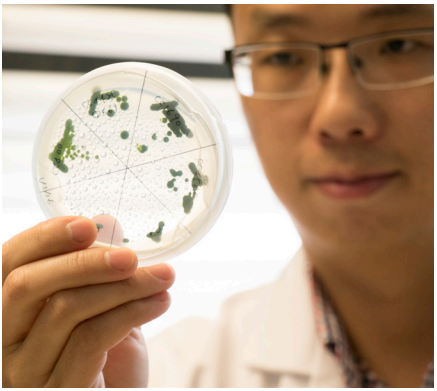


GUIDE TO EXPERTS

University of Maryland Center for Environmental Science

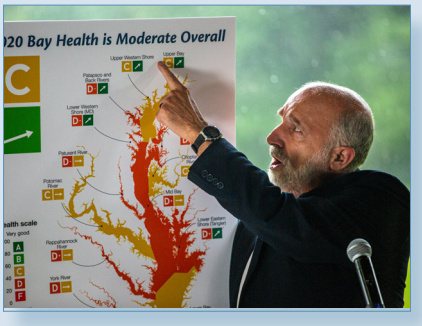
2024

HARNESSING THE POWER OF SCIENCE to transform the way society understands and manages the environment

A globally eminent research and graduate institution focused on advancing scientific knowledge of the environment, the **University of Maryland Center for Environmental Science** provides sound advice to help state and national leaders and prepares future scientists to meet the global challenges of the 21st century.

RESEARCH

We work across disciplines and in diverse settings—from the Appalachian Mountains to the Arctic—seeking solutions that improve people's lives and sustain the natural world.



PUBLIC SERVICE

As trusted scientific advisors, our faculty provide unbiased research to inform management decisions and public policy on pressing environmental issues in our communities and around the world.

EDUCATION

Our renowned faculty train the next generation of environmental leaders as part of the University System of Maryland's nationally ranked graduate program in marine and environmental science.

POPULAR TOPICS

CHESAPEAKE BAY RESTORATION

CHESAPEAKE BAY REPORT CARD: **Bill Dennison**, Professor: Coastal ecosystem ecology, assessing ecosystem health dennison@umces.edu

CRABS: **Thomas Miller**, Professor: Recruitment and population dynamics of aquatic animals miller@umces.edu

FISHERIES: **David Secor**, Professor: Migration and population ecology of marine fishes, telemetry and analytical techniques for tracking fish movements, fisheries, and protected species secor@umces.edu

OYSTER HATCHERY: **Stephanie Alexander**, Oyster Hatchery Manager: Production of oyster larvae, seed, spat on shell, restoration, aquaculture tobash@umces.edu

OYSTERS: **Michael Wilberg**, Professor: Population dynamics, quantitative fisheries, stock assessment, management strategy evaluation, fisheries management wilberg@umces.edu

SEA LEVEL RISE: **Ming Li**, Professor: Physical oceanography, estuarine and coastal dynamics, regional impacts of climate change and extreme weather events mingli@umces.edu

CLIMATE CHANGE

Victoria Coles, Professor: Climate variability and change, observations and modeling of ocean and estuarine ecology, biogeochemistry and circulation vcoles@umces.edu

Matthew Fitzpatrick, Professor: Spatial modeling, quantitative ecology, biogeography, macro-ecology, biodiversity, climate change, biological invasions mfitzpatrick@umces.edu

Hali Kilbourne, Associate Professor: Paleoclimatology and paleoceanography, contextualizing modern climate change and explor-ing the processes causing seasonal to centennial climate variability kilbourn@umces.edu

SEA LEVEL RISE: **Ming Li**, Professor: Physical oceanography, estuarine and coastal dynamics, regional impacts of climate change and extreme weather events mingli@umces.edu

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TOPICS OF EXPERTISE

AGRICULTURAL/ LAND IMPACTS

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Tom Fisher, Professor: Terrestrial and atmospheric nutrient inputs, nutrient cycling and limitation fisher@umces.edu

Xin Zhang, Professor: Environmental science and policy, biogeochemical cycles of carbon and nitrogen, earth system modeling, atmospheric-biosphere interactions xin.zhang@umces.edu

AIR QUALITY

Mark Castro, Associate Professor: Atmospheric-biosphere interactions, impacts of land use on water quality mcastro@umces.edu

Xin Zhang, Professor: Biogeochemical cycles of carbon and nitrogen, earth system modeling, atmospheric-biosphere interactions xin.zhang@umces.edu

ALGAL BLOOMS

Pat Glibert, Professor: Phytoplankton ecology, nitrogen uptake and mineralization by plankton, primary production and photosynthesis glibert@umces.edu

Judy O'Neil, Research Associate Professor: Cyanobacteria ecophysiology and plankton trophodynamics joneil@umces.edu

Allen Place, Professor: Genomics of toxin-producing dinoflagellates, mitigation of cyanobacteria blooms place@umces.edu

ALTERNATIVE ENERGY

Feng Chen, Professor: Marine microbial ecology, microbial diversity, genomics, clean green biotechnology chenf@umces.edu

Russell Hill, Professor: Symbiosis between bacteria and marine invertebrates, microalgae and biofuels hill@umces.edu

Yantao Li, Associate Professor: Micoalgal molecular biology and lipid biochemistry, biotechnology and environmental bioremediation, metabolic engineering for biofuels and bioproducts yantao@umces.edu

IMPACT ON MARINE LIFE—

David Secor, Professor (CBL): Migration and population ecology of marine fishes, telemetry and analytical techniques for tracking fish movements, fisheries and protected species secor@umces.edu

CHEMISTRY & TOXICOLOGY

Michael Gonsior, Associate Professor: Chemical diversity of complex dissolved organic matter in aquatic and engineered systems, disinfection by-products, photochemistry, marine biogeochemistry gonsior@umces.edu

Andrew Heyes, Associate Research Professor: Trace metal geochemistry, mineral weathering, contaminant transport and hydrology, sedimentology, wetlands and aquatic chemistry heyes@umces.edu

Carys Mitchelmore, Professor: Detection of chemical contaminants, understanding toxicity/ implications to organism and ecosystem health. mitchelmore@umces.edu

Christopher Rowe, Associate Professor: Physiological ecology, ecotoxicology, herpetology rowe@umces.edu

Johan Schijf, Associate Professor: Aqueous biogeochemistry of trace metals schijf@umces.edu

CHESAPEAKE BAY RESTORATION

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Matthew Gray, Assistant Professor: Ecophysiology of bivalves, ecological restoration, ecosystem services, aquaculture mgray@umces.edu

Jeremy Testa, Professor: Estuarine biogeochemistry, dissolved oxygen cycling, numerical modeling, estuarine systems ecology jtesta@umces.edu

Lisa Wainger, Research Professor: Environmental economics, integrated ecological and economic modeling, ecosystem services, environmental restoration, water quality trading wainger@umces.edu

UNDERWATER GRASSES—
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"What you do with coastline management has huge implications in terms of how the tides and storm sturge in Chesapeake Bay respond to sea- level rise. Climate change is real; sea-level rise is happening. We have to understand it and plan for it right now."

—Oceanographer Ming Li , co-author of "Sea-level rise projections for Maryland"

"Maybe we'll see higher production of some things like blue crabs, but we may see diminished production of fish that don't do so well in warmer waters, such as striped bass, perch and black sea bass.""

—Fisheries expert Dave Secor on the impact of climate change on the commercial fishery in Chesapeake Bay

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ARCTIC RESPONSE—
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FORESTS & TERRESTRIAL ECOLOGY

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GENOMICS & GENETICS

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INVASIVE SPECIES

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MARINE FOOD WEB

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MICROBIAL BIOLOGY

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NUTRIENT DYNAMICS

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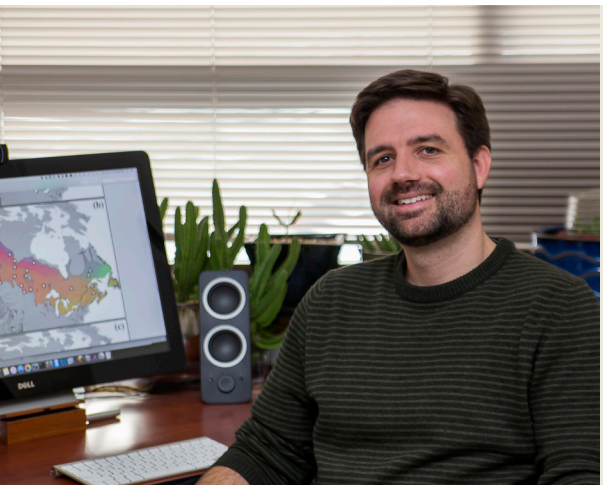

"Within the lifetime of children living today, the climate of many regions is projected to change from the familiar to conditions unlike those experienced in the same place by perhaps any generation. ."

—Matt Fitzpatrick created the Future Urban Climates app

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OCEAN SCIENCE

BIOLOGICAL—
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Raleigh Hood, Professor: Models to simulate and predict biogeochemical and ecological variability in marine environments
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Ming Li, Professor: Estuarine and coastal dynamics, regional impacts of climate change and extreme weather events
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"Decoding the blue crab genome enables us to decode the factors providing resiliency of the blue crab to climate change and disease in the Chesapeake Bay and beyond."

— Biochemist Sook Chung led the effort to sequence the genome of blue crab

Judy O'Neil, Research Associate Professor: Cyanobacteria ecophysiology and plankton trophodynamics
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James Pierson, Associate Professor: Biological oceanography, plankton ecology, trophic dynamics, copepods
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Greg Silsbe, Assistant Research Professor: Role of phytoplankton in global carbon cycle, satellite remote-sensing, tropical limnology
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PHYSICAL—
Lee Cooper, Research Professor: Stable and radioisotope composition of organic materials and natural waters, aquatic plant physiology, high latitude oceanography and hydrology
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Joe Jurisa, Assistant Professor: Mixing and transport processes in estuarine and coastal systems jjurisa@umces.edu

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OYSTERS

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SOCIOECONOMIC MODELING

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STREAM HEALTH & RESTORATION

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Robert Hilderbrand, Associate Professor: Stream ecology and conservation, stream assessment, monitoring, and restoration; watershed responses to land use and land cover change rhilderbrand@umces.edu

URBAN WATERFRONTS

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WATER QUALITY

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Greg Silsbe, Assistant Research Professor: Role of phytoplankton in global carbon cycle, satellite remote-sensing, tropical limnology gsilsbe@umces.edu

"Sampling a single river, you need a net, crew, permit; it can be expensive. The eDNA approach is an alternative where you just take a water sample, and you get an idea of the abundance of fish."

—Louis Plough on using DNA to track fish in area waterways

Jeremy Testa, Associate Professor: Estuarine biogeochemistry, dissolved oxygen cycling, numerical modeling, estuarine systems ecology
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Qian Zhang, Watershed Effectiveness Data Analyst: Environmental science, water quality, watershed, nutrients, statistics, modeling, machine learning, Chesapeake Bay
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WILDLIFE ECOLOGY

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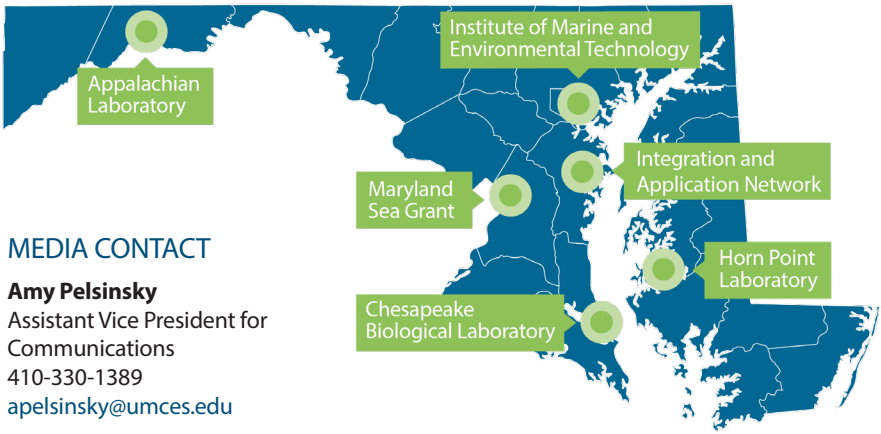

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