AOS & CICS Newsletter

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Kirk Bryan Receives American Meteorological Society Award

Kirk Bryan, a Senior Scientist in the Program of Atmospheric and Oceanic Sciences (AOS), has been honored by the American Meteorological Society (AMS) "for pioneering contributions to ocean circulation modeling, including model development and applications to the study of ocean heat transport and the ocean's role in climate."

(L to R) AMS Past President, Walter Dabberdt and Senior Scientist, Kirk Bryan

Bryan received the AMS's 2009 Henry Stommel Research Award on January 14th during the Society's 89th annual meeting in Phoenix, Arizona. The Award, one of the society's highest honors, is granted to researchers in recognition of their outstanding contributions to the advancement of the understanding of the dynamics and the physics of the ocean.

Bryan is best known as the author of the first three-dimensional ocean circulation model that was general enough to permit arbitrary coastlines and bathymetry, temperature and salinity, and a full equation of state. His initial paper on the full model was co-authored by Michael Cox and published in Tellus in 1967. The Bryan/Cox model, through the Modular Ocean Model (MOM) and its descendants, is the most widely used ocean model in the world. He is also widely known for his work on the ocean's heat transport and for his work with AOS Senior Scientist Suki Manabe and the climate group at GFDL on the development of coupled ocean-atmosphere models to predict the climatic response to greenhouse warming. He published one of the first papers on the transient response of a coupled system to an increase in atmospheric CO_2 and was one of the first to apply a coupled ocean-atmosphere model to paleoclimate. He was also one of the first to predict interhemispheric asymmetries in the climate response to CO_2.

In addition to these contributions, GFDL Researcher Robbie Toggweiler applauds Bryan's role as "co-organizer and prime cheerleader behind NOAA's Atlantic Climate Change Program (ACCP)." He notes that "ACCP became a very effective conduit for research funding into the ocean's role in climate change at a time when the ocean-climate link was not being addressed strongly enough through oceanographic field programs." Toggweiler adds that "I like to think that our current appreciation of the North Atlantic Oscillation and its role in climate change was spurred along by early research support provided through ACCP" -- thanks, in no small part to the pioneering efforts of Kirk Bryan.

Apart from his impact on NOAA's ACCP, Kirk's profound impact on AOS's oceans program can be seen in the impressive list of AOS graduate students and visiting scientists that he mentored through the years including, Adrian Gill, Bert Semtner, Stephen Pond, Bill Hibler, Claes Rooth, Xin Huang, Claus Boening, Bill Hsieh, Eli Tziperman, Paul Shopf, Doug MacAyeal, Jurgen Willebrand, and Peter Lemke. Also counted among this group are AOS Director Jorge Sarmiento and GFDL Researcher Robbie Toggweiler.

Founded in 1919, the American Meteorological Society promotes the development and dissemination of information and education on the atmospheric and related oceanic and hydrologic sciences and the advancement of their professional applications. Additional information on the AMS, the

Program in Atmospheric and Oceanic Sciences (AOS) & The Cooperative Institute for Climate Science (CICS)

Inside this issue:

Annual Meeting, and other award winners is available on the Internet at <http://www.ametsoc.org>. ■

Legg Succeeds Vallis as AOS Director of Graduate Studies

Research Oceanographer Sonya Legg

Research Oceanographer Sonya Legg has been named the AOS Program's Director of Graduate Studies (DGS) effective July 1, 2009. She will succeed Geoff Vallis, who after serving for three years as the DGS has decided to step down. "As DGS, Geoff played an integral role to our program and we owe him a debt of gratitude for his invaluable service, said AOS Director Jorge Sarmiento.

As the DGS, Legg, who also has an appointment as a lecturer, will be responsible for the oversight of the graduate program and the welfare of the graduate students. She will serve as the point of contact for all academic matters in the Program. The DGS also sits on the Faculty Committee of the Graduate School, which determines graduate policy for the university as a whole. Additionally, the DGS chairs the Graduate Work Committee (GWC) whose primary focus is Program recruitment, assessment, and development.

"We are delighted that Sonya has accepted this role, and we welcome her. She will no doubt be instrumental as the Program moves forward; I look forward to working with her," Sarmiento added. ■

Preparations for the IPCC Fifth Assessment Underway

In anticipation of the Intergovernmental Panel on Climate Change (IPCC) fifth assessment (AR5), CICS and GFDL scientists and are addressing the modeling challenges that remained at the end of the fourth assessment report (AR4), including clouds and aerosols, oceanic heat uptake, regional climate information, and the carbon cycle. GFDL Scientist Ron Stouffer noted that in contrast to the AR4, in which eighteen research groups contributed mainly physical climate models with century timescales, the AR5 will see 25 groups contributing a mix of Earth system models (ESMs) and global climate models with decadal to century timescales. According to Stouffer, ESMs "close the carbon cycle" by looking at the effect of biological changes on climate; typically they contain details of atmospheric chemistry, ocean ecology and biogeochemistry, plant ecology and land use.

In late February, before an audience of Princeton Energy and Climate Scholars (PECS), CICS Scientist Elena Shevliakova reported that recent studies with coupled climate-carbon cycle models indicate the possibility of a large positive carbon cycle feedback to the climate system, which will have implications for mitigation strategies of the future atmospheric CO_2 concentration. A number of experiments with the state-of-the-art ESMs using new scenarios of representative concentrations pathways (RCPs) are planned for the AR5 IPCC assessment to quantify future climate changes and the carbon cycle perturbations, said Shevliakova. Other challenges being tackled by CICS and GFDL scientists in preparation for the fifth assessment are decadal prediction and the feedback between climate and air pollution.

At a recent workshop, GFDL Scientist and Organizing Committee Member Ron Stouffer and GFDL Director V. "Ram" Ramaswamy, who also represented WCRP as Vice-Chair of the organization's Joint Scientific Committee, joined many of the world's leading climate scientists to share the latest developments in climate change science,

(L to R) "Jerry Meehl (NCAR), Susan Solomon (ESSL), Kevin Hamilton (U of Hawaii – formerly AOS alumni & faculty member/ GFDL), Thomas Stocker (U of Bern; Also host to Jorge Sarmiento), Ron Stouffer (GFDL), at recent climate change science workshop in Hawaii."

and to discuss their implications for our understanding of the Earth System, and its response to ongoing accelerated emissions of greenhouse gases and pollution particulates, and deforestation. The findings of scientists at this workshop will be made available for the planning of the AR5. The workshop, held at the University of Hawaii in March, was jointly sponsored by the Intergovernmental Panel on Climate Change (IPCC), World Climate Research Programme (WCRP), and the International Geosphere-Biosphere Programme.

A scoping meeting of experts to define the outline of the IPCC fifth assessment report is scheduled for mid July 2009. The Working Group I report will be finalized in early 2013. The Working II and III reports will be completed the following year. ■

CICS Sponsors PCTS Climate Dynamics Workshop

For a ten day period in early May, CICS was the co-sponsor of a spring school on 'Fundamental Problems in Climate Dynamics.' Held on Princeton's main campus and organized by Geoff Vallis and Isaac Held, the school was hosted by

the Princeton Center for Theoretical Science (PCTS), directed by Paul Steinhardt. PCTS is an interdisciplinary center based in Jadwin Hall, whose goal is to bring together theoreticians of all different ilks to explore forefront issues in the theoretical sciences. "We are especially interested in programs that will be influential in setting new directions for research. We emphasize bringing together theoretical scientists across campus who do not normally interact, because we were founded on the idea that this crossing between disciplines is a powerful way of seeding new approaches and collaborations," Steinhardt said.

According to Vallis, the School brought in approximately 35 students and distinguished outside speakers from the United States and Europe, with a similar number of local attendees, both from the AOS Program and from departments across campus. The audience comprised theorists studying everything from cosmology to clouds and from astrophysics to atmospheric physics. The audience was treated to explications of a wide range of topics in climate dynamics, from the large-scale atmospheric and oceanic circulation, through fluctuation-dissipation theory, to moist convection and on to paleoclimate and the cause of the ice ages.

On the social side, two barbecues and an ice breaker provided ample opportunity for the attendees to get to know each other. On the Wednesday evening the attendees had a lively and informal discussion of global warming over pizza, ranging from purely scientific issues such as whether scientists had a special responsibility to society, and even to whether global warming was an appropriate scientific area of investigation at all, given all the political ramifications of the subject.

Steinhardt, who considers the program on Climate Dynamics to be one of the most important and historic they have had at PCTS, said, "It brought to the center of the Princeton campus outstanding and renowned scientists in climate dynamics who presented to young students and postdocs in climate science and a diverse crowd of junior and senior scientists in many other disciplines (including string theorists, cosmologists, condensed matter and material scientists) an introduction to the fundamental science and challenging open issues in understanding the climate."

Kearney Sets Sail on CLIVAR I5 Cruise

Geosciences Graduate Student Kelly Kearney recently joined a team of researchers aboard the Scripps Research Vessel (R/V) *Roger Revelle* as part of a 57- day scientific expedition from South Africa to Australia. This transect of the Indian Ocean, nicknamed "I5", was the latest mission in the US Global Ocean Carbon and Repeat Hydrography program. Funded by the National Science Foundation and NOAA, the I5 cruise, led by James Swift, an oceanographer at the Scripps Institute of Oceanography of the University of California, San Diego, conducted a boundary-to-boundary, full-depth Conductivity-Temperature-Depth-Oxygen (CTDO)/Lowered Acoustic Doppler Current Profiler (LADCP) /hydrographic/ carbon/tracer profiling

Graduate Kelly Kearney alongside of the CTD

and sampling program at stations along 32°S from South Africa to Australia. Using a variety of methods, including sampling with a conductivity, temperature, depth sensor, or CTD, which is lowered over the side of the ship, Kearney and fellow scientists collected water samples to analyze for such variables as salinity and dissolved oxygen as well as the concentrations of Chlorofluorocarbons and nutrients. Additionally, they measured trace metals (chiefly iron and aluminum) in the upper 1000 meters at some of their stations.

This was not always an easy task. During the fourth week of the expedition, Tropical Cyclone Jade hit the *Revelle* directly. Chief Scientist Swift reported that when the CTD was put into the water for the 5525-meter deep cast, winds were fairly manageable at a steady 35 knots. Four hours later, when they brought the CTD back on deck, average winds were 52 knots and continued rising into the upper 50's. Stormy seas meant a rough ride for all aboard and an interruption in CTD operations, as well as little sleep for Kearney and her shipmates. After holding in the wind for nearly 24 hours, seas calmed and operations resumed.

The I5 expedition is central to CLIVAR, an integrated approach to a global monitoring program for carbon, hydrographic and tracer measurements, and is driven by the need to monitor the changing patterns of CO_2 in the ocean. The data collected during the expedition will support continuing model development that will lead to improved forecasting skills for oceans and global climate.

R/V Roger Revelle conducting CTD operations (photo courtesy of Scripps Institute of Oceanography)

The CLIVAR program is always seeking interested participants among graduate students, postdoctoral scientists, and new scientists. According to Research Oceanographer Bob Key, participation in future CLIVAR expeditions requires a firm commitment from the student/researcher, and a request to participate generally happens about a year before the cruise sails.

Like Kearney, AOS Graduate Student Yves Plancherel was scheduled to join a

team of researchers aboard the *Revelle* this fall. The "I7N" western Indian Ocean transect from Oman to South Africa was to be carried out during September and October. However, due to recent pirate attacks around the I7N track, the expedition has been canceled. The ship schedulers, along with the Oversight Committee for the CO2/Repeat Hydrography Program and the funding agencies, are working furiously on an alternate plan that is both scientifically justified and reasonably safe from piracy.

Interested students can find approximate cruise plans at: http://ushydro.ucsd.edu/cruises.html and can contact Bob Key, if they have questions about this valuable program.

The 83 meter (277 foot) Revelle is equipped with labs and other facilities for examining the biological, oceanographic, geological, and geophysical components of global change. It accommodates 37 scientists, has a crew of 22, and has a cruising speed of 12 knots. ■

Ocean Carbon and Biogeochemistry (OCB) Scoping Workshop Set for June 8 -11

Scientists from a wide range of Ocean Carbon and Biogeochemistry (OCB)-relevant communities will converge on Princeton's Main Campus from June 8-11, 2009 to participate in the "New Frontiers in Southern Ocean Biogeochemistry and Ecosystem" workshop. The scoping workshop, to be held in the newly – designed and constructed Lewis Library, is being sponsored by the National Science Foundation (NSF) Office of Polar Programs and Chemical Oceanography Program, the National Aeronautical and Space Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA), and Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) program, and will focus on carbon cycling and marine ecosystems in the context of climate variability in the Southern Ocean.

According to Steering Committee Member and AOS Director Jorge Sarmiento, the objective of the workshop will be to facilitate interaction between the physical, biogeochemical, and ecosystem research communities to develop research strategies to resolve current limitations, gaps, and discrepancies in our understanding and prediction of the Southern Ocean ecosystem, biogeochemical cycles, and carbon uptake. In addition to scientists from modeling and observational communities, an impressive group of scientists of all career stages and members of the international science community are among the confirmed participants. The registration deadline was April 15, 2009.

The Southern Ocean plays a critical role in the global climate system owing to its unique physical, biogeochemical, and ecological features. The region is undergoing substantial changes in response to climate trends and variability, and future changes are expected to exert substantial impacts on biogeochemical cycles and ecosystem processes of the Antarctic. Despite increased efforts to understand these processes, significant discrepancies still exist between models and observations, and a number of key processes remain poorly quantified. There is a clear and increasing need to develop a coordinated approach that advances our understanding of climate variability in the Southern Ocean and its implications for ecosystem dynamics and biogeochemical cycling. ■

GFDL Scientists Gearing Up for Lab Review, June 30 – July 2, 2009

Contributed by Maria Setzer, GFDL Communications Director

GFDL's research programs will undergo a comprehensive external review, from June 30 to July 2, 2009. All research labs of NOAA's Office of Oceanic and Atmospheric Research (OAR) are subject to review by a panel of outside experts, approximately once every four years. GFDL's last review was in 1999. The purpose of these reviews is to provide an external assessment of the effectiveness of the labs in meeting OAR goals and objectives, and NOAA's strategic and operating plans. Members of the review panel will evaluate the quality, relevance and value of the lab's research to both internal and external interests. These evaluations help to strategically position NOAA's labs for science planning in the future.

GFDL's research will be grouped into 3 broad categories for the review: Atmospheric and Oceanic Modeling; Physical Climate Change: Understanding and Prediction; and Carbon, Biogeochemistry, and Climate. Organized by these categories, a series of presentations over two and a half days will highlight accomplishments from the past several years. Each presentation will be followed by discussion with the review panel.

The 7 confirmed members of the review panel are senior scientists from NSF, MIT, University of Washington, Duke University, University of Exeter, Max Planck Institute, and NCAR. After the review, the panel will produce a written report and V. "Ram" Ramaswamy, as GFDL's Director, will be expected to respond to the panel's findings and recommendations.

Numerous staff members from OAR and NOAA's Climate Program Office will attend the review as observers. The National Weather Service; National Ocean Service; National Marine Fisheries Service; and National Environment Satellite, Data and Information Service will also send representatives. Other NOAA research laboratories which are scheduled to be reviewed in the coming year will observe GFDL's review. Several partners from CICS are also invited to attend as observers, and CICAR (GFDL's joint institute with Columbia University) is invited to send a representative. The capacity of GFDL's Smagorinsky auditorium will limit the number of people who can attend the review, but the lab is planning to webcast it internally. ■

Success in the AOS Graduate Admissions Process

This year, AOS had the largest applicant pool in the Program's 45 year history. AOS Director Jorge Sarmiento notes that the admissions process is both thorough and rigorous, and this year was no exception. "I have a great appreciation for our talented faculty who devote a great deal of time and energy to the process," he said. Once selections are made, admitted students are invited to Princeton, and faculty and staff look to persuade them that the AOS Program is the best choice for them.

On March 11th, the Program welcomed prospective students to the Forrestal Campus. The reception featured an overview of the distinctive aspects of the AOS Program, as well as opportunities for students to meet individually with faculty members and to explore the campus and student life at Princeton. "We are pleased that three of the four students who visited, accepted our offer of admission," AOS Director Jorge Sarmiento said.

The AOS Program extends a warm welcome to incoming class members: Joe Makjut, Sam Potter, Claire Radley, and He Wang. ■

CICS Fisheries Prediction Meeting Planned for June 15 – 17

The Cooperative Institute for Climate Science (CICS) will be holding a workshop on "Applying IPCC-class models of global warming to fisheries prediction" on June 15-17, 2009. The workshop will bring together fisheries and climate scientists to develop new and innovative applications of IPCC models to problems in fisheries science and management. Talks by a range of international experts on fisheries and climate will be featured. Discussions will be aimed at identifying factors limiting our understanding of the links between fisheries and climate and devising strategies to overcome these limitations. According to lead organizer and GFDL Scientist Charlie Stock, key scientific topics, such as regional downscaling of climate results, will be discussed in greater detail at the workshop.

In related news, members of NOAA's Fisheries Science Board visited GFDL in March for an all-day meeting focused on potential uses of present and future GFDL model results for marine resource issues. Ocean acidification, fisheries management, harmful algal blooms, and sea level rise are of particular interest to NOAA's National Marine Fisheries Service (NMFS) managers and advisors. Ongoing engagement between climate and fisheries scientists will include evaluation of the utility of present climate and earth system model results to these interests. A post-doctoral position jointly funded by GFDL and NMFS, is expected to be filled by a student currently completing his Ph.D. at Scripps Institution of Oceanography, and will support these efforts. ■

Transportation Update

We are pleased to report that the daily shuttle service to and from Main Campus has been a great success! Ridership continues to increase since the shuttle's inception in January of this year; 1,325 people took the shuttle during the month of March alone. AOS Director Jorge Sarmiento is "delighted that the shuttle is working and that so many folks of taking advantage of this service."

You may now track the shuttle as it makes its way between and around campuses at the following TigerTracker link:

http://princeton.transloc.com/

A map of transit stops and routes to and from Forrestal/PPPL can be found at the following link: http://www.princeton.edu/transportation/tigertransit.html

along with additional information on other shuttle routes. ■

AOS & CICS Research in Action

[*This column is intended to focus on AOS & CICS research accomplishments and milestones, past, present, and future. In this issue, we highlight the accomplishments of AOS Research Associate Eric Galbraith, who spent more than three years in Jorge Sarmiento's group.*]

After more than three years in Sarmiento's group, Eric Galbraith will be returning to the Great White North to take up a faculty position in the Department of Earth and Planetary Science at McGill University in Montreal, Quebec.

Eric, a geologist by training, earned his Ph.D. in paleoceanography, focusing on changes in the marine nitrogen cycle during recent ice ages. When he arrived at Sayre Hall with the goal of modeling biogeochemistry, he barely knew how to change directories on his own in Unix. But through the patient tutelage of the AOS and GFDL researchers, he gradually learned how to navigate the supercomputer and how to assemble code into a running model.

AOS Research Associate Eric Galbraith

Together with Jennifer Simeon and with the help of many others, he then set to work modifying the GFDL IPCC-class coupled climate model to run long simulations at a reduced computational cost, which eventually resulted in a coarse-resolution coupled climate model and its ocean-only counterpart. Eric also got excited about developing relatively simple biogeochemical models that could be easily modified for looking at specific problems, and ended up producing two new models: ibgc and bling.

"My time at AOS has been a tremendous learning experience, and a lot of fun," said Galbraith. "Everyone is always happy to discuss ideas, and we always seem to end up wanting to explore many more problems than we could possibly have time for. I really think this is science at its best. And I will definitely miss the Forrestal frisbee golf course!"

"We're definitely going to miss Eric around here - his love of ideas and his inventive ways have been a great asset around Sayre Hall, said Keith Rodgers, AOS Associate Research Scholar. "And often when I get stuck on a problem, I march straight down to his office, and with a few insightful questions (delivered in his inimitable Socratic style), he is always able to set me back on track."

Eric's scheduled departure is July 1st. ■

AOS & CICS News

Manabe Recently Elected to the National Academy of Japan

Senior Scientist Suki Manabe

Congratulations to AOS Senior Scientist **Suki Manabe** who was recently elected as an honorary member of the National Academy of Japan. This highly selective membership is awarded to foreign scholars who have made particularly important contributions to science and academics in Japan. Manabe received this honor for his outstanding achievements in Earth Science, particularly his contribution to climate model development and his study of climate change and global warming.

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Congratulations to AOS Graduate Student **Ilissa Ocko** who was recently awarded a National Science Foundation (NSF) Graduate Research Fellowship. The fellowship "recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees in the U.S. and abroad." Under the mentorship of V. Ramaswamy, she will be researching how aerosols transported to the Arctic offset the radiative balance.

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Congratulations to AOS Graduate Student **Erica Staehling** who recently accepted a 2009 National Defense Science and Engineering Graduate (NDSEG) Fellowship. Her application was selected by the Office of Naval Research (ONR) from over 2,000 submitted applications that were received this year. Sponsored and funded by the Department of Defense (DoD), the NDSEG Fellowship is offered to individuals who have demonstrated ability and special aptitude for advanced training in science and engineering. Erica joins AOS Graduate Student Andrew Babbin as a NDSEG Fellow.

Interested in idealized geophysical fluid dynamics with relevance to climate change, Erica has been working with both Isaac Held and Geoff Vallis. Her research focuses on understanding fundamental climate dynamics through theory and idealized models. Specifically, she has been working on understanding the sensitivity of surface winds to the vertical structure of the meridional temperature gradient with a quasigeostrophic model.

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Congratulations to Geosciences Graduate Student **Yves Plancherel** who is the recipient of the Friends of Davis International Center Excellence in Teaching Award. The award is given to an international graduate student who has demonstrated excellence in teaching undergraduates at Princeton University. Friends of Davis International Center promotes international understanding by offering friendship and support to Princeton University's international graduate students, visiting scholars and their spouses.

Arrivals:

Yu-Lin (Eda) Chang, a visiting graduate student from the National Taiwan Normal University, began working with Lie-Yauw Oey in March. While at Princeton, she will be conducting very high-resolution model calculations to study wind-induced mixing (and mixed-layer instability) over a sloping bottom topography in the presence of an oceanic front.

Stephanie Downes joined the Sarmiento group in March as a Postdoctoral Research Associate. She comes to Princeton from the University of Tasmania. Her research involves using models and observations to analyze Southern Ocean circulation.

Olga Sergienko arrived in April and will be working with Tom Delworth and Geoff Vallis as an Associate Research Scholar. She comes to Princeton from the Geology Department of Portland State where she was a Research Assistant Visiting Professor. She received her Ph.D. in Geophysical Sciences from the University of Chicago. Her research interest is ice sheet modeling.

Claudie Beaulieu joined the Sarmiento group in early May as a Postdoctoral Research Associate. She comes to Princeton from the University of Quebec. Her research focuses on the terrestrial carbon sink, using statistical analysis of observations.

Rym M'sadek arrived on May 1, 2009 and will be working with Tom Delworth and Geoff Vallis as a Postdoctoral Research Associate. She comes to Princeton from the University Pierre et Marie Curie. Her research interest is multidecadal to centennial variability of the Atlantic meridional overturning circulation and its impact on climate.

Hitoshi Tamura, a visiting research collaborator from the Japan Agency of Marine-Earth Science and Technology Frontier Research Center for Global Change, will be working with Leo Oey from May through August, 2009. While at Princeton, he will investigate the impact of oceanic waves on ocean currents in the Princeton POM model, and introduce the POM08 to JCOPE as a new wave-current coupled model.

Daniel Goldberg, a Postdoctoral Research Associate, will arrive in June to work with Tom Delworth and Olga Sergienko. He comes to Princeton from

the Department of Mathematics, New York University. His research interest is ice sheet modeling.

Pablo Zurita-Gotor, a Visiting Research Scholar from the Universidad Complutense De Madrid, will be working with Geoff Vallis from June 1 through August 15, on climate dynamics.

Departures:

After two and a half years as a Postdoctoral Research Associate, **Laurent White** has accepted a position at Exxon.

Graduate Student Defenses

Sarah Kang, under the advisement of Isaac Held, successfully defended her thesis (April 20, 2009) entitled, "*The Response of Tropical Precipitation to Extratropical Thermal Forcing."* She has accepted a postdoctoral associate position at Columbia University.

Birth Announcements

Congratulations to Nancy and GFDL Scientist **Charlie Stock** on the birth of their son, Trevor, who was born on March 6, 2009, weighing 9 pounds and measuring 22 inches long.

Congratulations to Laura and former Postdoctoral Research Associate **Laurent White** on the birth of their son, Matthew Alexander, who was born on April 26, 2009, weighing 8 pounds, 3 ounces and measuring 20.7 inches long.

AOS Program
Princeton University
Sayre Hall
300 Forrestal Road
Princeton, NJ 08544-0710

Phone:
(609) 258-6047

Fax:
(609) 258-2850

We're on the Web!
www.aos.princeton.edu

Editor: Joanne Curcio
Email:
jcurcio@princeton.edu