

## **Earth System Science (ESS) Program FY16 Information Sheet**

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### **Atmospheric Chemistry, Carbon Cycle and Climate (AC4)**

#### **Fires in the Western US: Emissions and Chemical Transformations**

Fires in the Western US are regular seasonal events that greatly affect air quality and climate through the production and direct release into the atmosphere of trace gases and particulates, and their subsequent chemical evolution and transport. A number of field campaigns and laboratory studies have been undertaken in recent years that have provided data on various aspects of emission products resulting from biomass burning, their chemical composition, chemical and physical transformation, and their eventual impact on air quality and climate. Over the next 5 years, NOAA's Chemical Science Division (CSD) of the Earth System Research Laboratory is planning to add to the available knowledge of atmospheric composition resulting from biomass burning by focusing on fires in the Western US. The field campaign, Fire Influence on Regional and Global Environments Experiment (FIREX) will span a variety of ground, mobile and aircraft measurements, in addition to chamber and Fire Science Laboratory experiments. The white paper and more information about FIREX can be found at <http://esrl.noaa.gov/csd/projects/firex/>

In FY 2016-2017, Atmospheric Chemistry, Carbon Cycle and Climate (AC4) program will focus on research that capitalizes on FIREX by seeking to support studies of emissions and chemical transformation resulting from prescribed and wildfire burning in Western US. Specifically, AC4 plans to support the types of projects that:

- Collect, analyze and/or model data from FIREX or related field or laboratory experiments
- Exploit multiple data sets - in situ, remote, and /or satellite, especially from CrIS instrument
- Focus on the effects of biomass burning on nitrogen cycle
- Contribute to improving the prediction of smoke from wildfires, especially in NOAA's Air Quality Forecasting system, via improvements to regional prediction modeling systems that utilize models like CMAQ and WRF-Chem.

Proposals that seek direct involvement with FIREX activities, including the aircraft, mobile/ground sites and/or laboratory, should include a support letter, collaborator or a co-I from CSD. All funded project PIs can be associated with FIREX effort and are encouraged to include in their budget, as appropriate, travel to 1 meeting, nominally in Boulder, CO, for a science team meeting/data workshop. Three or well-justified four year proposals are welcome, to allow for sufficient time for pre-mission preparation and for post-field analysis and modeling. Projects will start either in FY16 or FY17.

#### **Program Contact information:**

For additional program announcement information, investigators should contact the following AC4 Competition Managers:

Kenneth Mooney (Kenneth.Mooney@noaa.gov, 301-734-1242)

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Letters of Intent should be submitted directly to the Competition Managers.

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## **Climate Variability and Predictability Program (CVP)**

### **CVP - AMOC-Climate Linkages in the North and/or South Atlantic**

The large-scale circulation of the ocean is a complex and connected feature that redistributes heat, salt, and nutrients around the globe. A major component of this feature is the Atlantic Meridional Overturning Circulation (AMOC). Understanding the dynamics of this circulation, and how it both drives and is driven by climate, is essential for seasonal to multi-decadal Earth system prediction, management of ecosystems including fisheries, and informing societal resilience to coastal hazards such as sea level rise.

The AMOC deep water formation occurs at the highest latitudes of the Atlantic and is sensitive to regional and global changes in climate. A long-term goal of the US AMOC Science Team, Task Team 2 is to improve the understanding of linkages between South Atlantic Ocean and Southern Ocean, the North Atlantic and Arctic, and the Atlantic Ocean and the rest of the climate system. By providing a more detailed characterization of AMOC flow pathways and their impacts on variability, the climate research community can advance toward the overall goal of improving seasonal, inter-annual, decadal, and multi-decadal climate prediction. (US AMOC 2014 Annual Report:

[http://usclivar.org/sites/default/files/amoc/2015/USAMOC\\_2014AnnualReport.pdf](http://usclivar.org/sites/default/files/amoc/2015/USAMOC_2014AnnualReport.pdf))

In FY 2016, the CVP program solicits projects that will refine the current scientific understanding of the AMOC state, variability, and change. Specifically, projects are sought that use newly deployed and existing observations in combination with modeling experiments to refine our understanding of the present and historical circulation (and related transports of heat and freshwater) in the North and/or South Atlantic. An emerging priority is to provide a more detailed characterization of AMOC flow pathways and their impact on variability. Successful principal investigators will become members of the U.S. AMOC Science Team and are expected to participate in the Science Team meetings and report. See <https://usclivar.org/amoc>.

#### **Program Contact information:**

For additional program announcement information, investigators should contact the following CVP Competition Manager:

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