

Past, present, and future of the atmospheric chemistry research and international collaborations

*Hiroshi Tanimoto¹

1. National Institute for Environmental Studies

The atmosphere is an integrator connecting the components of the Earth system. Human emissions of pollutants and long-lived greenhouse gases into the atmosphere have caused dramatic transformations of the planet, altering air quality, climate, the cryosphere, elemental cycles and nearly every ecosystem worldwide. Understanding the global atmosphere requires an international network of scientists providing intellectual leadership in areas of atmospheric chemistry that need to be addressed, promoted and would benefit from research across disciplines and/or geographical boundaries. Acknowledgement of this need led to the formation of the International Global Atmospheric Chemistry (IGAC) Project in 1990. Since 1990, IGAC has fostered a community of several thousand students, scientists, policy makers, and stakeholders that actively collaborate across geographical boundaries and disciplines in order to contribute to addressing the most pressing global environmental change and sustainability issues through scientific research. However, fulfilling IGAC's mission to facilitate atmospheric chemistry research towards a sustainable world is not without its challenges. Currently, one of the most pressing issues of our time is air quality. The World Health Organization recently stated that over 9 out of 10 people breathe unhealthy air and that air quality is the top environmental cause of premature deaths in the world. Due to this attention, the issue of air quality is becoming so prominent, and in many cases so political, that conducting sound fundamental scientific research on air quality is being threatened by the increased emphasis on applied or solution oriented research. This emphasis leaves little room for curiosity-driven, exploratory science, which in the past has resulted in the discovery of some of the most pressing global environmental change issues, with the ozone hole being a very prominent example. The recent growth of post-truth and nationalist sentiments are further challenges to fundamental scientific research and international collaborations. We seek to explore the challenges facing IGAC and discuss ways in which they may be overcome so that IGAC can continue to foster an international community that aims to address the known and unknown global environmental change and sustainability issues of our time through scientific research.

Keywords: atmospheric chemistry, international collaboration, IGAC, air quality, climate change