

Aerosols Program

FY 2000 Information

This information is intended to supplement the NOAA Program Announcement for FY 2000 Climate and Global Change Grants Program, which gives the timetable, format, and submission procedures for proposals.

Those interested in responding with a proposal should be cautioned that the availability of new funds cannot be accurately foreseen. FY 2000 budget constraints could severely limit available funds for new starts.

A. NOAA's Emphases and Rationale

Tropospheric aerosols - including sulfates, soot, carbonaceous aerosols, biomass smoke, sea salt, and mineral dust - are recognized to affect global and regional climate [IPCC, 1996]. The Aerosols Program seeks to provide information about the radiative forcing of human-influenced particles on the climate system in order (i) to aid the detection and attribution of regional and global climate change, in particular, the estimation of the alteration that anthropogenic aerosols may be providing to the greenhouse-gas induced warming patterns, and (ii) to improve the prediction of future climate changes for various radiative-forcing scenarios.

The uncertainty in the radiative forcing induced by aerosols considerably exceeds that due to most other known anthropogenic forcing terms (for instance, the well-mixed greenhouse gases) presently included in prediction of climate change [IPCC, 1996]. Further, it limits the ability either to predict surface temperature changes associated with specified scenarios of greenhouse gas emissions, or even to unambiguously detect a greenhouse warming signal.

To contribute to a better predictive understanding of the role of anthropogenic aerosols in climate forcing, the Aerosols Program is highly focused on reducing the uncertainty in the magnitude and distribution of the radiative forcing by aerosols. NOAA's capabilities to make simultaneous field measurements of aerosol chemical, physical, and optical properties are particularly well-suited for a near-term focus on direct radiative forcing. Accordingly, the program is focused primarily at this time on the direct effect of aerosols.

Quantification of the radiative forcing of aerosols is a complex problem. In contrast to the long-lived greenhouse gases which tend to be well mixed in the troposphere, the short-lived aerosols exhibit extreme spatial and temporal variability, with single-particle optical properties which depend upon particle size and also upon highly variable chemical composition, which in turn depend upon a highly complex set of processes. As a consequence it is necessary to study tropospheric aerosols under a broad range of conditions.

The International Global Atmospheric Chemistry Program [IGAC] has conducted a series of field campaigns to characterize aerosols, their effects, and the processes that control their composition and distribution, under a variety of conditions. These campaigns have, to date, studied aerosols in the remote marine atmosphere, off the Atlantic coast of North America, and over parts of the North Atlantic Ocean impacted by European pollution. Planning for a new experiment, ACE-Asia, is nearing completion, with a focus on studying aerosols advected from Eastern Asia over the Western Pacific Ocean.

B. The FY 2000 Solicitation

Pending availability of funds, the NOAA Aerosols Program anticipates contributing support in FY 2000 to proposals to the National Science Foundation for investigator participation in the ACE-Asia field campaign. The most current description of the ACE-Asia campaign may be found on the World Wide Web at <http://saga.pmel.noaa.gov/aceasia/>.

Investigators who wish to apply for support for participation in ACE-Asia should contact the NSF Atmospheric Chemistry Program in coming months for up to date information regarding the status of this campaign. At this time NSF is considering, together with NOAA, the appropriate level of support for the ACE-Asia campaign, and the possibility of jointly reviewing and funding proposals for participation in the campaign.

The NOAA Aerosols Program will not directly accept proposals in FY 2000 except from investigators at facilities that are ineligible for NSF support. Such proposals, however, though submitted to NOAA, will be reviewed and evaluated jointly with proposals submitted directly to NSF. Investigators who are contemplating submitting proposals to NOAA should be aware that the anticipated NOAA funding level may be adequate to support only a very small number of investigations.

For further information, please contact Joel Levy, NOAA Office of Global Programs, 301-427-2089 x 111, Internet: joel.levy@noaa.gov; or Eric Saltzman or Anne-Marie Schmoltner, NSF Atmospheric Chemistry Program, 703-306-1522, Internet: esaltzma@nsf.gov or aschmolt@nsf.gov.

C. References

IGAC, International Global Atmospheric Chemistry Program. IGAC Core Project Office, MIT, Bldg. 24-409, Cambridge, MA 02139-4307. Tel: 617-253-9887; Fax: 617-253-9886; Email: igac@mit.edu

IPCC, Climate Change 1995: The Science of Climate Change, Intergovernmental Panel on Climate Change, Cambridge University Press, 1996. Editors: J.T. Houghton, L.G. Meira Filho, B.A. Callander, N. Harris, A. Kattenberg, and K. Maskell, 1996.