Center for Environmental Systems Engineering (CESE)

Mission/Purpose

The Center for Environmental Systems Engineering (CESE) is a collaborative facility used by faculty, staff, students at Syracuse University and cooperators. The mission of the CESE is to facilitate collaboration on research and analytical measurements pertaining to environmental problems and technologies. The CESE is housed in Link Hall within the College of Engineering at Computer Science at SU. Collaborators and students across and beyond SU are encouraged to use the facilities and to interact with CESE faculty, staff, and students.

Current Research

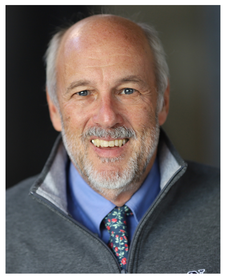
- Climate change effects and mitigation on ecosystems, water systems and infrastructure.
- Use of spatial science data and global earth observations for water resource management and response to hydroclimatic disasters.
- Sources, transport, transformations, fate and remediation of nutrients and trace organic and inorganic contaminants
- The cost effectiveness of approaches to decarbonize sectors and to promote carbon sequestration.
- Application and effectiveness of green infrastructure.
- Water treatment technologies.

Center Members


Elizabeth Carter


David Chandler


Cliff Davidson


Charles T. Driscoll

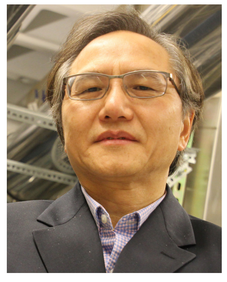

Chris Johnson

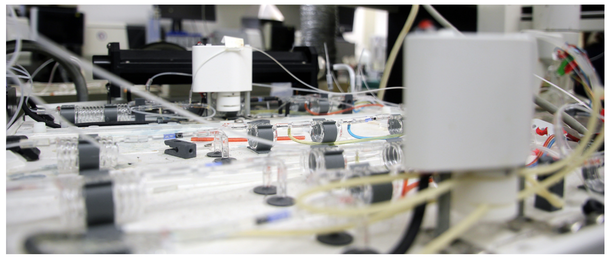

Mary Margaret Koppers


Mario Montesdeoca


Svetoslava Todorova


Teng Zeng


Jensen Zhang

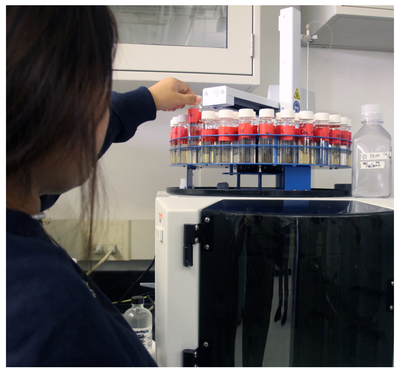


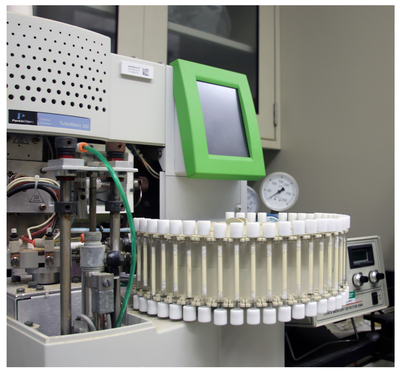
Capabilities/Services

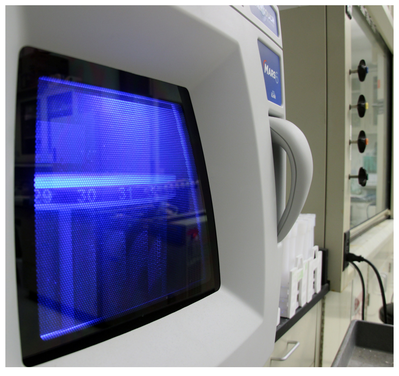
The CESE includes 22,000ft^2 of core and individual laboratories that have been designed with versatility required for interdisciplinary studies and are furnished with sophisticated equipment for environmental research. Facilities allow for the characterization/analysis of biogeochemistry of complex ecosystems, microbial characterization, soil/sediment processing and analysis, major element analysis, organic and inorganic trace substance processing, and analysis, and a state-of-the-art, Class 1,000 clean room. Computer laboratories are available for data analysis, environmental modeling, visualization, and GIS.

Ongoing/Active Projects

- The hydrologic and water quality function of green roofs
- Development and utilization of a continuous and autonomous, low-cost, in-situ monitoring system for carbon dioxide at construction sites
- The dynamics of microbial mercury methylation in meromictic lakes in Central New York
- Development of a comprehensive method for testing and evaluating air cleaning technologies
- Testing and evaluation of real-time sensors of volatile organic compounds to evaluate indoor air quality
- Air quality and energy efficiency monitoring to assessing integrated building retrofitting
- Acid-base chemistry of soils affected by chronic acidification
- Chemical weathering and the recovery of Catskill stream watersheds from chronic acid deposition
- Suspect and nontarget screening of organic micropollutants in environmental systems
- Low-cost, camera-based distributed sensor network for automatic high water mark mapping of urban flooding (USGS/WRI)
- Automatic extraction of engineering-relevant data from space-based imagery for federal coastal management
- Digital hurricane reconnaissance
- Developing sub-seasonal to seasonal forecasts for water resources management







Sponsors

- National Aeronautics and Space Administration (NASA)
- New York State Energy Research and Development Authority (NYSERDA)
- Adirondak Center for Loon Conservation
- National Science Foundation (NSF)
- Syracuse University Biomaterials Institute
- Upstate Louis Stokes Alliance for Minority Participation
- United States Department of Agriculture (USDA)
- Syracuse Central Institute of Technology
- Skaneateles Lake Association
- The Syracuse Office of Undergraduate Research & Creative Engagement (SOURCE)
- Central New York Community Foundation
- Syracuse University Education Model Program on Water-Energy Research (EMPOWER)
- Cornell University
- American Chemical Society
- The United States Geological Survey (USGS)
- Department of Energy
- Collegiate Science and Technology Entry Program (CSTEP)

cese.syr.edu

Syracuse University
Center of Excellence in
Environmental & Energy Systems