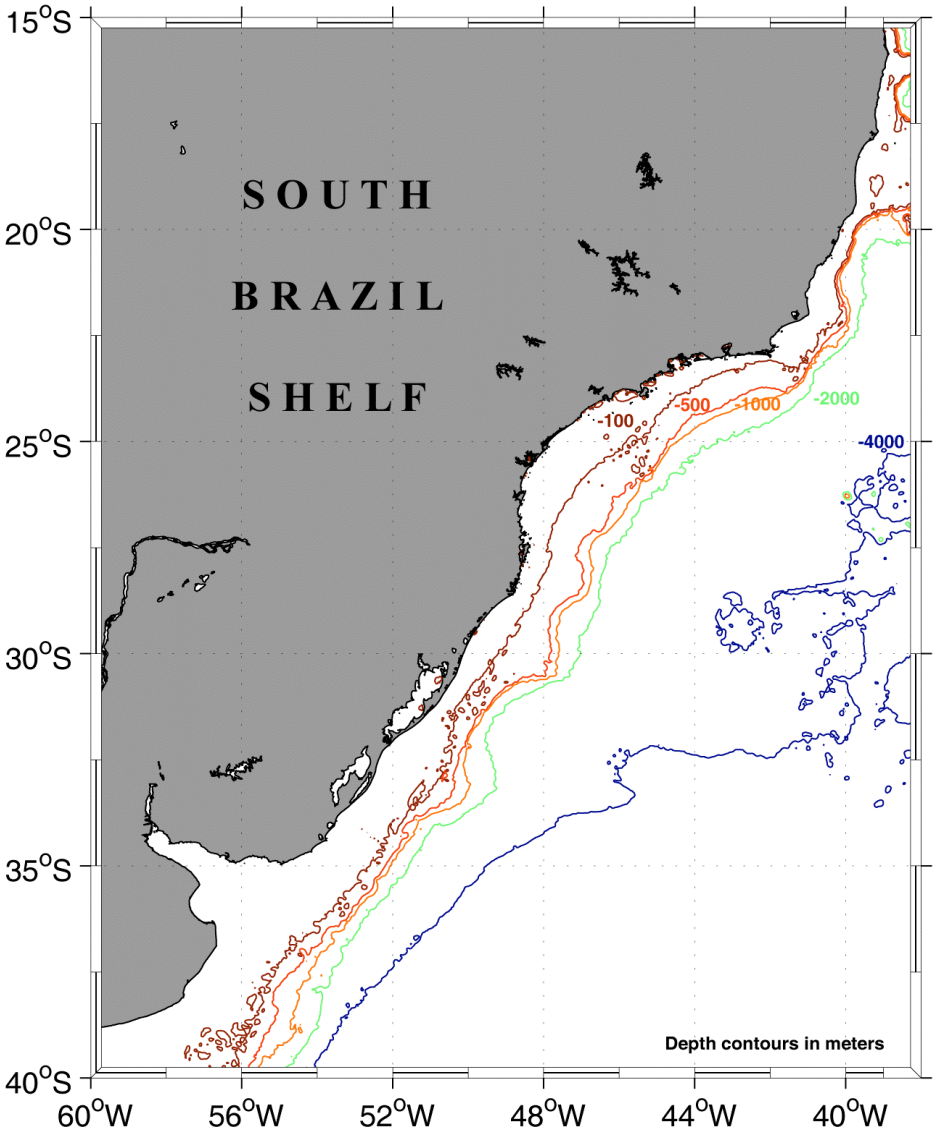


Figure 1. Bathymetry of the South Brazil Shelf. [Smith and Sandwell, 1997]

Observations

There has been very little scientific research on the internal waves on the Southeast coast of Brazil. Satellite imagery shows primarily shoreward propagating, but a few along shore propagating internal wave packets. The number and geographic distribution of packets indicated a variety of source locations along the shelf. The internal wave characteristics appear similar to continental shelf break generated waves observed elsewhere (e.g. New York Bight, Southwest Africa)

Table 1 presents the months when imagery with wave signatures has been acquired.

Table 1 - Months when internal waves have been observed on the South Brazil Shelf
(Numbers indicate unique dates in that month when waves have been noted)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2	2	2						1	3	2	2

References

Large Marine Ecosystems of the World: LME #15: South Brazil Shelf; January 2004 http://na.nefsc.noaa.gov/lme/text/lme15.htm

Bakun, A.; Parrish, R.H., 1991: Comparative studies of coastal pelagic fish reproductive habitats: the anchovy (Engraulis anchoita) of the southwestern Atlantic. ICES J. Mar. Sci., 48: 343-361.

Hubold, G. 1980 a: Hydrography and plankton off southern Brazil and Rio de la Plata, August - November 1977. Atlântica, 4: 1-22.

Hubold, G. 1980 b: Second report on hydrography and plankton off southern Brazil and Rio de la Plata, Autumn cruise: April - June 1978. Atlântica, 4: 23-42.

Smith, W. H. F., and D. T. Sandwell, 1997; Global seafloor topography from satellite altimetry and ship depth soundings, *Science*, v. **277**, 1957-1962 http://topex.ucsd.edu/marine_topo/mar_topo.html

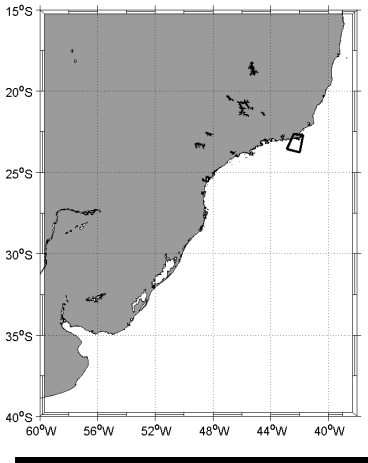


Figure 2. Astronaut photograph (STS109-725-34) over the South Brazil Shelf acquired in March 2002. The image shows well-defined packets of waves propagating shoreward from slightly different directions. Imaged area is roughly 40 km x 60 km.

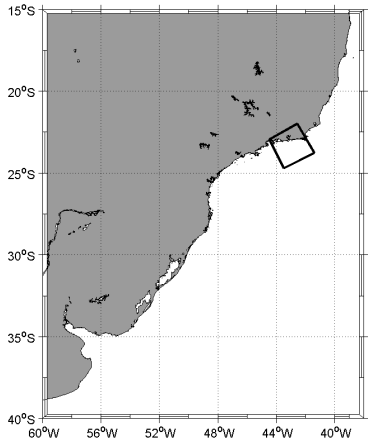
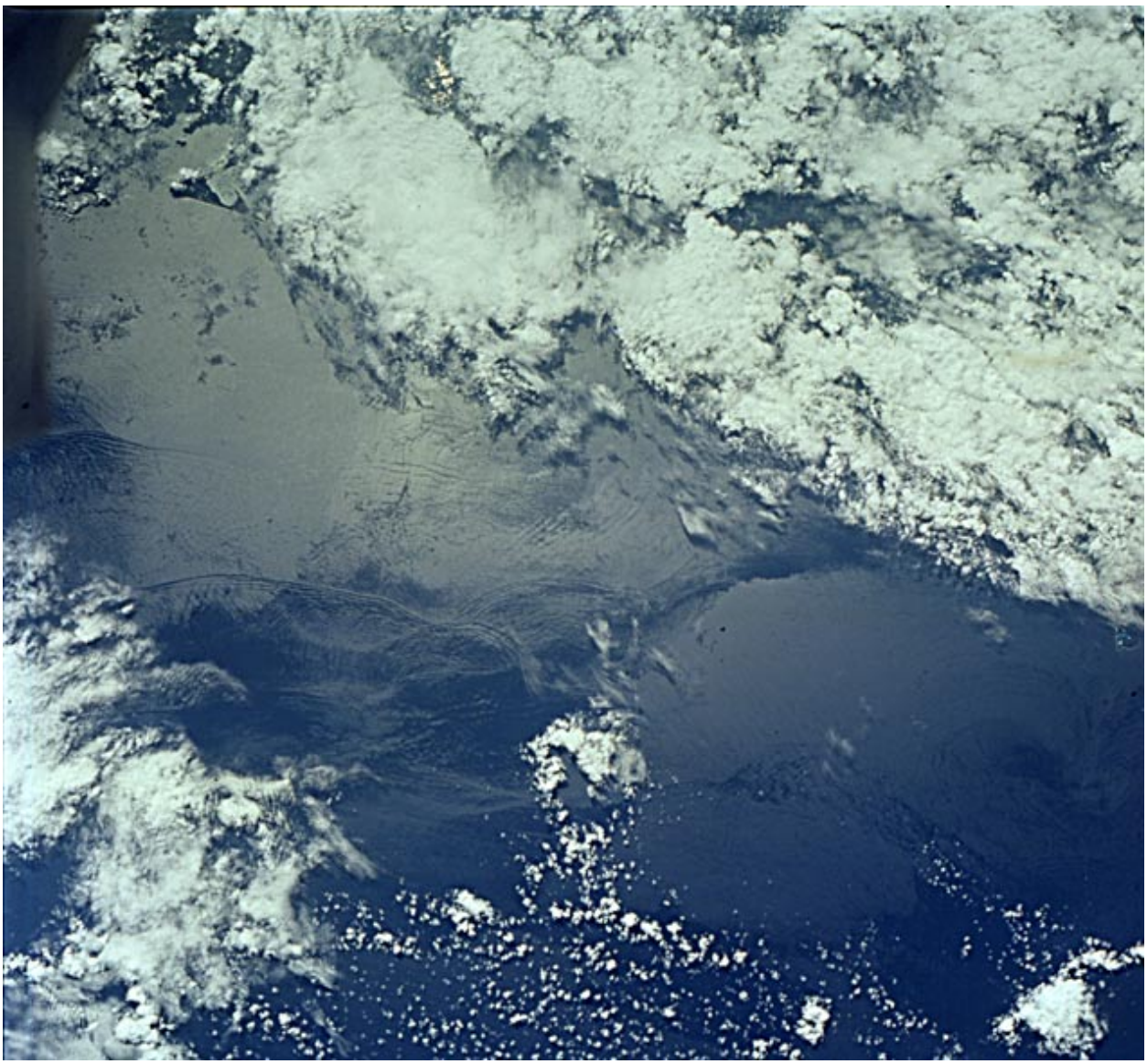


Figure 3. Astronaut photograph (NM23-713-280) acquired on 17 March 1997 at an unknown time. The image shows several well-defined signatures of internal wave packets propagating shoreward. Imaged area is 250 x 200 km.



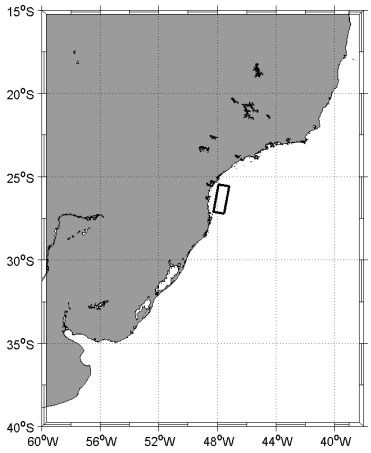
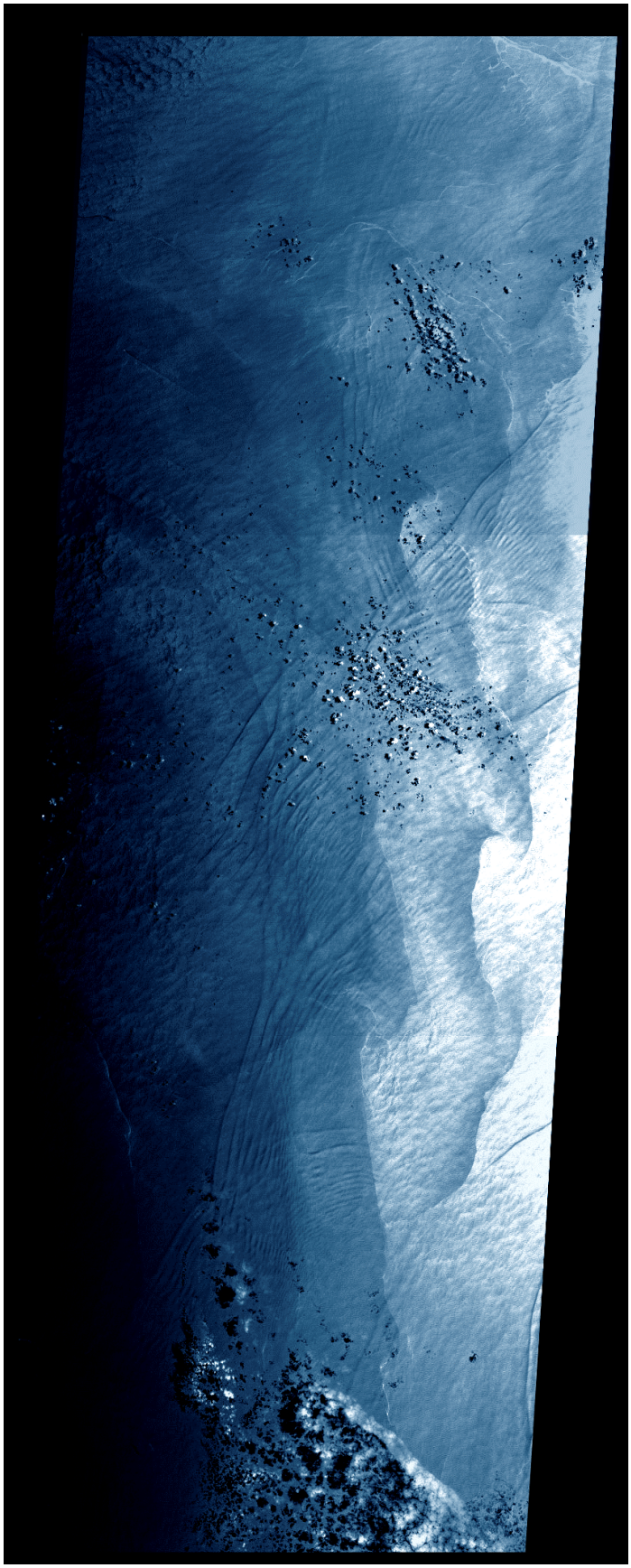


Figure 4. ASTER false-color VNIR image from the South Brazil Shelf acquired on 2 January 2001 at 1342 UTC. The image shows the signature of several internal wave packets propagating shoreward. The packet interaction and distribution indicate that the waves are generated at a variety of places along the shelf break. Imaged area is 60 km x 180 km.



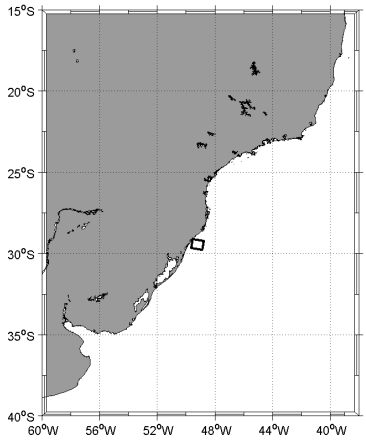
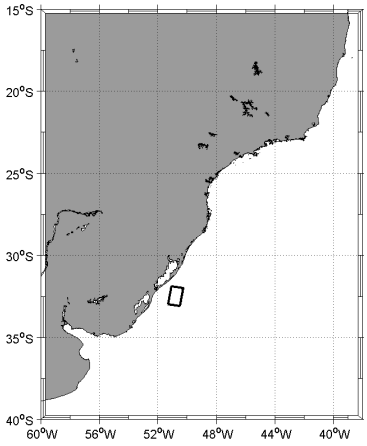


Figure 5. ASTER false-color VNIR image over a portion of the southeast coast of Brazil acquired on 30 October 2000 at 1343 UTC. The image shows the signature of an internal wave propagating near shore. The dark area could be associated with upwelling. Imaged area is 60 km x 60 km.



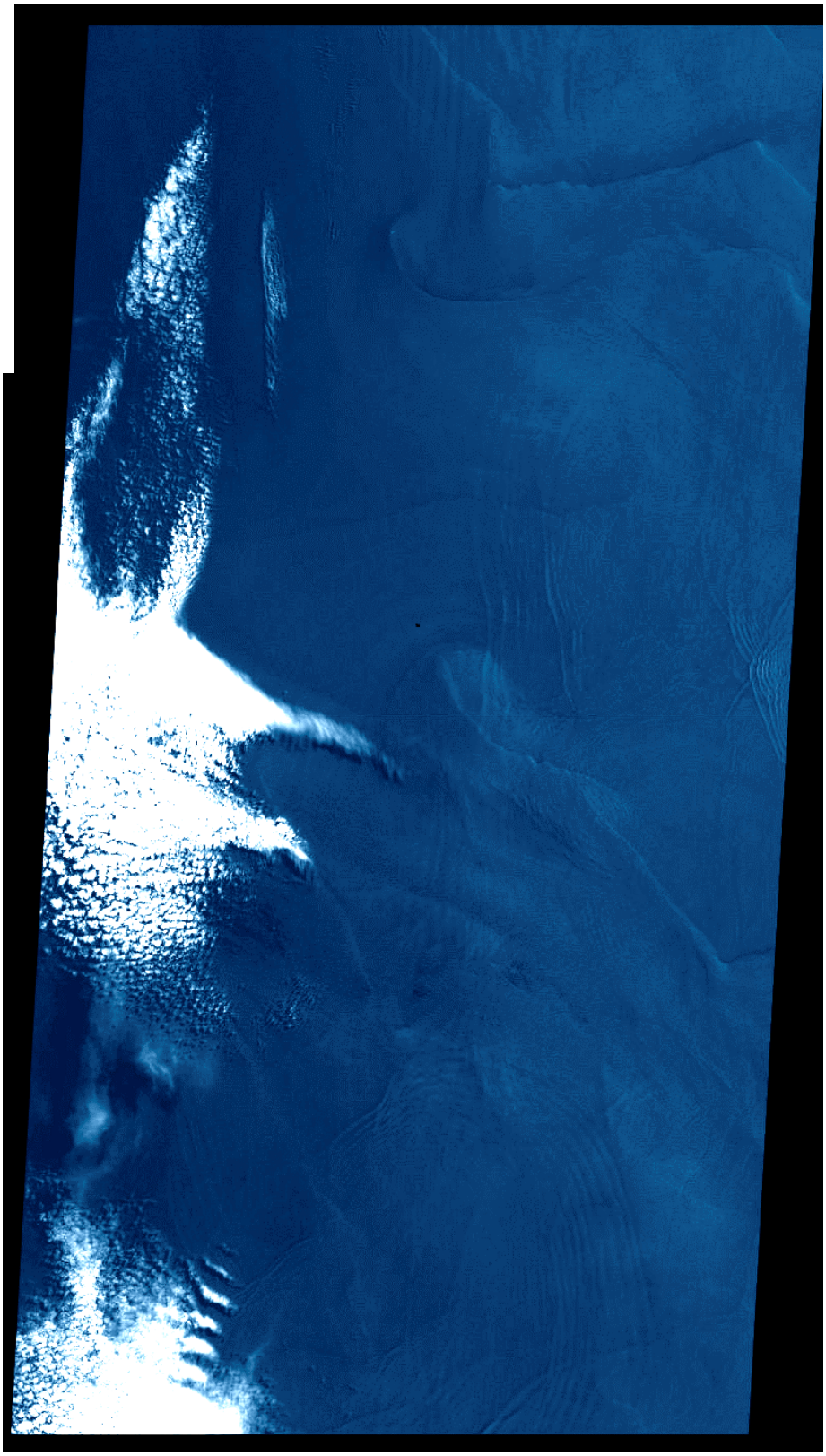


Figure 6. ASTER false-color VNIR image over the South Brazil Shelf acquired on 22 November 2000 at 1350 UTC. The image shows the signature of several shoreward propagating internal wave packets and a single well-defined packet propagating along shore. Imaged area is approximately 60 km x 120 km.

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