Mission Statement by Masaki Satoh

Atmospheric Science in Asia-Oceania

The Asia-Oceania region is characterized by several important atmospheric phenomena that have major impacts on the people of the region and their countries' economies. For instance, the region is subject to the Asian monsoon's tropical and sub-tropical convective systems, which play key roles in climate systems. Tropical cyclones and heavy rainfall frequently cause severe damage to people and the environment. The region is a hotspot of anthropogenic aerosols, which affect clouds, precipitation, radiation, and human health. Atmosphere-ocean interactions play crucial roles in the region's atmospheric circulation, and recent research into stratosphere-troposphere coupling has provided new perspectives for teleconnection or stratospheric effects on tropical convection.

To promote atmospheric sciences and reduce damage to the region's societies and economies, we particularly need to coordinate observational and modeling studies among researchers in the Asia-Oceania region. This involves enhancing communication between researchers from different countries and making concrete efforts to develop our students and younger researchers. Toward these ends, we need to continue to improve the use of the tools at our disposal – such as meetings and journals – to ensure that the AOGS has fully coordinated frameworks.

Professional Experience

I have been conducting and promoting research using high-resolution global non-hydrostatic model simulations for more than a decade, particularly for the development of the non-hydrostatic icosahedral atmospheric model (NICAM) and related studies with global cloud-resolving simulations. I have engaged intensively in the fields of tropical meteorology, tropical cyclones and Madden-Julian oscillations. I have also used high-resolution satellite observational data of clouds and precipitation (TRMM, GPM, CloudSat, CALIPSO, Himawari) to compare, evaluate, and improve cloud properties of NICAM. Internationally collaborative studies, which included field components such as CINDY/ DYNAMO, are also an important part of my research. Using high-performance supercomputers, my work has shown that global non-hydrostatic models have the potential to solve problems related to cloud and precipitation systems in the Asian monsoon region.

Based on the above experiences, I have been continuously convening sessions at AOGS for more than five years. Main topics of the session I convened are applications of cloud-resolving model simulations for studying cloud-related processes in climate simulations. I have also given invited talks particularly at sessions for tropical cyclone studies.

Vision for the AOGS AS Section

If elected President of the Atmospheric Sciences section, I would vigorously

pursue three main agendas to develop the activities and mission of the AOGS:

First, I will enhance the coordination of observational and modeling studies, for which vital data is expected to emerge in the next few years. My involvement with field campaigns such as Years of the Maritime Continent (YMC) and new satellite observations (Himawari-8/9, GCOM-C, EarthCARE) will allow me to implement effective and important coordination and communication between researchers in the region – using the AOGS as the key channel. I will encourage the analysis of new observations and collaborations with numerical models and work to ensure all countries have access to and are involved with high-resolution numerical data and simulations.

Second, I will encourage the participation of students in the AOGS through my involvement with the University Allied Workshops (UAW), which are managed by several universities in eastern Asia.

Third, I will enhance activities of the AOGS journals (Geoscience Letters) through collaboration with other international atmospheric science journals. I am an Editor or Board Member for several journals (*Journal of the Meteorological Society of Japan, SOLA, Progress in Earth and Planetary Science, Monthly Weather Review, Journal of Advances in Modeling Earth Systems*) and I will use my experience and influence to invigorate and develop the AOGS journals.