Technical Announcement

U. S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico OCS Region

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Full-Water Column Current Observations in the Western Gulf of Mexico

OCS Study BOEMRE 2010-044

The Bureau of Ocean Energy Management (BOEM), Gulf of Mexico OCS Region, announces the availability of a new study report, *Full-Water Column Current Observations in the Western Gulf of Mexico*.

The Western Gulf of Mexico owes a large fraction of its circulation variability to the translation of Loop Current eddies (LCE's). These eddies are warm-core anticyclonic features detached from the Loop Current in the eastern Gulf of Mexico. The LCE's have large diameters (~ 200; 124 mi km) and their size and swirl motion generally diminishes with depth remaining coherent down to a water depth of 800-1,000 m (2,625-3,281 ft). The LCE's trek westward or southwestward at rates of 2-5 km/day (1-3 mi/day) and end in a collision against the Gulf's western shelf/slope. As a result of satellite-based measurements, the amount of information at the surface is quite ample, but there is a lack of deepwater observations of these eddies as they interact with the shelf. To fill this data gap and learn more about the Gulf circulation, an experiment was carried out in Mexican waters in the northwestern Gulf of Mexico. From August 2004 to November 2005, direct current measurements over 14 months off the coast of Tamaulipas capture the evolution of currents and temperatures as several eddies transit across a five mooring array. Three of these moorings are located at 500-, 2,000-, and 3,500-m (1,640-, 6,562-, and 11,483-ft) bottom depth and the remaining two to the southwest along the 2,000-m isobath resembling a tilted "T." The main objectives of this experiment were to determine mean currents and temperatures, to assess their principal scales of variability, and to measure and document the breakup and ultimate dissipation of LCE's during their collision against the western shelf of the Gulf of Mexico.

This report is available only in compact disc format from the Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, at a charge of $15.00, by referencing OCS Study BOEMRE 2010-044. The report may be downloaded from the BOEM website through the Environmental Studies Program Information System (ESPIS). You will be able to obtain this report also from the National Technical Information Service in the near future. Here are the addresses. You may also inspect copies at selected Federal Depository Libraries.

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