ECU®

RESEARCH, ECONOMIC DEVELOPMENT & ENGAGEMENT

NATURAL RESOURCES AND THE ENVIRONMENT RESEARCH CLUSTER

Co-Directors

Alex Manda,
Associate Professor,
Department of Geological Sciences
Water Resources, Hydrogeology, Surface water-groundwater interactions

Burrell Montz,
Professor,
Department of Geography, Environment, and Planning:
Natural resources management, Environmental impact analysis; Water resources management

MISSION

The mission of the Natural Resources and Environment Cluster is to provide opportunities for faculty at ECU and their collaborators to undertake projects through securing external funding that will improve

- the quality of life,
- health,
- education, and
- employment

for the people and communities in the region.

MISSION

The Cluster will undertake projects that focus on sustainable energy, water resources, and other natural resources and environmentally-related topics.

GOALS

TO

- develop relationships with potential collaborators within and outside ECU.
- build interdisciplinary research teams to produce research ideas and grant proposals to carry out the projects.
- identify research opportunities as they arise, whether through RfPs, regional needs, or other avenues.

PRIORITY RESEARCH AREAS

The research priorities for the Natural Resources and Environment Cluster lie at the center of the water-energy nexus.

ENERGY

- Energy-Biogas: Spatial, environmental, economic, political and societal factors and impacts;
- Off-shore (wave and wind) energy: viability, transportation, and storage, environmental, economic, political and societal factors and impacts.

NATURAL RESOURCES

- water quality and quantity
- surface/ground water management
- wastewater management
- stormwater management

Cluster Faculty

Name	Department	Research Interests
Jamie DeWitt	Pharmacology and Toxicology	Biological organisms and their responses after exposure to environmental contaminants
Randall Etheridge	Engineering	Agricultural and ecological engineering
Mike O'Driscoll	Geology	Identifying and quantifying the factors that regulate groundwater and nutrient inputs to surface water
Charlie Humphrey	Health and Human Performance	Onsite wastewater systems, pollutant transport through groundwater and surface water, stormwater management, land use impacts on water quality
Tom Rickenbach	Geography	Precipitation Systems, Climate Variability
Praveen Malali	Engineering	Ocean-wave energy conversion systems, solar-thermal power generation, energy savings and engineering education
Jacob Hochard	Economics	Environmental Economics, Development Economics
Ariane Peralta	Biology	Microbiology, biogeochemistry, community and soil ecology and the applied disciplines of restoration ecology and agroecology
Richard Ericson	Economics	Comparative economic system, microeconomic theory, economics of transition
Ranjeet Agarwala	Engineering	Sustainable energy particularly solar and wind energy
David Chalcraft	Biology	Population, community and ecosystem ecology in both freshwater and terrestrial system
Jeffrey Skibins	Recreation Science	Wildlife Conservation
Rachel Gittman	Biology/ CSI	Restoration ecology, conservation biology
April Blakeslee	Biology	Conservation, marine ecology
Lok Pokhrel	Public Health	Toxicology, risk assessment
Jinkun Lee	Engineering	Manufacturing process optimization

Research Highlights of the Past Year

Grant Proposals and Successes

- Proposals
  - 21 submitted
    - > $10 Million
    - 17 Cluster Faculty
  - 11 outstanding
    - ~$ 2 Million
  - Submitted to
    - National Science Foundation
    - Department of Energy
    - Department of the Interior
    - NOAA
    - Sea Grant
- Grants
  - 4 so far
    - ~$958,000
    - 17 Cluster Faculty
  - Sources
    - National Science Foundation
    - US Fish& Wildlife Service

Examples of Proposals

- Microbial controls on wetland carbon stabilization and storage
  - Biology
- Monitoring to determine Enterococci and fecal coliform concentrations during baseflow and storm events in Lake Mattamuskeet and the Pamlico Sound
  - Engineering, Environmental Health
- Using Undergraduate Engineers and Community Engagement to Build Resilient Coastal Communities
  - Anthropology, Engineering, Coastal Studies
- Predicting Drinking Water Contamination from Extreme Weather to Reduce Early Life Contaminant Exposures
  - Economics, Atmospheric Science, Engineering, Biology, Pediatrics

Cluster Seed Grants

- 8 applications; 4 awarded
  - $~50,000
  - Engineering
  - Public Health, Coastal Studies, Engineering
  - Biology, Coastal Studies
  - Recreation Sciences
- Topics
  - Development of a hydrokinetic energy extractor offshore NC
  - Development of technology to reduce a toxic wastewater contaminant
  - Oyster restoration design criteria and monitoring approaches
  - Evaluating pro-conservation behaviors across eastern NC

Engagement

- Engaged at least 24 stakeholders
  - 16 new
  - > 70 interactions

- Includes:
  - Working with farmers and other stakeholders to address saltwater intrusion problems in agricultural fields
  - Working with municipalities to address stormwater flooding
  - Working with municipalities to assess impact of climate change on wastewater treatment
  - Working with NC Health County Offices to address water quality and human health outcomes