



NOAA Research in Illinois



IL-1 through 20 (Statewide)

Climate and Global Change Program

NOAA is responsible for providing climate information to the nation in order to prepare and protect climate sensitive sectors of society and the economy. To carry out this mission, NOAA's Climate and Global Change Program conducts focused scientific research to understand and predict variations of climate. The Program is comprised of a number of research elements, each focusing on a specific aspect of climate variability. Taken together, this research contributes to improved predictions and assessments of the effects of climate variability and change on different environments over a continuum of time scales from season to season, year to year, and over the course of a decade and beyond. This research is accomplished through the strong support of the academic and private sectors, as well as NOAA and other federal laboratories. In FY 2001, NOAA's Climate and Global Change Program provided approximately \$243,900 in support of climate research in the State of Illinois. For more information please visit <http://www.ogp.noaa.gov>

IL-1 through 5, 7 and 9 (Chicago)

Great Lakes Environmental Research Laboratory Real-Time Meteorological Observation Network

The Great Lakes Environmental Research Laboratory Marine Instrumentation Laboratory has deployed and is maintaining a real-time network of shore-based meteorological instrument packages including one in Chicago. The meteorological observations obtained from the network are being used in GLERL's Great Lakes Coastal Forecasting System to improve nowcasts and forecasts of wind, waves, water levels, and circulation. In addition, the National Weather Service forecast office in Chicago is using the observations to improve marine forecasts and warnings. The Chicago station measures/records wind speed, wind gust, wind direction, and air temperature at five minute increments that are updated every 15 minutes on the web. In addition, a webcam provides an image of nearshore Chicago waters and skyline that is updated every 30 minutes. For more information please visit <http://www.glerl.noaa.gov/metdata/chi/>

IL-1, 2, 5, 7, 9, 10, and 11 (Lake Michigan)

Great Lakes Environmental Research Laboratory Great Lakes Research

The Great Lakes Environmental Research Laboratory (GLERL) carries out research and provides scientific products, expertise, and services required for effective management and protection of Great Lakes and coastal ecosystems. As part of the mission of NOAA and the U.S. Department of Commerce, GLERL science provides for protection of life and property, economic well-being, and

sustained ecosystem health. With a wide array of scientific disciplines on staff, and an ecosystem-level focus, GLERL contributes unique capabilities in support of intelligent and cost-effective Great Lakes and coastal resource management. GLERL is pursuing focused research in areas including aquatic contaminants and biogeochemistry; invasive species, ecosystem dynamics and long-term monitoring. In Illinois waters of Lake Michigan, a GLERL scientist in collaboration with University of Wisconsin-Milwaukee and Illinois Natural History Survey researchers is documenting yellow perch recruitment dynamics to assess both short- and long-term outlook in perch reproduction in support of informed and effective management decisions affecting the fishery. In addition, in a new and unique effort started in February 2001, GLERL now has a Great Lakes Sea Grant Extension Agent onsite to support and promote increased communication and cooperation among GLERL and the seven Great Lakes Sea Grant Programs in the region, including the Illinois-Indiana Sea Grant program. By making GLERL scientific products, services, and expertise more widely available to the extensive Great Lakes Sea Grant Network, the agent can rely on the Network's vast outreach, communications, and education infrastructure to furnish constituents with a wider information base. For more information please visit <http://www.glerl.noaa.gov>

IL-1, 2, 5, 7, 9, 10, and 11 (Lake Michigan)

**Great Lakes Environmental Research Laboratory
Episodic Events Great Lakes Experiment**

The Episodic Events Great Lakes Experiment (EEGLE) Program is a five-year study of spring storm-induced erosion and transport of fine sediment material in Lake Michigan's southern basin. The storm episodes generate winds, waves and currents, and a heavy sediment load that can be identified and tracked by satellite imagery. Fine sediment particles often bind with contaminants and nutrients and their suspension and transport elsewhere in the Lake may have important implications for ecosystem structure and function. EEGLE is a collaborative project that includes scientists from NOAA's Great Lakes Environmental Research Laboratory and university scientists from both inside, and outside, the Great Lakes region. The program is supported by funding from NOAA and the National Science Foundation. For more information please visit <http://www.glerl.noaa.gov/eegle/>

IL-1, 2, 5, 7, 9, 10, and 11 (Lake Michigan)

**Great Lakes Environmental Research Laboratory
Lake Michigan Mass Balance Study**

Scientists from NOAA's Great Lakes Environmental Research Laboratory are participating in the EPA mass balance study that seeks to identify the sources, pathways and fate of contaminants cycling through the Lake Michigan ecosystem. Four major chemicals are being studied; polychlorinated biphenyls (PCBs), atrazine (an agricultural herbicide), trans-nonachlor (a pesticide), and mercury. The Lake Michigan Mass Balance focuses on where these chemicals are entering the Lake and what happens to them as they move through the ecosystem. This study will identify relative pollutant loads from rivers, air deposition, and sediment resuspension, and will allow prediction of the benefits associated with reducing such loads. For more information please visit http://www.glerl.noaa.gov/res/Task_rpts/aeqadie06-1.html

IL-1, 2, 5, 7, 9, 10, and 11 (Lake Michigan)

National Undersea Research Program

National Undersea Research Center for the Northeastern United States and Great Lakes

The National Undersea Research Center for the Northeastern United States and Great Lakes is located at the University of Connecticut, Avery Point in Groton, Connecticut. It is one of six regional centers supported by the National Undersea Research Program (NURP). The Center supports and conducts undersea research in the waters off the northeast coast of the United States and the Great Lakes. The Center provides science and operational support (occupied submersibles, remotely operated vehicles and mixed gas diving technologies) and funding for reviewed projects within this region. The center supports research on the physical, chemical, and biological factors controlling the cycling and fates of organic contaminants and heavy metals (trace metals) at the sediment/water interface and their ultimate impacts on biological productivity. Also receiving special attention are the habitat characteristics controlling the recruitment and population dynamics of recreational and commercial species of fish, including "pest" species. The FY 2001 funding for the Center totaled \$1.36 million. For more information please visit <http://www.nurc.uconn.edu>

IL-1, 2, 5, 7, 9, 10, 11, and 15 (Based in Urbana - serves entire Illinois coastal zone)

National Sea Grant College Program

Illinois-Indiana Sea Grant College Program

The Illinois-Indiana Sea Grant College Program, part of the National Sea Grant College Program, is a regional program of research, education, and outreach services that works to promote the wise use of Great Lakes resources, primarily along southern Lake Michigan. Illinois-Indiana Sea Grant research addresses increasing the size and profitability of aquaculture industries; reducing the spread, introduction, and economic impact of non-indigenous species; improving both the biological and human aspects of the Lake Michigan fishery through attainment, transfer, and application of knowledge of food web and ecosystem dynamics of the lake; supporting ecologically sound and sustainable coastal economic development and land use; and reducing non-point pollution stemming from increased land development. The Program works with Purdue University Cooperative Extension Service and other state and federal agencies in an effort (entitled "Planning with POWER") to educate local land use decision-makers and natural resource officials on the impacts of land use on surface water quality and natural resources and provides alternative land use options. The public, industry, and policy makers are kept informed on issues related to biological resources, aquaculture, water quality, and coastal business and environment through the Program's extension and outreach services along with its biannual newsletter "The HELM" and Internet publication "The HELM Online." Extension efforts in both states are enhanced through partnerships with the Cooperative Extension Service at both the University of Illinois and Purdue University. In FY 2001, Illinois-Indiana Sea Grant projects received funding of approximately \$1.4 million from the National Sea Grant College Program. For more information please visit <http://www.iisgcp.org>

IL-13 and 15 (Argonne and Bondville)

Air Resources Laboratory Atmospheric Integrated Research Monitoring Network

AIRMoN, or Atmospheric Integrated Research Monitoring Network, is an array of sampling stations designed to quantify the extent to which changes in emissions affect air quality and deposition. NOAA's Air Resources Laboratory operates both elements of the network, AIRMoN-Wet and AIRMoN-Dry. AIRMoN-Wet collects data on the deposition of pollutants that occurs with precipitation. Daily samples of precipitation are collected at ten stations throughout the country and then sent to a single central laboratory for chemical analysis. An AIRMoN-Wet station is located near Bondville. The goal of AIRMoN-Dry is to identify and understand the processes that cause the deposition of atmospheric pollutants without the presence of precipitation in order to quantify dry deposition rates at locations where direct measurement is not possible. An AIRMoN-Dry station is located near Argonne. Prime users of these data include ecologists, agriculturists, foresters, and power companies affected by Clean Air Act legislation. For more information please visit <http://www.arl.noaa.gov/research/programs/airmon.html>

IL-15 (Bondville)

Air Resources Laboratory Surface Radiation Measurement Network

The Air Resources Laboratory operates six stations as part of its surface radiation measurement network (SURFRAD). One of these stations is located near Bondville. The station instruments support regional and global weather and climate research with accurate, continuous, long-term measurements of the surface radiation budget over the United States. Solar radiation is the driving energy for geophysical and biological processes that control weather and affect planetary life; understanding the global surface energy budget is therefore key to understanding climate and the environmental consequences to agriculture and other statewide concerns. Because it is impractical to cover the whole earth with monitoring stations, the answer to global coverage lies in reliable satellite-based observations. Accurate and precise ground-based measurements across a range of climate regions are essential to refine and verify the satellite observations. These ground-based measurements also support special research projects on radiation and climate processes in the Illinois region and serve as important verification for weather forecasts. For more information please visit <http://www.srrb.noaa.gov>

IL-15 (Bondville)

Air Resources Laboratory Climate Reference Network

The U.S. Climate Reference Network (CRN) is a network of new climate stations now being developed by the National Climatic Data Center (NCDC) as part of NOAA's Climate Observations and Services Initiative. The Air Resources Laboratory's Atmospheric Turbulence and Diffusion Division (ATDD) in Oak Ridge, Tennessee, is heavily involved with the development, deployment, and maintenance of the network. The primary goal of the CRN is to provide long-term high quality

climate observations and records of surface air temperature and precipitation with minimal time-dependent biases affecting the interpretation of decadal to centennial climate variability and change. The CRN will provide the nation with a first class long-term, 50-100 years, observing network that will serve as the Nation's benchmark Climate Reference Network. The CRN will also provide the United States with a network that meets the requirements of the international Global Climate Observing System (GCOS). Data from the CRN will be used in climate monitoring activities and for placing current anomalies into historical perspective. Data will also be used to provide the best possible information about long-term changes in surface air temperature and precipitation, including means and extremes. These data will be distributed hourly to National Weather Service sites via NOAAPort and posted online for no-cost access by anyone worldwide. CRN sites are currently deployed near Bondville, as well as in North Carolina, Nebraska, Montana, Oklahoma, Rhode Island, New Hampshire, and Tennessee. Within the next 5 years there will be a total of 250 stations spread throughout the United States. For more information please visit <http://lwf.ncdc.noaa.gov/oa/climate/research/crn/crnmain.html>

IL-15 (Bondville)

Air Resources Laboratory Climate Research

NOAA's Climate and Global Program has funded the establishment of three sites within the Mississippi River Basin to study the air-surface exchanges of heat and water vapor that are so important to the hydrological cycle of the region, and to learn more about the processes driving these exchanges, including the details of the local energy balances (incoming solar energy, heat and water vapor exchanges, outgoing long wave radiation, energy storage in soils, soil moisture content, soil temperatures at different depths, etc.). The Air Resources Laboratory's Atmospheric Turbulence and Diffusion Division (ATDD) has established these sites, where very specialized battery-powered (solar recharge) fast-response instrumentation is operated continuously and automatically. The data are recovered daily through a cellular telephone modem from ATDD in Oak Ridge, Tennessee, and are reviewed for any sign of instrumentation problems. One of the three sites is on a farm near Bondville. For more information please visit <http://www.atdd.noaa.gov>

IL-15 (Bondville)

Air Resources Laboratory Environmental Monitoring Tower

The Air Resources Laboratory's Atmospheric Turbulence and Diffusion Division contributes to the GAPP/GEWEX program by operating five research energy/carbon flux towers in the continental United States. The sites are located at a deciduous forest site in East Tennessee, an agricultural site in central Illinois, a ponderosa pine stand in western South Dakota, and two grassland sites; one in eastern Montana and the other in central Mississippi. These sites are providing data that will be used to improve the representation of land/surface processes in both regional and global weather prediction models. For more information please visit <http://www.ogp.noaa.gov/mpe/gapp/>

**Forecast Systems Laboratory
GPS Meteorological Observing System**

NOAA's Forecast Systems Laboratory (FSL) operates a rapidly expanding network of GPS Meteorological (GPS-Met) Observing Systems to monitor the total quantity of precipitable water vapor in the atmosphere. Currently, there are 93 systems over the contiguous 48 states and Alaska, and plans are being made to extend these observations to Hawaii, Puerto Rico, the Caribbean Islands, and Central America. Water vapor is an important but under-observed component of the atmosphere that plays a major role in severe weather events and the global climate system. GPS-Met systems provide accurate water vapor measurements under all weather conditions, including thick cloud cover and precipitation, and do so at very low cost. The major reason why this system is so economical is that the network is being developed by FSL in cooperation with federal, state and local government agencies, universities, and the private sector. The GPS stations provide high-accuracy surveying and navigation services for National defense, automated agriculture, safe land and marine transportation, government infrastructure management, and 911 emergency response services. Fortuitously, these systems can also be used for meteorology with the addition of surface weather sensors. A GPS-Met system operated by NOAA is located near Winchester. For more information please visit <http://www.gpsmet.noaa.gov/jsp/index.jsp>

For further information about these and other NOAA programs, please contact NOAA's Office of Legislative Affairs at (202) 482-4981.

February 2002