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ESSM Bi-Annual Newsletter - Summer 2019

1 message

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NOAA Climate Program Office (CPO) ESSM Division supports competitive research to advance scientific understanding of the Earth system and to improve NOAA's Earth system models, predictions/projections and applications to address NOAA's mission in the climate area.

Programs

AC4 (Atmospheric Chemistry, Carbon Cycle, and Climate)

COM (Climate Observations and Monitoring)

CVP (Climate Variability and Predictability)

MAPP (Modeling, Analysis, Predictions, and Projections)

FY20 CPO NOFO

CPO's annual call for proposals (Notice of Funding Opportunity - NOFO) was published on July 24. This year, ESSM has 7 competitions. Letters of Intent are due by 5pm ET on August 23, and full applications must be received by 5pm ET on October 28.

Earth System Science and Modeling (ESSM) Program FY20 competitions:
AC4: Urban Atmosphere in a Changing Climate: Chemistry, Carbon and Composition

COM: Developing Terrestrial-, Marine-, and Ice-atmospheric Boundary Layer Datasets through Collaborations between Observations and Modeling Communities

MAPP: (1) Characterizing and Anticipating U.S. Droughts' Complex Interactions;
(2) Constraining Models' Climate Sensitivity

Multi-program (MAPP, CVP, COM): Explaining Climate Extreme Events: Developing a Rapid Assessment Capability and Understanding the Causes and Mechanisms of Extreme Events

Cross-Divison FY20 Competitions: Supporting the Needs of NOAA Fisheries
ESSM/CVP - Climate and Changing Ocean Conditions - Process Research and Modeling to Support the Needs of NOAA Fisheries
ESSM/ MAPP - Modeling Climate Impacts on the Predictability of Fisheries and Other Living Marine Resources
CSI/COCA - COCA Fisheries and Climate Program: Understanding Climate Impacts on Fish Stocks and Fisheries to Inform Sustainable Fisheries Management

ESSM Community Workshop

2019 Save the Date -- The 2019 ESSM Community Workshop will be held November 18 - 19 in Silver Spring, MD and is open to the broader Earth System Science Community. The workshop's theme this year is "Climate Research to Enhance Resilience to Extreme Heat". For more information, visit the workshop website.

The 2018 ESSM workshop report is now available. The agenda and presentations can be viewed on the 2018 workshop website.

Program Update: AC4

Global Monitoring Division Annual Meeting took place in May 2019 and presentations are now posted.

FY19 focus on long term trends in atmospheric composition: AC4 FY19 competition focused on long term monitoring of and trends in atmospheric composition. This broad call for proposals aimed to spotlight the importance of long term monitoring. NOAA has decades long experience with monitoring of trace gases, especially greenhouse gases and (stratospheric) ozone depleting substances, and this was an opportunity to leverage the data collected so far. From FY19 competition, 10 projects were recommended for funding (totalling $4.9 million over 3 years), spanning tropospheric and stratospheric ozone, CO2, methane, aerosols and hydroxyl radical (OH) - the key atmospheric oxidant. Projects take advantage of various NOAA and non-NOAA data sources, including ground based and space-based data. Full list will be posted on AC4 website as soon as the projects are awarded.

FIREX-AQ field campaign focus on smoke from wildfires in the U.S. is happening right now, with several aircraft (ER-2, DC8 and Twin Otters), mobile laboratories and ground sites instrumented to measure a suite of gases and aerosols. Some of the topics include emissions of trace gases, aerosols and aerosol precursors, chemistry and transport of chemicals close to the fire and downwind, including long range transport, impact of smoke on air quality and climate, including impact on urban areas. This is an interagency effort led by NOAA and with NASA a major partner. AC4 program has supported 20 projects so far, spread across all phases of FIREX and FIREX-AQ, starting with the 2016 experiment in

Missoula Fire Science Lab. FIREX-AQ field campaign is taking place in July-August, 2019, half stationed out of Boise, ID and the second half from Selina, KS.

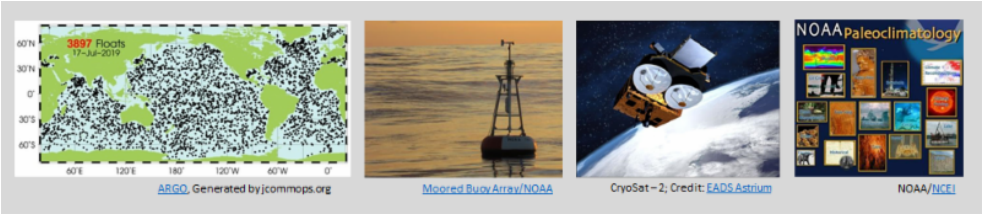
Urban Atmosphere and FY20 Priority: Urban carbon flux synthesis project "CO2-USA" is in its final year, and continues organizing scientists and engaging city stakeholders across the US in ways of verify emission reductions goals that many cities currently are setting. The third in a series workshop will take place in Boston on October 7-8, 2019. AQUARIUS (Air QUality Research In the western US) workshop will organize scientists interested in studying wintertime particulate matter (PM) in the intermountain west basins. That workshop will take place September 25-26, 2019 in Salt Lake City. In FY20, AC4 competition priority addresses both carbon and chemistry community needs for more data and analysis, and provides an opportunity for research to inform urban stakeholder action, as related to air pollution mitigation and carbon management.

Program Update: COM

COM, formerly Climate Monitoring (CM) in the Ocean Observing and Monitoring division (OOMD), joined the Earth System Science and Modeling Division in FY19 with a new program manager, Dr. Virginia Selz (virginia.selz@noaa.gov). The COM program focuses on capitalizing on NOAA's existing observational datasets to support the development of value-added data products. Recent competitions have focused on the development of data products related to assessing and monitoring weather and climate extremes, ocean and global climate indicators, as well as indicators for national climate assessments.

Future Funding Priorities. In FY20 the COM program is focusing on supporting the development and analysis of datasets (physical or biogeochemical; terrestrial, atmospheric, or marine) that improve representation and understanding of atmospheric boundary layer processes in models and encourage collaboration between the observational and modeling communities.

The COM program is undergoing a program review in FY19 to evaluate the last five years of activities and look ahead to the future for ways to coordinate and collaborate across ESSM, CPO, and NOAA to better extract value from NOAA's existing observational data. The COM program continues to stay engaged with OOMD and participated in the recent OOMD Community Meeting (June 17-18 2019).



Snapshot of NOAA and International Partner Observations used in FY14-FY18 COM Projects

Program Update: CVP

NOAA Ship Ronald H. Brown at Sea (Credit: NOAA)

CVP Sponsored Workshops:
Sources and Sinks of Ocean Mesoscale Eddy Energy Workshop took place in March 2019 and presentations are now posted. (CVP co-funded with MAPP, and all USCLIVAR agencies)

Sea Level Changes along the US East Coast Workshop took place in April 2019 and presentations are now posted. (CVP co-funded with MAPP, OOMD, and NASA thru USCLIVAR)

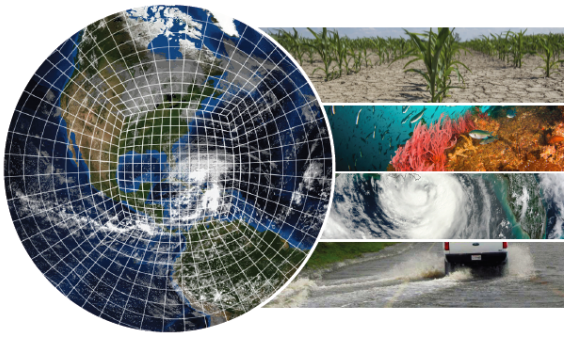
Atmosphere Convection and Air-Sea Interactions Workshop took place in May 2019 and presentations are now posted. (CVP co-funded with OOMD, DOE, and NSF thru USCLIVAR)

FY19 CVP focus on Climate Process Teams - Translating Ocean and/or Atmospheric Process Understanding to Improve Climate Models: One of CVP's FY19 competitions focused on model diagnostics and process representation improvements to ocean and/or atmospheric models. This call for proposals must include collaborations with NOAA OAR laboratories, involve external academic and/or private-sector research scientists and demonstrate the usefulness to improving NOAA climate models and those at other major modeling centers. From this FY19 competition, 3 projects were recommended for funding. Funding for these awards is under consideration from NSF and NOAA/CVP. Full list will be posted on CVP website as soon as the projects are awarded.

FY19 CVP focus on Observing and Understanding Upper - Ocean Processes and Shallow Convection in the Tropical Atlantic Ocean: One of CVP's FY19 competitions focused on observing, understanding, and/or process modeling of air-sea interactions in the Northwest Tropical Atlantic as part of the Atlantic Tradewind Ocean-Atmosphere Mesoscale Interaction Campaign (ATOMIC, US-led research) and the EUREC4A Ocean-Atmosphere component (EUREC4A-OA, European-led research) field campaigns. The key purpose of ATOMIC/EUREC4A-OA is to examine air-sea interactions which include, but are not limited to, upper ocean processes, ocean boundary layers, mesoscale ocean eddies, ocean interactions with the atmosphere, as well as lower atmospheric boundary layer processes and their influence on the ocean. From this FY19 competition, 10 projects were recommended for funding, five are awards to academic institutions, and five are awards to OAR labs. NOAA plans to also contribute the use of the NOAA Ship Ronald H. Brown and the NOAA P-3 aircraft. Collaborations include the CVP Program, ESRL/Physical Sciences Division, OAR Laboratories, and OOMD Surface Drifter Program. A full list of projects will be posted on CVP website as soon as the projects are awarded.

Years of the Maritime Continent (YMC) Field Campaigns Update: YMC is an international project from 2017 through 2020 with US, Indonesia and Japan. Indonesia-NOAA Workshop 2019: A NOAA-BMKG workshop will be held in Bogor on August 13-15, 2019. YMC will be the focus of a session during the meeting.

Program Update: MAPP



Significant Contributions to S2S Research, Modeling, and Transition: NOAA's Subseasonal-to-Seasonal (S2S) Task Force, a pioneering three-year initiative of the MAPP Program started in 2016, has made several contributions to the overall progress of bridging the weather to climate prediction gap. With their work, they have highlighted the interplay of key physical processes for predictions, examined their simulation in numerical models, and pioneered the development of new prediction methodologies. The task force's initial results are helping to set future S2S research and development goals, and accentuate investments in the Climate Test Bed activity. As a part of their efforts the task force has organized a special collection titled "Bridging Weather and Climate: Subseasonal-to-Seasonal (S2S) Prediction". This special collection is a milestone in S2S research and will be published in *Journal of Geophysical Research-Atmospheres* and *Geophysical Research Letters*. Meanwhile, 12 CTB projects are being completed and will lead to an improved operational prediction capabilities. These projects significantly contribute to the NWS Weather Ready Nation goal.

Model Development and Coordination: As a part of its mission, the MAPP Program partners with other organizations to coordinate model development efforts, including attending, co-sponsoring, and organizing relevant meetings. The 5th US Climate Modeling Summit brought together the top climate modeling centers with the goal of coordinating the development of a national climate modeling strategy and to improve our nation's modeling and prediction capabilities. This year's focus was on improving the representation of modes of climate variability (MJO, QBO, ENSO, etc) in models.

The Tri-MIP-athlon-2 international workshop, co-sponsored by MAPP and DoE, brought together key experts in the Aerosols and Chemistry Model Intercomparison Project (AerChemMIP), Radiative Forcing Model Intercomparison Project (RFMIP), and the Precipitation Driver Response Model intercomparison Project (PDRMIP) in support of the Coupled Model Intercomparison Project Phase 6 (CMIP6). The goal of the joint workshop was to combine the new results from the experiments (AerChemMIP, RFMIP, and PDRMIP) to understand how they impact one another and consequently affect the climate responses involving clouds, aerosols and precipitation processes in the CMIP6.

The CMIP6 Hackathon is taking place October 16-18, 2019 at the NCAR Mesa Lab and the Lamont Doherty Earth Observatory. The goal of the Hackathon, co-sponsored by MAPP, is to explore new standards for community-driven analysis by providing 1) tutorials on cutting-edge analysis tools, 2) peer-learning opportunities, and 3) open-ended project work in a highly collaborative environment.

Accelerating Model Development with a Focus on Process-Level Evaluation: In an effort to accelerate the development of increasingly realistic models, NOAA MAPP's Model Diagnostics Task Force (MDTF) has developed a new approach centered on greater

incorporation of process-oriented diagnostics (PODs) that can be applied during the model development process and repeatedly applied with several model versions as a benchmark for model improvement. PODs are effective means to characterize environmental processes and behaviors related to the ability of a model to simulate an observed phenomenon underpinning predictions and projections. The MAPP MDTF has been developing PODs and promoting their practical application in models including those used by NOAA GFDL for climate predictions and projections. MDTF PODs and their overall framework has the potential to accelerate the development of NOAA models, and the framework is increasingly relevant to other agency activities, such as DOE's precipitation metrics effort, and international activities.

The MDTF has also organized a special collection spanning several American Meteorological Society journals. The collection is devoted to highlighting current efforts in developing process-oriented evaluations of climate and Earth system models including those related to Coupled Model Intercomparison Project (CMIP). The task force has a group paper titled "Process-Oriented Evaluation of Climate and Weather Forecasting Models," which describes their efforts to develop process-oriented diagnostics through community effort, work with GFDL and NCAR to integrate these diagnostics with their overarching diagnostic activities, and promote this approach. This paper serves as the header for the special collection, which is still open for submissions.

FY19 and FY20 Budget Update

The FY20 President's Budget released on March 11th proposed to eliminate the Climate Competitive Research budget line, which funds the majority of ESSM programs. So far, Congressional language from the House Committee mark-up prohibits the elimination of the Climate Competitive Research and includes an increase of $11 million. The Senate has not yet put forth an FY20 budget.

Competitive Climate Research	FY19 Proposed	FY19 Enacted	FY20 Proposed	FY20 House Committee markup	FY20 Senate	FY20 Enacted
Budget (in $millions)	0	60	0	71	TBD	TBD

News & Meetings

Noteworthy Updates:

- Dr. Neil Jacobs is still the Acting NOAA Administrator (no permanent administrator confirmed).
- Provide your comments on the DRAFT NOAA OAR's R&D Plan (2020 - 2026). The period to submit formal comments on the Federal Register ends August 26th, 2019.

Meetings sponsored by ESSM:

- LUMIP Workshop will be held at AGC in Snowmass, CO, September 16-20, 2019
- AQUARIUS workshop will take place in Salt Lake City, UT, September 25-26, 2019
- Water Isotopes and Climate Workshop will take place in Boulder, CO October 1-3, 2019 (organized by the USCLIVAR Working Group)
- CO2-USA workshop #3 will take place in Boston on October 7-8, 2019
- CMIP6 Hackathon will take place in NCAR, Boulder CO and LDEO, Palisades NY October 16-18 2019
- CPO/ESSM Community Workshop on Climate Research to Enhance Resilience to Extreme Heat, Silver Spring, MD, November 18-19, 2019
- WCRP Climate Science Week in 2019 Fall AGU in San Francisco, CA, December 9-13, 2019
- A Town Hall meeting on "The Role of NOAA Climate Competitive Research" in 2019 Fall AGU in San Francisco, CAm December 9-13, 2019

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