

Atmospheric Sciences

Section of AGU Newsletter

Volume 7, Issue 1 2013

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The Union and Section deadline for awards and nominations has been extended to 31 March, 2013

Climate Science in a Web 2.0 Context

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The climate debate has become an ubiquitous topic for discussion in the 21st century. This discussion goes beyond the scope of peer-reviewed papers: it reaches people all around the world in a wide variety of media. The Web 2.0, which refers to the new era of the Internet allied to social media, has facilitated the communication of climate science to the public. One of the Web 2.0 widely used tools is blogs, which give the public the chance to express their opinion and therefore, to engage with blog writers and scientists. Mathew Reeve, a Climatology PhD student at the University of Bergen, Norway, has created a different blog to communicate climate science. This article will discuss how his different approach to blogging could be beneficial for teaching university students and early career scientists how to bridge the gap between science and communicating science to others.

Climate blogs have become a one-stop shop for anyone who wants to be updated in the current debate of climate science. Blog texts are short, informal, easy to understand and their use of scientific jargon is limited. They also provide a sense of community, where many subscribe to blog websites and participate as readers or as commentators. People can therefore voice their opinion, which gives them a sense of empowerment. It is no wonder that blogs have become so popular. There is, however, a negative side to blogging: to a considerable extent blogs do not go through the established process of peer-reviewing and many do not go through any

review at all. In the competition to establish new blog websites, some resort to sensationalism or may end up distorting scientific results. The competition is also tough as illustrated by the fact that a Google search of the expression "climate blog" gives half a billion hits!

Mathew Reeve, a PhD student in Norway, has created an alternative way to climate blogging. His blog offers university students and early career scientists a platform to write articles that engage the public in the climate science debate irrespective of their prior experience. The blog is based around an improvement-by-doing ideology. The more you write, the more you will improve. At the same time, the blog provides a "peer" review process for the articles that are posted on the Internet. This review process is made up of a board of research scientists, university professors and not least fellow bloggers, who go through the texts and provide feedback. Through a true community approach the students develop skills for communicating science to others. In an interview with Mathew, I had the opportunity to ask him a few questions on his innovative blogging idea. My interview questions are shown below, together with his replies.

Why climatesnack.com?

It's a play on words of sorts. The idea for the site started in Norway with the name Klimasnakk. This means 'climate talk'. However, I like the sound of the name and converted it 'directly' to English. I think it works well, since the site will give its readers

and bloggers interesting nibbles of climate information. I also think it conveys the easy-going attitude of the blog. We will not judge anyone on writing skills. The whole point of the blog is to help people improve.

Where did you get inspiration to create a blog on climate science?

Last fall I took a scientific writing course on Coursera. Kristin Sainani from Stanford University led the course. I am in general, extremely impressed with Coursera - if you don't know what it is then check it out [<https://www.coursera.org/>]. The online lectures were interesting, informative and above all downloadable. An online community sprung up around the course with many discussion forums covering all aspects of the course content. I learnt a lot during the course. One of the most important lessons was that of continuity. We should keep practicing writing in order to improve. Try and write something every day. That's obviously very difficult, but you get the idea. So in essence I created the blog to encourage myself to keep writing. However, I missed the community that the Coursera course had spawned, and the benefits that came from it.

Could you tell us something about the objectives of your blog?

Well, once the course was over, the community that followed it scattered. I want the blog to offer the chance to build a community around scientific writing that will remain in place. I want it to motivate climate

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Call for Volunteers

As a new AGU Council gets underway, the Atmospheric Sciences Section needs volunteers for a 2-year term for the following posts: Section Webmaster, Student Travel Grant coordinator, Outstanding Student Paper Awards (Coordinator Lead and Deputy Coordinators for Oral and Poster papers). These positions consist of deadline assignments but only 1-3 times/year. In recognition of the sometimes heavy effort, the Section sponsors the Coordinators' travel to the Fall meeting (airfare and lodging subject to AGU practices). Volunteer rewards also include a chance to 'make a difference,' gain leadership experience in your career track, get to know a spectrum of AGU members and activities. If you are interested in being considered for one of these positions, please send an email with short CV to President Peter Webster, pjw@eas.gatech.edu.

We are also looking for Newsletter contributions. Please send those to Editor Dr Violeta Toma, vtoma@eas.gatech.edu.

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Section Announcements

Time to honor your colleagues with an AS-Section Award or Union nomination:

ASCENT AWARD: for mid-career scientists receiving their PhDs or highest degree in the years 1993-2004. The only criterion for the award is that the applicant demonstrates excellence in research and leadership in his or her field. Nominations for women and underrepresented minorities are encouraged. It is anticipated that up to 4 awards will be made each year. Learn more about the [Ascent Award submission details on the AS-Section Web site](#).

Nominations should be sent to [Peter J. Webster](#) by 31 March 2013.

HOLTON AWARD: The Holton Award recognizes outstanding scientific research and accomplishments of early-career scientists in the field. To be eligible, candidates should be a member of AGU, and be no more than three years past the award of the Ph.D. degree. This means that the Ph.D. must have been received in 2010, 2011, or 2012. Learn more about the [Holton Award submission details](#).

Nominations should be sent to [Anne Thompson](#) by 31 March 2013.

KAUFMAN AWARD: The Yoram J. Kaufman Award for broad influence in atmospheric science through exceptional creativity, inspiration of younger scientists, mentoring, international collaborations, and unselfish cooperation in research. Learn more about the [Kaufman Award submission details](#).

Nominations should be sent to [Anne Thompson](#) by 31 March 2013.

UNION FELLOWS: Each year 0.1% of the AGU base are honored as Union Fellows. The AS-Section has its own Fellows Committee of distinguished AS members and chaired by Prof K.N. Liou of UCLA. The AS committee will reevaluate and rank the AS nominations which will then be ranked, in turn, with nominations from other sections. Fellow nominations are to be submitted as per instructions on the [AGU Union Fellows Web page](#).

UNION AWARDS, PRIZE, AND MEDALS: Nominations are being accepted for several of AGU's Union Awards, Medals, and Prize. Please take this opportunity to nominate a colleague for their outstanding work. Learn more about [Union Awards, Medals, and Prize being presented in 2013](#).



students and early career researchers to make the first step to improving their writing skills. As a community, I hope that people will be encouraged to give constructive feedback to their co-bloggers about the structure, flow and clarity of their online articles. The overall objective is to improve our article writing skills. For this, we need to be able to tell a good story, and that takes practice.

What is it special about your blog that sets it apart from the others?

We have absolutely no standards. If you want to improve your writing skills through blogs, then you have two options. Firstly you can start your own blog. If your writing is not up to standard, then I doubt you'll get many followers or constructive feedback. In this sense it will be difficult to remain enthusiastic and motivated to continue writing. The other option is applying to write for an established climate blog. This option will mean that you have to improve your writing skills on your own before applying because those sites certainly, and rightly so, have standards. Climatesnack offers the benefits of writing in a community without being an expert before you start. We also have good contacts in the research community and articles on Climatesnack will be promoted on social media sites and may also get picked up by journalists. In this way, you can increase your impact and visibility in the community at the same time as improving your writing. The only thing we ask of our bloggers is that they pluck up their courage to take the first steps by registering and publishing their first online article. Even if they don't get the best feedback to start with, the community approach will offer the encouragement to improve. If anybody has received a rejection from a scientific journal then writing on Climatesnack will be a piece of cake. And for those who have never received a

rejection; we want you on our advisory board. Even though Climatesnack is still in its infancy, I think the ideals behind it are quite new. I hope that this will encourage people to be a part of something new.

How do you fund your blog?

With my free time at the moment. We hope to start up our first discussion group in Bergen in March, and then take it from there. If the concept takes off then we will obviously need to apply for some funding to develop the idea more and set it slightly more apart from the normal blogosphere. If anybody would like to work with us on development then get in contact. At the moment we are limited to the options on wordpress.com, but maybe one day we will be able to develop our own standalone blog.

How do you foresee your blog in the future?

If I am ridiculously optimistic, with hundreds of young and early career climate scientists daring to improve their writing skills. If we can build a blog community built on this mutual improvement concept, then maybe we can. There's lots of exciting things I would like to implement. For example, it would be great to develop an anonymous peer review system where other members, or maybe even the general public, can review and mark the articles under different topic headings. I really think this would be an amazing way to track bloggers progress through the Climatesnack community. Maybe they will start with a low score, but after several online articles, their writing improves and so does their score. All this is in the future, but hopefully not the too distant future. With funding we could develop these ideas further and build a strong foundation for this new approach. To develop this mutual improvement concept for scientific writing would be exciting no matter what, and I hope others would like to



Photo: Mathew Reeve

join me.

Mathew Reeve has indeed created an alternative and innovative way to communicate climate science in a Web 2.0 context. By juxtaposing blogging with teaching students and early-career scientists how to communicate science under a "peer" review process, his blog empowers them to engage with the public more effectively. Mathew's enthusiasm and drive, as expressed in the interview, are also key elements for making his blog work. Klimasnakk, which literally means "climate talk" in Norwegian and now metamorphosed into Climatesnack, may become an influential voice among others in the climate blogosphere of the future.

(Note: If you would like to contact Mathew his email address is: mathew.reeve@uni.no and you can check out his blog website at: climatesnack.com).

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

HIPPO GLOBAL SCALE AIR CHEMISTRY DATASET NOW AVAILABLE

Data from the HIPPER Pole-to-Pole Observations (HIPPO) study of greenhouse gases and aerosols are now available to the atmospheric research community and the public. This comprehensive dataset provides the first high-resolution vertically resolved measurements of over 90 unique atmospheric species from nearly pole-to-pole over the Pacific Ocean across all seasons. The suite of atmospheric trace gases and aerosols is pertinent to understanding the carbon cycle and challenging global climate models. This dataset will provide opportunities for research across a broad spectrum of Earth sciences, including those analyzing the evolution in time and space of the greenhouse gases that affect global climate.

Two websites (see links on next page), created by the National Center for Atmospheric Research, Earth Observing Laboratory, and U.S. Department of Energy, CDIAC (the Carbon Dioxide Information Analysis Center), debuted on 30 November 2012 to serve those interested in acquiring HIPPO data and documentation. See the bottom of this announcement for more details.

HIPPO was an NSF- and NOAA-funded, multi-year global airborne research project to survey the latitudinal and vertical distribution of greenhouse and related gases, and aerosols. Project scientists and support staff flew five month-long missions over the Pacific Basin on the NSF/NCAR Gulfstream V, High-performance Instrumented Airborne Platform for Environmental Research (HIAPER) aircraft between January 2009 and September 2011, spread throughout the annual cycle,



Photo 1: With its high-flying capabilities, HIAPER, the NSF/NCAR Gulfstream V research aircraft, opened new frontiers for this type of global atmospheric profiling.

from the surface to 14 km in altitude, and from

87°N to 67°S.

The landmark study resulted in an extensive, highly detailed dataset of over 90 atmospheric species, from six categories, all with navigation and atmospheric structure data, including greenhouse gases and carbon cycle gases; ozone and water vapor; black carbon and aerosols; ozone-depleting substances and their replacements; light hydrocarbons and PAN; and sulfur gases/ocean-derived gases. A suite of specialized instruments on the aircraft made high-rate measurements as the plane flew, while several whole air samplers collected flasks of air for later analysis in laboratories around the U.S.

HIPPO DATA ARCHIVES

CDIAC HIPPO Data Archive: <http://hippo.ornl.gov/>

Integrated measurement data products and user documentation are provided at the Carbon Dioxide Information Analysis Center (CDIAC) HIPPO data archive. Files are in ASCII text format. Products include:

- A comprehensive merged product at 10-second resolution for all high-rate measurements (40 measurements of 26 unique species, not counting flask measurements)
- Combined results from all discrete whole air sample and gas chromatograph measurements (77 unique species)
- Pressure-weighted mean column concentration data for total and 10 km columns and 100 m vertical intervals
- A subset of all measurements from NOAA flask samples that are directly comparable with data from the NOAA/ESRL/GMD CCGG cooperative air sampling network
- A subset of highly accurate MEDUSA flask sample trace gas and isotope data with additional diagnostics

EOL HIPPO Data Archive: www.eol.ucar.edu/projects/hippo/

The Earth Observing Laboratory (EOL) HIPPO data archive provides component data, documentation, and information, including:

- Photos, imagery, and movies from aircraft-mounted camera with time-synchronized navigation and state parameter data
- Pole-to-pole atmospheric cross-section plots of chemical species
- Investigator-provided quality-assured individual instrument data files
- Supporting data sets (e.g. operational satellite, model output, global observations, etc.)
- Ancillary flight information, field catalogs, data quality reports, software, and documentation

See full news release: http://hippo.ucar.edu/HIPPO/HIPPO_News_Release_f.pdf



Photo 2: Flight tracks from the five HIPPO missions from 2009 – 2011, over the Pacific Basin.

The University of Georgia's Atmospheric Sciences Program

In October 2012 the University of Georgia (UGA) was elected to be the 78th member of the University Corporation for Atmospheric Research (UCAR). UCAR membership signals a new stage in the growth of UGA's atmospheric sciences program (ASP; <http://atsc.uga.edu/>), so we thought you might want to know more about us.

UGA is located in the music and arts mecca of Athens, Georgia, about 65 miles east-northeast of Atlanta in the rolling hills of northeast Georgia. UGA is the nation's oldest state-chartered university, founded in 1785. UGA's ASP began a little later, in 2000. It has 7 tenured faculty, 1 research staff, approximately 30 undergraduate students, and 12 graduate students. Since UGA is Georgia's flagship and land-grant university, the program is able to leverage partnerships with faculty and programs in engineering, marine sciences, education, Sea Grant, forestry/natural resources, ecology and the Extension service.

Since 2001 the ASP has granted undergraduate

certificates in atmospheric science, which require 30 semester hours of coursework in atmospheric and related sciences and satisfy American Meteorological Society (AMS) recommendations and Federal employment requirements. To date, 37 UGA students have completed this certificate. Within the UGA Department of Geography, which houses most of the atmospheric sciences-related faculty, 15 M.S. and 3 Ph.D.s relating to atmospheric science have been granted in the past five years, with another 8 Ph.D. students and 5 M.S. students in progress. Our alumni have won AMS, National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration (NASA) scholarships and fellowships, and have gone on to pursue advanced degrees at Colorado State, Penn State, Texas A&M, North Carolina State, Florida State, and the University of Wisconsin-Madison. Our graduate degree recipients are now faculty members at Northern Illinois, Mississippi State, Western Kentucky, Auburn, the University of Wisconsin-Whitewater and the College of DuPage (PHOTO 1).

Our faculty investigate a wide range of phenomena, including precipitating systems (i.e., mesoscale convective systems, hurricanes), urban climate, hydroclimate extremes, cryospheric processes (i.e., Greenland icemelt, snow cover), weather/climate and health, the paleoclimate of the Intermountain West,



Photo 1: Victor Gensini, a Ph.D. student under the supervision of Dr. Tom Mote at UGA and an assistant professor at the College of DuPage (IL), encounters the topic of his dissertation.

weather salience, and clear-air turbulence forecasting. ASP faculty have received some of the highest honors in the field including AMS, NASA, National Weather Association (NWA), Fulbright, and Presidential research and outreach awards. Within the last five years, ASP core or affiliate faculty members have been responsible for 110 journal articles and over \$11 million in extramural funding from NASA, NOAA, U.S. Department of Agriculture, Department of Defense (DoD), Department of Energy (DoE), National Science Foundation (NSF), and UCAR. Our faculty

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also routinely appear in the media as topical experts. For example, Tom Mote (longtime ASP director and department head of Geography) was quoted in hundreds of media outlets worldwide in the summer of 2012 for his work on Greenland icemelt.

UGA ASP faculty have also assumed leadership roles as National Research Council, NASA, DoE and NOAA advisory board members, editors and associate editors of journals such as JGR-Atmospheres, Geography Compass-Climatology Section and the Journal of Applied Meteorology and Climatology, and in elected positions in national organizations. Most notably, Marshall Shepherd, director of the UGA ASP and a Fellow of the AMS, was elected President of the American Meteorological Society for 2013 (PHOTO 2).

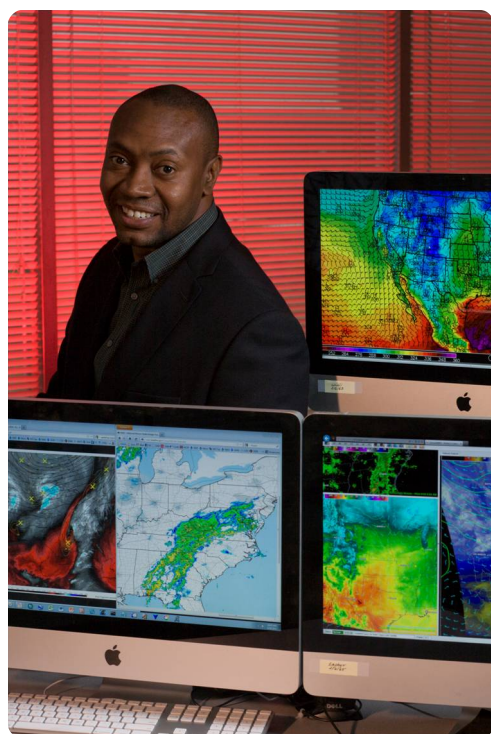


Photo 2: Marshall Shepherd, director of the UGA Atmospheric Sciences Program, in the Climate Research Laboratory on top of the UGA Geography/Geology Building.

ASP faculty have also received college-wide, university-wide, and national recognition for excellence in teaching. Dr. John Knox was deemed one of “The Best 300 Professors” in the United States by the Princeton Review. UCAR President Thomas Bogdan noted that “the curriculum for UGA’s Atmospheric Sciences program is highly innovative and forward-looking, offering an unusually broad interdisciplinary focus that ranges from anthropology to geography, while retaining the fundamentals so critical to our field of study” [<http://columns.uga.edu/news/print/university-elected-to-atmospheric-sciences-consortium/>]. We emphasize collaboration, as exemplified in



Photo 3: The UGA student chapter of the American Meteorological Society with Ginger Zee, in front of the UGA football stadium next door to the Geography/Geology Building.

multi-author undergraduate research publications in leading journals such as the Bulletin of the American Meteorological Society and the Journal of Climate, and award-winning forecast teams in the WxChallenge competition.

New UGA ASP initiatives in 2013 include:

- 1) partnering with the Department of Geography and NASA through DEVELOP, a national student internship program to enhance training and development in earth science. This collaboration is only the second that is housed strictly at a U.S. university;
- 2) innovative curricula, including a new Introduction to Data Assimilation class and a unique Ph.D.-level seminar “Deconstructing Superstorm Sandy” (<http://deconstructingsuperstormsandy.blogspot.com/>) that brings together students across disciplines to research the scientific and societal aspects of Sandy; and
- 3) a series of high-profile activities hosted by UGA’s student AMS chapter (<https://www.facebook.com/UgaAms>), including attendance at regional and national meetings, development of a weather calendar, and nationally known speakers such as “Good Morning America” meteorologist Ginger Zee, Weather Channel experts Bryan Norcross and Tom Niziol, and Weather Underground founder and blogger Jeff Masters (PHOTO 3).

We’re a young and relatively small program, which afford us the advantages of flexibility and camaraderie. Our students are being prepared for the 21st century’s challenges and opportunities, while our faculty are innovating and providing pathways for future questions facing science and society. We hope to see you at an AGU meeting or come and visit us in Athens!

Interview with Julia Hargreaves

Hans von Storch

Julia (Jules) Hargreaves took physics at Oxford University, where she received her BA in 1991; her PhD was in Astronomy and Astrophysics, 1995, from Cambridge University. From 1995-2001 she studied spectral wave modelling at the Proudman Oceanographic Laboratory, UK. In 2001 she commenced research in climate change in Yokohama Japan. Since then she has worked in the same room of the same building, although the institute has gone through several changes in identity; initially it was Frontier Research System for Global Change and now it is called the Research Institute for Global Change.



A photo of Jules taken quite recently.

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

Scientifically, I think the thing that’s most significant is my work towards using paleoclimate simulations for quantitative evaluation of climate models and for predicting climate change. This is something I’ve been working on for a few years now and there’s no one specific paper that stands out for me, but it’s still very much an ongoing and active area of research. The aim is to move beyond merely saying “the models look reasonably good” and

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to produce more specific and scientifically defensible assessments of how good (or bad!) they really are and how much this impinges on future climate change predictions. Something that I hope may have more of a cultural impact is the establishment of the journal *Geoscientific Model Development* (GMD), a revolutionary journal (at least in the eyes of the doting Executive editors) which focusses on publishing and documenting computer models in the geosciences. In the world before GMD existed, authors were struggling to publish detailed descriptions of models, with the consequence that the most fundamental tools of our trade were left largely undocumented and thus unreproducible. It was also apparent to me that such a journal was even more of a requirement in the climate sciences where non-publication of models leaves the science potentially exposed in this highly politicised field. It wasn't long until Dan Lunt had the same idea and brought his large array of contacts into play, including Rolf Sander, and the two of them have really done most of the work. I have always found the EGU to be very forward thinking, and hoped that the journal could join their stable, and in the end that's exactly what happened. The revolution continues apace.

You are presently working as senior scientist in the paleoclimate group, in the Research Institute for Global Change (RIGC) in Yokohama, Japan. How is it for you to live and work in a country with a rather different culture, in terms of everyday life and in terms of scientific practice?

I find that Japan is so upside-down that it causes me to continually question my assumptions about the world, and I think that has had the most positive influence on my work. Daily life is easy. We have never been short of funds for equipment or travel. In fact we tend to have too much. Our research has been funded by large consortium grants and thus our administrative overhead is really quite slight. The Japanese approach to climate science is very different to that in the UK. I think this is because the Japanese are less questioning of authority and therefore tend not to ask "why" so readily. However, they are quite happy with asking "how?" and team-working skills are also strong. In some respects, the inefficiency of Japanese science is striking. On the other hand, when we worked in the UK we were so driven towards so-called efficiency that there was little time for any creative thought. Those Japanese who we collaborate most effectively with tend to be those who have spent time abroad, which may not be entirely coincidental. I do have a communication problem with the Japanese, as my language abilities are rather poor, and fluency in English is rare among the Japanese. This lack of people to talk to has had a positive



A cherry blossom party in 2009, with Jules' Uncertainty Group, and the Paleo-climate Group, led by Ayako Abe-Ouchi (who is taking the photograph).

effect of encouraging the development of strong working relations with scientists in Europe and the USA, whom I physically meet only very rarely. One of your previous interviewees, Nanne Weber had a particularly strong influence on me. Her regular emails, full of wisdom and sanity, were a kind of life-support, and despite the fact I met her physically only a handful of times, she left quite a hole in my life when she passed away.

Your husband is another British climate scientist – does this mean that scientific issues are a permanent presence in your personal lives?

When I was a teenager I decided that it would be a good idea to find a scientific husband to work with. But I was very lucky. I had no idea I'd find one with such a blazing-fast CPU as James [Annan]! As for science invading my personal life, I find that climate science is one of those professions where one is always on duty. As soon as I tell people what I do, I get the 3rd degree. I find this much more of an intrusion to my personal life than the fun of discussing a scientific problem with James on a Sunday lunchtime.

There are more couples, with both partners being climate scientists. What would you suggest to such couples – should they strive to work in related fields or is distance of research fields beneficial? You publish most papers together with your husband – does it happen that people find it difficult to properly attribute your, or his, contribution to the work?

The way our situation has evolved is an adaption to circumstances so I wouldn't want to offer advice, other than to be adaptable and to try to let ego take a second place to science. That we work quite so closely together is probably a consequence of being stuck in Japan with no one else to talk to for the first few years we were here! However, with similar interests but different skills, I think that James and I together make a very capable scientist. I'm a physicist and he a mathematician. I tend to push collaborations and have lots of ideas. James is incredibly "realistic" about the bad ideas, but takes the good ones and makes them into better ones. You might be amused to know that over the last few years I was James' line

manager. While I doubt this would be tolerated in most places, there seems to be no rule about it in Japan, and it worked surprisingly well. Coupled with the fact that he writes most of the words on our blog ["James' Empty Blog", <http://julesandjames.blogspot.jp>], he definitely gets a lot of the credit, but also takes the blame, which seems a fair swap to me.

Do you notice a gender bias in perception of achievements, in Japan or in Great Britain?

This is very difficult to answer in a short interview. While acknowledging that there are huge differences in the societal roles adopted by men and women in Japan, speaking personally I have been treated with very little gender bias. The reason is that my cultural identity is "foreigner in Japan", and within this identity, gender is an irrelevance. Although being always treated as a foreigner gets tiresome in some ways, in others it is a big advantage. It was certainly a unnerving experience when I first arrived in Japan, and people started taking notice, and acting on what I said. "Is this what life is normally like for men?", I wondered. It changed my behaviour. When I found that people started to act on my advice I had to start to think much more carefully before opening my mouth.

The relative number of females is very skewed in atmospheric and related sciences. Should this be overcome, and which measures would you suggest?

I think that gender ratios are not the main problem holding back scientific progress. The old-boy network is a much more dangerous thing. People seem to like forming little cliques of people much like themselves. I thought that the study by Nature recently into the gender bias of their male and female editors was very illuminating. We all need to be aware of our biases and make a point of inviting people that we don't know well to join our groups - whether that's asking people to review papers, inviting people to conferences, or job interviews. For the best cross-fertilisation of ideas we need to invite young people without famous supervisors who work in institutes we haven't heard of. The same is true when it comes to evaluating the science of others. When James and I moved into climate, we came from other fields so we had no big name mentors to put on our papers. A decade later it is noticeably easier to get our papers accepted. I find this disturbing as it ought to be possible to assess the science without considering the person, or the reputation of their workplace. I think we too often ignore the ideas of younger scientists, and too often fail to argue with the well-established.

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

I recently met someone who had the Lisieki & Raymo benthic stack permanently tattooed on

their forearm. While I wouldn't want to go that far, I think that these kinds of detailed paleoclimate records, such as the ice cores from Antarctica are the most entrancing developments in climate science in recent years.

Is there a politicization of atmospheric science? Is this different in Japan than in your home country, Great Britain?

Climate science is certainly very political. Since I do all my science in English, I am, however, only really aware of the English-language politics. We are quite well protected from it here, but it seems that in such an environment it can be difficult to be rational and realistic about climate change. In order to publish in high

impact journals the numbers must keep getting bigger and the outcomes more scary.

What constitutes “good” science? Is this the same in Japan as in Great Britain?

I'm looking for the third way. The British are all about flashy big-picture ideas. On the other hand the Japanese prefer to disappear down into the obscurity of minutiae. The UK is riddled with assessment, requiring every little step forward to be hyped and sent to Nature, whereas in Japan, promotion can more surely be gained by doing everything your boss asks you to, with publications playing a rather minor role.

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

I think that “gut feeling” is merely the way our brains inform us about the aggregation of our experiences. As we gain more scientific experience our gut instincts are honed, and we can more efficiently solve problems. On the flip-side, while science ever advances, as we age and our minds become more rigid and less able to absorb new information, until eventually our gut feelings become too inaccurate to be useful. Then we definitely ought to retire!

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