

# NOAA'S ATLANTIC OCEANOGRAPHIC AND METEOROLOGICAL LABORATORY

Hurricane, Climate, Coastal, and Ocean Research

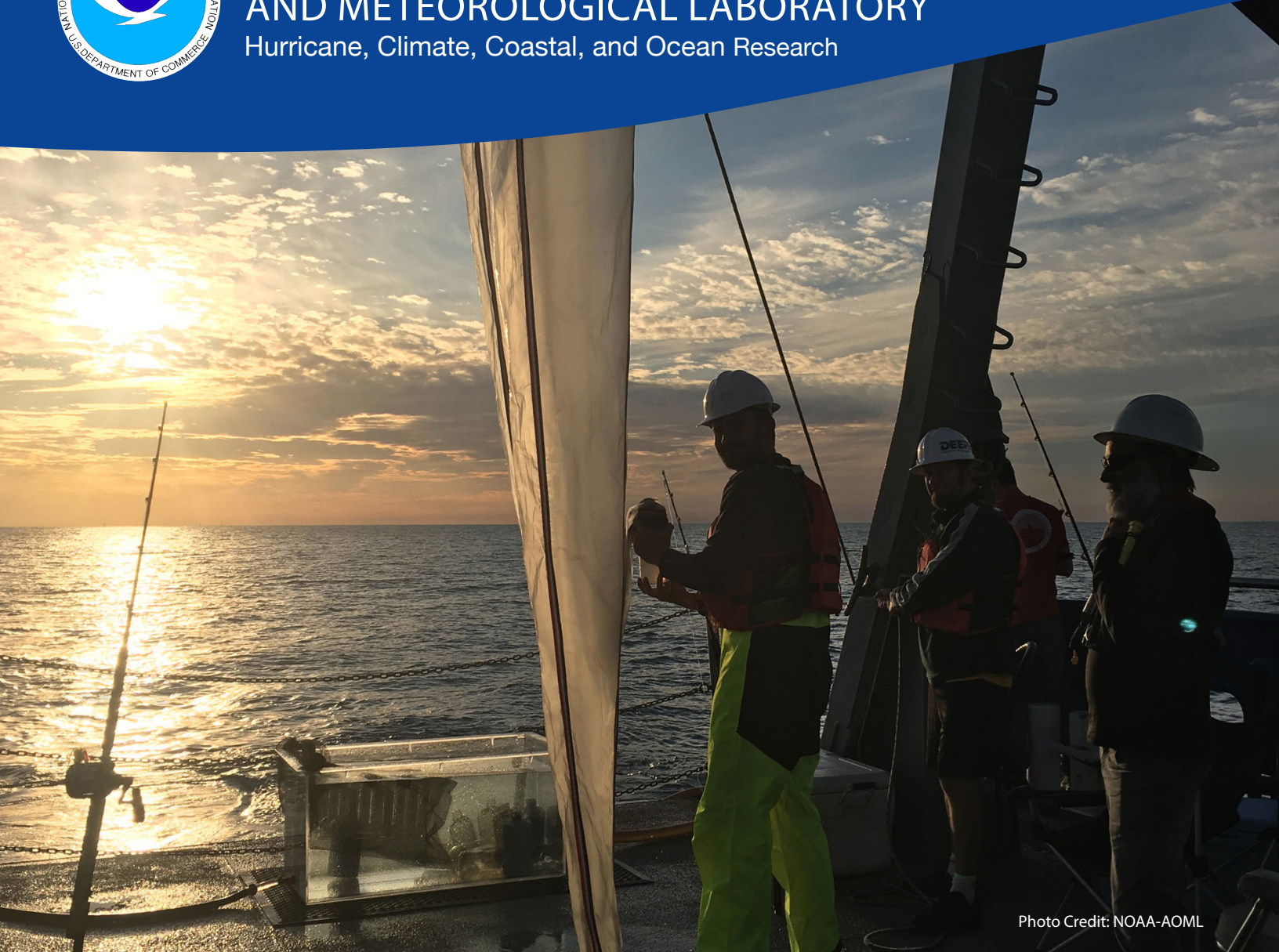



Photo Credit: NOAA-AOML

## Atlantic Oceanographic and Meteorological Laboratory

The research portfolio of NOAA's Atlantic Oceanographic and Meteorological Laboratory (AOML) encompasses ocean, coastal, and atmospheric studies to deliver NOAA's future by transferring research results into operations and applications. We focus on improving the prediction of hurricanes, learning about the ocean's role in climate and extreme weather events, understanding the global impacts of ocean acidification and pollution on coastal ecosystems, and providing insights to help resource managers. AOML leads many international efforts to maintain, optimize, and interpret global observations from ships, satellites, aircraft, drifting buoys, moored instruments, and floats. These observations are the foundation of our research.



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Photo Credit: NOAA-AOML



## ***Improving Hurricane Forecasts***

AOML scientists fly directly into storms to observe the processes that drive intensity change and employ new technologies to observe where humans cannot safely go. AOML then transfers these observations into our ever-improving models, such as the Hurricane Weather Research and Forecasting model, to help NOAA provide the nation with the best forecasts.



## ***Advancing Environmental Modeling***

AOML's computer simulations of the natural world help inform decision making that saves lives. We work closely with federal, academic, and international communities to advance the state of hurricane modeling, inform sound economic investment in observing systems, and better understand the impacts of resource management decisions.



## ***Understanding the Ocean's Role in Climate & Weather***

AOML leverages data from its ocean observing systems to examine patterns of change in ocean features and how these patterns of change can explain, and even predict, severe weather events such as hurricanes. We also study how the ocean can influence seasonal patterns such as extreme temperatures and drought.



## ***Identifying Solutions for Coastal Ecosystems***

AOML uses an ecosystem-based approach to describe how the physical, chemical, and human environments are connected to the marine environment. We consider relationships to coastal systems such as coral reefs and economically important fish stocks, managed by our NOAA and state partners, so that they can best manage resources.



## ***Maintaining Ocean Observing Systems***

AOML designs, optimizes, and maintains key ocean observing systems with global partners to monitor ocean currents and other properties. We study how ocean changes affect climate and marine ecosystems and build on the current state of knowledge by maintaining valuable, long-term datasets of ocean changes over time to improve earth system predictions.



## ***Understanding the Global Carbon Cycle***

AOML works closely with national and international partners to describe the ocean's role in the global carbon cycle. Using ships of opportunity, we monitor carbon as it moves between the ocean and the atmosphere. We also study the impact of increasing amounts of carbon being absorbed into the ocean, causing seawater to become more acidic.

