

Atmospheric Sciences Section of AGU Newsletter

Volume 4, Issue 6 December 2010

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**AGU FALL MEETING
2010**

13–17 December, San Francisco, California, USA
Moscone Convention Center

NSF and the Atmospheric Sciences: Current Opportunities and Future Strategies

16 December 2010 - AGU Fall Meeting

12:30:00 PM - 1:30:00 PM - Moscone West, Room 2009

The Atmospheric Sciences community is invited to meet with Michael Morgan, the new AGS Division Director, and program officers from NSF's Atmosphere Section (AS), to learn about AS programs and opportunities. A brief overview of current activities and an introduction to the new AS strategic planning initiative will be followed by ample time for informal discussion and interaction.

Dear Readers,

a new issue of our newsletter focused on the next AGU Fall Meeting is here

This is probably my last newsletter as Editor-in-Chief. I would like to thank all the editors for their help and contribution during the last two years and the members of the Atmospheric Sciences Executive Committee for their support to this project.

This issue includes an interview with Alan Robock, Past-President of our section and a great supporter of this newsletter. Also, we include two articles about Douglas R. Worsnop and William R. Boos, awarded with the Kaufman and Holton awards this year. Check the Section News with important announcements about the activities of our section for the Fall Meeting.

Happy reading!

*Juan A. Añel, Editor-in-Chief
EPhysLab, Univ. of Vigo at Ourense, Spain*

Newsletter Editors:

** Anna Harper - Colorado State Univ., USA*

** Hans von Storch - University of Hamburg, Germany.*

** Morgan Yarker - Center for Global and Regional Environmental Research, Univ. of Iowa, USA.*

Section News

We need your input

The AGU Council has begun an important research project on the future of our science and what that means for AGU. This project, titled "Mission: Alignment Project", will be discussed at the Council meeting on 12 December in San Francisco but we would like your involvement as well. At the Fall Meeting, you have two opportunities to voice your opinion:

1. Attend one of the guided group discussions being held on Monday and Tuesday. Specific times are listed below.
2. Participate in an online survey. Details will be provided at our business meeting in San Francisco.

The newly configured AGU Council now includes a wide range of constituent voices - the leaders of all sections and focus groups, five committee chairs, five students and young careerists, along with the AGU President and Executive Director. The Council's first order of business is aligning to the new mission and strategic plan. The group will be addressing the following question:

Given our strategic plan, stakeholder expectations of AGU, and what is being asked of science and our members -- How does our science need to be organized, recognized and rewarded, disseminated and promoted?

We would like to hear from all AGU members as we move forward on this important project. Please help us shape the future of AGU!

Guided Group Discussions are being held in Moscone West 2012

Participants	Date	Time
Session 1 for Section/Focus Group members	Monday 13	4pm – 5:45pm
Session 2 for Section/Focus Group members	Tuesday 14	10:30am – 12:20pm
Session 3 for international members	Tuesday 14	1:30pm – 3:30pm
Session 4 for students/young careerists	Tuesday 14	4pm – 6pm

Please come and tell us what you think!

Special Section Sessions and events at AGU Fall Meeting

**Atmospheric Sciences and Global Environmental Change banquet
Tuesday night, December 14**

Wednesday, Dec. 15

**4:00p-6:00p A34A Atmospheric Sciences New Fellows Highlights
Moscone West 3002**

Thursday, Dec. 16

**10:20a-11:20p A42A Bjerknes Lecture by Tim Palmer
Moscone South 103**

**11:20a-12:20p A42D Charney Lecture by Ellen Mosley-Thompson
Moscone South 103**

Looking for Editor-in-Chief

Our section is looking for a new Editor-in-Chief for this newsletter beginning January 2011. Duties include: collecting and distributing announcements of activities related to Atmospheric Sciences, Section news, interviews, scientific news, reports from meetings, and job announcements. You will manage a team of Contributor Editors and will decide about the contents of each issue.

If you desire to contribute to the AGU as an active part of our community in an engaging and interesting role, this is a good opportunity. You will participate in the Atmospheric Sciences Section and work with top researchers and leaders in the community. Also, you will develop communication skills and enjoy visibility among an AGU Section with more than 10,000 affiliates. We encourage your application. Open to everyone, this is an excellent opportunity for an advanced Ph.D. candidate or postdoctoral researcher. Part-time professionals might also consider applying.

To apply, send a statement of your background and interest in doing the job, along with a CV to Prof. Alan Robock (robock@envsci.rutgers.edu).

Interview with Alan Robock

Hans von Storch



A young Alan Robock, in Kauai in 1990.

Dr. Alan Robock is a Professor II (Distinguished Professor) of climatology in the Department of Environmental Sciences at Rutgers University. He graduated from the University of Wisconsin, Madison, in 1970 with a B.A. in Meteorology, and from the Massachusetts Institute of Technology with an S.M. in 1974 and Ph.D. in 1977, both in Meteorology. Before graduate school, he served as a Peace Corps Volunteer in the Philippines. He was a professor at the University of Maryland, 1977-1997, and the State Climatologist of Maryland, 1991-1997, before coming to Rutgers. At Rutgers he directs the Rutgers Undergraduate Meteorology Program. Professor Robock has published more than 290 articles on his research in the area of climate change, including more than 165 peer-reviewed papers. His areas of expertise include geoengineering, climatic effects of nuclear

war, effects of volcanic eruptions on climate, regional atmosphere-hydrology modeling, and soil moisture variations. He serves as Editor of Reviews of Geophysics, the most highly cited journal in the Earth Sciences. His honors include being a Fellow of the American Meteorological Society and a Fellow of the American Association for the Advancement of Science (AAAS). Professor Robock is a Lead Author of the upcoming Fifth Assessment Report of the Intergovernmental Panel on Climate Change, which was awarded the Nobel Peace Prize in 2007. He currently serves as Past-President of the Atmospheric Sciences Section of AGU and Chair of the Atmospheric and Hydrospheric Sciences Section of AAAS.

You have important positions in both AGU and AAAS. What is the role of such organizations in times of climate change and the sometimes difficult interaction of policymaking, politics and science?

I am currently the Past President of the AGU Atmospheric Sciences Section and the Chair of the AAAS Atmospheric and Hydrospheric Sciences Section. The primary role of these societies is to produce excellent peer-reviewed journals to publish the results of our science. In addition, the other major role of AGU is to provide the Fall Meeting and other smaller meetings to enable scientists to meet, share their recent results, and organize new scientific projects. In addition, it is the role of both societies to inform the public and policymakers about the science we have produced in a form that they can understand. One mechanism is seminars in Washington, DC, for Congressional staffers and others working on policy issues. The AAAS Annual Meeting also serves this purpose, by presenting new science in a way that non-experts can understand.

It is not the role of the societies to advocate specific policies in response to scientific findings. But we need to make sure that our science is not misrepresented in policy discussions. And we need to defend scientists who are attacked for just doing their job. For example, it is important to issue a condemnation of Virginia Attorney General Kenneth Cuccinelli's ongoing attack on academic freedom at the University of Virginia, and in particular on the work of Michael Mann. It is also the role of our societies to advocate for funding for our scientific research and for improved science education throughout the school system from kindergarten through universities.

Some people see political adversaries at work, who want to undermine the authority of science, and advocate different world views, for instance creationists or climate change deniers. How should science deal with such challenges?

We have to deny the deniers. However, we are not trained as politicians or in public relations. And we do not have the massive budget available to those whose interest is in confusing the public about global warming, so they can continue to sell products that use the atmosphere as a sewer and produce global warming. The one thing we can all do as individuals is continue to produce good science. I think we also have an obligation to explain our science to community groups, schools, friends, and in the media. I offer courses and lectures at my university for non-scientists. I never say "no" when asked to give a talk at a school, at a senior-living center, at a Rotary Club, or on television. For example, I appeared on CNN twice in November, 2009, during the Copenhagen conference. Although the network found it necessary to provide people to debate the science with me, it was easy to counter them and I felt good (continues on the next page)

about the opportunity to educate a much larger audience than I usually address. Through our societies, IPCC, and individually, we just have to continue to tell people about what we know. For our individual careers we have to publish in peer-reviewed literature. But for the good of the planet, we also have to inform the general public.

How do you see the role of the IPCC, for the public, for science and for policymakers?

It is the role of IPCC to assess the latest science and give an objective, non-political view of what we know and what we do not know, so that the public and policymakers can make informed decisions in response to climate change. The IPCC has a rigorous writing and reviewing process, which insures that all information is evaluated and considered without prejudice. Working Group I, The Scientific Basis, for which I am a Lead Author for the Fifth Assessment Report and which is now being written, has produced very detailed reports, with no errors that have been discovered. Minor errors in the last Working Group II report have been exploited by global warming deniers, but the entire report provides an excellent summary of the global consensus on climate change, and there are no other legitimate views that should be taken seriously. As for the impact on science, IPCC does not generate or drive science – it only assesses science, but questions it brings up do inspire curiosity-driven research. For example, the global climate modeling community is now conducting the Coupled Model Intercomparison Project 5 (CMIP5), the results of which will form the basis for much of the analysis in the Fifth IPCC Assessment, which will be completed in 2013.

Is there a politicization of atmospheric science?

When our science has policy implications, those affected, such as oil and coal companies, act politically. However, I have not found the process of science among scientists in my discipline to be politicized. Ideas advance on their merits, not based on who writes them or due to any outside influence. The editorial process works, by using peer-review, and serves to improve scientific content and communication of new ideas. As we all know, things sometimes slip through that later prove to be wrong, but the scientific process, by continuing to evaluate and question accepted ideas with new ideas and data, corrects such issues.

What constitutes "good" science?

Because new scientific knowledge that will be created is by definition unknown, and

because the use to which scientific knowledge will be put cannot be known in advance, it is difficult to define a priori what is good. In my value system, scientists should work hard on topics about which they are curious, and publish their work so that all can be able to access the new knowledge. But if you find that your work can be used for what you consider to be evil purposes, then it is your obligation not to do the work. If you find dangers to society as a result of your work, it is your obligation to warn society of them. If you find positive contributions you can make from your work, it is good to work on those aspects.

What do you think about the relationship between science and media?

With a few exceptions, the media does a poor job of educating the public about science. I think that is because they do not see that as their job. Their job is to sell newspapers (or whatever the current medium is), and they do this by sensationalizing their stories. They exaggerate new results, rather than treating them as incremental hypotheses. They try to find conflict rather than agreement. And they are taught in journalism school that you need to show both sides of each issue. This is a fair way to treat political views, for example, but not to treat our field of endeavor, where by and large there is a consensus and agreement on basic understanding. In addition, science journalists are disappearing from major media outlets, and not being replaced. For some reason, editors think they need specialists to report on sports, but that general reporters can report on science. The result is quite uninformed news articles, often with errors, and a diminishing understanding of science by the public. Therefore, we need to seek independent means of getting scientific information to the public, and not depend on the media.

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

Subjectivity cannot be removed from science. To start with, we make subjective judgments about what research to undertake. We make subjective decisions about stopping certain lines of research. And we make subjective choices about how much time to spend on our work, and on how to divide our work time on research, teaching, administration, and public outreach. Both scientific culture and different national cultures affect how we behave, and how scientific research programs are organized and funded. My feeling is that large organized projects such as those that develop satellite and other observing programs or

general circulation modeling centers, with models, computers, and technical support, are crucial to science, but they also need to be combined with curiosity-based work by individual investigators and small groups. Instinct is important to recognize new concepts when analyzing data and model outputs. I am always inspired when I think of Ed Lorenz recognizing chaos when he got diverging results after repeating a calculation started with slightly different initial conditions.

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

The most significant achievement is my work on nuclear winter. In the 1980s, by running climate model simulations, doing studies of the impacts of forest fire smoke on surface temperature, and by writing about policy implications, I am proud to have been part of the team that warned the world of the danger of the use of nuclear weapons. Nuclear winter theory led to a vigorous discussion of the direct effects of the use of nuclear weapons and a realization that the nuclear arms race was crazy and dangerous, and that the use of nuclear weapons would be suicide. This led directly to the end of the nuclear arms race, several years before the end of the Soviet Union. Mikhail Gorbachev, then leader of the Soviet Union, described in an interview in 1994 how he felt when he got control of the Soviet nuclear arsenal, "Perhaps there was an emotional side to it.... But it was rectified by my knowledge of the might that had been accumulated. One-thousandth of this might was enough to destroy all living things on earth. And I knew the report on 'nuclear winter.'" And in 2000 he said, "Models made by Russian and American scientists showed that a nuclear war would result in a nuclear winter that would be extremely destructive to all life on Earth; the knowledge of that was a great stimulus to us, to people of honor and morality, to act in that situation." [Robock and Toon, 2000]

I am now working with Brian Toon and other colleagues to warn the world that the current reduced American and Russian arsenals can still produce nuclear winter, and that even a nuclear war between India and Pakistan could produce climate change unprecedented in recorded human history. We are frustrated that people are not paying as much attention to our results as people did previously, but I was honored in September, 2010, by an invitation from Fidel Castro to come to Cuba and give a talk about nuclear winter. He listened for an hour to my talk and then wrote extensively about the need to rid the world of nuclear weapons. For the story (continues on the next page)

of my trip, please visit:

<http://climate.envsci.rutgers.edu/Cuba/>

The other most significant accomplishment is my contribution to the understanding of the effects of volcanic eruptions on climate, including the winter warming phenomenon. These results are summarized in my most highly cited paper, Robock [2000], and since then I have continued to work with my students on this topic by producing an update ice-core-based time series of volcanic forcing for the past 1500 years and to better understand the effects of high latitude eruptions.

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

In 1974, when I was a graduate student at MIT and my Masters' advisor, Norman Phillips, left, I talked with other faculty members looking for an advisor and Ph.D. dissertation topic. Ed Lorenz told me, "Climate would be a good field to get into these days." It was brilliant advice and I was lucky enough to follow it. I found in my Ph.D. dissertation that increasing CO₂ would affect future climate and published the first transient climate model simulation of the effects of CO₂ on climate [Robock, 1978]. What is surprising and exciting to me is how this topic has slowly, and now more rapidly grown to become a dominant issue for the planet. It is the subject of international negotiations, political campaigns, criminal theft of private emails, and multi-million dollar lobbying and disinformation campaigns by multi-national corporations.

Another topic is the increasing skill of weather forecasts. When I was younger and told people I was a meteorologist, they said, "You guys are always wrong." Now they say, "Will it rain tomorrow?" Although we clearly understand that there is a fundamental limit to predictability, accurate weather forecasts have become more and more an assumed part of people's lives for several days into the future.

Would you recommend that students go into an interdisciplinary degree program?

No. To work in an interdisciplinary or multidisciplinary or transdisciplinary field, first you need to have a discipline. Certainly progress in science depends on various members of a team contributing their own expertise, but each person needs to be an expert in a field. I would tell students to go deep into a narrow area, learn how to be a scientist, learn various techniques, such as data analysis, instrumental design, and modeling, learn how to write papers and proposals, and most importantly learn how to ask scientific questions. If a person becomes

spread too thin at the beginning, they will not learn as well how to be a scientist. Only after becoming a scientist in a discipline can they contribute to an interdisciplinary team.



Signed photo of Fidel Castro Ruz and Alan Robock, September 14, 2010, taken in Havana after the nuclear winter lecture by Alan Robock.

References

- Robock, A. (1978), Internally and externally caused climate change. *J. Atmos. Sci.*, 35, 1111-1122.
- Robock, A. (2000), Volcanic eruptions and climate. *Rev. Geophys.*, 38, 191-219.
- Robock, A., and O. B. Toon (2010), Local nuclear war, global suffering. *Scientific American*, 302, 74-81.

The opinions presented in the interview do not necessarily represent those of the interviewer or the AGU.

Douglas R. Worsnop: Kaufman Award winner

Anna B. Harper

Congratulations to Dr. Douglas Worsnop for receiving the Yoram J. Kaufman Award for Unselfish Cooperation in Research. As evidenced by his credentials, Worsnop's research career and collaborations cover a range of disciplines and span many miles. He is the Vice President of Aerodyne Research, Inc. (ARI), the Director of their Center for Aerosol and Cloud Chemistry, and a Finland Distinguished Professor in Physics at the University of Helsinki. Worsnop is co-author of more than 200 publications, as of January 2010. He was named an AGU Fellow in 2007.

Worsnop earned a Ph.D. in chemistry from Harvard University in 1982, and then spent three years in Freiburg, Germany, as a Humboldt Fellow in physics. International collaborations have benefited his personal life, as well, because he met his wife while in Germany. In 1985, they moved back to the U.S. and Worsnop started working at Aerodyne Research, Inc., a private company that provides R&D services and advanced instrumentation in areas such as atmospheric and environmental science, energy and propulsion technologies. One landmark milestone in his career was developing the Aerodyne Aerosol Mass Spectrometer (AMS), which enables ambient field measurements of the chemical composition of sub-micron sized particles. His work with the AMS has created the opportunity for numerous collaborations.

As one nomination letter stated, "The AMS community is an amazing collection of people who work in Doug's spirit: together they improve the instrument, develop the science, share ideas, work openly and support each other."

Worsnop also enjoys advising and mentoring graduate students and post-doctoral scientists, something not usually available for people in the private sector, but his passion for these things has prompted him to pursue opportunities beyond Aerodyne's walls.

Another nomination reads: "Doug Worsnop stands for everything that the late Yoram Kaufman symbolized: altruism, enthusiasm, curiosity-driven science and the willingness to share it, and an unstoppable will to spend time with young and established scientists in order to help them do real and exciting science."

Worsnop made time in his busy schedule to tell us a little more about himself, as he (continues on the next page)



Douglas R. Worsnop.

prepares to accept the award during the Atmospheric Science banquet on Tuesday, December 14.

Your career has been full of fellowships and collaborations with institutions in several countries. What has led you to so many international collaborations?

The science. When I got my PhD, the first thing I wanted to do was to postdoc in Europe. I did that, and after I came to Aerodyne I set up a collaboration between the group I worked with in Germany (the University of Freiberg physics department) and the chemistry department at Johns Hopkins. That is just the way I have always done it. Interdisciplinary research among multiple institutions is necessary, it is the only real way to make things happen. Atmospheric science and climate change are inherently global phenomena, it makes the most sense to do it internationally.

You were named a Finland Distinguished Professor in 2007, and this position has been extended through 2015 – what research opportunities does this present over the next four years?

The atmospheric science community in Finland is the leading aerosol research community in the world. I am now heavily involved in researching the molecular evolution of atmospheric clusters and nanoclusters. This has implications for how aerosol particles are formed in both the natural and anthropogenically perturbed atmosphere.

We effectively have an academic group at Aerodyne and I have been advising students and postdocs for the last 25 years; now I am getting to do it in a different academic environment and in a different country.

What do you enjoy about mentoring and collaborating with young scientists?

Doing science – My definition of a Ph.D. is someone who is trained to ask questions, not primarily to find solutions. Every time you learn something, it immediately leads to more questions - which are in the end more important than answers. Working with

graduate students and postdocs is by far the most fun way of doing that.

What led you to develop the Aerodyne Aerosol Mass Spectrometer, and how has this instrument contributed to atmospheric chemistry?

It is become a standard device for measuring the size-resolved chemical composition of sub-micron particles in the atmosphere. In the 90's, we spent most of time in the lab, doing physical chemistry and studying kinetics. We initially developed the AMS to help with lab experiments. We understood that if it worked, it would potentially have applications for ambient field measurements, but we had never done field measurements ourselves. Now, we mostly do field measurements... in atmospheric science that is where the action is. All of the growth and most of the excitement in experimental atmospheric research is now based on extensive measurements in ambient air.

Being in a group in a company that manufactures instruments has enabled us to participate in experiments all over the world. We don't quite sell instruments, well we do sell instruments, but we really sell research. We end up closely collaborating with the majority of our users. That has been the basis of our success – and the basis of this award.

Who were your mentors as a young scientist?

There is a whole bunch of people I could mention. Starting from the beginning, Lloyd Leach, my high school chemistry teacher; Sheldon Wettack, my undergraduate advisor; Dudley Herschbach, my Ph.D. advisor; Helmut Haberland, my postdoc advisor; my wife Regina and son Alec; Chuck Kolb, my boss at Aerodyne; Paul Davidovits, our closest collaborator; John Jayne, my favorite student and AMS co-inventor; Jose Jimenez, my favorite postdoc and collaborator; the CACC group at Aerodyne; Ari Laaksonen, who introduced me to Finnish science – and an ever growing list of collaborators all over the world. Every one of these people (mostly young people, even some professors), and every experiment, have been precious during my career in science.

What has been a career highlight for you?

The highlight has to be the summer of 1995: the first oscilloscope trace of an ammonium nitrate single particle pulse made John and I believe that the AMS could work. Those nitrate pulses remain the basis of AMS calibration to this day – mass spec ion counting from vaporized bursts of a known number of molecules from particles of known

size and composition. The only real difference from my PhD and postdoc work is the aerosol particle - sampled (sometimes size selected) from the atmosphere.

In the next decade, how do you see research efforts in atmospheric chemistry evolving?

For me, research in aerosol chemistry and microphysics will remain an important topic. The role of aerosols is still the largest single uncertainty in quantifying climate change. It's not necessarily the most important issue, but as far as the detailed climate modeling that we (the atmospheric research community) are doing goes, the impact of aerosols will remain the largest uncertainty for a few years to come.

If we are going to continue to improve our understanding we have to extend both routine and intensive measurements in the developed world to areas where the largest emissions - and the largest growth - will be in the future.

The opinions presented in the interview do not necessarily represent those of the interviewer or the AGU.

William R. Boos: Holton Award winner

Morgan B. Yarker



William R. Boos

Meet the newest Holton Award winner, Dr. William Boos. He is an Assistant Professor of Geology & Geophysics at Yale University. He got his Ph.D. from Massachusetts Institute of Technology in Atmospheric Science (where he also held his first postdoctoral position) and recently finished his Postdoctoral Fellowship in Earth and Planetary Sciences at Harvard University. As a young researcher, he has made outstanding contributions to the field with ten peer-reviewed publications.

As an undergraduate, Boos studied mathematics and physics. In graduate school, he did his thesis on geophysical fluid dynamics where he discovered that he was more interested in the processes of the atmosphere than the ocean. So, he applied his knowledge of geophysical fluid dynamics to abrupt onset monsoons. This topic appealed to him, because there are social and scientific benefits to understanding monsoon onset. "A lot of the atmospheric dynamics are not understood in the tropics as well as they are understood in the higher latitudes," Boos explained. "Many poorer countries in the tropics are vulnerable to disasters and I get to work on very fundamental unsolved problems." His current research involves theories to explain the dynamics of wind and rainfall patterns.

Boos hopes his work in monsoon research will contribute to a better understanding of monsoons, how they will change with changing climate and how we can predict

them better. Boos explains, "There is currently a lot of discrepancy between climate models about flood and drought in monsoon regions. These are the things I would like to work towards understanding."

When asked what achievements got him to where he is today, Boos made reference to Thomas Edison's quote, explaining that it takes "1% inspiration and 99% perspiration. If you work hard, it goes a long way towards advancing your goals." He said that he was fortunate to work on topics he found interesting, so it helped him put in the effort he needed to succeed.

In addition to hard work, Boos said James Holton inspired him through graduate coursework. "I never got the opportunity to meet Holton," he explained "but I used his book to help me through my graduate coursework." He and his fellow graduate students referred to themselves as "Holton addicts", because they relied on his book, *An Introduction to Dynamic Meteorology*. Boos said that he feels honored to be a recipient of the award dedicated to the person that got him through his graduate coursework.

In his free time, Boos enjoys biking around the cities, cooking, and reading novels.

Congratulations Dr. Boos!

Opportunities

Note: You may be asked for your AGU member # to open the following links. Visit the AS Section website for links to other job opportunities not listed here.

Some of these job postings and others can be found at:

http://www.agu.org/cgi-bin/membership_services/joblistings.cgi

Atmospheric Sciences

* Assistant Professor in regional climate modeling, Dept. of Geography and Earth Sciences, Univ. of North Carolina at Charlotte, USA. Contact: Dr. Matthew Eastin (mdeastin@uncc.edu)

* Two tenure-track faculty positions in climate sciences, School of Earth and Atmospheric Sciences (EAS) at the Georgia Institute of Technology, Atlanta, USA. More info: <http://www.eas.gatech.edu/node/964>

* Two postdoctoral research scientist positions in extratropical cyclones and climate change (Refs: RS10050; RS10051), University of Reading, UK. More info: <http://www.reading.ac.uk/about/jobs/>

* Postdoctoral position in estimation and representation of model error covariances in data assimilation, CNRM/GAME (Météo-France/CNRS), Toulouse, France. Contact: Loïk Berre (Loik.Berre@meteo.fr)

* Postdoctoral research fellow positions in climate research, Centre for Australian Weather and Climate Research, Aspendale, Victoria, Australia. More info: <http://www.csiro.au/careers>

* Postdoctoral research fellow in modeling air quality and climate interactions on regional scales (Ref.: 001282), Centre for Atmospheric and Instrumentation Research, University of Hertfordshire, UK. More information: <http://www.herts.ac.uk/jobs/home.cfm>

* Postdoctoral position in LES/Boundary Layer Meteorology-Modelling, Karlsruhe Institute of Technology, Garmisch-Partenkirchen, Germany. Contact: Dr. H.P. Schmid (HaPe.Schmid@kit.edu).

* Postdoctoral researcher in global aerosol-climate interactions, University of Oxford, Oxford, UK. Contact: Dr Philip Stier (philip.stier@physics.ox.ac.uk)

* Tenure-track assistant professor in climate science (Ref.: #558552), Northern Arizona University, USA. More info: <http://hr.nau.edu/>

* Postdoctoral Position in Climate Dynamics, Lamont-Doherty Earth Observatory of Columbia University, USA. More info: <http://academicjobs.columbia.edu>

* Vilhelm Bjerknes fellow in earth system physics, ICTP, Trieste, Italy. More info: <https://onlineapps.ictp.it/ENTER/APPLICANT/EF10.mhtml>

* Lecturer in Climate/Atmospheric Physics, Department of Physics and Astronomy, University of Canterbury, Christchurch, New Zealand. Contact: Dr. Adrian McDonald (adrian.mcdonald@canterbury.ac.nz)

* Professorship in Meteorology, Faculty of Physics, Ludwig-Maximilians-University, Munich, Germany. Contact: Dr. Bernhard Mayer (Bernhard.Mayer@dlr.de)

* Tenure-track assistant professor, Department of Geography and Geology, University of Wisconsin-Whitewater, Whitewater, Wisconsin, USA. Contact: Dr. Dale Splinter (splinted@uww.edu)

* Postdoctoral researcher in coupled weather-hydrology modeling for air quality, ecosystem and climate applications, EPA/NERL, Research Triangle Park, North Carolina, USA. Contact: Dr. Robin L. Dennis (Dennis.Robin@epa.gov)

* Postdoctoral fellowship in airborne meteorology, Institute for Climate and Atmospheric Science, University of Leeds, UK. Contact: Professor Douglas Parker (d.j.parker@leeds.ac.uk)

* Research associate and postdoctoral fellow positions in climate change and seasonal forecasting, Climate System Analysis Group (CSAG), University of Cape Town, South Africa. More info: <http://www.csag.uct.ac.za>

* Postdoctoral position in spatial quality control of precipitation data, Météo-France, Toulouse, France. Contact: Anne-Laure Gibelin (anne-laure.gibelin@meteo.fr)

* Postdoctoral research fellow in diagnosing the physical mechanisms regulating rainfall over Australia, Monash University, Melbourne, Australia. Contact: Professor Michael Reeder (michael.reeder@monash.edu)

* Research scientist in large eddy simulation and mesoscale models, Center for Wind Energy Research, ForWind, Oldenburg University, Germany. Contact: Dr. Gerald Steinfeld (gerald.steinfeld@forwind.de)

* Postdoctoral position in atmospheric chemistry modeling, Météo-France, Toulouse, France. Contact: Virginie Marecal (virginie.marecal@meteo.fr)

* Postdoctoral visiting fellowships at CIRES, Colorado, USA. More info: <http://cires.colorado.edu/collaboration/fellowships>

* Postdoctoral researcher in atmospheric chemistry and physics, Laboratoire de Météorologie Physique, Université Blaise-Pascal, Clermont-Ferrand, France. Contact: Karine Sellegri (K.Sellegri@opgc.univ-bpclermont.fr)

* Assistant Professor in atmospheric science, University of Wyoming, USA. More information: <http://www.engr.uwyo.edu/info/WyoExcelChair/>

* Assistant Professor of Atmospheric Sciences, Department of Earth and Atmospheric Sciences at the University of Nebraska-Lincoln. Contact: Dr. Merlin Lawson (mlawson@unl.edu)

* UCAR visiting scientists program - NOAA climate and global change postdoctoral fellowship program, USA. More info: <http://www.vsp.ucar.edu/cgc/>

* UCAR visiting scientists program - PACE fellowship program, USA. More information: <http://www.vsp.ucar.edu/pace/>

* Assistant professor (tenure-track) position in atmospheric and oceanic sciences, Department of Atmospheric and Oceanic Sciences, University of Wisconsin-Madison, USA. More information: <http://www.aos.wisc.edu>

* Tenure track position in mesoscale or dynamical meteorology, University of Massachusetts Lowell, USA. More info: <http://jobs.uml.edu>

* Tenure-track assistant professor of earth sciences - climate modeling, Department of Earth Sciences, College of Letters, Arts & Sciences, University of Southern California, USA. Contact: Karen Young (kayoung@usc.edu)

* Postdoctoral fellowships in atmospheric sciences, Earth Observatory of Singapore, Nanyang Technological University, Singapore. More info: <http://www.earthobservatory.sg/careers>

* Research Scientists, Fraunhofer IWES, Oldenburg, Germany. Contact: Prof. Dr. Peinke (peinke@uni-oldenburg.de).

* PDRA in flood modelling and data assimilation, Environmental Systems Science Centre (ESSC) at the University of Reading, Reading, UK. More info: <http://www.reading.ac.uk/about/jobs/about-jobsindex.aspx>

* Postdoctoral Fellowship in regional climate research (Ref: MB/7/99 ex 2010/11), Wegener Center for Climate and Global Change, University of Graz, Austria. Contact: Dr. Andreas Gobiet (andreas.gobiet@uni-graz.at).

Interdisciplinary

* Postdoctoral researcher in ocean modeling, Los Alamos National Laboratory, USA. More info: http://public.lanl.gov/ringler/files/BER_PD_Ocean.pdf

* Full-time Scientist in water and carbon cycle (Ref.: 9874), Jet Propulsion Laboratory, CA, USA. More info: <https://careerlaunch.jpl.nasa.gov/>

* Analyst or senior analyst (Group Leader) in Meteorological Applications Section (Ref: AP10-30), ECMWF, UK. More info: www.ecmwf.int/newsevents/employment/en/

* Postdoctoral researcher in terrestrial ecosystems and anthropogenic activities (Ref.: 25036), Lawrence Berkeley National Laboratory, CA, USA. More info: <http://careers.crijob.com/lbnlcareers/>

* Associate research scientist in modeling of the global methane cycle, Columbia University and NASA/Goddard Institute for Space Studies, New York, USA. More info: <http://academicjobs.columbia.edu/>

* Postdoctoral position in numerical methods, Meteorological Research Division of Environment Canada, Canada. Contact: Martin Charron (Martin.Charron@ec.gc.ca)

* Postdoctoral research fellowship in interconnections of ethical, scientific, social, and economic aspects of geoengineering proposals, Penn State University, Pennsylvania, USA. More info: <http://rockethics.psu.edu/>

* Postdoctoral fellowship in interdisciplinary geosciences, Department of Geology and Geophysics, Yale University, USA. More info: <https://academicjobsonline.org/ajo/yale/G&G>

* Research positions in climate, aquatic and atmospheric science, Research Center for Environmental Changes, Academia Sinica, Taipei, Taiwan. More info: http://www.rcec.sinica.edu.tw/tw_recruitment_pi_en.html

Student Opportunities

* Ph.D. position in atmospheric circulation and Arctic sea ice, Department of Meteorology, Stockholm University, Sweden. More info: <http://www.su.se/english/about/vacancies/phd-studies>

* Ph.D. scholarship in solar radiation and energy (Ref.: 2010/815), Australian National University, Canberra, Australia. More info: <http://recruitment.csiro.au/>

* Ph.D. position in formation of secondary organic aerosol (SOA) from tree emissions, IEK-8 Troposphere, FZ-Jülich, Jülich, Germany. Contact: Dr. Astrid Kiendler-Scharr (A.Kiendler-Scharr@fz-juelich.de)

* Ph.D. positions in climate change and climate system, Climate System Analysis Group (CSAG), University of Cape Town, South Africa. More info: <http://www.csag.uct.ac.za>

* Ph.D. position in local precipitation extremes, Faculty of Applied Sciences, TU Delft, Delft, Netherlands. More info: <http://www.msp.tudelft.nl/applications>

* Ph.D. position in field and laboratory investigations of soot particles using aerosol mass spectrometry, ETH Zurich, Institute for Atmospheric and Climate Science, Zurich, Switzerland. Contact: Dr. Berko Sierau (berko.sierau@env.ethz.ch)

* NSF IGERT fellowship in polar environmental change, Dartmouth College, USA. More information: <http://www.dartmouth.edu/~igert/>

* Ph.D. positions in marine and atmospheric chemistry, Rosenstiel School of Marine and Atmospheric Science, University of Miami, USA. More info: <http://www.rsmas.miami.edu>

* Multiple graduate positions in atmospheric science, Atmospheric Science Program, Department of Geography, Indiana University, USA. More info: <http://www.indiana.edu/~geog>

Schools

WAVACS-COST Winter School - Water vapour in the climate system

Venice, Italy. 6-12 February 2011.

<http://www.isac.cnr.it/wavacs/school-2011>

Conferences

// AGU Fall Meeting 2010 //

San Francisco, CA, USA 13-17 December 2011.

<http://www.agu.org/meetings/fm10/>

// ESF-COST High-Level Research Conference on Extreme Environmental Events //

Cambridge, UK, 13 - 17 December 2010.

<http://www.esf.org/conferences/10345>

// AMS 91st Annual Meeting //

Seattle, WA, USA, 23 - 27 January 2011.

<http://www.ametsoc.org/meet/annual/>

// AGU Chapman Conference on Atmospheric Gravity Waves and Their Effects on General Circulation and Climate //

Honolulu, Hawaii 28 February – 4 March 2011.

<http://www.agu.org/meetings/chapman/2011/ccall/>

// 9th Annual Climate Prediction Applications Science Workshop //

Des Moines, Iowa, USA, 1 – 4 March 2011.

<http://www.ucs.iastate.edu/mnet/cpas/home.html>

// AGU Chapman Conference on Climates, Past Landscapes, and Civilizations//

Santa Fe, New Mexico, USA 21 – 25 March 2011

<http://www.agu.org/meetings/chapman/2011/ecall/>

// EGU General Assembly 2011 //

Vienna, Austria, 3 – 8 April 2011.

<http://meetings.copernicus.org/egu2011/>

// International Symposium on weather radar and hidrology //

Exeter, UK, 18 – 21 April 2011.

<http://www.wrah2011.org/>

// 11th Conference on Polar Meteorology and Oceanography //

Boston, MA, USA, 2 - 4 May 2011.

<http://ams.confex.com/ams/11Polar/oasys.epl>

// XXV IUGG General Assembly //

Melbourne, Australia, 28 June – 7 July 2011.

<http://www.iugg2011.com/>

// 11th EMS Annual Meeting & 10th European Conference on Applications of Meteorology //

Berlin, Germany, 12-16 September 2011.

<http://meetings.copernicus.org/ems2011>

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