



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

**Air Quality and Dispersion Meteorology over the Northeastern Gulf of Mexico:
Measurements, Analyses, and Syntheses**

OCS Study MMS 2000-014

The Minerals Management Service (MMS), Gulf of Mexico OCS Region, announces the availability of a new study report, *Air Quality and Dispersion Meteorology over the Northeastern Gulf of Mexico: Measurements, Analyses, and Syntheses*.

Several coastal areas in the northeastern Gulf of Mexico have been designated as Wildlife Refuges and National Preserves. Some of these areas are assigned Class I and II status by the U.S. Environmental Protection Agency (EPA), and are subject to the most rigorous requirements for air quality. Monitoring of ambient air quality and meteorological conditions at multiple near-shore stations was performed to investigate the pollutant concentrations impacting these areas and the meteorological characteristics that affect dispersion and transport over the OCS region. Two stations over the northeastern Gulf were deployed, one located at Breton Island of the Chandeleur Island chain off the southeast coast of Louisiana, and the second installed on the eastern end of Dauphin Island, Alabama. The stations were similarly equipped for measurement of ambient SO₂ and NO_x using EPA-approved monitors. A surface meteorological monitoring system was also installed at Breton Island chain. Meteorological measurements at Dauphin Island were from adjacent C-MAN station DPIA1. All data were stored on site and offloaded during regular servicing, at which time the air quality monitors were inspected and calibrated in accordance with methods described in the Code of Federal Regulations. The record at Breton Island covers from October 1994 through August 1998, and at Dauphin Island from March 1996 to May 1998. All data were quality controlled through calibration reports and station operator notes.

Main conclusions include hourly concentrations of SO₂ and NO₂ at both stations of less than 6 ppb for over half the study period. Annual and maximum concentrations of both pollutants were well below the National Ambient Air Quality Standards. Mean concentrations are generally higher in the fall and winter months at both stations. No significant diurnal trends are evident. Maximums at Dauphin Island are mostly associated with winds from north-northeast. SO₂ maximums at Breton Island are primarily seen with northerly winds, while NO₂ maximums are generally from south-southwest. On average, SO₂ concentrations are higher at Dauphin Island than Breton Island, while NO₂ is nearly equivalent. High SO₂ at Breton Island is mostly seen under Continental High synoptic conditions (northerly winds), high NO₂ observed predominantly under Gulf Return (southerly winds). Turbulence intensities over Breton Island are in reasonable agreement with those in the literature, but are influenced by terrain effects. Monthly mean stability over Breton Island is typically unstable, with free convection observed up to 15 percent of the time. Under unstable conditions offshore, the mixing height is equivalent to the lifting condensation level, and on average is below 750 m. Stable conditions offshore can produce mixed heights near 100 m.

For more information about this study or the Environmental Studies Program in general, contact the Environmental Sciences Section (MS 5430), 1201 Elmwood Park Boulevard, New Orleans, Louisiana 70123-2394, telephone (504) 736-2789.

You can obtain copies of the report from the Minerals Management Service, Gulf of Mexico OCS Region, at a charge of \$10.00 by referencing OCS Study MMS 2000-014. 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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[Return to Technical Announcements](#)