infrastructure for collecting sustained, long-term observations of the Gulf of Maine region. The backbone of the GoMOOS is the mooring program. Ten mooring are located throughout the Gulf of Maine (Fig. 3.4; see www.gomoos.org for exact locations); one in the deep basin, 4 along the shelf waters, and 6 located in nearshore environments. The standard suite of measurements on each mooring includes metereologic and hydrologic conditions (Fig. AHB2). Four of the GoMOOS moorings also have instrumentation to measure the bio-optical conditions. The GoMOOS program also includes a series of CODAR stations to map the surface currents over the entire Gulf of Maine, circulation and wave modeling programs, as well as utilizing NASA and NOAA remote sensing time series (ocean color, sea surface temperature, winds).

CMO and PRIMER: The interdisciplinary oceanographic programs known as Coastal Mixing and Optics (CMO), Shelfbreak PRIMER (not an acronym), and Synthetic Aperture Sonar (SAS) PRIMER conducted a number of coordinated field experiments in the vicinity of the New England continental shelf over the period from September 1995 to August 1997 (Dickey and Williams, 2001; see www.opl.ucsb.edu). CMO focused on physical, bio-optical, and sedimentary processes on the continental shelf, while the Shelfbreak PRIMER investigated physical processes over the shelf and slope and their influence on sound transmission onto the shelf. The experiment utilized several different observing platforms enabling measurements over space scales from centimeters in the vertical to tens of kilometers in the horizontal and time scales from minutes to the annual cycle. The results of the experiment have led to improved understanding of inter-relationships and couplings among physical, bio-optical, sedimentary, and acoustical properties and processes. Two hurricanes passed near the study site enabling novel research concerning the physical and bio-optical effects of intense atmospheric forcing. Internal solitary waves and their relation to bio-optical events was another highlighted study area.

HyCODE: The Hyperspectral Coastal Ocean Dynamics Experiment (HyCODE) was an Office of Naval Research (ONR) sponsored five-year interdisciplinary program (see www.opl.ucsb.edu). HyCODE field experiments were located off the coast of New Jersey at the Long-term Ecological Observatory site in 15 m water depth (LEO-15), on the west Florida Shelf as part of the ONR Ecology of Harmful Algal Blooms (EcoHAB) program, and in the Bahamas near Lee Stocking Island as part of the ONR Coastal Benthic Optical Processes (CoBOP) program. The main objective of the HyCODE program was to develop an understanding of the diverse processes that control inherent optical properties (IOP) and apparent optical properties (AOP) in the coastal ocean by use of hyperspectral imagery. Platforms included moorings, ships, gliders, AUVs, and aircraft, most of which were equipped with hyperspectral instrumentation. Basic research was centered on the investigation of the impact of relatively small-scale physical, biological, and chemical processes on near-surface spectral IOP and AOP. Some of the processes under investigation for the HyCODE project include advection of optically important material, phytoplankton growth and loss, bubble injection, sediment resuspension, fronts, and internal waves. Applied research focuses on the development and validation of hyperspectral ocean color algorithms. Moorings were used to provide high temporal resolution bio-optical (*i.e.* IOP and AOP) and physical data sets. These experiments were designed to sample the maximum possible number of matched *in situ* IOP and AOP observations for calibrating, groundtruthing, and relating subsurface optical properties (algorithm development) to satellite data, and to develop, test, and validate optical models and high-resolution interdisciplinary models of the coastal ocean.

MEPS: The Marine Environmental Prediction System (MEPS) is a network of moored buoys in Lunenburg Bay, Canada (see www.phys.ocean.dal.ca/programs/cmep/cmep.html). MEPS is part of the CMEP (Centre for Marine Environmental Prediction), a initiative led by Dalhousie University and funded through the Canadian Foundation for Innovation. MEPS consists of three heavily instrumented buoys, a real-time, high speed broadband communications network, and a modeling and analysis system for transforming sensor data into information that can be visualized by a broad range of system users. The buoy network provides data from AOP, acoustic, physical and meteorological sensors to monitor the biological variability and transport of sedimements within Lunenburg Bay. The system is designed to provide both high temporal, spatial and vertical resolution of processes within Lunenburg Bay. This combination of a wide range of sensors and flexible data acquisition system with a large power system and high bandwidth wireless telemetry make this system ideal for validating remote sensing data in the coastal zone.

Equatorial Oceanographic and Air-Sea Interaction Processes

TOGA TAO/TRITON: The Tropical Ocean-Global Atmosphere (TOGA) observing system consists of ~70 moored platforms along the equatorial Pacific to observe oscillations associated with the El Nino and Southern Oscillation (ENSO). These ENSO specific moorings cover the entire equatorial Pacific from 95°W across the date line to 165°E, from 8°N to 8°S. Recently the project name was changed to the Tropical Atmosphere Ocean/Triangle