

## FY22 AC4 Program Information Sheet

### Program Name

Atmospheric Chemistry, Carbon Cycle and Climate (AC4) Program

### Program Mission

AC4 is a competitive research program that incorporates research on atmospheric chemistry and the carbon cycle. In collaboration with the NOAA Laboratories and the academic community, the AC4 program supports research to determine the processes governing atmospheric concentrations of trace gases and aerosols in the context of the Earth System. The program aims to contribute a process-level understanding of the Earth System through observation, modeling, analysis, and field studies to support the development and improvement of models, and to inform carbon and air pollution management efforts.

### Focus for FY22

**Fire and smoke at the wildland urban interface**

### Funding for FY22

Most proposals should budget for no more than \$750K total over 3 years.

### Competition Information

Biomass burning is one of the largest atmospheric perturbations, with impacts on air quality, weather and climate. The temporal and spatial scales of the contributions of fires to atmospheric composition range from short-lived air pollutants over small areas in the vicinity of local fires to long-lived greenhouse gases affecting regional or even global distributions from large-scale seasonal fires. The composition of smoke varies, and is still largely understudied, especially its chemical evolution. The most recent field campaign, FIREX-AQ, mostly focused on wildland fires in the western US, which are increasingly affecting air quality, including in urban areas downwind, causing disruptions to daily life and harm to human health. As more people move to fire-prone areas and wildfires become more frequent with the changing climate, the wildland-urban interface is becoming more important in assessing smoke impacts, both from burning biomass as well as houses and household items. Furthermore, emission factors for fires from the wildland-urban interface are less studied than from wildland fires because among other factors the opportunities to study them are rare.

In addition to in situ data from field campaigns, NOAA develops several satellite-based fire and smoke products that can provide insights into smoke spread and its chemical evolution and impacts.

In FY22, to build on and expand its previous wildfire investments, the AC4 program invites proposals focused on one or more of the following:

- Research that puts FIREX-AQ data in a larger, including interannual, context, ideally incorporating data from other field campaigns and measurement networks
- Applications of JPSS and GOES satellite products to study biomass burning, both within the US and globally
- Analysis of wildland fire smoke impacts on urban areas and fires at the wildland-urban interface
- Investigation of emission factors of fires that include household materials

Of most relevance will be proposals incorporating more than one priority and those making use of previously collected data. Limited additional data collection could be possible. Projects addressing elements of environmental justice are welcome.

Collaborations with NOAA centers, especially in developing their use of satellite data, are encouraged but not required. Development of new or improvements to existing JPSS and GOES products are possible through this announcement, but those with NESDIS collaborators will be most relevant.

Proposals involving laboratory investigations, including in NIST's National Fire Research Laboratory (NFRL), are welcome. Information about the NFRL and the research that can be undertaken in that facility can be found at:

<https://www.nist.gov/el/fire-research-division-73300/national-fire-research-laboratory-73306>

**Contact:**

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**Data Archiving**

Data Accessibility: The AC4 Program requires that public access to grant/contract-produced data be enabled in the following way:

Funding recipients will establish their own data hosting capability (describe in proposal)

Technical recommendations: There is no specific technical guidance; however, proposals are to describe their proposed approach. Use of open-standard formats and methods is encouraged.

Resources: Proposals are permitted to include the costs of data sharing or archiving in their budgets.