

# NOAA's Atlantic Oceanographic and Meteorological Laboratory

Organizational Overview

Dr. Robert Atlas  
Director



# AOML Vision

A NOAA research laboratory recognized as a center of excellence in atmospheric and oceanic research and a sought-after resource to the community and the nation for expertise on hurricanes, coastal ecosystems, and the role of oceans in climate.



# AOML Mission

AOML's mission is to conduct research to understand the physical, chemical, and biological characteristics and processes of the ocean and the atmosphere, both separately and as a coupled system.

These investigations will lead to:

- More accurate forecasting of severe storms
- Better use and management of marine resources
- Better understanding of the factors affecting both climate and environmental quality
- Improved ocean and weather services for the nation.





# Virginia Key Science Community



Miami Seaquarium

Maritime and Science  
Technology (MAST) High  
School

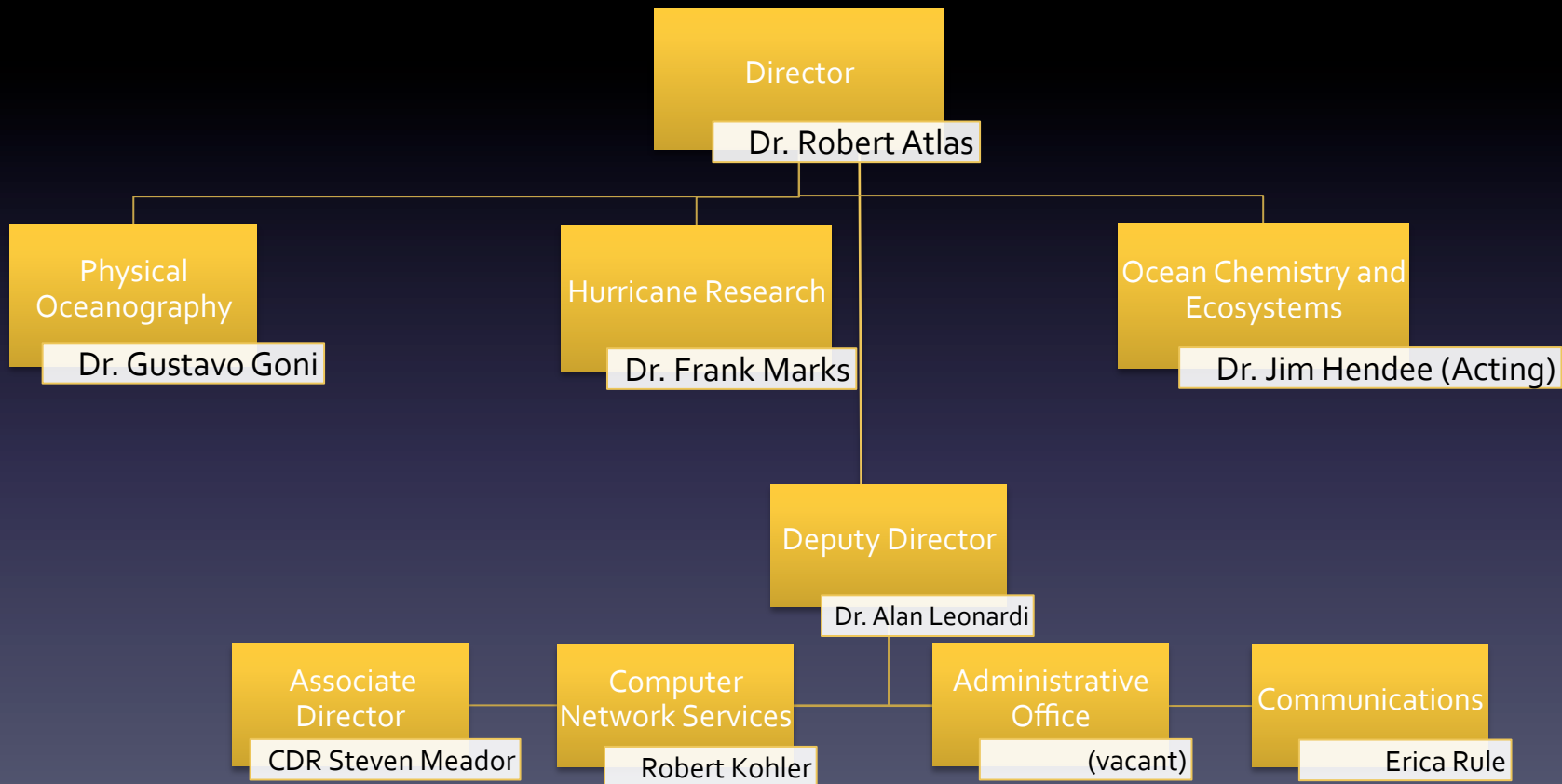
AOML

University of Miami's  
Rosenstiel School of Marine and  
Atmospheric Science

Southeast Fisheries  
Science Center

# AOML Internal Organization

OAR's most diverse laboratory



# AOML Research is Driven by:

NOAA Strategic Plan

NOAA 5-Year R&D Plan

NOAA Customers

Federal Statutes

National Programs

Interagency Agreements

International Agreements

Local/Regional Governments

Climate Goal

Weather & Water Goal

Ecosystem Goal

National Ocean Service

NOAA Fisheries

National Weather Service

Office of Weather and Air Quality

Climate Program Office

Coral Reef Conservation Program

Ocean Acidification Program

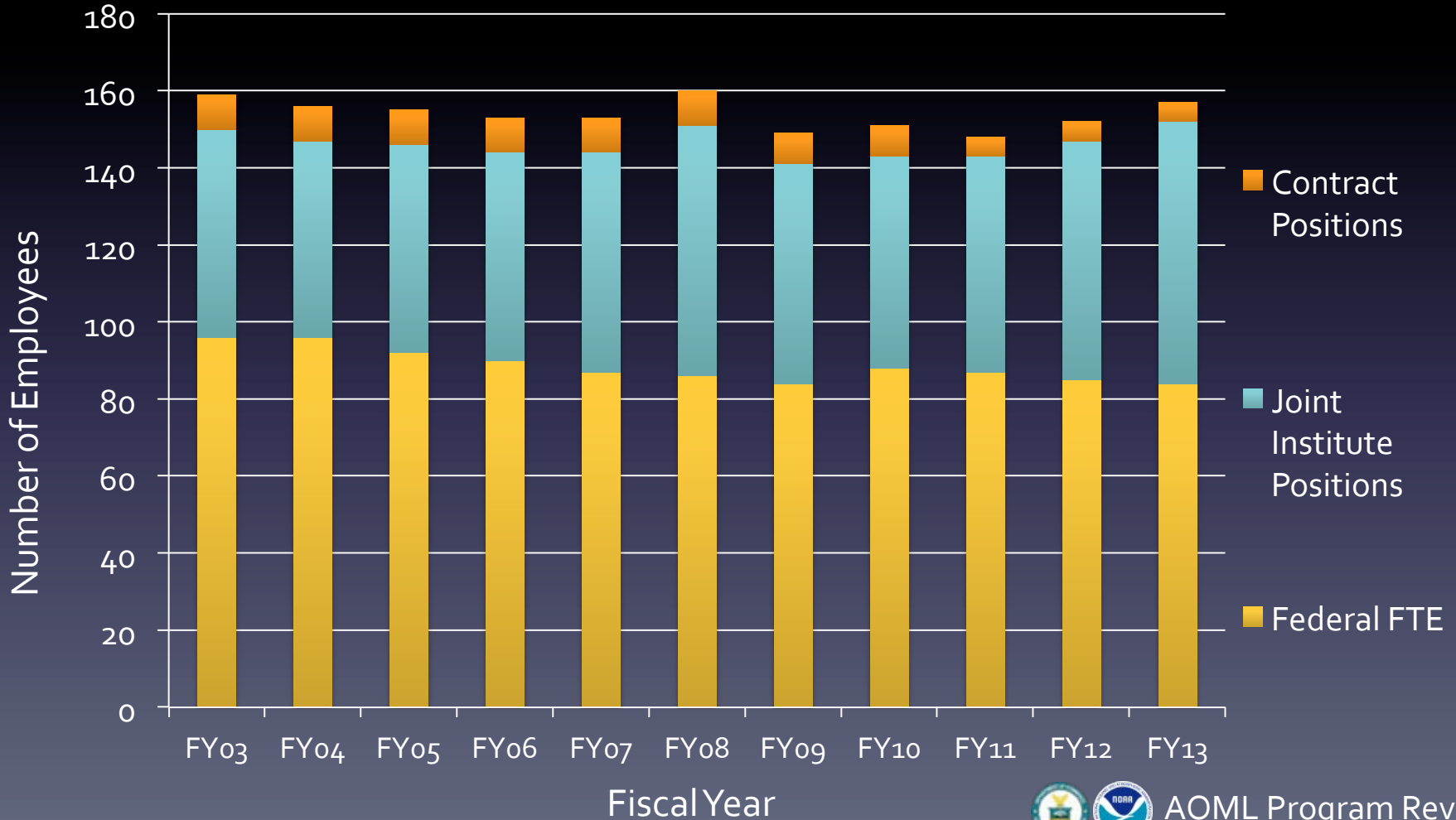
Unmanned Aircraft systems Program

Integrated Ecosystem Assessment Program

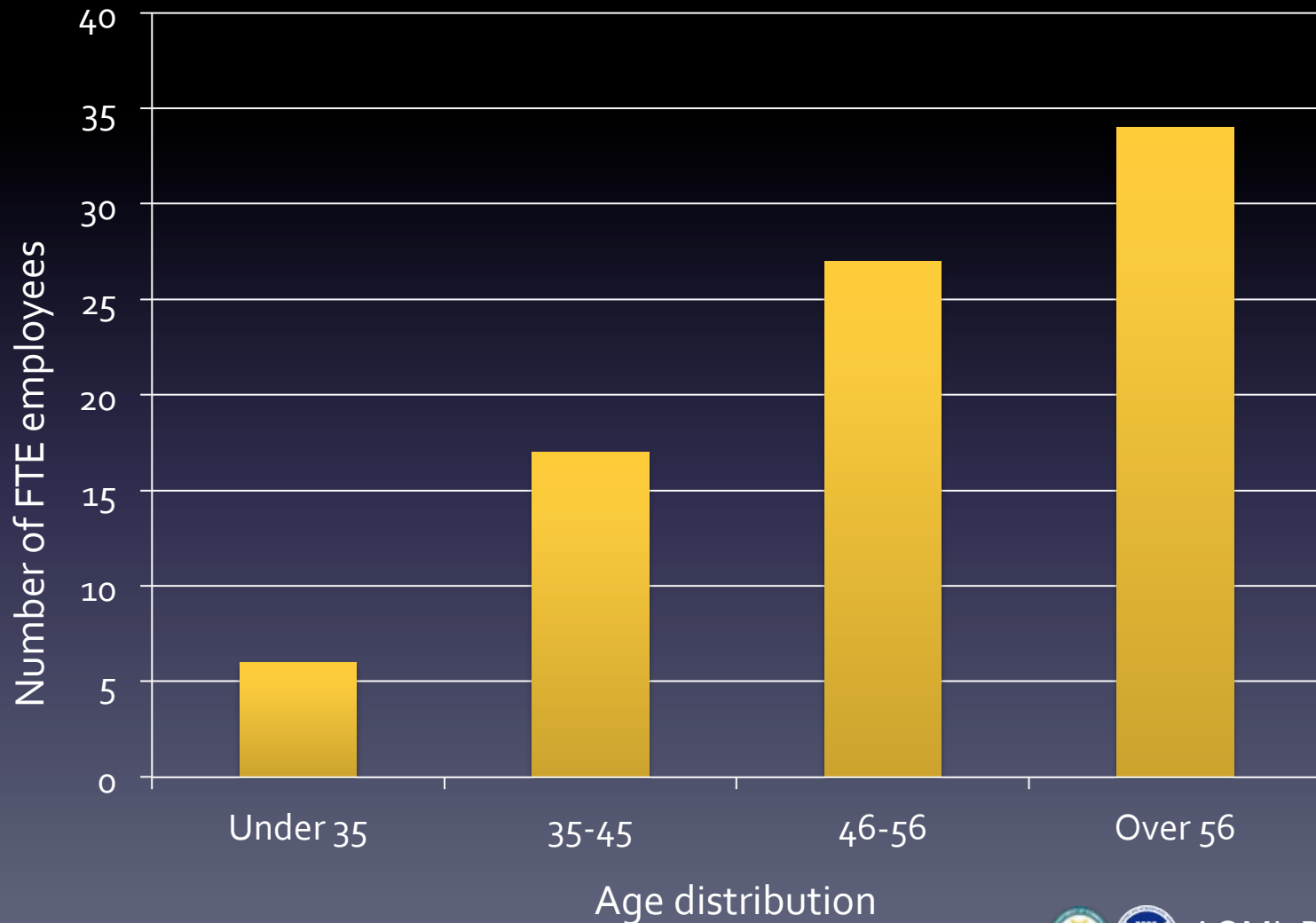


# AOML Resources: People

Total AOML Employees from 2003 – 2013 by Employment Category

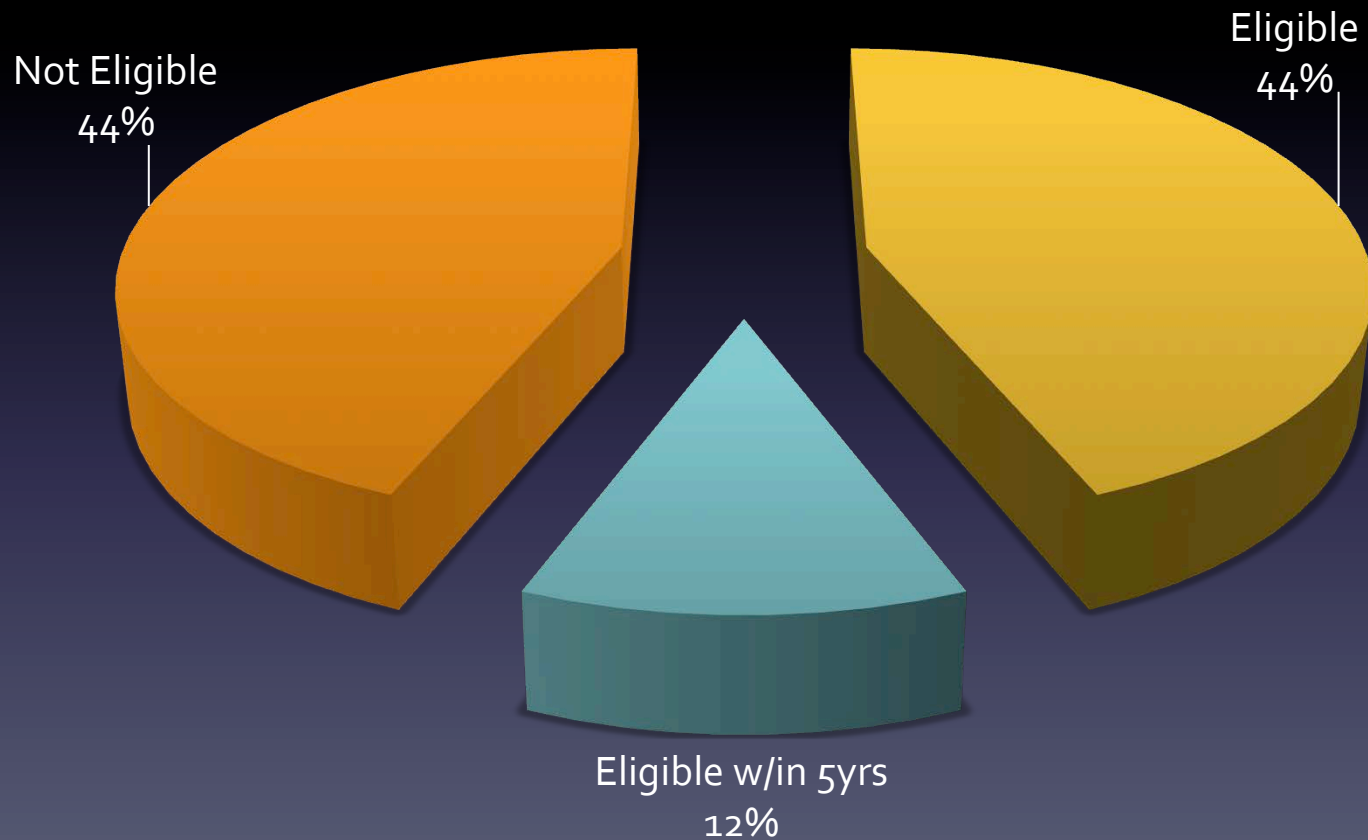


# AOML Resources: FTE Age Distribution



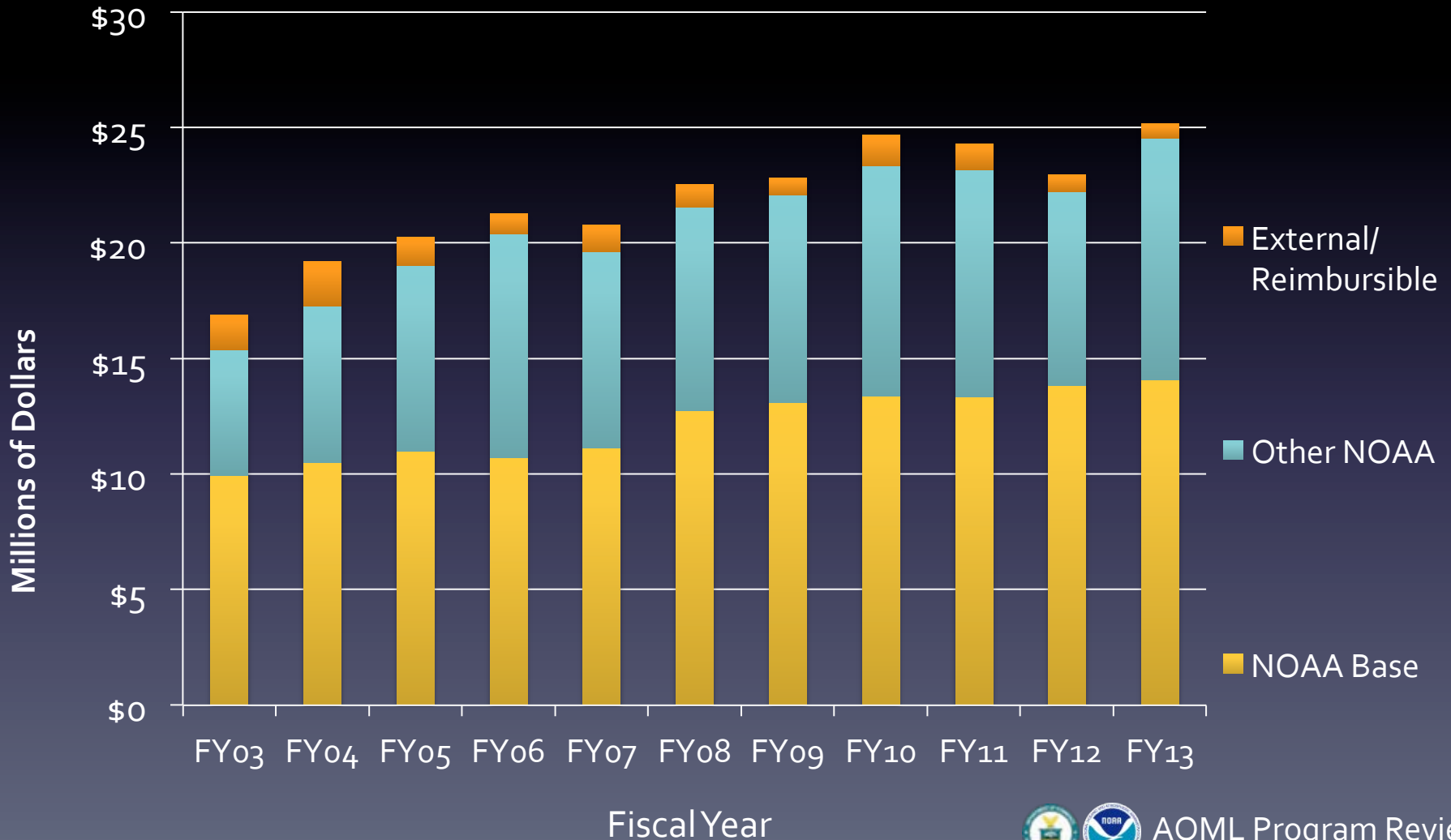


# AOML Resources: FTE Retirement Eligibility



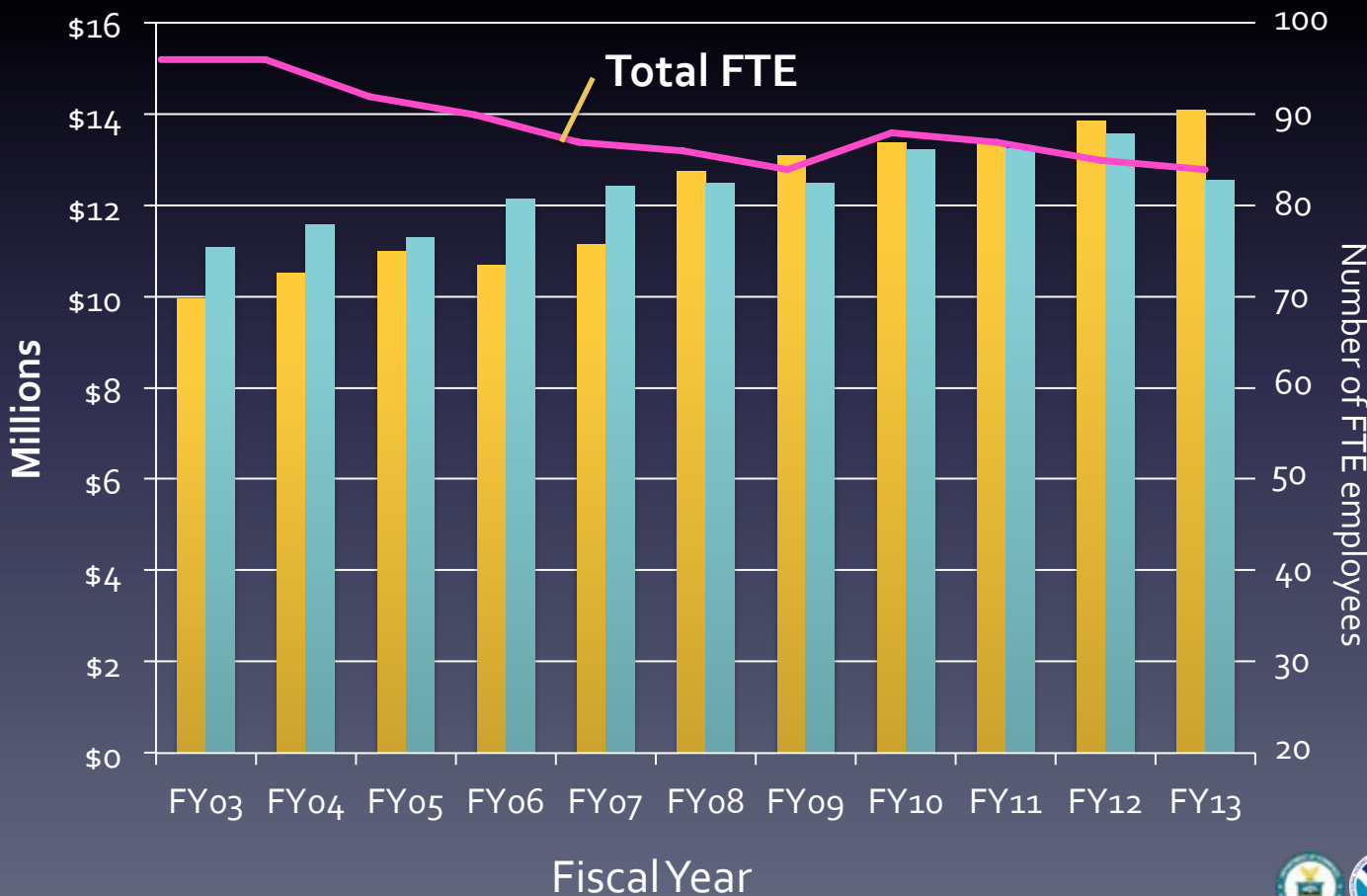
# AOML Resources: Funding

AOML Total Funding from 2003 – 2013, by source



# AOML Resources: Budget vs. Salaries

Base Funding vs. FTE Salary Load (including FTE count), 2003 - 2013

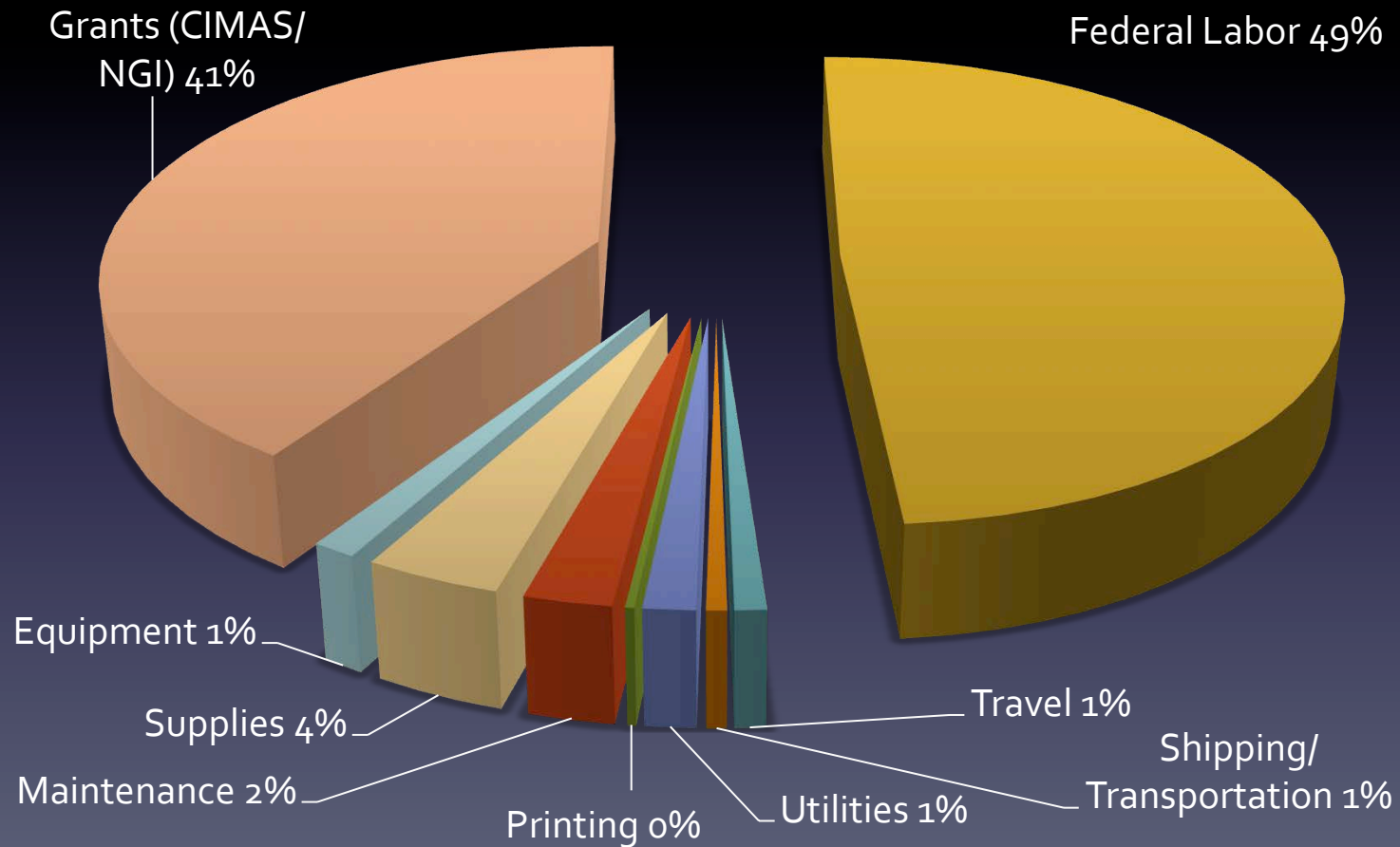


- Base funds have grown by \$4M in the past decade
- Since 2008 Base Funds have exceeded FTE salary

■ Base  
■ FTE Salary

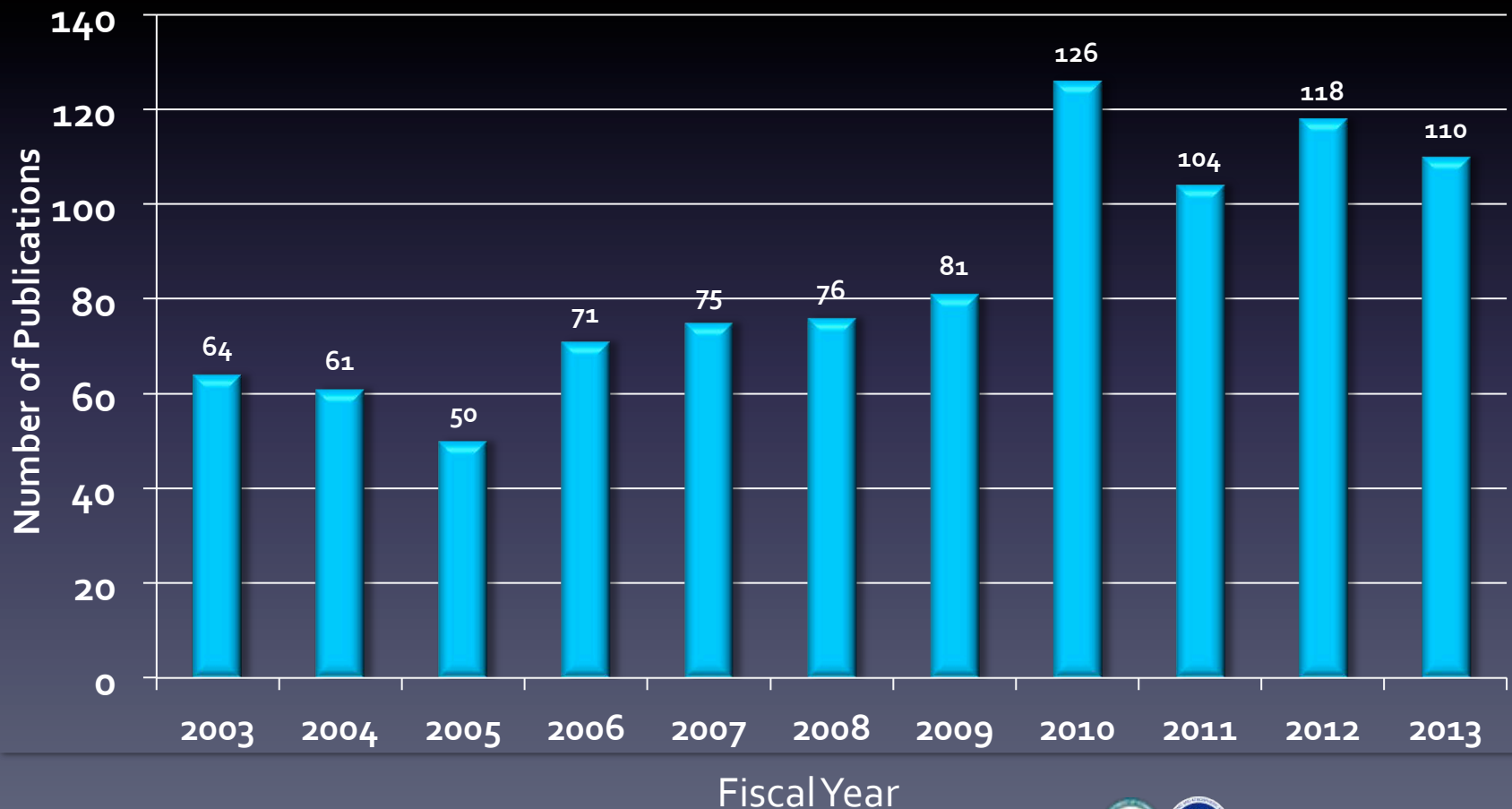


# AOML FY 2013 Operating Expenses



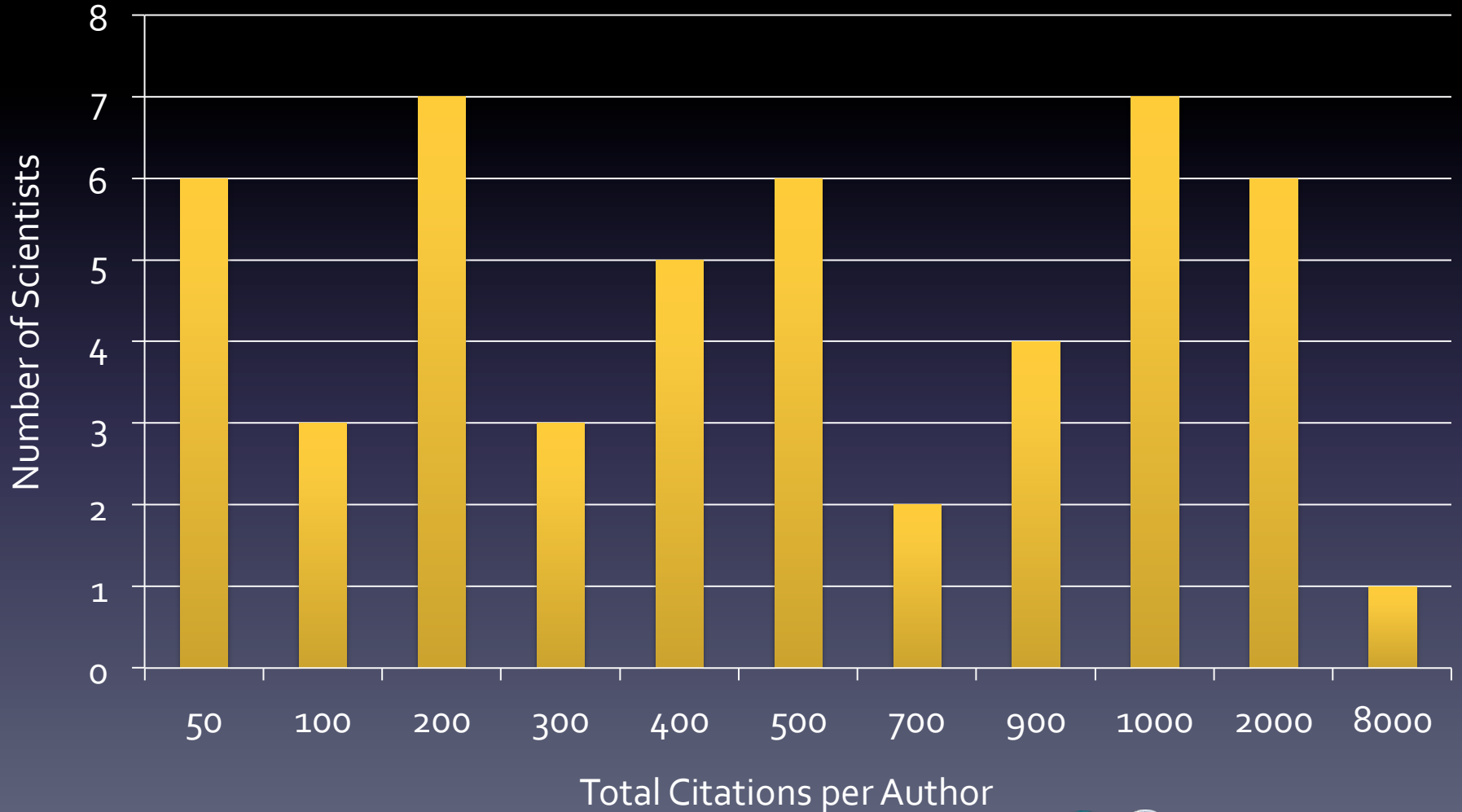
# AOML Peer Reviewed Publications

AOML Peer-Reviewed Publications by Fiscal Year: 2003-2013

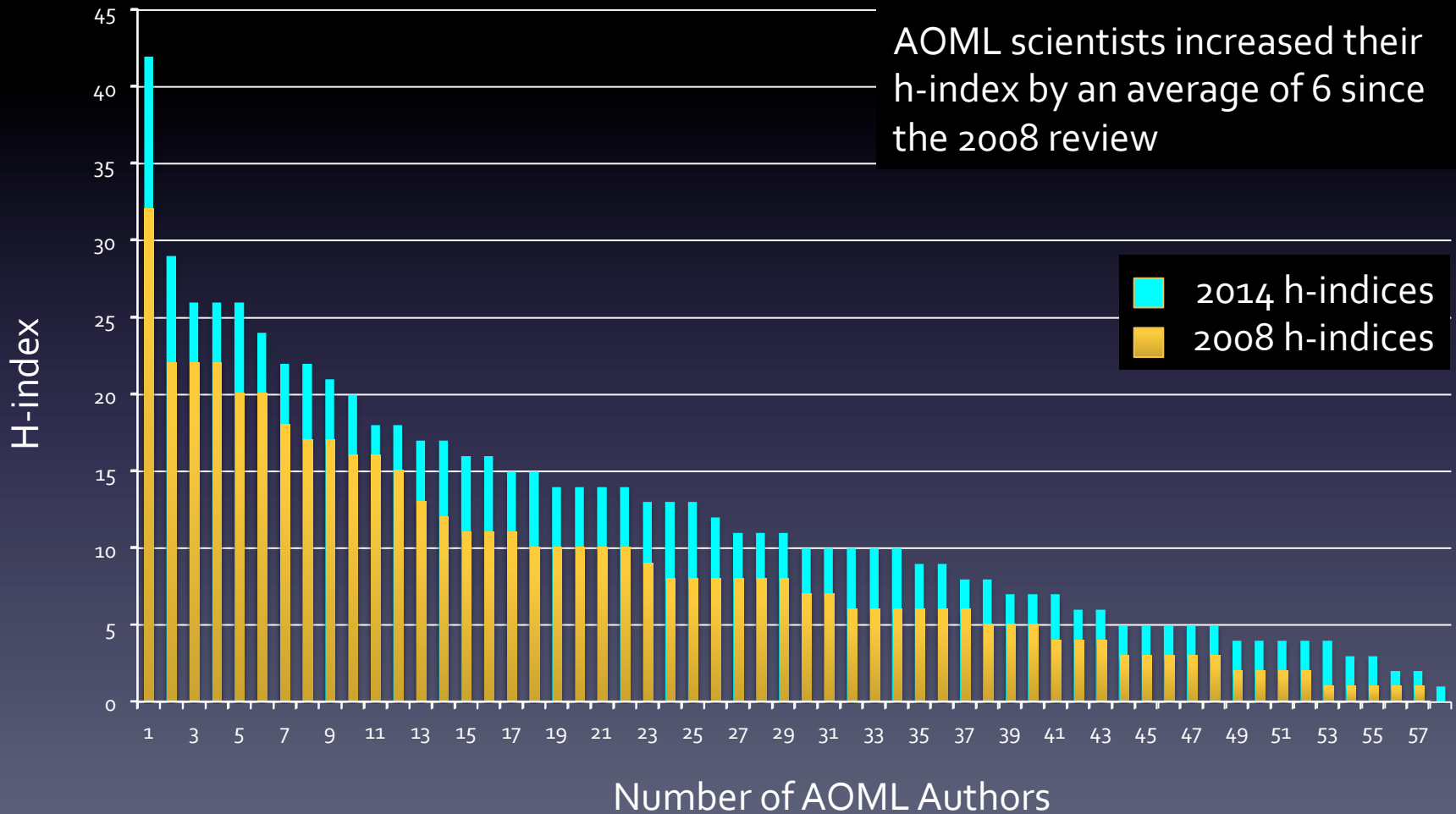




# Distribution of Citations per AOML Author



# Publications: H-index



# AOML Research: Customer Focused, Results Driven

- Research at AOML is driven by the needs of our customers, particularly other NOAA line offices.
- We create and implement next generation observing systems, technologies, models and analyses that are unique to AOML in the fields of oceanography and meteorology.
- AOML leverages partnerships within the broader scientific community to augment and increase our capacity to meet our objectives.
- AOML research targets key scientific questions that focus our research to provide results that are tailored to our customers' needs and NOAA's mission.





# Key Questions Driving AOML Research

## Research Themes

- Oceans and Climate
- Coastal Oceans and Ecosystems
- Hurricanes and Tropical Meteorology

## Key Science Questions

- To what extent do models correctly estimate the state of the Meridional Overturning Circulation?
- What causes deficiencies and uncertainties of IPCC-AR5 climate models?
- What drives Tropical Atlantic climate changes and their impacts?
- What processes drive regional changes in Atlantic and Arctic ocean circulation and sea level?
- What are the optimal observing system designs and strategies that will improve ocean state estimates and forecasts?
- Can we predict extreme U.S. tornado outbreaks beyond the "weather" time scale?





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- How are Carbon Dioxide Levels in the Ocean Changing?
- What is the impact of climate change and ocean acidification on coral reefs?
- What are the sources, concentrations and dispersion patterns of nutrients and pathogens in coastal waters?
- How do we assess, evaluate, and predict the holistic integrated state of coastal ecosystems to improve management?
- Can we use molecular and genomic strategies to identify sources of degradation in coastal ecosystems?



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- What is the role of convective-scale processes in tropical cyclone intensity change?
- How can high resolution models be improved to better represent structure and intensity change in tropical cyclones?
- What observations will result in accurate and precise representation and forecasts of the TC inner core in models?
- How does the interaction of hurricanes with vertically sheared flow contribute to intensity change?
- Can we improve tropical cyclone model biases through systematic evaluation using observations?



# New Research Thrust

- Quantitative Observing System Assessment Program (QOSAP)
  - Develop the next generation “state of the art” Global OSSE System
  - Adapt OSSE methodology to additional applications
  - Conduct OSEs and OSSEs in support of data gap mitigation

# Key Issues

- Uncertainty in federal budget (furlough)
- Reduced access to Ocean-class NOAA ships in the Atlantic
- Aging facility that draws on research funds for maintenance

# Key AOML Accomplishments

- Establishing modeling as a key activities in ocean and atmospheric research
- Maintaining key oceanic and tropical cyclone observational capabilities
- Developing OSE's /OSSE's for the atmosphere and ocean
- Significantly enhanced transition to operations and applications in all research themes
- Significantly improved publication rate
- Upgraded website and social media communication
- Substantially more integrated with NOAA's operational Line Offices
- Contributions to NOAA's response to Deep Water Horizon

