MMS Technical Announcement

U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

Technical Announcement

November 2004

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Boundary Layer Study in the Western and Central Gulf of Mexico: Final Report

OCS Study MMS 2004-060

The Minerals Management Service (MMS), Gulf of Mexico OCS Region, announces the availability of a new study report, *Boundary Layer Study in the Western and Central Gulf of Mexico: Final Report.*

This study characterizes the atmospheric boundary layer (ABL) structure and evaluates how the ABL structure influences the transport and dispersion of pollutants in the western and central Gulf of Mexico. The information will be used to support techniques for evaluating the effects of oil and gas exploration, development, and production activities in the OCS on air quality over coastal areas.

The MMS now has available new observations of vertical profiles in the ABL for the OCS from six meteorological stations in the Gulf of Mexico. These stations were equipped with 915-MHz radar wind profilers (RWP), 2-KHz Radio Acoustic Sounding Systems (RASS), and surface meteorological stations. Two stations collected ABL data for three years from May 1998 through October 2001, and four stations collected data from September 2000 through October 2001. The RWP's and RASS measure winds and virtual temperatures, respectively, from near the surface to heights of a few kilometers, and the surface stations measure skin temperature as well as wind speed, wind direction, air temperature, and water vapor mixing ratio at an elevation of about 25 m on an oil platform. In addition to the new data from the vertical profilers, routine meteorological observations from buoys and from shoreline stations were included in the analysis. The new and routine data collected were analyzed to investigate the over-water surface energy balance, the climatology of latent heat versus sensible heat fluxes, mixing depths, the frequency of occurrence of very stable conditions, and the horizontal spatial variability of wind speed and direction. Because of these new observations, for the first time in the Gulf of Mexico region the required full vertical profiles of meteorological variables can be input into transport and dispersion models. Quality assurance/quality control (QA/QC) procedures were also applied to produce a single database. The Coupled Ocean-Atmospheric Response Experiment (COARE) computer program was also used to calculate the surface heat fluxes and the boundary layer parameters.

This report is available only in compact disc format. The disc is available from the Minerals Management Service, Gulf of Mexico OCS Region, at a charge of $15.00 by referencing OCS Study MMS 2004-060. The report may be ordered through the Minerals Management Service's on-line ordering system at **http://www.gomr.mms.gov/WebStore/front.asp**. 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.

Minerals Management Service
Gulf of Mexico OCS Region
Public Information Office (MS 5034)
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394
Telephone requests may be placed at
(504) 736-2519 or 1-800-200-GULF
or FAX: (504) 736-2620

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161
(703) 487-4650 or FAX: (703) 321-8547
Rush Orders: 1-800-336-4700

The Minerals Management Service is the federal agency in the U.S. Department of the Interior that manages the nation's oil, natural gas, and other mineral resources on the Outer Continental Shelf in Federal offshore waters. The agency also collects, accounts for, and disburses mineral revenues from Federal and American Indian lands. MMS disbursed more than $8 billion in FY 2003 and more than $135 billion since the agency was created in 1982. Nearly $1 billion from those revenues go into the Land and Water Conservation Fund annually for the acquisition and development of state and Federal park and recreation lands.

MMS Main Website: **www.mms.gov**
Gulf of Mexico Website: **www.gomr.mms.gov**

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