

Northwest Africa

Overview

Southwest Africa covers approximately 2000 km of coast between Western Sahara (24°N, 16°W) to northern tip of Morocco at the Strait of Gibraltar (36°N, 6°W) (Figure 1). A significant continental shelf exists along the entire section of the African coast. The region shows major upwelling and is influenced by the Canary Current, which is strongest near the coast and becoming progressively weaker offshore. [LME 2004].

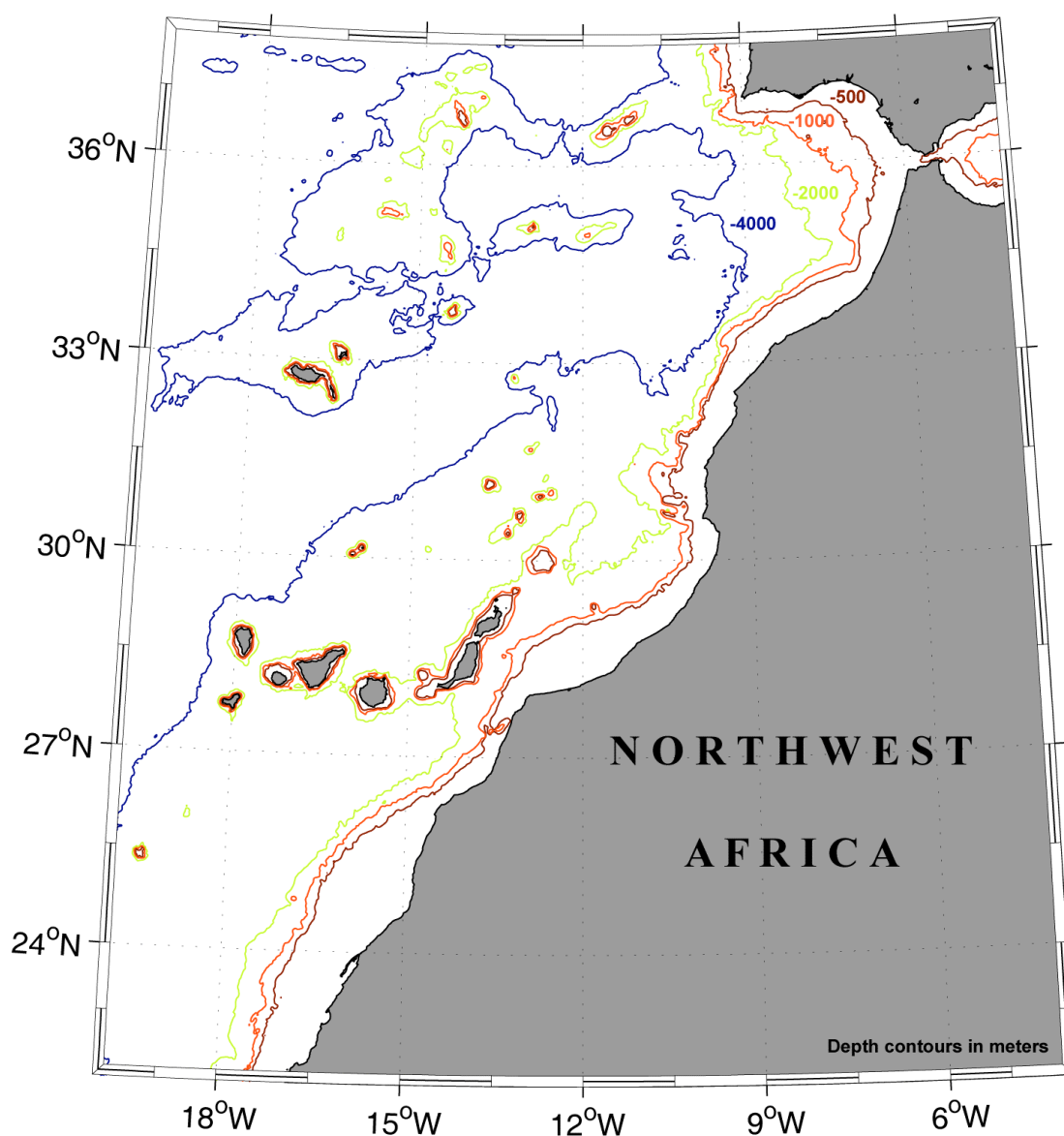


Figure 1. Bathymetry of Northwest Africa [Smith and Sandwell, 1997]

Observations

There has been some scientific study of internal waves along the Northwest Coast of Africa [see Vlasenko et al. 1996]. Satellite imagery shows wave signatures that are characteristic of continental shelf generated internal waves that occur along other coasts in the northern Atlantic (New York, Bight, Iberian Peninsula) and those generated along Southwest Africa. The waves are expected to occur only during the summer and early fall (June through September) when a well-developed thermocline is present. Table 1 shows the months of the year when internal wave observations have been made.

Table 1 - Months when internal waves have been observed around Northwest Africa
 (Numbers indicate unique dates in that month when waves have been noted)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1			1	2	1	4	4	4	1	1	

References

- Large Marine Ecosystems of the World: LME #27: Canary Current, January 2004
<http://na.nefsc.noaa.gov/lme/text/lme27.htm>
- 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
- Vlasenko, V.L., V.A. Ivanov, I.G. Krasin and A.D. Lisichenok, 1996, Study of intensive internal waves in the shelf zone of Morocco, *Physical Oceanography*, Volume 7, No. 4, pp. 281- 298,

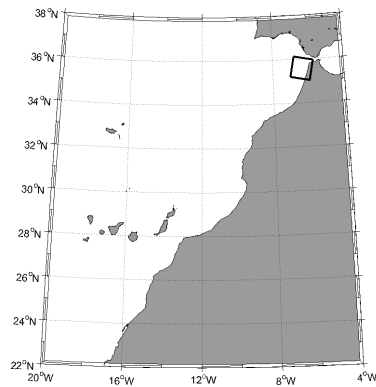
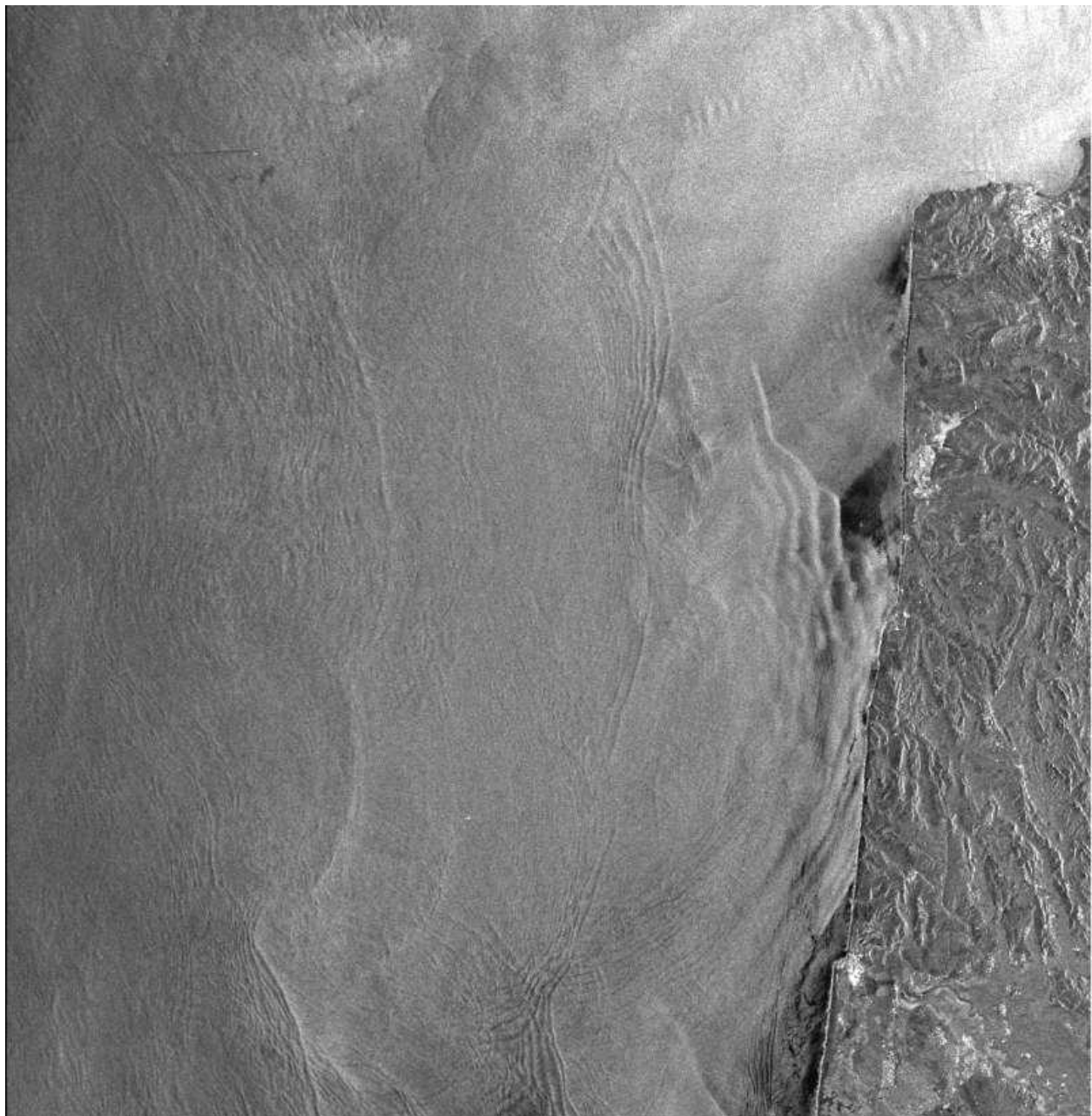


Figure 2. ERS-1 (C-band, VV) SAR image of the Morocco Coast acquired on 11 July 1994 at 1107 UTC (orbit 15618, frame 2889). The image shows the signature of two tidal cycles of internal wave packets propagating toward the coast. Interpacket separations are approximately 25 km. Imaged area is 100 km x 100 km. ©ESA 1994 [Image courtesy of The Tropical and Subtropical Ocean Viewed by ERS SAR <http://www.ifm.uni-hamburg.de/ers-sar/>]



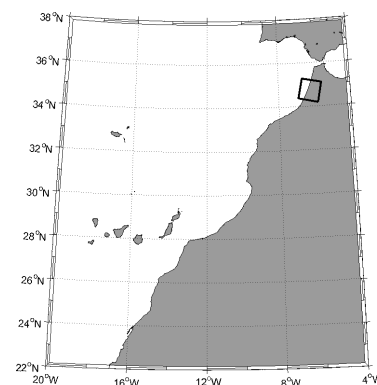
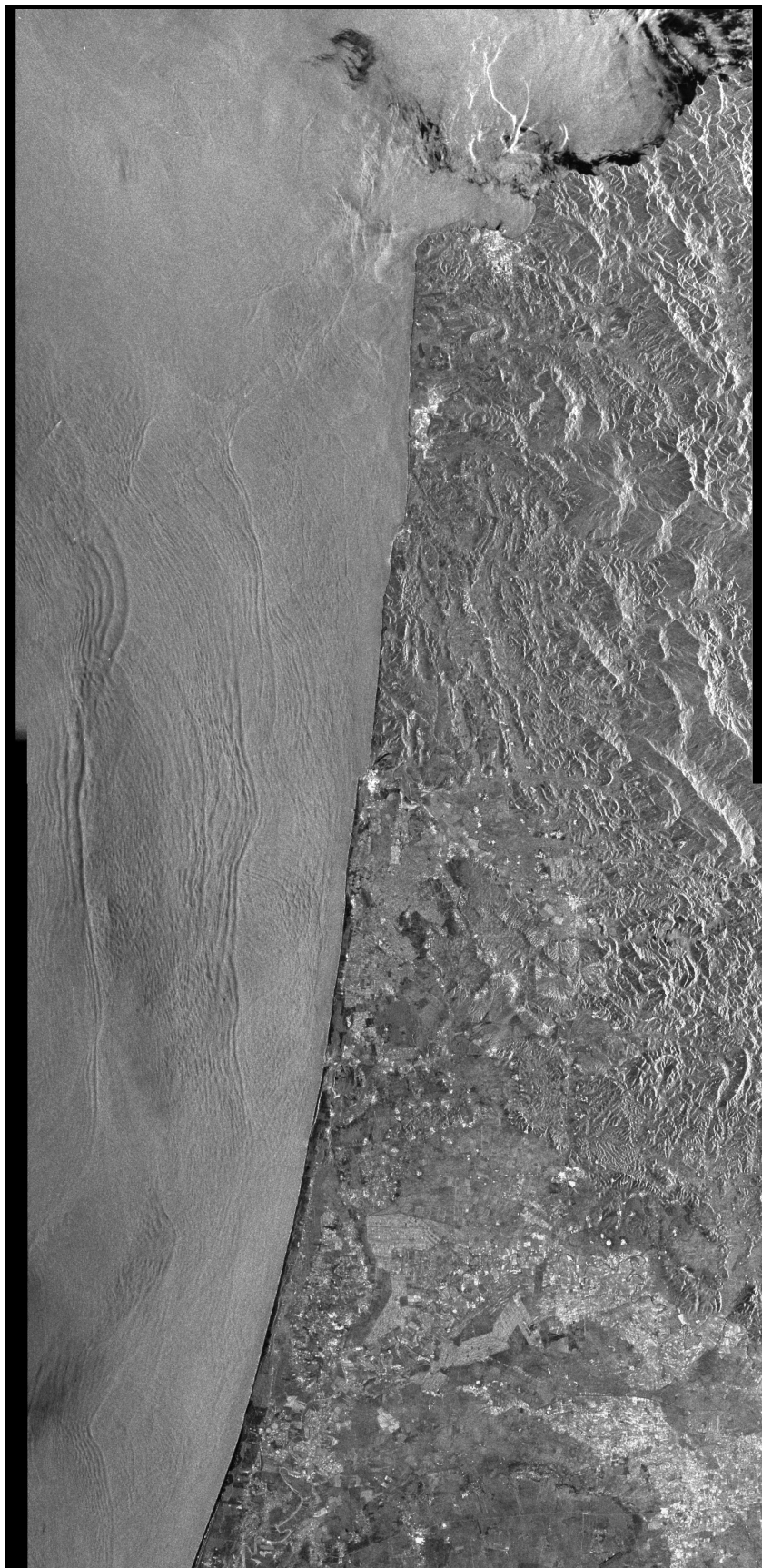


Figure 3. ERS-1 (C-Band VV) SAR image of continental shelf solitons off the west coast of Morocco acquired on 25 September 1992 at 1105 UTC (orbit 6251, frame 2889, 2907). The internal wave signatures are very similar to those observed off the west coast of Portugal. Imaged area is 100 km x 200 km. ©ESA 1992 [Image courtesy of The Tropical and Subtropical Ocean Viewed by ERS SAR <http://www.ifm.uni-hamburg.de/ers-sar/>]

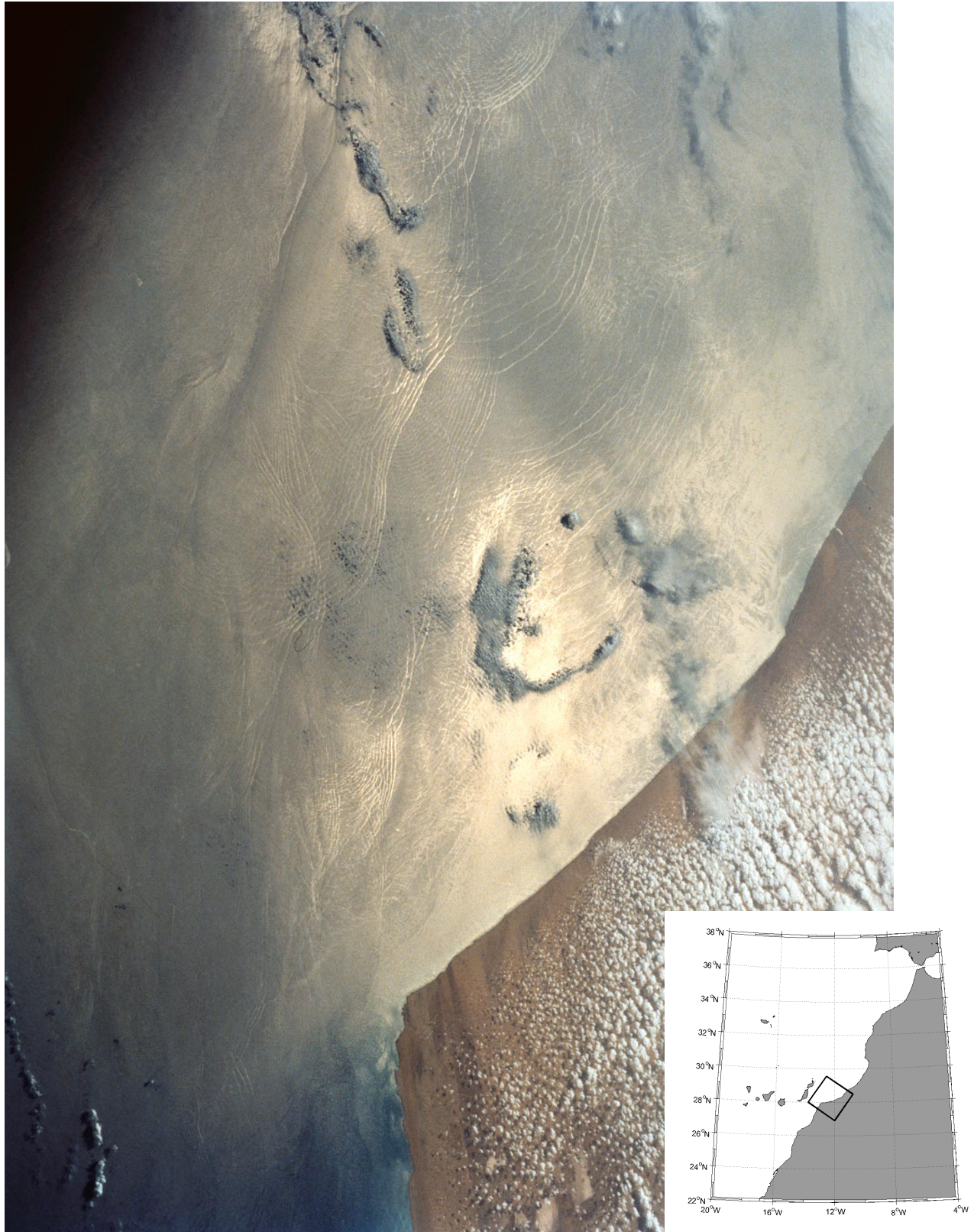


Figure 4. Astronaut Photograph (STS046-81-70) acquired on 2 August 1992 at 0925 UTC. The image shows internal wave activity off the southwest coast of Morocco. Imaged area is approximately 150 km x 200 km [Image courtesy of Earth Sciences and Image Analysis Laboratory, NASA Johnson Space Center (<http://eol.jsc.nasa.gov>)]

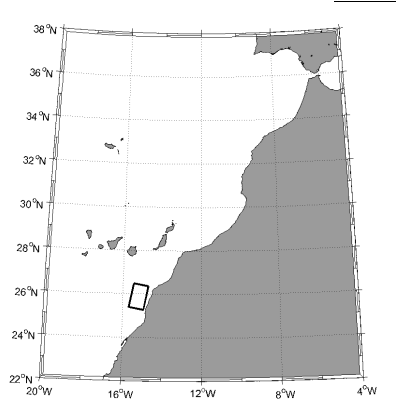


Figure 5. ASTER false-color VNIR image of internal waves off the coast of Western Sahara acquired on 12 April 2003 at 1148 UTC. Current signatures are also visible. Imaged area is 60 km x 120 km.

