# West Central Africa

#### Overview

West Central Africa covers approximately 5500 km of coast between Western Sahara (22°N, 17°W) and Angola (5°S, 12°E) (Figure 1). The continental shelf in the region varies significantly in width. The region is influenced by the eastward flow of the Guinea Current. Upwelling off the coasts of Ghana and Cote d'Ivoire occurs seasonally, with a weak upwelling around January to March, and intense upwelling from July to September [LME, 2004].



#### **Observations**

There has been no scientific study of internal waves along West Central Africa. Satellite imagery shows internal wave signatures along the parts of the coast where the continental shelf is wider than approximately 40 km. The signatures suggest the waves are characteristic of internal waves that occur in other continental shelf regions of the Atlantic (New York Bight, Southwest Africa). Since West Central Africa borders the equator, wave occurrences are expected to take place year round. The occurrence frequency may change with the variation in seasonal upwelling.

Table 1 shows the months of the year when internal wave observations have been made.

 Table 1 - Months when internal waves have been observed in the Atlantic along the West Central African coast.

 (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	1			2	1	4	1	

### References

Large Marine Ecosystems of the World: LME 28: Guinea Current; January 2004, http://na.nefsc.noaa.gov/lme/text/lme28.htm

Smith, W. H. F., and D. T. Sandwell, Global seafloor topography from satellite altimetry and ship depth soundings, Science, v. 277, p. 1957-1962, 26 Sept., 1997. http://topex.ucsd.edu/marine\_topo/mar\_topo.html

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An Atlas of Oceanic Internal Solitary Waves (February 2004) by Global Ocean Associates Prepared for Office of Naval Research – Code 322 PO



Figure 2. MODIS (Bands 1,3,4) 250-m resolution visible image near the coast of Mauritania acquired on 15 August 2003 at 1420 UTC. Imaged area is approximately 100 km x 210 km.





Figure 3. ASTER false color VNIR image near the coast of Senegal acquired on 3 September 2000 at 1200 UTC. The image shows the signature of very fine scale internal waves propagating shoreward. Imaged area is 60 km x 60 km.





Figure 4. ASTER false-color VNIR image near the coast of Guinea-Bissau acquired on 30 March 2001 at 1156 UTC. Imaged area is 60 km x 60 km.





Figure 5. Astronaut photograph (STS39-610-30) over Sherbo Island near the coast of Sierra Leone acquired on 30 April 1991 at 1627 UTC Imaged area is approximately 80 km x 60 km. [Image courtesy of Earth Sciences and Image Analysis Laboratory, NASA Johnson Space Center (http://eol.jsc.nasa.gov)]





Figure 6. Astronaut photograph (STS41-85-99) near the cost of Liberia acquired in October 1990. Imaged area is approximately 60 km x 40 km. [Image courtesy of Earth Sciences and Image Analysis Laboratory, NASA Johnson Space Center (http://eol.jsc.nasa.gov)]



Figure 7. Astronaut photograph (STS041-82-9) along the Ivory Coast acquired on 9 October 1990 at 1057 UTC. Imaged area is approximately 65 km x 40 km. [Image courtesy of Earth Sciences and Image Analysis Laboratory, NASA Johnson Space Center (http://eol.jsc.nasa.gov)]



20°N



Figure 8. ASTER false color VNIR image near the coast of Ghana acquired on 15 August 2000 at 1053 UTC. Imaged area is  $60 \text{ km} \times 60 \text{ km}$ .





20°N

15°N

10°N

5°N

**0**°

5°S 18°W

2

12°W

6<sup>0</sup>W



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