

NOAA's Climate Observations and Monitoring Program: *Planning for the Next Decade of Observing*

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

September 25, 2014





Climate Observation Division Webinar Outline

- Status and recent changes
- Budget update
- External forces/opportunities
- Strategic plans and directions
- Next steps.... And take-away messages

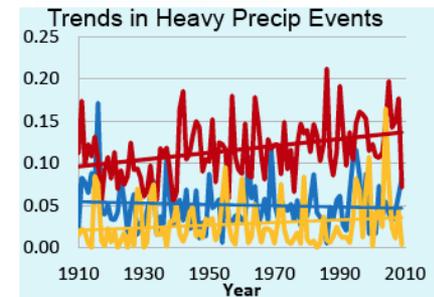
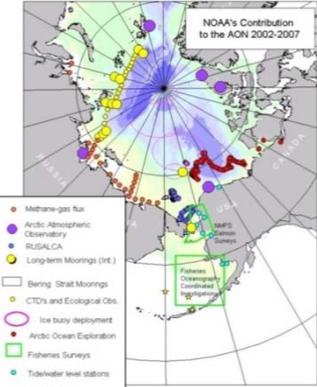


Climate Program Office

Climate Observation Division - Mission

Our mission is to provide

- **long-term high-quality global observations, and**
- **climate information and products to researchers, forecasters and other users to inform and prepare society for environmental challenges**



Strategic Partners

- NOAA (PMEL, AOML, GFDL, GLERL, CPC, EMC, NCDC, NODC, ESRL, NDBC), US Navy, NSF, NASA, DOE)
- Academia (Scripps, WHOI, UW, Miami, UH, FSU, ...)
- Int'l collaborators in Europe, Asia, Russia, Australia, S. America, Africa, etc
- Int'l Research Programs (e.g. WCRP), IOC, Arctic Council, IASC, PAG, WMO, etc



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Climate Observation Division - Organization



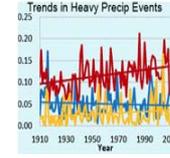
Ocean Climate Observations

- Sustained global ocean observing
- Ocean products and information
- International observational coordination and infrastructure



Arctic Research Program

- Sustained Arctic atmospheric and ocean observing
- Key products and information
- Analysis of key variables (e.g. climate detection)
- Developing US-Russian partnerships



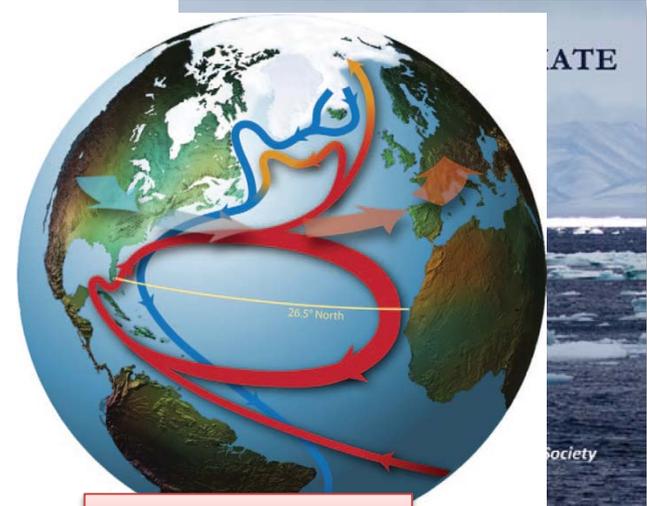
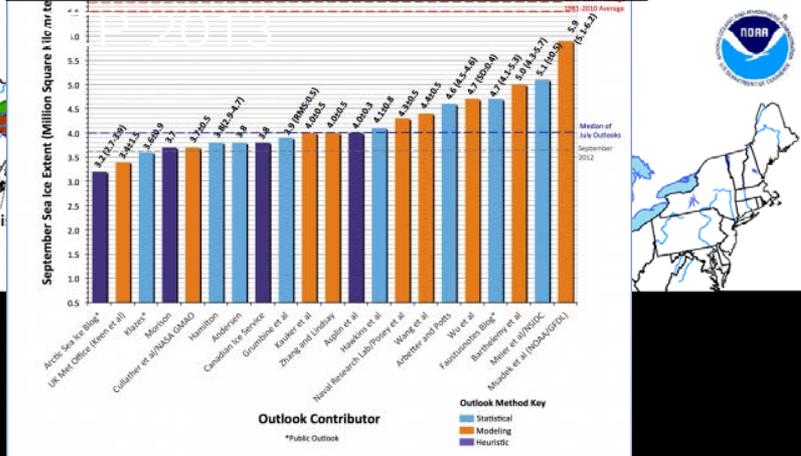
Climate Monitoring

- Data set development – creating value-added climate products
- Paleoclimate data and methods
- Contributions to establishing climate data records and products for assessments



COD is providing climate, marine, & Arctic observations, research, products, and services

SEA ICE OUTLOOK



AMOC Variability Last year's Climate

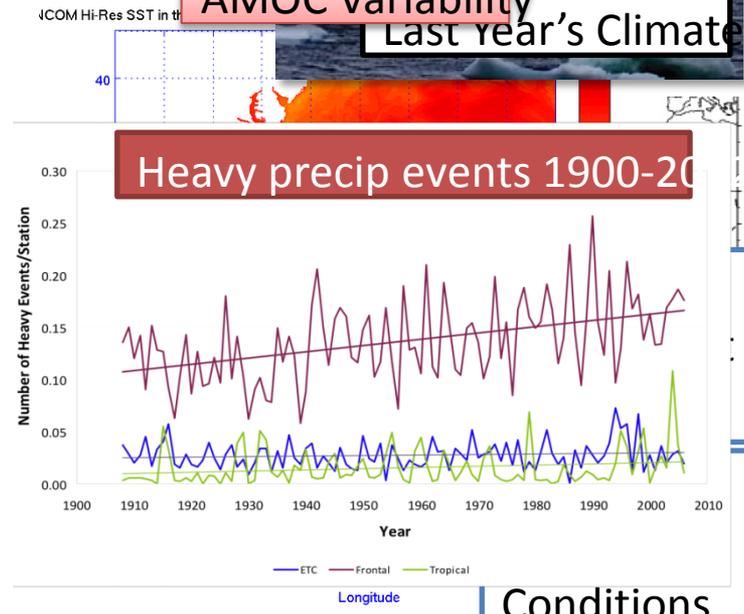
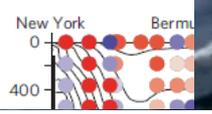
Arctic Report Card: Update for 2012

nature climate change PUBLISHED ONLINE: 1

135 years of global ocean warming | Challenger expedition and the Argo

Dean Roemmich^{1*}, W. John Gould² and John Gilson¹

Changing temperature throughout the oceans is a key indicator of climate change. Since the 1960s about 90% of the excess heat added to the Earth's climate system has been stored in the oceans



Refereed Publications

Conditions

Changes at COD



Bill
Murray



Candyce
Clark



Joel
Levy

Recent Retirees



Jennifer
Saleem Arrigo



Kathy Tedesco

New Hires

Staffing

Ocean Climate Observations

Steve Piotrowicz
Diane Stanitski
Kathy Tedesco
Sidney Thurston

Arctic

Kathy Crane

Climate Monitoring

Jennifer
Saleem Arrigo

A NOAA Corps Officer will join COD in January 2015

Additional hires anticipated to support Oceans, Arctic

In 2015 COD will be moving into reconfigured space on NOAA main campus/buildings (savings of annual rent costs)



Climate Observation Division Budget

Division Allocation from CPO FY14 (FY13)

Climate Observation Division \$44.1M (\$40M)

Ocean Climate
Observations
\$38M (\$34.5M)

Arctic
Program
\$3.1M (\$3.4M)

Climate Monitoring
\$2.9M (\$2.9M)

Sustained Ocean
Observations and
Monitoring

Regional Climate
Data and
Information

Climate Competitive
Research

Budget Lines

0.0%

+0.8%

-32%

+8%

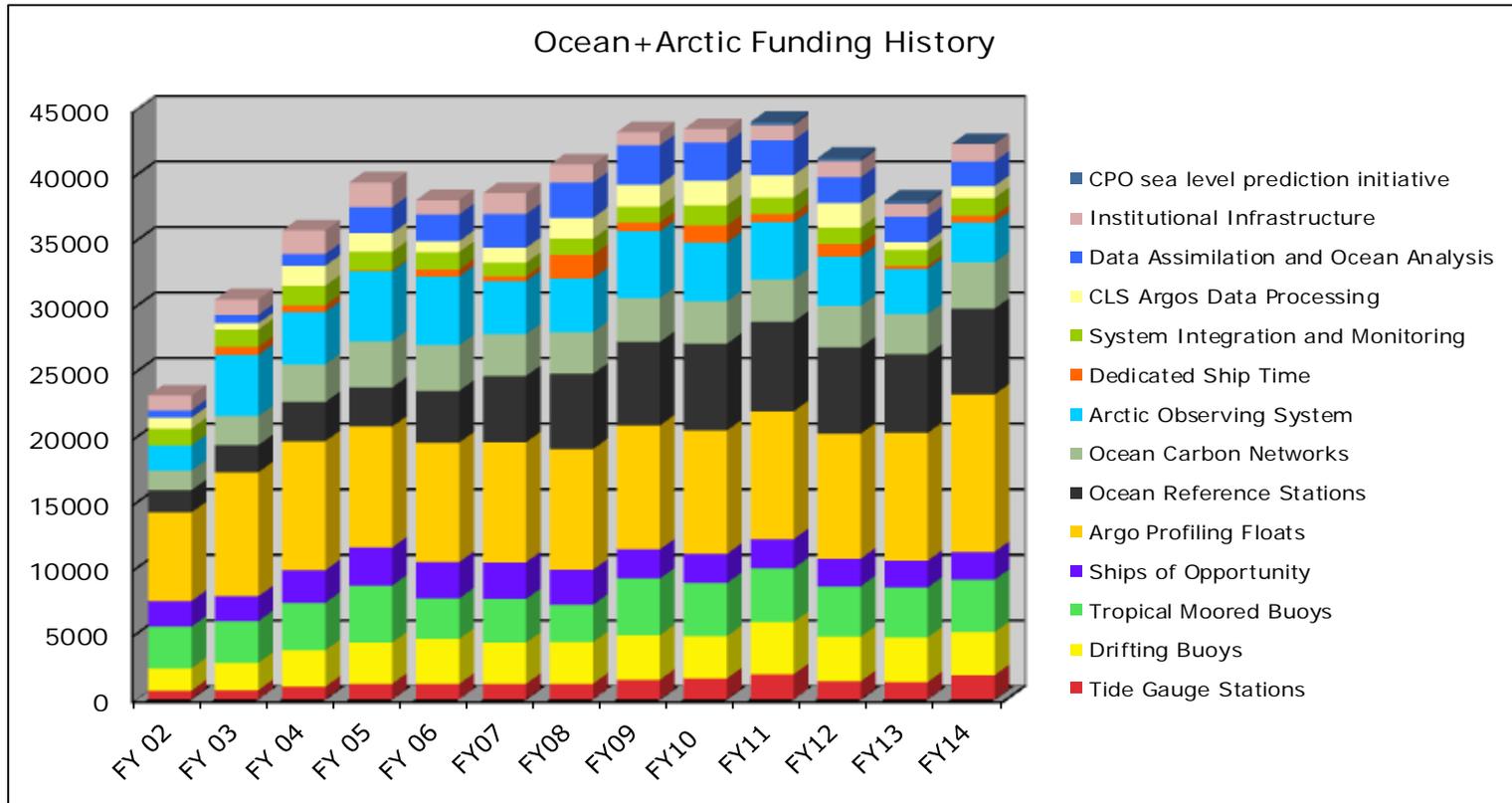
-28%

0.0%

FY15 House & Senate Mark (for entire PPA, not specifically COD programs)



Climate Observation Division Budget History



Decreases in Arctic (28%) and Climate Monitoring (48%) since FY11 have not been recovered.

COD is working with CPO and Climate Goal to make best case for increased support/funding in these programs.



Climate Observation Division Planning

Strategic Planning - External Forces & Opportunities

- Evolving requirements for global climate observing systems (e.g. oceans, atmosphere, Arctic) and rapidly changing observing capabilities
- New Strategic Plans and priorities (within NOAA, including OAR and CPO)
- NOAA and US Gov't Directives (e.g., public access to publicly funded research and data)
- Increased need to demonstrate and communicate how, when, where our activities are contributing towards NOAA mission and priorities.



Climate Observation Division Planning

Strategic Planning - Internal Program Needs

- Improve coordination and synergies across COD as well as with other NOAA and external groups
- Provide input to CPO plans
- Prepare to make strategically-driven choices and changes that better position COD and NOAA for the next decade of observing



Climate Observation Division Planning Evolving Data Management at NOAA

Vision/Goal

All NOAA environmental data are to be



Discoverable



Accessible



Usable



Preserved

for all types of users and applications.

Currently...

Data Management Plan

NOAA PIs must describe how you will preserve, document and distribute data in a “DMP”

Data Sharing

Grantees write data sharing plan, and share data within 2 years.

NOAA Administrative Order 212-15 (2010)

Coming Soon – “PARR” Implementation

OSTP Public Access to Research Results (2013)

Data & Pubs

- **Expanded DM requirements**
- **Method for providing access to published papers**



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Context of COD Observing Activities

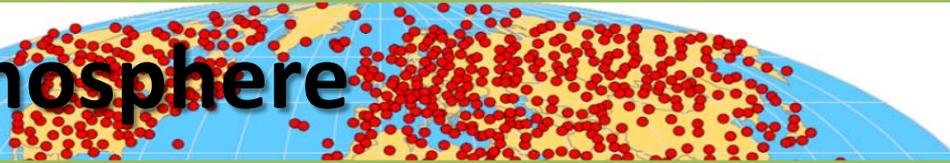
Argo, Jason, XBT, TAO/PIRATA/RAMA, Drifters, Ocean Carbon, OceanSITES, GLOSS, RUSALCA, GRA (IOOS), AVHRR...

Global Oceans



GSN, CRN, GAW, GUAN, GRUAN, IASOA, BSRN, MSU...

Atmosphere



CRN, IASOA, GTN-Permafrost/hydrology/glaciers/

Land



Global Climate Observing System

- Requirements processes
- Observing essential variables
- Network coordination
- Network monitoring
- Data management/access
- Integration
- Products
- Evaluation

COD supported activity in Red



Climate Observation Division COD Strategic Goals Framework

OBSERVING SYSTEM

Sustain, with national and international partners, an evolving in situ global observing system adequate to monitor, understand, and support prediction of the Earth system.

INFORMATION AND PRODUCTS

Expand the range of observation-based products and analyses to describe global and regional patterns of climate variability and change, and use these to educate and inform others about the changing state of the climate, and COD's foundational role in observing.

PARTNERSHIPS

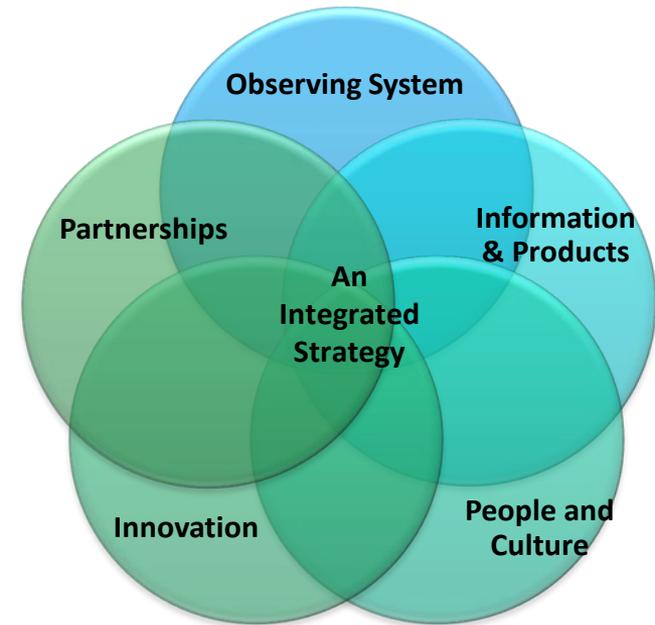
Collaborate with interagency, federal, international, academic, and private sector partners to develop solutions for sustaining and evolving the global in situ observing system and leverage federal observing investments.

INNOVATION

Leverage innovative practices and new technologies to improve system efficiency, timeliness, effectiveness, reduce risks associated with declining ship resources, and catalyze new applications of observational capabilities.

PEOPLE & CULTURE

Strengthen the workforce and supporting infrastructure to sustain leadership in global climate observing and related research.



- The COD Strategic Plan Division-wide (Ocean, Arctic, Monitoring)



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Guiding Questions

- What is the ocean's role in climate variability and change, including extremes (such as drought and hurricanes)?
- What are the processes governing the global ocean's temperature, salinity, circulation, and ocean-atmosphere interactions that improve our knowledge of changes in climate, oceans, and weather, and improve their predictions?
- How are global, regional, and local sea level changing, and why?
- To what extent is the global ocean playing a role in uptake and distribution of atmospheric carbon? How do global changes in ocean carbon affect ocean acidification?
- How is the Arctic system changing, particularly sea-ice extent and thickness; atmospheric circulation; and ocean conditions particularly important for marine ecosystems, transportation, commerce, & security?
- What information about the global ocean will help explain what is happening to open ocean and coastal marine ecosystems?



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COD Strategic Goals - highlights



Sustain an evolving in-situ global observing system adequate to monitor the Earth system



- **Evolve the requirements for the current ocean, atmosphere, and Arctic observing systems** in response to the needs of NOAA; users engaged in research, operations, and assessments; as well as decision-makers
- **Evolve the ocean, atmosphere, and Arctic observing systems in response to the requirements of end users and stakeholders engaged in research, operations, and assessments.**

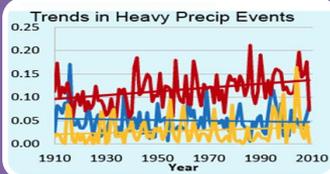
Foci: Tropical Pacific, Arctic, Deep Ocean, ocean biogeochemistry and others (TBD)

- **Develop observing evaluation capabilities** in the context of research, analyses, monitoring, model validation, and forecast requirements.
- Maximize synergies between sustained observing activities and planned climate process field campaigns.
- **Improve the timeliness, integration, and access/dissemination of observations and information.**



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COD Strategic Goals - highlights



Expand the observation-based products and analyses that describe global and regional patterns of climate variability and change

- **Sustain existing products** foundational to NOAA mission and describing climate variability and change.
- Support delivery of **new products** describing patterns of climate variability and change with a focus on oceans, Arctic, and extremes, including for rapid transitions and thresholds.
- Establish and expand new **long time-series baseline indicators** of climate variability and change.
- **Build awareness for COD capabilities** by communicating to multiple audiences through NOAA's websites, publications, assessments, reports, and representative indicators.



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COD Strategic Goals - highlights



Collaborate with interagency, federal, international, academic, and private sector partners to develop solutions for sustaining and evolving the global in-situ observing system and leverage federal observing investments

- **Develop synergies between in situ and remote sensing communities for critical satellite calibration/validation work, product and information development, and updating requirements of the in situ observing system.**
- Enhance the sustainability of the global climate observing system by diversifying, supporting, and leveraging **international partnerships** and frameworks.



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COD Strategic Goals - highlights



Focus on innovative practices and new technologies to improve system efficiency and capabilities

- **Develop and begin implementation of a **technology roadmap** to align with the future vision of the observing system.**
- **Optimize the use of all available ship resources and investigate strategies to reduce risks associated with declining ship resources.**
- **Improve data transmission timeliness** by leveraging new and emerging technologies.
- **Target strategic relationships and partnerships to test and incorporate new technologies** (including those developed outside of COD)



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COD Strategic Plans – next steps

- **COD Strategic Plan**
 - **Currently in draft form**
 - **Under revision in response to input received.**
 - **A revised draft will be available for comment.**
- **CPO Implementation plan will reflect initial steps necessary to achieve COD 5yr goals**
- **COD moving out in select areas outlined in our Strategic Plan**
- **COD investment priorities will align closely with our Strategic Plan**



Climate Observation Division Take-Away Messages

- **COD, and its many partners, have developed and are developing, critical elements of the in-situ climate observing system.**
- **NOAA is widely recognized for its international leadership in, and support of, global ocean and Arctic observing.**
- **We intend to maintain that leadership, and expand that leadership role into other areas.**
- **Program foundations of strong scientific participation and leadership, multi-faceted partnerships, and coordinated program management have worked well, but there is always room for improvement.**
- **Key challenges remain in sustaining the existing systems, and evolving it in light of new needs, capabilities, and opportunities amidst uncertain budgets.**
 - **We should not be afraid of evolving the system to make it more efficient, robust, and responsive to increased needs/requirements.**
- **We rely on our PIs and partners to carry out our mission. We look to you for continued leadership in the community, support, feedback, and engagement.**



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Thanks all and the COD Team

