scientific investigation of this beautiful region in Brazil. For more information about the CCIV2012 symposium, visit their website at www.ccet.ufrn.br/cciv2012/.

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Interview with Toshio Yamagata

Hans von Storch

Toshio Yamagata is currently the director of Application Laboratory at Japan Agency for Marine-Earth Science and Technology. He was the Dean of School of Science of the University of Tokyo from 2009 to 2012 and, after retiring from the university in 2012, he was given the title of Professor Emeritus. His has done extensive modeling and analysis work with focus on large-scale dynamical processes of the oceans and the atmosphere. He has been awarded in 2004 the American Meteorological Society’s H. U. Sverdrup Gold Medal “for his outstanding accomplishments in the study of ocean and climate dynamics, especially with respect to El Nino and air-sea interaction over the Indian Ocean.” He is a fellow of the AMS and AGU for his accomplishments and outstanding contributions to the atmospheric and oceanic sciences.

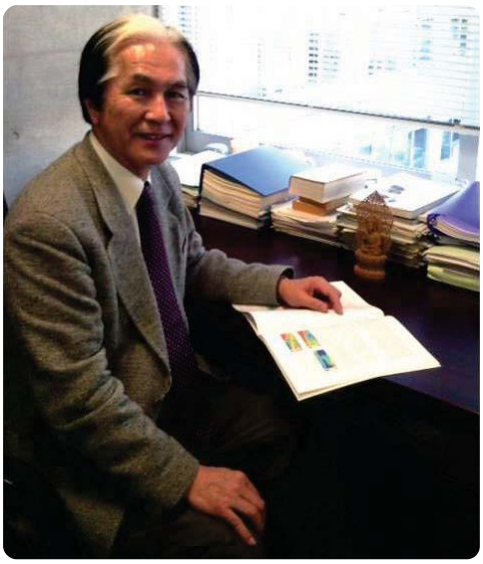

Photo 1: Yamagata just before retirement in 2012.

What would you consider the most two significant achievements in your career?

The development in the early 1980s of an instability theory (with George Philander of Princeton University) of an ocean-atmosphere coupled system to explain the evolution of El Niño/Southern Oscillation and the discovery (with Saji Hameed and young colleagues from Asia) of another ocean-atmosphere coupled mode: the Indian Ocean Dipole, based on the synthesis of ocean-atmosphere observational data, in the late 1990s. In retrospect, I think both contributed to stimulating the climate research community to deepen the understanding of climate dynamics from new viewpoints.

You have retired from the Tokyo University and you are now a leading scientist at JAMSTEC for climate application studies. Can you tell us a bit about the differences, both in terms of institutions and in terms of issues?

Since I started my career in GFD (geophysical fluid dynamics) in the early 1970s, I have always felt a there was a gap between my academic research and the surrounding society. Involvement in the climate research based on the background of GFD in the 1980s, at Princeton filled the gap to some extent. To proceed further in this direction, I realized the necessity of concerted action with scientists (like Roger Lukas, Jay McCreary and Gary Meyers) sharing the same idea in and out of my homeland, and I started contributing some of my energy to supporting institutional frameworks such as FRSGC (Frontier Research System for Global Change) and Earth Simulator of JAMSTEC and NASDA (now JAXA), and the Japan-US bilateral IPRC (International Pacific Research Center) at the University of Hawaii under the support of the Science and Technology Agency (called at that time). From 1997, I led a group at FRSGC composed of young active scientists mostly from abroad to develop ocean and climate models for prediction. Such extracurricular activities were compatible, despite busyness, with my concurrent university academic life for basic research and graduate/undergraduate education. Without the liberality of the University of Tokyo, this could not happen. Now I graduated from my mission in the university, and I find time to be fully involved in application studies based on ocean and climate prediction information at new JAMSTEC’s Application Lab. It is interesting, however, that the feeling of “something missing” is still left after having filled the gap perceived in my younger days. I believe this drives me further on to stage II.

You are Japanese – is there a difference in how atmospheric science is done in your homeland compared to the western way?

Living interdisciplinarily is rather difficult in my homeland. Also, without a strong spirit, developing one’s own idea that is different from what many people think is difficult in such a geographically small island country. I think, in my homeland, I am accepted as an oceanographer but still not accepted as a meteorologist . Perhaps, this is a general phenomenon all over the world; the smaller the village, the stricter the discipline with a long history. I believe that we need more liberal air in both infra- and supra-structres.

Photo 2: Yamagata at Moscow Airport in 1998.

Your homeland has been hit by the tsunami in 2011, and brought the Fukushima nuclear reactor out of control. Did these events impact the focus of atmospheric science is Japan?

I strongly believe that the tragedy of 3/11 calamity was doubled by the villager mind in several related science fields including earth science. In that sense, it was partly a manmade disaster. For example, if the information from the bottom pressure gauges deployed far offshore were released immediately from the Japan Meteorological Agency to our society,

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thousands of lives could have been saved. However, the too bureaucratic belief in the manual describing the relation between the tsunami height and the earthquake magnitude stopped the information delivery. Too much belief in the manuals without understanding how they were introduced led to further disaster. The silence of scientists particularly belonging to national institutions under one too strong voice restriction (but actually not released) after the calamity lead to people further losing the confidence in science. It is not easy to regain the credit. How to behave as a scientist with expertise when facing such a disaster has now become a big issue in the academic community. This is again related to the problem that links science and society. We have realized the importance of daily activities to enlighten operational people, policy makers and, most importantly in a long run, laypersons by delivering a scientific way of thinking as well as the outcome of science.

When you look back in time, what where the most significant, exciting or surprising developments in atmospheric science?

I am always impressed by the rich history for modern weather forecast as foreseen by Vilhelm Bjeknes in 1904. It has been achieved by close interactions between technological growth in earth observations, meteorological innovations led by Jule Charney, the evolution of the computer science led by von Neumann, and the implementation of a information delivery system of WWW(World Weather Watch) fostered by J. F. Kennedy at the occasion of UN General Assembly in 1961. Our way of life has been completely changed after those persistent, unselfish challenges. This is one of the best examples of science innovation in our history. I am sure our seasonal climate forecast activities will keep this outstanding track.

Is there a politicization of atmospheric science?

Climate change and climate variations are different. Projection and prediction are different, too. The problem of climate change includes trans-science issues without validation and very much political. Seasonal climate forecast based on scientific research of climate variations is within the realm of science and technology and looks undervalued in comparison with global change issues. I think we need to pay at least equal attention to science for seasonal forecast with validation studies. This is because countries, either developed or developing, suffer serious impacts of abnormal weather and extreme events due to climate variations under the increasing pressure of global environmental change. By doing so, global change issues will find much broader support on this globe.

What constitutes "good" science?

I think "good" science must be done together with active validation studies supported by technology development, leading to new knowledge as well as the improvement of our understanding. Particularly in earth science, it needs to contribute even indirectly to sustainable well-being of our habitable planet rather than just increasing our knowledge as in "pure" science.

What is the subjective element in scientific practice? Does culture matter? What is the role of instinct?

To me, science is like wine. Culture is related to climate, and gives aroma in science when pursued by individuals just as terroir does. This may give us richness of styles in viewing and expressing our world under the general principles of physics and mathematics.

The opinions expressed in this interview do not necessarily represents those of the reviewer or the AGU.

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Volunteer to judge Papers, oral and/or Poster, for this Fall's OSPA in San Francisco!

You were given an opportunity to contribute to this worthwhile activity and to support junior scientists at a critical time in their career development.

Please contact the Section OSPA Volunteer Coordinator, Prof. Vickie Connors, Virginia Commonwealth University at vsconnors@vcu.edu

2011 Fall Meeting OSPA Winners

Alexis Attwood, University of New Hampshire, Durham, The effects of mineral dust on the hygroscopic and optical properties of inorganic salt aerosols

Adriana Raudzens Bailey, University of Colorado, Boulder, Isotopic signatures of mixing processes and cloud detrainment in the subtropics

Shannon Capps, Georgia Institute of Technology, Atlanta, Quantifying relative contributions of global emissions to PM2.5 air quality attainment in the U.S.

Matthew Christensen, Colorado State University, Fort Collins, Aerosol-precipitation responses deduced from ship tracks as observed by CloudSat

Evan Couzo, University of North Carolina at Chapel Hill, A regulatory model's ability to simulate large spatial heterogeneity in observed ozone in Houston, Texas

Stephen Griffith, Indiana University, Bloomington, Hydroxyl and hydroperoxy chemistry at the CalNex-LA 2010 site: Measurements and modeling

Will Johnson, Montana State University, Bozeman, Development of an eye-safe micropulse differential absorption lidar (DIAL) for carbon dioxide profilings

Chunsong Lu, Nanjing University of Information Science and Technology, Nanjing, China, and Brookhaven National Laboratory, Upton, Long Island, New York, Observational study of different entrainment-mixing mechanisms in cumulus during RACORO: An implication for parameterization

Corey Markfort, University of Minnesota, Twin Cities, Effect of wakes on land-atmosphere fluxes

Scot Miller, Harvard University, Cambridge, Massachusetts, Large-scale environmental drivers of North American methane emissions

Richard Moore, Georgia Institute of Technology, Atlanta, Volatility and hygroscopicity of Atlanta CCN during new particle formation events in summer 2009

Harshal Parikh, University of North Carolina at Chapel Hill, A combined kinetic and volatility basis set approach to model secondary organic aerosol from toluene and diesel exhaust/meat cooking mixtures

Brandon Strellis, Georgia Institute of Technology, Atlanta, The influence of light absorbing aerosols on the radiation balance over central Greenland

Michael Zucker, University of Colorado, Boulder, Airborne passive microwave measurements from the AMISA 2008 science campaign for modeling of Arctic sea ice heating