



**ADVANCED
SCIENCE
RESEARCH
CENTER**



ENVIRONMENTAL SCIENCES INITIATIVE

asrc.gc.cuny.edu/environment

Mission

To serve as a focal point for experts to join forces, to dialogue, and to solve the major 21st-century strategic environmental challenges facing the region, the nation, and the world, capitalizing on state-of-the-art sensor, field, laboratory, and geospatial modeling techniques.



Initiative Overview

The Environmental Sciences Initiative on the top floor of the ASRC houses state-of-the-art facilities, including laboratories for chemical and isotopic measurements, coastal ecosystems, microbial ecology, and remote sensing. It also hosts a rooftop observatory with a unique vantage point for studying the meteorology and atmospheric dynamics of New York City, using a LIDAR sensor and an array of other instrumentation.

Our research team, led by Professor Charles Vörösmarty, includes faculty, staff, post-doctoral scholars, graduate students, and undergraduates from across CUNY. We also host a dynamic population of visiting scientists from around the globe. The initiative brings a distinct research vision to the environmental sciences, uniting state-of-the-art analytical capabilities, environmental analytics, and sensing technologies to create fundamental scientific knowledge for addressing the most challenging environmental research questions facing the globe today and into the future.



Laboratories

Vörösmarty Laboratory

Led by Professor Charles Vörösmarty, this laboratory engages in multi-scale, interdisciplinary research that addresses society's pressing environmental research questions. These include how to: better manage energy, water, and nutrients in ways that reduce waste and enhance recycling; protect humans from the impacts of pollution; assess the state of global water resources; protect unique biodiversity assets and the valuable ecosystem services they provide; and refurbish and make more efficient our built and natural infrastructure assets.

Greenfield Laboratory

Professor Dianne Greenfield and her team study the complex environmental feedback between global stressors (urbanization, climate, acidification, eutrophication) and aquatic (primarily coastal) ecosystems emphasizing phytoplankton—the foundation of aquatic food webs that generate about half of Earth's oxygen and substantially influence biogeochemical cycling. Projects span genetic to ecosystem scales using field, laboratory, and novel molecular approaches to study harmful algal blooms, hypoxia, biogeochemical, and food web processes. Results help better understand aquatic ecosystem dynamics and safeguard both environmental and public health.

Groffman Laboratory

Professor Peter Groffman and his laboratory team study terrestrial biogeochemistry with a focus on nitrogen dynamics, especially gases. Projects range across multiple scales, including microbial and molecular scale analyses; field and ecosystem scale measurement of fluxes using geochemical and isotope approaches; and landscape- and regional-scale work using remote sensing, geographic information systems, and simulation models. Much of this research occurs at National Science Foundation-funded Long Term Ecological Research sites in New Hampshire and Baltimore, Maryland.

Reinmann Laboratory

Professor Andrew Reinmann and fellow researchers study the effects of environmental change, such as climate change, urbanization, and land cover change, on the multitude of ways that plants and soil microbes influence terrestrial carbon cycling and nitrogen dynamics in a variety of human-disturbed ecosystems. The multidisciplinary research combines field observations, ecosystem experiments, and laboratory analyses with geographic information systems, remote sensing, and modeling. Reinmann currently has projects in forested and human-dominated landscapes throughout the mid-Atlantic and northeastern United States.