

Relationships to Other Projects

The [IGAC](#) Focus on Atmospheric Aerosols is coordinating four experiments that address the properties of the atmospheric aerosol relevant to radiative forcing and climate. The first Aerosol Characterization Experiment ([ACE-1](#), November-December 1995) documented the chemical, physical, and optical characteristics of the aerosol in the remote marine atmosphere of the southern hemisphere. TARFOX (Summer 1996) will focus specifically on measuring the direct radiative effect of the anthropogenic aerosol over the western North Atlantic, and on determining the relationship between this effect and simultaneously measured aerosol chemical and physical properties. [ACE-2](#) (June-July 1997) will be conducted over the sub-tropical Northeastern Atlantic Ocean, with an emphasis on the anthropogenic perturbation of the background aerosol, including the characterization and evolution of anthropogenic aerosols from the European continent and mineral dust from the African continent, as they move out over the Atlantic Ocean. TARFOX provides an important "test of concept" for ACE-2, in that both will use the same methodology to measure the direct radiative effect of aerosols. However, TARFOX will be conducted at a time and location dominated by industrial aerosols, whereas ACE-2 measurements will include a combination of industrial and mineral aerosols. ACE-3 is in the early planning stages. It is expected to focus on a particular, important anthropogenic aerosol, such as that originating in Asia and carried eastward over the Pacific Ocean.

Radiative forcing by aerosols is one of the top priorities of the World Climate Research Program ([WCRP](#)). TARFOX is represented on the Working Group on Radiative Fluxes of the WCRP, which should ensure proper synergism. Similarly, TARFOX has formal contacts with the [WMO/GAW](#) Program. There is extensive work underway by various investigators to improve the satellite aerosol remote sensing capability over oceans. International teams are using the satellites and sensors listed in Section 7.2, plus several others, in this work. TARFOX will provide rich data sets of great value to this work.

The IGAC Focus on Atmospheric Aerosols includes four Activities that will utilize data from TARFOX: (1) Aerosol Characterization and Process Studies; (2) Direct Aerosol Radiative Forcing; (3) Aerosol-Cloud Interactions; and (4) Stratospheric Aerosols. The last is relevant to TARFOX objectives because tropospheric aerosol measurements from space, and from airborne and surface photo/radiometers, are affected by volcanically-enhanced concentrations of aerosols in the stratosphere. Measurements with the [SAGE II](#) instrument can be used to remove these effects. Also, SAGE has the capability to measure upper-tropospheric aerosol extinction under cloud-free atmospheric conditions. Internal to IGAC, but external to the Focus on Atmospheric Aerosols, is another activity with strong linkages to TARFOX, namely the Activity entitled Global Integration and Modeling, which has been augmented by a new Task entitled Modeling the Effects of Aerosols on Radiative Forcing and Climate.

[Return to Contents](#)

[Continue to Platforms and Instrumentation](#)

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