

# Outline of IGAC Activities in Japan

Hajime AKIMOTO

*Research Center for Advanced Science and Technology, University of Tokyo  
Komaba, Meguro-ku, Tokyo 153-8904, Japan*

## ABSTRACT

The atmospheric chemistry community in Japan has evolved in accordance with the implementation of the IGAC Project. A short history of atmospheric chemistry community and IGAC related activities in Japan is introduced.

**Key words** : aerosols, Asia and Pacific Region, atmospheric chemistry, greenhouse gases, IGAC oxidant and photochemistry

## 1. INTERNATIONAL IGAC PROJECT

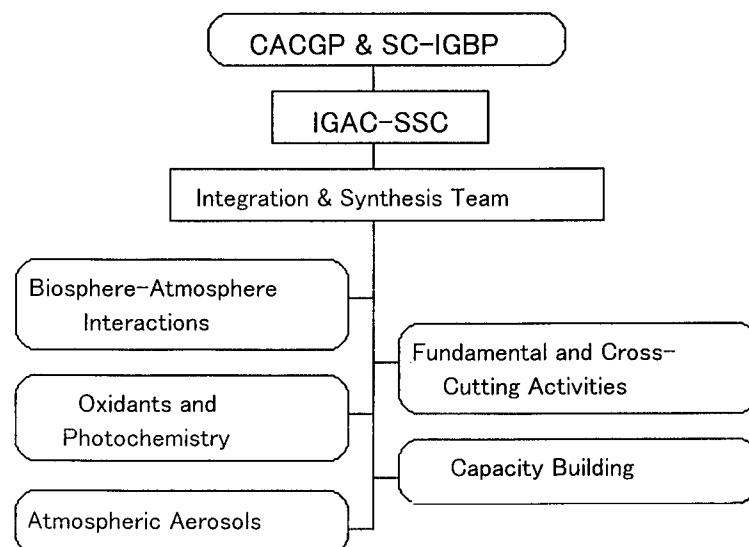
IGAC (International Global Atmospheric Chemistry Program) was initially implemented by CACGP (Commission on Atmospheric Chemistry and Global Pollution) in IAMAS (International Association of Meteorology and Atmospheric Sciences) under ICSU (International Council of Science Unions). It was elaborated at a planning meeting at Dookie, Australia, in 1987 (T. Ogawa and H. Akimoto attended from Japan) and authorized by CACGP in 1989 as an international program of atmospheric chemistry. Meanwhile, IGBP was adopted by ICSU as a global biogeochemical change program toward the next century and the IGAC was accepted as one of the core projects of IGBP at the IGBP/SAC in 1990. The original IGAC program was partly amended in the direction of strengthening the biospheric interaction component.

After eight years of activity led by the first Chairperson, Ron Prinn (MIT), a new structure for IGAC has been proposed under the new Chair, Guy Brasseur (NCAR). Figure 1 presents the new overall organizational structure of IGAC as of 1998.

## 2. IGAC ACTIVITIES IN JAPAN

Although atmospheric chemistry research has been conducted in Japan by individual scientists in the fields of meteorology, geochemistry and environmental chemistry prior to IGAC, it was only after the IGAC was established that the scientific community of atmospheric chemistry evolved in Japan. In response to the international initiative, the IGAC working committee (Chair : late A. Ono) and IGAC subcommittee (Chair : T. Ogawa) were founded under the Science Council of Japan in 1991 and 1992, respectively. Japanese IGAC research themes as shown in Table 1 were selected by the committee considering both the international activities and the identity of Japanese scientists in this field. The subcommittee chair has been succeeded by H. Akimoto since 1994.

In order to enhance scientific exchanges among scientists in the atmospheric chemistry community, the domestic JGAC (Japan IGAC) Symposium (1989-1990) and IGAC Symposium (1991-1993) were organized by T. Ogawa annually and about 30 papers were presented each year. In September 1994, the International Symposium on Global Atmospheric Chemistry



**Fig. 1** The new overall organizational structure of IGAC.  
(adapted from IGAC Activities Newsletter No.12, March, 1998)

**Table 1** Research themes of Japan IGAC adopted in 1991.

Theme 1	Atmospheric Photochemistry and the Ozone Budget
Theme 2	Emission and Distribution of Greenhouse Gases
Theme 3	Long-range Transport and Transformation of Aerosols
Theme 4	Cycles and Biogenic Processes of Sulfur
Theme 5	Biogeochemical cycles of Trace Metals in the Atmosphere and Ocean
Theme 6	Polar Atmospheric Chemistry

(8th CACGP Symposium/2nd IGAC Science Conference) (Chair : T. Ogawa, Vice Chair : H. Akimoto) was held at Fuji-yoshida, and attended by about 90 Japanese and 170 foreign scientists. The international symposium gave momentum to atmospheric chemistry research in Japan and offered a good opportunity to demonstrate activities of Japanese scientists in this field to the world. Since then the domestic Atmospheric Chemistry Conference has been organized annually by T. Ogawa (1995), M. Uematsu (1996), H. Ueda (1997) and T. Nakazawa (1998). In October 1997, the Nagoya IGAC Symposium (International Symposium on Atmospheric Chemistry and Future Global Environment) (Chair : H. Akimoto, Vice Chair : T. Ogawa) was held under the sponsorship of the Science Council of Japan and National Space Development Agency (NASDA). It was attended by about 130 Japanese and 80 foreign scientists. Apparently, the number of atmospheric chemists are increasing steadily in Japan, and the annual domestic Atmospheric Chemistry Conference in 1998 was attended by about 90 scientists including students and about 60 papers were presented. In addition to the domestic Atmospheric Chemistry Conference, another domestic meeting called the Atmospheric Chemistry Symposium has been organized annually by the Solar, Terrestrial and Environment Laboratory (STEL), Nagoya University, including scientists working on stratospheric chemistry.

Japan IGAC took a policy to encourage individual scientists to join and take a leadership role in interna-

tional IGAC activities rather than strengthening their own "national plan." During the first phase of IGAC, Japanese scientists were committed especially to the two international IGAC Activities, APARE (East Asia/North Pacific Regional Experiment) and RICE (Rice Cultivation and Trace Gas Exchange), both of which were funded in Japan by Global Environmental Research Funds of the Environment Agency. The Environment Agency is not the only source of funds, several global atmospheric chemistry projects have been funded by grants under the Science and Technology Agency although they are not necessarily coordinated into international IGAC activity. More recently, a scientific research fund, "Tropospheric Global Dynamics," has been granted for 1998-2000 by the Ministry of Education, Science, Sports and Culture (MESSC) to cover global atmospheric chemistry research on themes : (1) tropospheric photochemistry and the ozone budget, (2) dynamics of variation and cycles of greenhouse gases, (3) variations of aerosols in the Asia/Pacific region and their effects on radiation, and (4) chemistry and cycles of halogens in the troposphere.

This volume of Global Environmental Research collects seven papers summarizing IGAC-related research in Japan. The themes of those papers are focused on (1) methane in the atmosphere and its emission from rice paddies, (2) tropospheric ozone in Northeast Asia and tropical Asia, and (3) characterization of aerosols over the Western North Pacific/Asia and from the Arctic.