RESEARCH
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Overview of NOAA Research and Context for GFDL Review

John Cortinas, OAR Deputy Assistant Administrator for Science

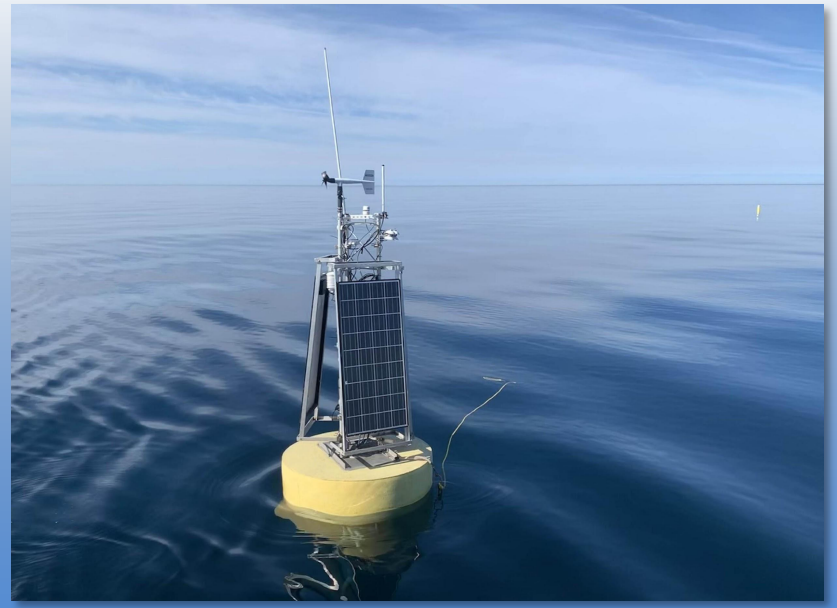
January 28-30, 2025

NOAA Mission

NOAA's Mission: Science, Service and Stewardship:

1. To understand and predict changes in climate, weather, oceans and coasts;
2. To share that knowledge and information with others; and
3. To conserve and manage coastal and marine ecosystems and resources.

NOAA's Office of Oceanic and Atmospheric Research (OAR)



Our Vision is to Deliver NOAA's Future

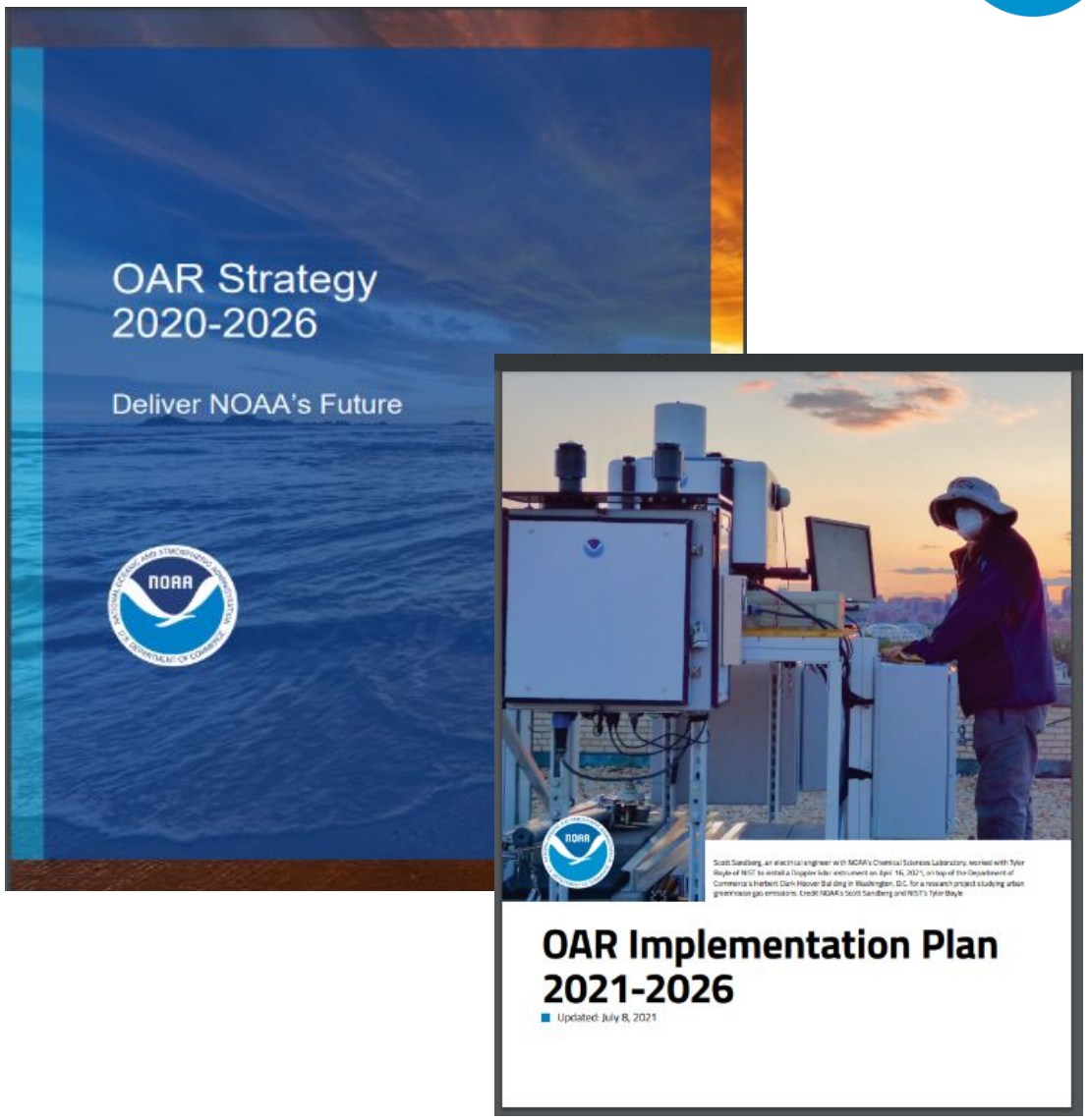
VISION

Our Mission is to conduct research to understand and predict the Earth system; develop technology to improve NOAA science, service, and stewardship; and transition the results so they help us meet the challenges faced by society.

MISSION

OAR Strategic Goals

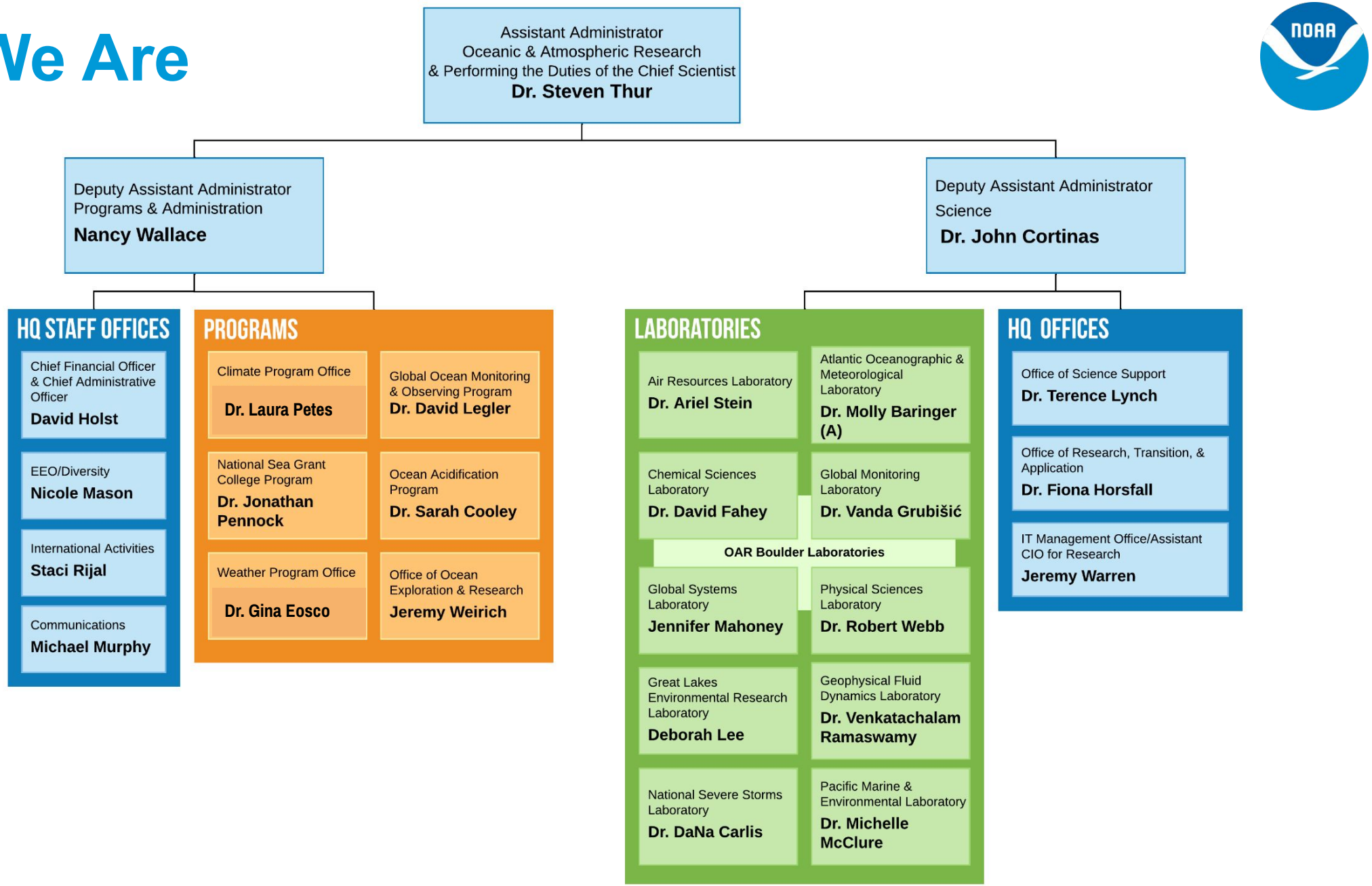
1. Explore the Marine Environment
2. Detect Changes in the Ocean and Atmosphere
3. Make Forecasts Better
4. Drive Innovative Science



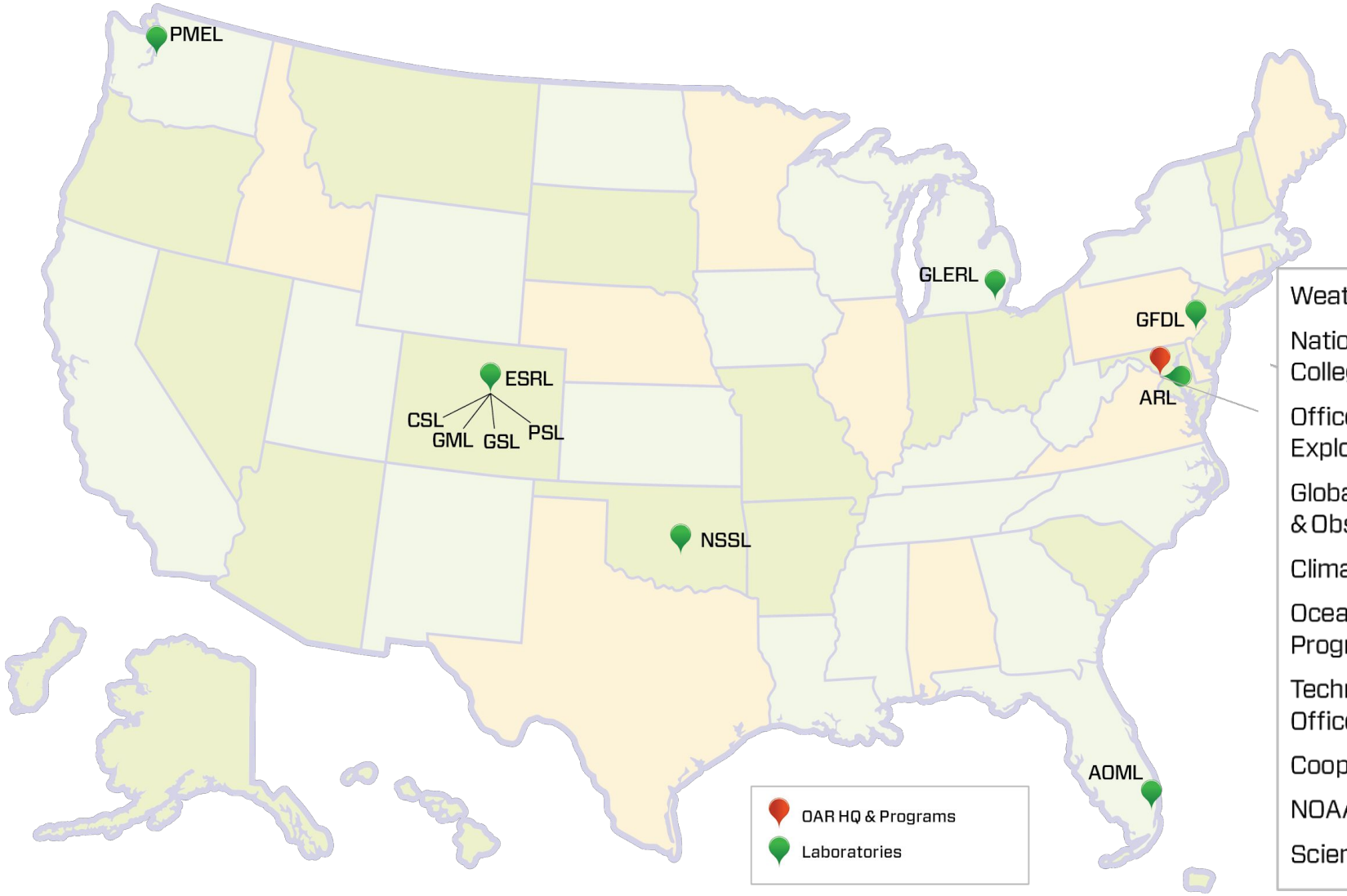
Societal Challenges

- Confront the challenges from our changing climate that is impacting almost every aspect of our lives.
- Protect against extreme weather events and environmental hazards to save lives, livelihoods, property and support healthy ecosystems.
- Manage too much and too little water ensuring both access and safety with Earth's greatest resource.
- Sustain a healthy environment and economy together, helping people understand how their choices will impact their communities.

Who We Are


Assistant Administrator
Oceanic & Atmospheric Research
& Performing the Duties of the Chief Scientist
Dr. Steven Thur
Deputy Assistant Administrator
Programs & Administration
Nancy Wallace
Deputy Assistant Administrator
Science
Dr. John Cortinas
HQ STAFF OFFICES
Chief Financial Officer & Chief Administrative Officer
David Holst
EEO/Diversity
Nicole Mason
International Activities
Staci Rijal
Communications
Michael Murphy
PROGRAMS
Climate Program Office
Dr. Laura Petes
Global Ocean Monitoring & Observing Program
Dr. David Legler
National Sea Grant College Program
Dr. Jonathan Pennock
Ocean Acidification Program
Dr. Sarah Cooley
Weather Program Office
Dr. Gina Eosco
Office of Ocean Exploration & Research
Jeremy Weirich
LABORATORIES
Air Resources Laboratory
Dr. Ariel Stein
Atlantic Oceanographic & Meteorological Laboratory
Dr. Molly Baringer (A)
Chemical Sciences Laboratory
Dr. David Fahey
Global Monitoring Laboratory
Dr. Vanda Grubišić
OAR Boulder Laboratories
Global Systems Laboratory
Jennifer Mahoney
Physical Sciences Laboratory
Dr. Robert Webb
Great Lakes Environmental Research Laboratory
Deborah Lee
Geophysical Fluid Dynamics Laboratory
Dr. Venkatachalam Ramaswamy
National Severe Storms Laboratory
Dr. DaNa Carlis
Pacific Marine & Environmental Laboratory
Dr. Michelle McClure
HQ OFFICES
Office of Science Support
Dr. Terence Lynch
Office of Research, Transition, & Application
Dr. Fiona Horsfall
IT Management Office/Assistant CIO for Research
Jeremy Warren

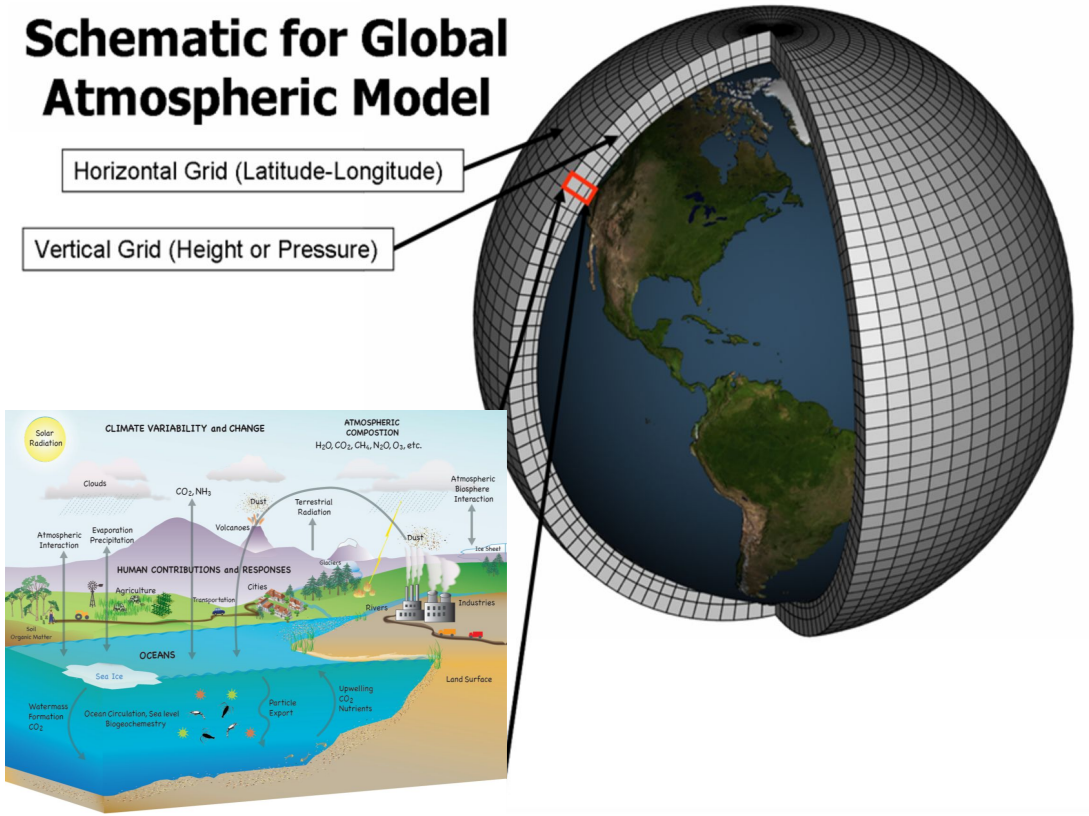
OAR Labs and Programs



- Weather Program Office
- National Sea Grant College Program
- Office of Ocean Exploration & Research
- Global Ocean Monitoring & Observation
- Climate Program Office
- Ocean Acidification Program
- Technology Parnerships Office
- Cooperative Institutes
- NOAA Libraries
- Science Advisory Board

Geophysical Fluid Dynamics Laboratory

GFDL is focused on comprehensive research that is fundamental to advancing the scientific understanding of the physical, dynamical, chemical and biogeochemical processes governing the behavior of the atmosphere, oceans, land, ice, and ecosystems. GFDL has been a pioneer since 1955 in the development and application of computational models of weather, oceans, and climate. The use-inspired research contributes to NOAA's seamless understanding, predictions and projections from weather to seasonal to centennial timescales, including extremes; quantification of regional and global climate; and Earth System variability and change.



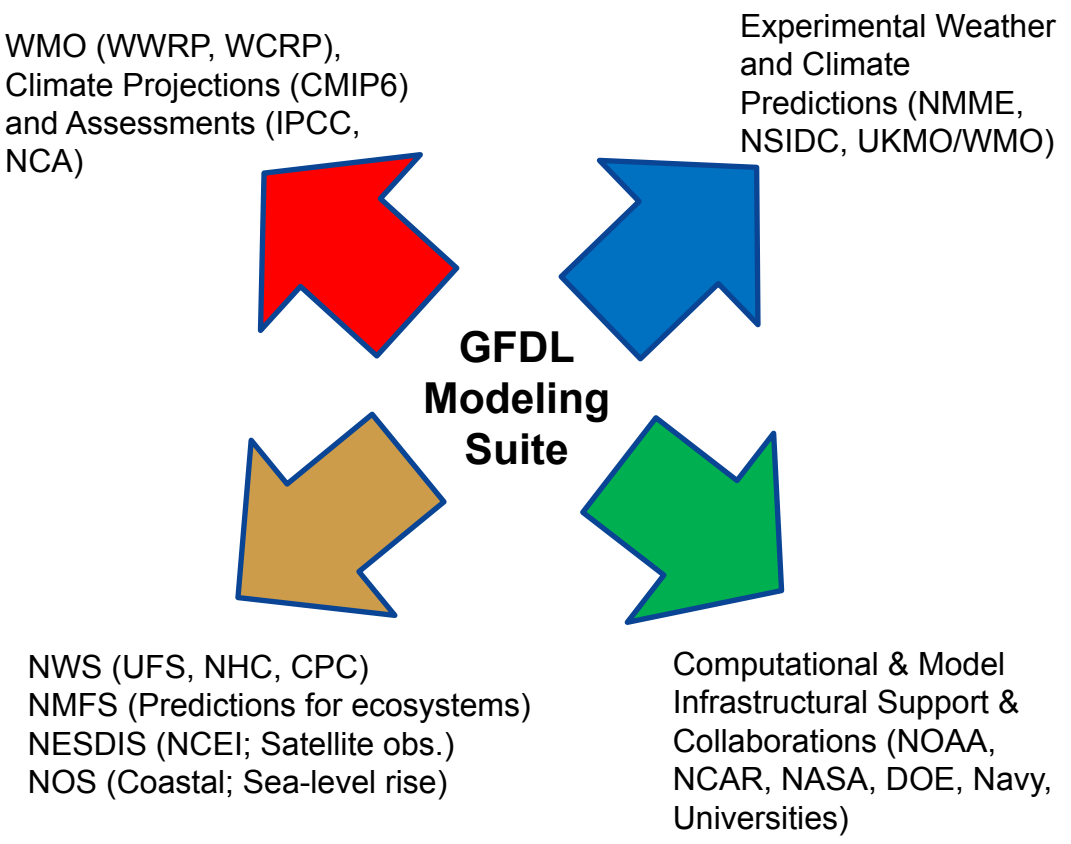
GFDL modeling and applications support NOAA innovations:

- FV3 atmospheric dynamic core for National Weather Service predictions
- MOM6, national ocean model for predictions of weather and climate
- Seasonal predictions: North American Multi-Model Ensemble (NMME)
- Operational Atlantic hurricane forecasts, and seasonal-decadal hurricane projections
- Earth System models for ocean, climate and ecosystems applications
- Predictions of severe storms, heat waves, floods/droughts, Arctic ice
- Contributions to World Climate Research Program Model Intercomparison Project and Intergovernmental Panel on Climate Change (*The Scientific Basis*)

Geophysical Fluid Dynamics Laboratory in OAR's Portfolio

- GFDL directly supports three of OAR's Strategy (2020-2026) Goals: 1) Detect Changes in the Oceans and the Atmosphere, 2) Make Forecasts Better and 3) Drive Innovative Science.
- GFDL closely collaborates with other OAR laboratories and programs:
  - Global nested, and Variable Resolution modeling (GSL, AOML, PSL, EMC))
  - Forward looking projections (also Climate Change Projections out to 2050) (CPO, NESDIS/NCEI)
  - Precipitation Prediction Grand Challenge (CPO)
  - Hurricane research and predictions (AOML, NWS/NHC)
  - Climate Ecosystem Fisheries Initiative (PSL, PMEL; NMFS)
  - Coastal Inundation (PSL; NWS; NOS)
  - Modeling of climate variability and change (WMO/WCRP,….)
- GFDL also partners with programs across OAR, including CPO, GOMO, and OAP to *Confront the Challenges from our Changing Climate*, one of OAR's four Societal Challenges.

Users of GFDL Models, Data, and Information



Geophysical Fluid Dynamics Laboratory Leadership

Dr. Venkatachalam “Ram” Ramaswamy, GFDL Director

Dr. Ramaswamy took the helm at GFDL in 2008, as the lab’s fourth director. His maxim has been use-inspired research (so-called Pasteur’s Quadrant) that emphasizes the imperative for fundamental cutting-edge research relevant for NOAA’s applications and operations. His leadership has enabled innovative science underpinned by a sustained lab research infrastructure that is continuously fulfilling NOAA’s mission objectives. While advances in basic sciences (e.g., processes, mechanisms) are pivotal for improvements in modeling, understanding, and predictions, the challenge is the support of basic research and development, and how to derive cutting-edge models of the weather, climate, and Earth System that deliver trustworthy and societally-relevant information to the Nation.

Geophysical Fluid Dynamics Laboratory Leadership

Dr. Whit Anderson, GFDL Deputy Director

Dr. Anderson's primary role is to coordinate between the scientific mission of the lab and its supporting assets and activities, such as administration and information technologies and high performance computing. He interacts with external entities from other NOAA line offices, federal agencies, legislative branch of government and universities in support of the lab's science.

Lauren Koellermeier, GFDL Associate Director

In her role as Associate Director at GFDL, Lauren leads the development and implementation of science and administrative policies, and oversees communication and project management functions at GFDL. She oversees internal and external reporting, and the planning and execution of budget initiatives.

NOAA Science Reviews

- NOAA Administrative Order (NAO) 216-115B requires that NOAA research and development activities be evaluated every five years by independent peer review.
- OAR Circular 216-3 implements the NOAA requirements within OAR.
- OAR conducts these science reviews at the laboratory and program level.

Scope of Review

- Quality, relevance, and performance of research and activities sponsored or conducted by NOAA's GFDL over the last 5 years (2019).
- Recommendations for improvements moving forward.
- Progress on implementing strategic plans and insights for future planning.


The GFDL 5-10 Year Strategic Science Plan

09/26/19

Executive Summary

How Does OAR Define Success?

Three Evaluation Criteria:

1. **Quality** is a measure of the novelty, soundness, accuracy, and reproducibility of a specific body of research. Indicators include publications, technology development, data contributions, and awards.
2. **Relevance** is a measure of how well a specific body of research supports NOAA's mission and the needs of users and the broader society.
3. **Performance** is a measure of effectiveness and efficiency. It includes an assessment of the organization's leadership, management, operations, workforce, organizational culture, strategic planning, progress towards performance targets and milestones, efficiency in resource utilization, and transition of research to operations.

How OAR Uses Reviews

- Inform performance improvements and portfolio management
- Encourage innovative and collaborative approaches to meet goals and objectives
- Maintain consistency with NOAA strategic planning, budgeting, and execution
- Highlight directions for future strategic plans
- Identify common themes and priorities so that OAR can determine mechanisms, policies, or actions to address corporately

Thank You!