

KIM
ENVIRONMENTAL
GEOCHEMISTRY
LABORATORY

N E W S L E T T E R

WELCOME BACK TO SCHOOL!

The KEG Lab would like to introduce 6 new members! We now have a total of 10 Keggies in the Lab and they would all like to give a little "hello!"

New Members



Lena Buckendorf: Biology, Class of 2014

Project: Arsenic bioaccessibility at the Empire Mine, CA

I am a sophomore Biological Sciences student and aspiring orthodontist. For my first year in lab, I will be working with Woojin Joo and Jesi Mosolf conducting water and simulated gastric fluid extraction tests on mine waste from the Empire Mine.



Becca Chesne: Biology, Class of 2013

Project: Adsorption/desorption of metals onto iron oxyhydroxide nanoparticles

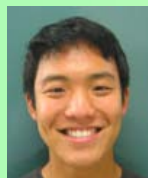
I am a junior biology major. I hope to eventually go to medical school. I am currently working with goethite nanoparticles in the lab, specifically the adsorption and aging projects.



Briana Lieberman: Biology, Class of 2013

Project: Adsorption/desorption of metals onto iron oxyhydroxide nanoparticles

I am a junior biological sciences major and psychology minor with an interest in pursuing a career in healthcare. I'm so excited to be working in the environmental geochemistry lab this semester and really enjoyed working in the lab over summer!



Woojin Joo: Biochemistry, Class of 2012

Project: Arsenic bioaccessibility at the Empire Mine, CA

I am a senior biochemistry and biology double major and am in the process of applying to medical school. This is my first year in the lab and I am currently involved in conducting physiologically based extraction tests to assess the bioavailability of arsenic in simulated gastric fluid.



Jesi Mosolf: Environmental Science & Policy, Class of 2013

Project: Arsenic bioaccessibility at the Empire Mine, CA

I am a junior environmental science/policy major (ecology focus) and have no idea what I want to do after I graduate. Right now however, I am very excited to be working on the Empire Mine project. Hopefully, in the future I will be able to find an amazing job that allows me to work both in the field and the lab.



Christina Chi: Post-Baccalaureate Pre-Health Program, 2011

Project: Speciation of arsenic using EXAFS linear combination fitting

I am currently completing the Post-Baccalaureate Pre-Health Program. After I graduated from UCLA with a BA in International Development Studies and had the opportunity to travel, work in retail, take the LSATs, study architecture, reside in a foreign country and participate in diabetes research. I always knew I wanted to pursue a career in healthcare, so I guess I was saving the best for last--I am very excited to be here!

KEG FAMILY CONTINUED...

Returning Members



Randy Rosales: Biochemistry, Class of 2012

Project: Arsenic and mercury mobilization from mine sites during rain events

I am a senior Biochemistry student and aspiring dentist. As I begin my third year in the lab, I am preparing my research project for the rainy season and working in other parts of the lab by analyzing previous data.



David Stack: Visual Arts, Class of 2010, Hazards and Global Environmental Change, Class of 2012

Project: GIS mapping of arsenic concentrations at mine sites

This year, as part of the masters program, I am working with Dr. Menas Kafatos on a NSF/USDA/DOE jointly funded project examining the impacts of climate change on ecosystems in the southwestern United States. Specifically, I will be examining how agricultural systems in California and other states will be affected. I will continue my role in the KEG lab by supporting the wiki website and participating in field sampling trips.



Jessey Francies: Biology, Class of 2010; M.S. Health and Strategic Communication, Class of 2011

Project: Leach extractions of arsenic-bearing mine wastes

As I enter my third year with the KEG Lab, I take on new responsibility: Lab Manager. I am excited to help manage and assist in all the exciting projects this year as well as help our new KEGs adjust to our well-oiled fast pace and fun research machine.



Natalie Kiwan: Studio Art; Environmental Science minor, Class of 2009

Project: Distribution and characterization of heavy metals in mine wastes

I worked in the lab in 2008, graduated in 2009, and am now returning to the lab after teaching English in South Korea for almost two years. I'm working on data analysis currently, and am very excited to be back in the U.S. and back in the good old KEG lab for the semester. I plan to embark on another adventure come January, destination to be determined.

Graduated Members



John Stegemeier: Chemistry, Class of 2010

Project: Effects of iron oxyhydroxide nanoparticle aggregation on metal adsorption and desorption

Currently: Ph.D. candidate, Civil and Env. Engineering, Carnegie Mellon University

Classes and research have begun. My current research focuses on nanomaterials in the environment, specifically ZnO nanoparticles found in sunscreen. Since my adviser is currently on sabbatical I am taking many classes, which have proven to be very challenging. However, though there is hard work in class and on my research ahead, I might be presented the opportunity to go abroad to use one of Europe's synchrotrons. It is all very exciting!



James Dale: Chemistry, Class of 2008

Project: Effects of iron oxyhydroxide nanoparticle aggregation on metal adsorption and desorption

Currently: Ph.D. candidate, Department of Geosciences, Virginia Tech

I am currently designing experiments to test how manufactured nanoparticles travel through natural systems and how those nanoparticles affect sediment transport. The project is an interdisciplinary collaboration with the Civil and Environmental Engineering department and will utilize TEM, ICP, DLS, and other techniques.



Suzie Shdo: Biology, Class of 2010

Project: Arsenic speciation and bioaccessibility in mine wastes

Currently: MPH candidate, Boston University

This fall, I've started pursuing my Master of Public Health at Boston University. With all the nation's best hospitals and schools, Boston is the best city to study public health! I am also working in the Environmental Health Department at the Harvard School of Public Health with Dr. Jim Shine and Dr. Joe Brain. And, since I just couldn't leave the KEG lab behind, I am still working to finish exciting work with Dr. Kim.

SUMMER KEG ACTIVITIES

Lena: I worked at a grocery store, trained for this year's volleyball season, and went to Nicaragua to help teach/apply proper dental care through Global Medical training.



Lena volunteering in Nicaragua



Briana with her mother, Dr. Jane Semel, in Honduras

Briana: Over summer I was able to travel to Honduras in order to participate in the Global Medical Brigades program. We were able to assist in basic screening, taking vitals, and distributing medicine to members of the community in need. I also traveled to Israel and was able to visit many places with historical significance as well as experience its beautiful scenery.

Jessi: I spent this summer relaxing! And now, I am ready to have an amazing semester.

Randy: This past summer I worked in the lab full-time and submitted my applications for dental school.

Woojin: During the summer, I had the privilege of going to

Italy for a month, where I had the opportunity to immerse myself in their language and culture.

Jessey: After traveling to Honduras with Global Medical Brigades in June, my boyfriend and I set out on a 3 week adventure in Europe where we spent time in



Woojin in Italy 2011



Eiffel Tower 2011



Suzie and Jessey in the Cape

Stirling (Scotland), Edinburgh (Scotland), London, Paris, Brugge, Brussels, and Amsterdam. Returning, we stopped in Boston to visit a former KEG, Suzie Shdo, on our way to Cape Cod where she joined us for some weekend fun in the sun!

Becca: This summer, I rode my horses and worked in the lab. I participated in equestrian competitions throughout the summer in San Juan Capistrano and Del Mar, with successful results.



Becca in one of her summer competitions



Natalie and her Korean students

Natalie: I spent the summer looking for jobs, thinking about grad school, reuniting with friends, and recovering from reverse culture shock.

*Our
KEGS
are in
motion*



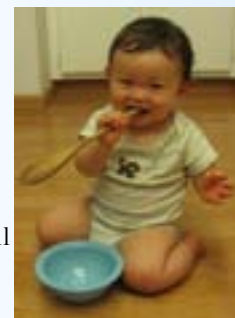
What is that Dr. Kim up to anyway?

Dr. Kim had an exciting and fulfilling year while on sabbatical at Harvard University; besides starting a number of new scientific research collaborations, sitting in on a few classes on geographic information systems (GIS), and attending a wide range of research talks and group meetings, he also was fortunate to spend a lot of time with his new son Jasper during his first several months.

Dr. Kim returned from Boston in July with his family and has been hard at work both getting the lab running and baby-proofing his house in Orange. Jasper turned 1 year old (already!) on 9/17/11 and is now in day care preparing to take his first steps. His wife Jeannine completed her master's in public administration at Harvard's Kennedy School of Government and is now working on starting her own business.

In addition to teaching physical geology this semester, Dr. Kim also recently assumed the position of director of the Office of Undergraduate Research, which supports research and creative activity across the entire university.

He's looking forward to this new challenge and helping to promote and support the level of research taking place in all disciplines including the sciences.



Like what you see here? Want to get involved You can visit our website: www.chapman.edu/envgeo, call: (714) 744-2181, or email Dr. Chris Kim: cskim@chapman.edu. We are located in Hashinger Basement, Room 32 and 34. We would be happy to answer any questions or even give you a tour!

Complied and Edited by: Jessey Francies

KEGS ON PARADE

David Stack takes on...



After a day journey driving across the United States, David Stack, a KEG pursuing an M.S. in Hazards, Global and Environmental Change, attended the



David at the entrance to NASA Goddard Space Flight Center.

DEVELOP internship program at NASA Goddard Space Flight Center in Greenbelt, Maryland. Now you may be wondering why he would drive (yes, he drove) all the way across the country for a summer internship, but his reasoning is simple.



In his free time, David visited Washington, D.C. and caught a glimpse of the Washington Monument before it was damaged.

“Goddard is the largest organization of scientists and engineers dedicated to increasing knowledge of Earth, the solar system, and the universe in the United States. Why settle only for the moon when you can fly among the stars?”

DEVELOP is a training and development program where students work on Earth science research projects and are mentored by science advisors from NASA and partner agencies. However, Stack says, “The problem solving and challenges we faced were generally our own to overcome. As the team leader on our project, Connecting Environmental Observations with Cholera Outbreaks in Bangladesh, I had the opportunity to lead my other two teammates, Avery Sandborn and Paul Widmeyer, toward finished products we were all proud of.”



DEVELOP presentations. Left to right: Paul Widmeyer, Dr. Dimitar Ouzonov, David Stack)

Time Machine: Boston Trip, April 2011

In the last edition of KEG news, it was mentioned that the KEG Lab would be taking a trip to Boston, MA to visit Harvard and see what Suzie and Dr. Kim had been up to while away from Chapman. To say the trip was a success would be an understatement—our Lab was able to experience Boston life for a week and participate in some invaluable experiences. The exposure included but was not limited to: meeting and presenting our own projects to our collaborators at Harvard’s School of Public Health, touring Boston and Harvard’s campuses, attending a Red Sox game, and attending talks, which exposed the Lab to the research and public health culture in Boston. The trip was a success! See the next few pages for photojournalistic proof.

Q & A with David Stack

Q: How does connecting the environmental observations with the outbreaks in Bangladesh improve the situation?

A: *The idea is that, by connecting observations of the diarrheal disease and space-based datasets on environmental conditions, better models of disease outbreaks can be constructed. Specifically, our study focused on satellite measurements of sea surface temperature, chlorophyll-a concentrations (an estimator for ocean algae), and rainfall in the Bay of Bengal. These observations were then analyzed with clinical and ground data using Excel and Google Earth.*

Q: That sounds like a lot of work! Did that take the entire summer?

A: *We put in many hours to make the project a success, and we definitely felt a sense of accomplishment at the end of the summer. But that project wasn’t the only way I occupied my time; not only did I get to view the final shuttle launch via a live feed with hundreds of other NASA employees, but I toured the three-story clean room where the James Webb Space Telescope is being constructed, saw the control room for Hubble Telescope, visited the Center for Climate Simulation where the Discover supercomputer is housed, attended Goddard Day, and listened to lecturers with such titles as “astronaut” and “Nobel prize winner.”*

Q: So how do you feel now?

A: *Anything at NASA is hard work. Each day challenges you, forcing you to tackling creative and real-world problems. But, for me, this experience was incredibly rewarding. I cannot think of a better way to have spent my summer. I can’t wait to apply what I have learned at NASA to my work at Chapman.*

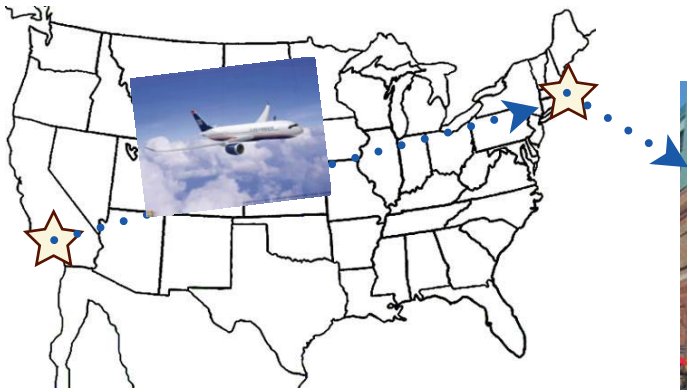
Q: Any last thoughts?

A: *Dreaming about doing something is one thing. Being given the opportunity to actually live it—well, that’s something else entirely.*

KEG TRIP TO

HARVARD

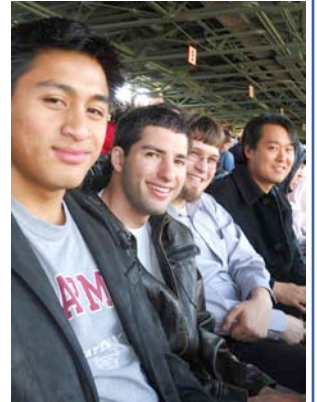
P L A Y • B Y • P L A Y



Dinner with President Doti



Hot dogs and Fenway Park!

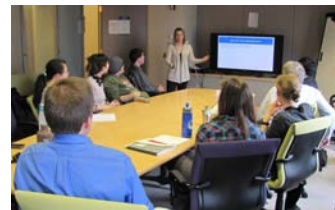


After many Skype dates, we finally meet Jasper in person!

David Stack



Tour of Harvard School of Public Health



Jessey Francies

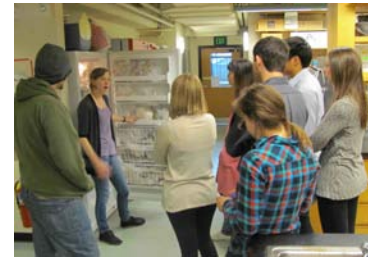
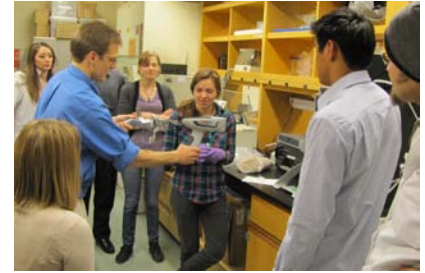
KEGs had the chance to share their own research projects with researchers at Harvard, gaining experience and collaboration.



Randy Rosales



Investigating the hands-on student show cases on display at the Harvard School of Design



Tour of the Dr. Jim Shine's Lab, one of our collaborators, at HSPH



After taking a tour of the historic campus, we took a photo in front of the statue of John Harvard, Harvard's founder.



All and all, the KEGS conquered Boston and enjoyed every minute of it. Thanks, Dr. Kim!



Eating with former KEGS at the Harvard School of Design



Immersing ourselves in a talk about the importance of water in relation to public health

