



Technical Announcement

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

Date: November 2014

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Current-Topography Interaction and Its Influence on Water Quality and Contaminant Transport over Shelf-Edge Banks

[OCS Study BOEM 2014-771](#)

The Bureau of Ocean Energy Management (BOEM), Gulf of Mexico OCS, announces the availability of a new study report, *Current-Topography Interaction and Its Influence on Water Quality and Contaminant Transport over Shelf-Edge Banks*.

The Flower Garden Banks National Marine Sanctuary, managed by the National Oceanic and Atmospheric Administration, is located on the Texas-Louisiana continental shelf in the northwestern Gulf of Mexico. The banks are large enough to alter the circulation on the Outer Continental Shelf (OCS), and the interaction between flows and topography gives rise to hydrodynamic processes that impact ecological conditions around the banks.

To better understand the hydrodynamic processes controlling material transport on reefs and to provide marine managers with information, an extensive data set of currents, hydrography, microstructure, and pressure data were acquired at the East Flower Garden Bank (EFGB). The topographic interactions can substantially modify advection and transport of water and matter over reef communities. Unlike near shore reefs of shallower waters, which are wave-dominated and strongly influenced by runoff, the ecology of shelf-edge bank communities seems to be dominated by current-topography interactions.

The resulting flows provide an energy subsidy for nutrient uptake, waste removal, larvae dispersal, also and regulate the physical environment that allows these communities to grow. Our field observations, some of which are unique to this study, greatly expand our knowledge and understanding of the currents and current interactions with the topography at the EFGB, and the observed processes may be applicable to other banks and topographic features, in general. Better understanding of the hydrodynamic processes that control material transport on reefs were obtained from analyses of these data and can provide information to marine managers to aide in the management of coral reefs as natural resources.

This report is available on CD from the Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, for \$15.00, and free of charge as a pdf file downloaded from the BOEM website.

Copies can also be viewed at selected Federal Depository Libraries. The addresses are listed below.

To order a CD, use the Gulf of Mexico OCS Region contact information below and reference OCS Study BOEM 2014-771. To download a pdf copy, use the Environmental Studies Program Information System and search using the study report number:

http://www.data.boem.gov/homepg/data_center/other/espis/espismaster.asp?appid=1.

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