



Climate Program Office Review

May 24-26, 2022

Pre-Recorded Presentation

Supporting Review Activity Area

1: Climate Science / Earth

System Science and Modeling

Climate Observation and Monitoring Program

Virginia Selz, Program Manager

CPO Earth System Science and Modeling Division



**Climate Observation and
Monitoring Program**

Virginia Selz, Program
Manager

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Modeling Division

Overview



- **Briefing Purpose:** Overview of COM Program
- **Context:** ESSM's COM program supports research focused on observation-based dataset and product development and analyses to increase the use and value of NOAA observations for climate research and applications.

COM research includes dataset/product development and analysis that:

- *Synthesizes observations to improve climate monitoring, modeling, and applications*
- *Targets use in Assessments: from user-specific (e.g. Office of National Marine Sanctuaries) to National Climate Assessment to IPCC*
- *Improves data/obs useability and availability to science and other stakeholder communities*

History since 2017:

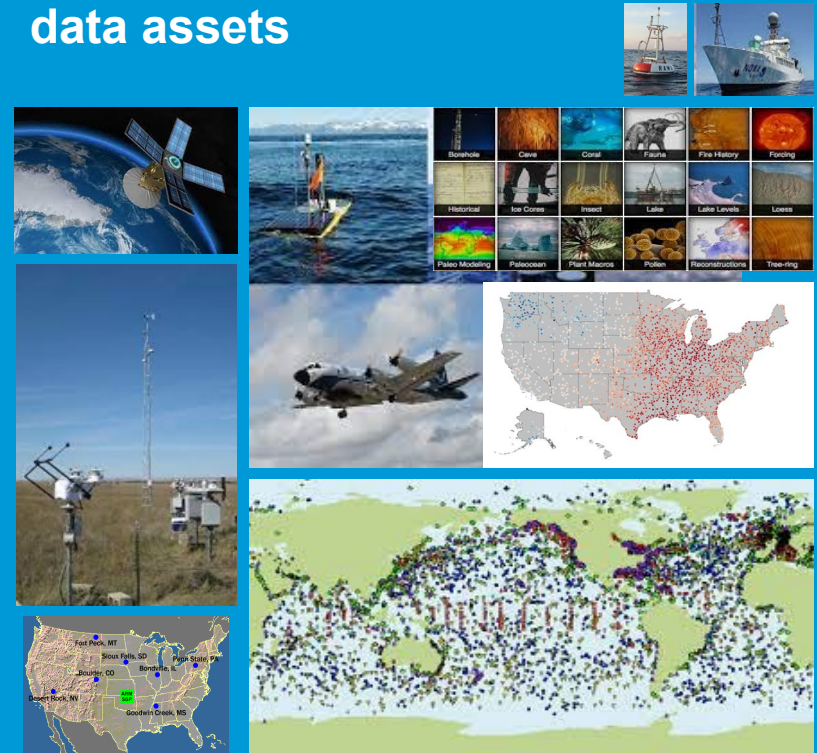
- *COM underwent a name change*
- *Transitioned from the Ocean Observing and Monitoring Division to ESSM 2019*
- *3 different program managers during period*

Annual Budget fluctuates +/- 300K (FY21 down from FY20)

FY21 Budget \$3.285M; Components:

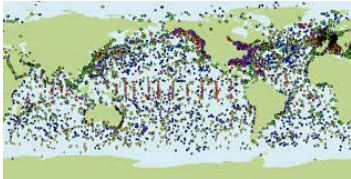
- Research Funding: 93%
 - Competitive: 68%
 - Direct to NWS, NESDIS: 25%
- Non-Research (Staff, Workshops, Travel): 7%

COM has a history of leveraging NOAA's vast observational and data assets



FY17-21 Competitive Research Portfolio (*multi-program competition*)

FY 17 Ocean Climate & Climate Monitoring (Indicators)



FY18 Paleoclimate Climate Monitoring (IPCC Uncertainties)

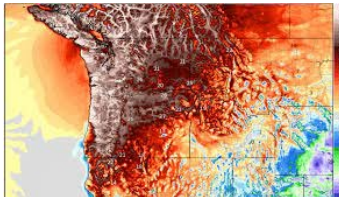


World Data Service
Paleoclimatology

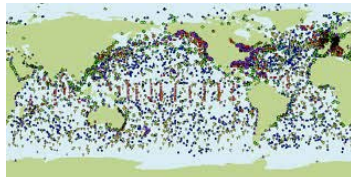
FY20 Atmospheric Boundary Layer Datasets for Models



FY20 MAPP+CVP+COM Explaining Extremes



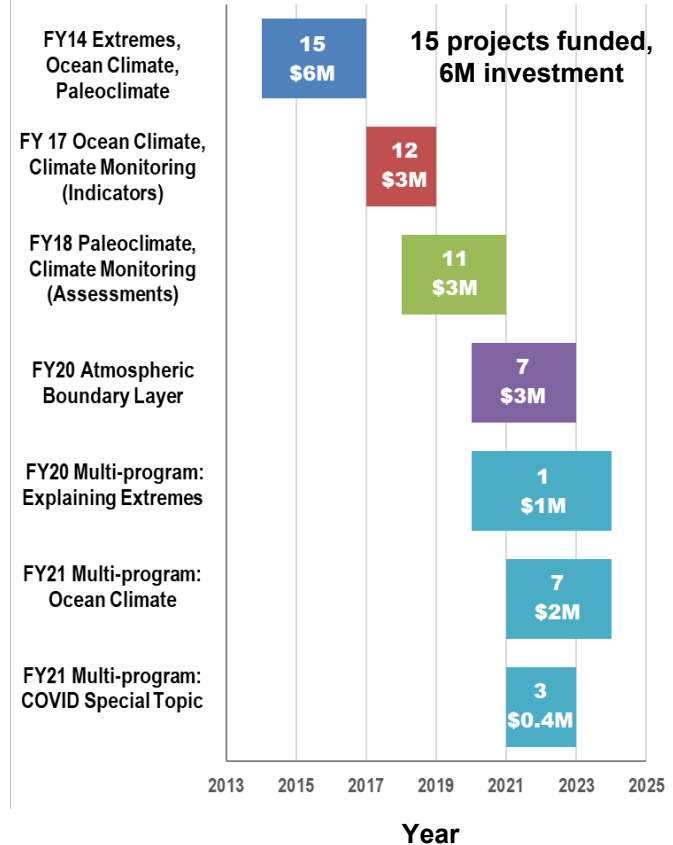
FY21 COM+CVP+GOMO Innovative Ocean Datasets for Climate Modeling & Monitoring



FY21 AC4+COM COVID Special Topic



Competition Topic

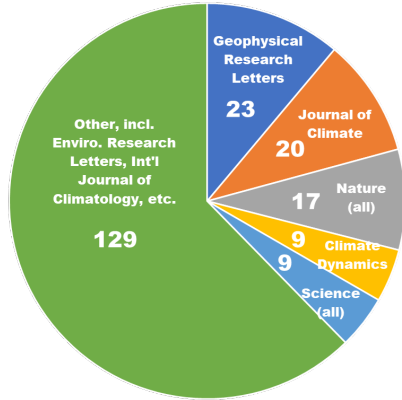


Key Accomplishments (FY17-21)



Quality

Total Publications, by Journal Family (182 total)



Notable Datasets

- ✓ Twentieth Century Reanalysis Project v3
- ✓ Daily Gridded North American Snow, Temperature, & Precipitation 1959-2009 v1
- ✓ Rutgers Northern Hemisphere 24 km Weekly Snow Cover Extent
- ✓ SeaFlux

Most Cited Publication, By Year

PAGES2k Consortium. (2017) "A global multiproxy database for temperature reconstructions of the Common Era." *Scientific Data*. (From Direct Funding)

142



57

Menne, Matthew J., et al. (2018) "The global historical climatology network monthly temperature dataset, version 4." *Journal of Climate* (From Direct Funding)

Box, Jason E., et al. (2019) "Key indicators of Arctic climate change: 1971–2017." *Environmental Research Letters* (From FY17 competition)

164



18

Kossin, James P., et al. (2020) "Global increase in major tropical cyclone exceedance probability over the past four decades." *PNAS* (From FY18 competition)

Slivinski, L. C., et al. (2021) "An evaluation of the performance of the twentieth century reanalysis version 3." *Journal of Climate* (From FY18 competition, co-funded by other programs)

9



top 1% of cited papers in its subfield (as identified by Web of Science).

Key Accomplishments (FY17-21)



Relevance

Strategic Partnerships

NOAA

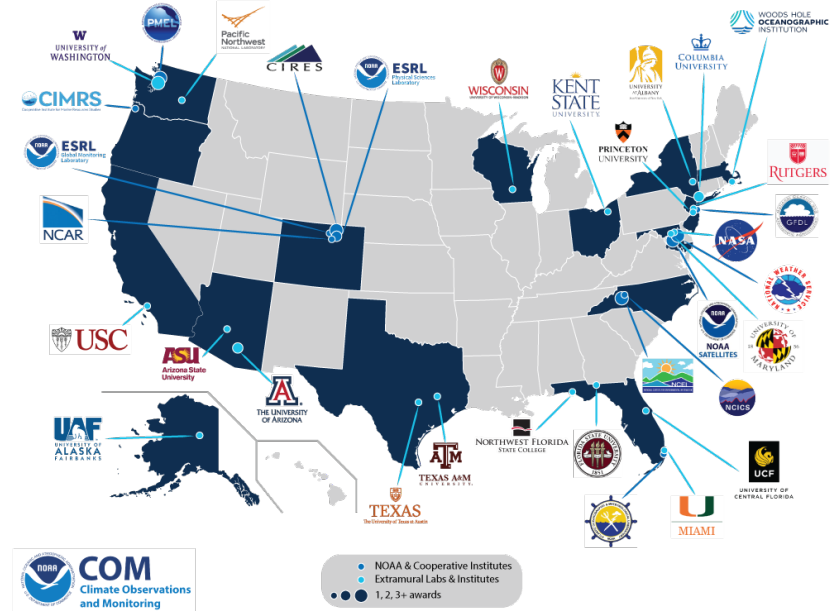
- **Competitive funding:** Average of 60% of competitively funded projects have affiliation with NOAA (NWS, OAR, NESDIS)
- **Direct funding:** NESDIS/NCEI Climate Monitoring and Paleoclimate datasets; NWS/CPC CMORPH2
- **Co-development/coordination of NOFOs:** OAR: GOMO; NOS: ONMS, NCCOS
- **Actively engaged with various NOAA/CPO priorities:** Precipitation Grand Challenge, Climate and Fisheries Initiative, CPO Risk Areas Initiative, Arctic

Academia: Universities in 15+ states

Interagency: USGCRP, US CLIVAR

Conferences/Workshops: OAR Arctic Forum, IOOS-OAR Workshop Series, AGU, Ocean Sciences, Ocean Obs, ESSM Workshops

COM-Funded Labs and Institutes (FY2017-2022)



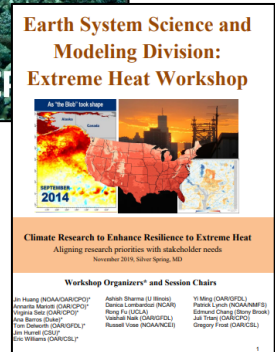
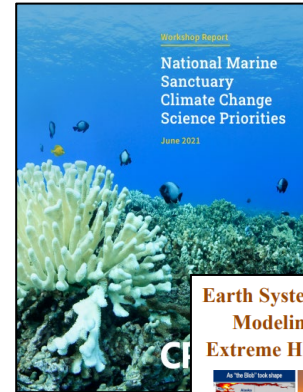
Key Accomplishments (FY17-21)



Performance

In past 5 years

- **Programmatic Leadership Examples (2019-2020)**
 - **Balanced COM-led vs multi-program competition portfolio:**
 - Supported 6 competitions: 4 were COM-led; 3 were Multi-program
 - Resulted in 56 COM-supported projects
 - **Improved integration of competitive and direct funding**
 - **Led Marine Risk Teams and supported Water Risk Teams**
 - **Planned (Left) and funded multiple Research Workshops**
 - **Awarded NOS Peer Rafting Award (2021)**
 - **Involved in planning processes:** Risk Teams (CPO-level), Climate and Oceans Portfolio participation (OAR-level), UN Oceans Decade Think Tank and Carbon Dioxide Removal Task Force (NOAA-level), USGCRP/CLIVAR (interagency-level)
- **Scientific Examples (2017-2020)**
 - **Development and analysis of Last Millenium Reanalysis (FY14)** advanced methods in proxy modeling and paleo data assimilation, and analysis of resulting dataset (FY18) advanced understanding of past climate processes
 - Development and/or analysis of climate datasets for Assessments (FY18) **provided support to strengthen and increase confidence in multiple IPCC findings.**
 - Continued support has been provided to **sustain and improve Climate Data Records** at NCEI



Key Accomplishments (FY17-21)

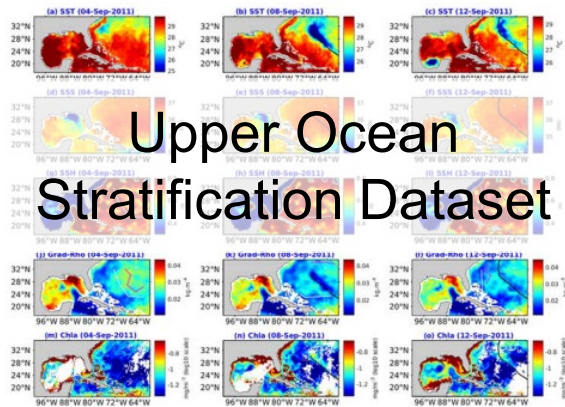


Highlights Scientific

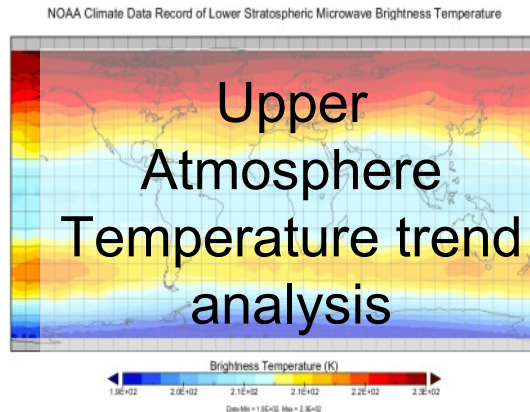
Projects across competitions develop datasets that are then used by the science community to inform 1) process understanding, 2) enhance obs-model integration and 3) improve the quality and consistency of climate datasets. Highlights:



1) For advancing process-understanding and further study



2) For improved Hurricane Intensity Prediction



3) For improved certainty in IPCC assessment findings

Drivers

- Program Scope
- Cross NOAA: Initiatives (PPGC, CFI); Program-program-lab collaboration opportunities
- CPO Risk Areas
- Interagency considerations

Constraints:

- Most direct funding to NWS and NESDIS (25% of budget) is fixed. It cannot be used to respond to changing office priorities.
- COM is a small program

Considerations/Challenges

- COM is a small program with a broad scope and has alternated between broad competitions (e.g. Climate Monitoring '17/18/21, Ocean Climate '17/21) and more narrowly scoped competitions (ABL datasets for models '20; Marine Ecosystems '22). **What is the optimal balance to best fulfill NOAA's mission?**
- There is increasing demand and pressure to connect research directly to operational services and end-user stakeholders. Most COM projects are upstream, foundational research that develop datasets for the science community to enable research that *may, in the distant future*, advance services. An exception to this is the 2022 Marine Ecosystem Risk Team solicitation targeted towards ONMS managers. **What is the optimal balance of targeting different stakeholder communities (science community (e.g. assessments, modeling), resource managers, the operational services community)?**

FY22-25 (Under Review)
Multi-program Competition with
ESSM: COM/MAPP and CSI
Division as part of the CPO
Climate Risk Area Initiative/
Marine Ecosystems

Supporting Slides



Additional Links and Resources

- [Climate Observations and Monitoring Program Website](#)
- COM Research Funding Portfolio Abstracts
 - [FY14](#), [FY17](#), [FY18](#), [FY20](#), [FY21](#)
- [COM supports improvements to subset of NCEI products](#)
- COM research investments from 17-21 in broader risk areas (Two-Pager)
- COM FY22 Focus: Marine Ecosystem Risk Area

Other Supporting Slides

- Examples of inputs to Competition Topics
- Relevance Research Portfolio Investments

NOAA and Community Input to COM Research Portfolio

FY22 Marine Ecosystems

- **NOAA:** CPO - ONMS Climate Science to Support Sanctuaries Workshop 2021, IOOS - OAR workshop series 2020, CPO Marine Ecosystem Risk Team 2019-current, NOAA FMC Line Office and OAR Lab Input Survey, NOAA Climate and Fisheries Initiative
- **Interagency:** US CLIVAR IAG Climate at Coasts Whitepaper

FY21 Oceans & Climate

- **NOAA:** 2020 GOMO Community Planning Meeting, 2020 SAB S2S2D Report, 2020 Ocean Acidification Science Plan 2020-2026, FMC Line Office and OAR Lab Input survey, CVP and GOMO interests
- **Interagency:** US CLIVAR IAG
- **Science Community:** OceanObs19 Synthesis Paper, Ocean Sciences Meeting 2020

FY20 Atmospheric Boundary Layer

- **NOAA:** OAR-wide Bedrock to Boundary Layer Workshop 2019, SAB S2S2D Report, CVP and MAPP Modeling Interests (CPTs, MDTF), FMC input survey
- **Interagency:** USGCRP US GEWEX, 2017 NAS Boundary Layer Workshop Report (NOAA, NASA, DOE, and NSF-funded)

Supporting: COM 101



Approximate distribution of research funding by topic

