

## FY2020 Competition Information Sheet

### Program Name

Climate Variability and Predictability (CVP) Program

### Program Mission

The Climate Variability and Predictability (CVP) Program supports research that enhances our process-level understanding of the climate system through observation, modeling, analysis, and field studies. This vital knowledge is needed to improve climate models and predictions so that scientists and society can better anticipate the impacts of future climate variability and change. The CVP Program sits within the Earth System Science and Modeling (ESSM) Division of the NOAA Office of Oceanic and Atmospheric Research (OAR) Climate Program Office (CPO; see <http://cpo.noaa.gov/CVP>). CVP is a critical component of the integrated research enterprise at CPO and maintains important connections to the other CPO program areas, such as Ocean Observations and Monitoring Division (OOMD), MAPP (Modeling, Analysis, Predictions and Projections) Program, and Climate and Societal Interactions (CSI) Division.

To achieve its mission, the CVP Program supports research carried out at NOAA and other federal laboratories, NOAA Cooperative Institutes, and academic institutions. The Program also coordinates its sponsored projects with major national and international scientific bodies including the World Climate Research Programme (WCRP), the International and U.S. Climate Variability and Predictability (CLIVAR/US CLIVAR) Program, and the U.S. Global Change Research Program (USGCRP).

### Focus for FY20

#### **CVP - Climate and Changing Ocean Conditions - Process Research and Modeling to Support the Needs of NOAA Fisheries**

In FY20, CVP is interested in coupled- or ocean-model process studies linked with observational data analysis to better understand physical changes in the ocean in direct support of the needs of [NOAA Fisheries research](#) in one or both of the following Large Marine Ecosystems (LMEs): California Current, and/or Northeast U.S. Continental Shelf. Specifically, CVP seeks focused studies to better understand the following questions with respect to physical properties of the ocean (such as heat, freshwater, and momentum, the two-way exchange with the atmosphere; globally and/or regionally) and the impact on marine ecosystems: 1) how does a particular climate phenomenon (with a timescale of months and longer, e.g., ENSO, PDO, AMO/AMV, NAO, etc.) drive physical ocean conditions (sea surface and subsurface temperature, salinity and currents)? and, 2) how are ocean conditions changing in response to changing climate conditions and why? The goal of this work is to strengthen the fundamental understanding of physical mechanisms that affect ocean

---

conditions in the context of climate variability and change, and how it impacts marine ecosystems. Outcomes of this project should clearly describe how changing climate conditions may affect marine ecosystems and habitats for living marine resources (e.g., protected species and U.S. fisheries) in one or both Large Marine Ecosystem (LME) regions: California Current and/or Northeast U.S. Continental Shelf.

[Note, there are additional coordinated solicitations through the Modeling, Analysis, Predictions and Projections (MAPP) Program and the Coastal and Ocean Climate Applications (COCA) Program. Please see these Programs' Information Sheets for details.]

### Funding for FY20

It is anticipated that there will be \$1,000,000 available in FY20 for **CVP - Climate and Changing Ocean Conditions - Process Research and Modeling to Support the Needs of NOAA Fisheries**. It is anticipated that most awards will be at a funding level between \$150,000 and \$225,000 per year for 3 years, depending on the availability of funding. The focus area of these proposed studies should include one or both of the identified LMEs: California Current, and/or Northeast U.S. Continental Shelf. Projects will start in FY20 or FY21, depending on the needs of the project and the availability of funding.

### Competition Information

**Title: CVP - Climate and Changing Ocean Conditions - Process Research and Modeling to Support the Needs of NOAA Fisheries**

Changing climate and oceans are affecting the nation's valuable living marine resources (LMRs) and the people, businesses and communities that depend on them<sup>1</sup>. From warming oceans and rising seas to droughts and ocean acidification, these impacts are expected to increase with continued changes in the planet's climate system. There is much at risk. In the U.S., ocean-related commercial fishing and recreational fishing and the seafood industry annually contribute approximately \$212 billion in sales impacts, \$100 billion to the gross domestic product (GDP), and support over 1.7 million full and part-time jobs across the broader economy<sup>2</sup>. Coastal habitats help defend coastal communities from storms and inundation and provide the foundation for tourism and recreation-based economies in many coastal communities. Climate-related information is needed to fulfill NOAA Fisheries

---

<sup>1</sup> Fourth National Climate Assessment, Oceans and Marine Resources chapter <https://nca2018.globalchange.gov/chapter/9/>

<sup>2</sup> National Marine Fisheries Service. 2018. Fisheries Economics of the United States, 2016. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-187, 243. <http://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2016>

---

mandates, and provide decision-makers with the information they need to reduce impacts and increase resilience to changing climate and ocean conditions<sup>3</sup>.

To meet these needs NOAA needs to strengthen climate-related science as it relates to marine ecosystems regionally and nationally. Climate process-oriented research is needed to better understand how climate impacts LMRs, how to reduce impacts and how to increase resilience of LMRs and LMR-dependent communities.

The Office of Oceanic and Atmospheric Research (OAR) Climate Program Office programs are uniquely positioned to advance climate science needs in support of fisheries and living marine resources, extending and complementing research at OAR Research Laboratories and NMFS Fisheries Science Centers via the engagement of the broader research community. In FY 2020, the Climate Variability and Predictability (CVP) program, the Modeling Analysis Predictions and Projections (MAPP) program and the Coastal and Ocean Climate Applications (COCA) program coordinate for a research initiative to address climate-marine ecosystem/fishery needs with the following three foci: process understanding (CVP), modeling and predictability (MAPP), and applied research to inform fishery management decisions (COCA).

In FY20, CVP is interested in coupled- or ocean-model process studies linked with observational data analysis to better understand physical changes in the ocean in direct support of the needs of [NOAA Fisheries research](#) in one or both of the following Large Marine Ecosystems (LMEs): California Current, and/or Northeast U.S. Continental Shelf. Specifically, CVP seeks focused studies to better understand the following questions with respect to physical properties of the ocean (such as heat, freshwater, and momentum, the two-way exchange with the atmosphere; globally and/or regionally) and the impact on marine ecosystems:

- 1) how does a particular climate phenomenon (with a timescale of months or longer, e.g., ENSO, PDO, AMO/AMV, NAO, etc.) drive physical ocean conditions (sea surface and subsurface temperature, salinity and currents)? and,
- 2) how are ocean conditions changing in response to changing climate conditions and why?

The goal of this work is to strengthen the fundamental understanding of physical mechanisms that affect ocean conditions in the context of climate variability and change, and how it impacts marine ecosystems.

Outcomes of this project should clearly describe how changing climate conditions may affect marine ecosystems and habitats for living marine resources (e.g., protected species and U.S.

---

<sup>3</sup> NOAA Fisheries Climate Science Strategy  
<https://www.st.nmfs.noaa.gov/ecosystems/climate/national-climate-strategy>

---

fisheries) in one or both Large Marine Ecosystem (LME) regions: California Current and/or Northeast U.S. Continental Shelf.

Collaborations with NOAA Laboratories, Fisheries Science Centers, and Cooperative Institutes are encouraged.

Investigators may only apply to one of the three related CVP, MAPP and COCA competitions as Lead Project Investigators. Investigators may apply to more than one of the aforementioned competitions in secondary roles.

[See the MAPP and COCA programs solicitations Information Sheets for related research opportunities].

Connecting Research Projects - Investigators of proposals selected via the CVP, MAPP, COCA Programs FY 2020 competitions on marine ecosystems research (as referenced above) will participate in a series of coordination and communication activities in order to share research methods and results, support collaboration and information exchange across proposals, and optimize the outcomes of this joint initiative.

## Data Archiving and Computational Resources

### Data Management Guidance

The Responsible NOAA Official for questions regarding this guidance and for verifying accessibility of data produced by funding recipients: Sandy Lucas, [sandy.lucas@noaa.gov](mailto:sandy.lucas@noaa.gov)

Data Accessibility: The CVP Program requires that public access to grant/contract-produced data be enabled in one of the following ways (select one):

- Funding recipients are planning to submit data to NOAA National Centers for Environmental Information (NCEI), which will provide public access and permanent archiving<sup>4</sup>. Point of Contact for NCEI is Nancy Ritchey (Nancy.Ritchey@noaa.gov)
- Data are to be submitted to an International Council for Science (ICSU) World Data System facility: <https://www.icsu-wds.org/community/membership/regular-members>
- An existing publicly accessible online data server at the funded institution is to be used to host these data (describe in proposal).
- Data are to be submitted to a public data repository appropriate to this scientific domain (describe in proposal).
- Proposal may request permission not to make data publicly accessible (proposal to explain rationale for lack of public access, and if funded approval to be obtained from Responsible NOAA Official listed above).

---

<sup>4</sup> NCEI supports the creation of adequate metadata and data ingest into long term repository holdings using tools such as Send2NCEI ([www.nodc.noaa.gov/s2n](http://www.nodc.noaa.gov/s2n), for small volume, one-time only data collections) and Advanced Tracking and Resource tool for Archive Collections or ATRAC ([www.ncdc.noaa.gov/atrac](http://www.ncdc.noaa.gov/atrac), for recurring and/or large volume data collections).

- Archival of data at an established Cloud Computing facility, if cost effective and reliable

Technical recommendations:

The CVP Program requires the following data format(s), data access method(s), or other technical guidance:

- Data must be made available in a common machine-readable non-proprietary format with appropriate metadata and clear labels and descriptors. Use of netCDF is encouraged.
- Data should be available via public and discoverable data portals, as described above.
- At a minimum, investigators should plan to archive and make available modeling data used in producing any figures in publications from research supported by their grants, as well as data that support conclusions reached in papers or stated publicly. Only those data which are necessary for demonstrating reproducibility of published results need be archived and made public unless otherwise required as part of the solicitation.
- In situ observational data collected during the field campaign should be made freely available to the public either 2 years after collection and validation or at the time of publication, whichever is sooner.
- Model data should be made available for at least 3 years after it is initially published or made otherwise publicly available.

Resources:

Proposals are permitted to include the costs of data sharing and/or archiving in their budgets within solicitation specified proposal cost limit. Proposed methods and approaches should use reasonable means to minimize data management costs.

----

**Program Contact information:**

For additional program announcement information, investigators should contact the following CVP Competition Manager: Sandy Lucas (Sandy.Lucas@noaa.gov, 301-734-1253)

**Letters of Intent should be submitted directly to the Competition Manager.**