Subsurface Geoscience expanding into Energy Data Management

Since spring 2017 we have collaborated with an industry consortium to develop a new focus area, Data Management for the Energy Industry. Its goal is to promote understanding of subsurface exploration and production data and evaluate its importance to upstream oil and gas businesses. The course will focus on this data throughout its life cycle, from capture to realization, until it becomes obsolete.

With the help of our faculty, adjunct lecturers and industry experts, we plan to offer an attractive program that provides the skill set needed to evaluate and manage large amounts of data. Topics will include models of data science and management, data management methods, data governance, information technology tools, data security, and more.

The new course will be offered in Fall 2018 as part of the M.S. in Subsurface Geoscience.

Rice University embraces challenge of digital learning

After many years advocating lecture capture and on-line programs to make our programs more accessible to working professionals, we were finally heard. Not only does President Leebron demand more digital learning options for both undergrad and graduate students, he also made sure the new dean of the Glasscock School of Continuing Studies is an expert in on-line course delivery with the mission to bring the school's programs on-line. The aim is to have at least five on-line, for- credit courses in place by 2020. The dean and faculty at Rice’s Jones School for Business have been path-makers for our university; their fully on-line synchronous Professional MBA program was approved in November and will be offered in 2018.

In the wake of this development, and with the help of Cin-Ty Lee, professor and chair of the Department of Earth, Environmental and Planetary Sciences, we are renewing our efforts to offer more evening courses, and transform existing, suitable courses into on-line versions that can be used by students both on and off campus.

We will keep you informed on our progress and count on the support of our faculty and our supporters inside and outside the hedges.
Several of the Environmental Analysis students have worked under Jim Blackburn for their internship projects supporting his work at the SSPEED Center. A recent article in the Rice Magazine provides an insight into his Center’s work and how it will help Houston to recover from Harvey: “Even as Hurricane Harvey hung over Houston, collecting the warming waters of the Gulf of Mexico and converting them into the 51 inches of rain that flooded neighborhoods as far apart as Meyerland (southwest Houston) and Kashmere Gardens (northeast Houston), Jim Blackburn was working, helping the city envision a post-storm future.”

Blackburn teaches environmental law at Rice, where he also co-directs the SSPEED Center, a university-based research and education center focused on severe storms. Just a few days after Harvey relented, Blackburn did not waste a moment: Harvey should be a catalytic and pivotal event for Houston, “he said. “As bad as Harvey was, there’s a worse storm coming in the future.” About a week later, he published an expanded list of recommendations for Rice’s Baker Institute for Public Policy. These range from repairing the aging Addicks and Barker reservoirs in far west Houston to heeding the advice of climate change experts. “How we respond to this horrible reality,” he wrote, “will determine the economic future of our region.”

“Even before the devastation of Harvey, the city’s widespread use of “impervious surfaces” was the subject of much criticism. It makes sense to get rid of some of that pavement and restore prairies and wetlands. Why not remove “underperforming structures” like Greenspoint Mall, which struggles to keep tenants, and convert them into “green infrastructure” like the Willow Waterhole, which doubles as a series of stormwater detention basins when wet and a park when dry?”

Atmospheric science, storm water management, landscape architecture, urban planning, regional development — for Blackburn, the way forward for Houston includes embracing the best practices of all these disciplines. The SSPEED Center’s directors are optimistic. “Finally, we’ve got the attention of the decision-makers, and universities are front and center on these projects,” Bedient said.

“If there’s any place in the world that can do it, it’s Houston,” Blackburn said. “It’s a funny place to look for the global leading response to resilience, but that’s squarely in front of us.”

* Severe Storm Prediction, Education, and Evacuation from Disaster
PSM Board of Affiliates UPDATE

We are excited to welcome new board members in 2018:

Alice Bullington, Shell – Senior Risk Management and Principle Technical Expert
Mike Coburn, Research!America – Executive Vice President and Chief Operating Officer
Ed Harris, Edge of Space – President and Co-Founder
Michel Le-Vot, Total – Director, Geosciences America
Myriam Mills, Hess Corporation – EHS Manager
Martin Stauble, Shell – VP, Exploration
Janet Yun, Chevron – Geologist

This year we started a new mentorship program, matching incoming students directly with board members. Fall students have direct access to at least one board member and are encouraged to reach out to start a conversation. Board members have been very proactive, and students have benefitted from this industry connection in many ways, i.e., expanding their network, getting career advice, and receiving internship search guidance and placement help. To further enhance networking options, Board Member Ed Biegert and his wife hosted a social in their home, with the Subsurface Geoscience students, other board members and faculty.

Alumni participation provides new insights

This year we brought several of our alumni back to speak at our seminar series, to provide insight into our program and how it helped them to be successful. We hosted Myriam Mills (Hess Corporation) and Cassie Lopez (Chevron) at a luncheon at Cohen House with the EADM students.

We also had a lunch gathering with students from various tracks to interact with alumni. Victor Ferrari (NSSC), Melissa Lopez (EADM), and Christa Clarke (BHP) answered questions on the internship search process, and gave course recommendations and interview advice.

The final panel consisted of a mixed international alumni group from both the oil and gas industry and the environmental consulting industry. Liang Gi and Richard Huang (ION Geophysical) joined Stephanie Chuang and Alex Liu (ENTech Consulting) and Lucas Chen (Weatherford) to provide constructive advice for our international students considering the versatility of the oil and gas industry at this time, and how to overcome hurdles through persistency, professionalism and networking.

Following up on this year’s board meeting recommendations, we met with a few of its members to review the annual board meeting agenda and organization. This review session resulted in great ideas to keep our annual meeting interesting and productive, and to keep our board members more involved with Rice and our programs.

left to right:
Shagun Bhat, Geosyntec; Eberhard Lucke, Niquan Energy; Andre Droxler, SG Track Director, Alberto Tohme, Tohme Consulting
**Internship reports and research**

**SUMMER 2017**

- **Brittany Nicholson**/Environmental Integrity Project
  Investigation of emissions of sulfur dioxide and volatile organic compounds from oil and gas facilities in West Texas

- **Carlyssa Villareal**/GSI Environmental
  Investigation of vapor intrusion

- **Sarah Hussain**/Enterprise Products
  Implementation of Sphera Essential Suite software (system to manage environmental regulatory compliance permits and requirements)

- **Michael Kutzler**
  Expansion of Independent Doctor network in Texas

- **Brian Troutman**/Academic research internship with Professor James Tour, Rice University
  Fighting cancer with nano machines

- **Eric Smith**/UTC Aerospace Systems, Electric Systems Operations and NASA
  Creation of sustainability calculator for NASA/JSC employees, and completion of a suite of capacity analysis tools for the operations and business analytics team to use to forecast customer demand and workforce capacity

- **Emily Cubbage**/C-Crete Technologies
  Product development for a cement additive and a system for 3D printing ceramics including research and testing of physical characteristics of materials strengthened by nano-enhanced components

- **Calyn Jew**/Statoil
  In-depth subsurface assessment of wells in the Appalachian Basin

- **Sean Romito**/Texas Commission of Environmental Quality
  Investigating Precambria basement and related strata of the northern Texas Panhandle

- **Skyler Wheeler**/Occidental Oil
  Investigating San Andres Formation in the Permian Basin

- **Will Eisenberg**/Total, Gulf of Mexico Team
  Use of interpretation software on seismic data to build isochore and isopach maps for intervals of interest

The newest PSM program in the School of Natural Sciences, Space Studies, offered an amazing seminar series this fall with impressive speakers:

- **Olga Bannova**/University of Houston, Research Professor
- **Mihriban Whitmore**/NASA, Senior Human Systems Integration (HSI)/Human Factors expert
- **Patrick Rodi**/Lockheed Martin, Fellow, specializing in high speed aerodynamics, aerothermodynamics, and vehicle design
- **Chris Hansen**/NASA, EVA Office Manager
- **Kimberly Hambuchen**/NASA, Human Robotic Systems, Deputy Project Manager
- **Adam Lauchner**/NASA, Flight Controller (in training) specializing in International Space Station Power and Thermal Systems (employed by Leidos, Inc.) and PSM Alum
- **John Scott**/NASA, Propulsion and Power Division, Chief Technologist
- **Joel Getchius**/Omitron Inc., Senior Navigation Engineer
- **Mark Jernigan**/NASA, Assistant Director for HHDP exploration systems development support
- **Ed Harris**/Edge of Space, Partner and Co-Founder
- **Sam Gunderson**/Blue Origin, Business Development Manager

Board Members and faculty also determined potential career paths for our students identifying areas such as flight control, space medicine, guidance/navigation and controls, business development, systems engineering and astronomy/space education as potential fits for our graduates. Current students interned this past summer at Jacobs Technology, NASA, Boeing, UTC Aerospace Systems, Final Frontier Design and ATEC.
At this year’s conference, Director Dagmar Beck presented on two panels; with colleagues from Keck Graduate Institute, University of Maryland and Kansas University. She was part of the discussion on innovative “plus” or “cohort” courses and teaching methods of the transferable skills curriculum of PSM programs.

Originally the emphasis was on transferable skills in communication, regulatory, policy, ethics, finance and economics. However, the needs have expanded and according to a recent survey 51% of programs include entrepreneurship, innovation, tech transfer, and intellectual property, and 13% of responding institutions list marketing/web design and graphics as transferable skills components.

The second panel consisted of former NPSMA presidents from Worcester College, Illinois Institute of Technology, University of Pennsylvania and Rice University, representing a range of institutions and programs embracing the PSM model of professional preparation, and extensive experience in the design and implementation of PSM programs. This interactive session on the future of the PSM programs brainstormed viable solutions and paths forward to regain the PSM cachet as the most innovative track in graduate education today.

When the concept of the professional science master’s program began, it offered a curriculum virtually unheard of in higher education. It included professional skills such as science communication, which was initially frowned upon by the academic elite, but in time became more attractive to higher education. Today many graduate programs incorporate professional skills into their curricula: communication, ethics, and intellectual property management, to name a few. Some PhD programs have even begun to see the light.

The question arises, where does this leave the PSM? While the PSM community should delight in this trend in graduate education and perhaps pat themselves on their collective backs, the broad adoption of this paradigm has now diminished the PSM brand. If this platform is no longer novel, then what will set the PSM programs apart?

The PSM concept has lead to great collaborations between education and industry, better employment opportunities for students and better employees for companies. The panelists discussed novel approaches that will maximize flexibility and provide opportunities for real-life career preparation including ways to build pipelines between universities and companies similar to the German “Duale Hochschule” system with the potential support of local government.

**RUNPSMA chapter activities**

*Co-presidents of the Rice University chapter of the National Professional Science Masters Association (RUNPSMA), Emily Cubbage (NS) and Brittany Nicholson (EADM), report on the chapter’s activities:*

“RUNPSMA continues to host social and professional development events for PSM students. This fall we held our Resumania event before the fall career fair, where students peer-reviewed resumes and elevator pitches. Attendees learned how to present their previous educational and work experiences to recruiters at the career fair. We also held our fall social on October 6, bringing together students, alumni, and faculty. This event received funding from the Rice Student Activities President’s Programming Fund allowing RUNPSMA to provide delicious food and desserts.”
This fall, faculty, students, alumni and staff joined to recognize Harry Wilkinson for his nearly 20 years of teaching “Management for Science and Engineering”, with Professor Andrew Barron, as part of the required cohort courses for the Professional Science Master's program. This course covers topics such as project management, marketing in high technology organizations, introduction to cash accounting concepts, high tech organizations, intellectual property, organizational behavior and leadership, and entrepreneurship.

**ALUMNI PROFILE  Cassie Lopez, ’13 (EADM)**

Houston native, Cassandra (Cassie) Lopez, graduated from Rice with a BA in Environmental Engineering Sciences in 2011, and from the PSM Program in Environmental Analysis and Decision Making in 2013. She began her career at Burns and McDonnell as a project Environmental Specialist and moved to Chevron Corporation in the Health, Safety, and Environmental (HES) function, supporting both onshore and offshore developments for North America Exploration & Production.

Cassie is passionately involved in community activities, serving as Club President for the Downtown Houston Toastmasters Club (2016-2017), engaging and mentoring current Rice PSM students in Lunch and Learns, and serving as featured guest speaker to the Federation of Houston Professional Women. She is also a member of the Offshore Technology Conference (OTC) networking committee for 2018. Cassie, a 2017 recipient of the top young professionals “30 Under 40” recognition by the area Leader News, is married and expecting her first child. She is very excited to continue her involvement with Rice University and the Houston community.

**Master’s Seminar Fall ’17**

The Faculty Advisors for the Bioscience and Health Policy program established a Journal Club as part of their regular weekly seminar series.

*The fall seminar series brought amazing people to campus:*

William Cohn/Johnson & Johnson, VP for Medical Devices; Center for Device Innovation at TMC, Director; PSM Board Member

Karen Basen-Engquist/M.D. Anderson Cancer Center

Michelle Paso/Rice Career Center

Johnna Carlson/Texas Children’s Hospital, Government Relations

Geoffy Haddad/ConocoPhillips Geology Fellow, SG Board Member

Kyung-Hee Bae/CWVOC, SG Board Member

Mary Purugganan/Rice Program in Writing and Communication, Senior Lecturer

Mike Burcham/Geosyntec, Environmental Engineer

Ed Harris/Edge of Space, Co-Founder, new SPS Board Member

Alberto Tohme/Tohme Environmental Consulting, President and EADM Board Member

**Liu Idea Lab for Innovation and Entrepreneurship**

As part of our seminar series, we also did an outing within the hedges and visited Rice’s new Liu Idea Lab for Innovation and Entrepreneurship. The Lab is Rice’s new on-campus hub for innovation and entrepreneurship. Associate Director Caitlin Bolanos showed us their new space and provided an overview of their program, courses and resources.
PSM student finds her voice through leadership training

Coming out of my undergraduate studies and into the PSM program at Rice, I was interested in enhancing my scope of skills in the academic and interpersonal spectrums. More than anything, though, I wanted to learn how to speak up, motivate, and engage people to create change. One of the goals as an environmental activist is to create awareness so that communities can become passionate and outspoken about their needs and those of their environment. As I gained knowledge of all the opportunities at Rice during my first semester, the Ann and John Doerr Institute for New Leaders (DINL)—founded in 2015/2016 with the strategic aim of transforming how students are developed as leaders—struck a chord with me as a chance to explore effective leadership qualities for creating change.

I started off with the Doerr Institute’s Coaching Program in the Spring of 2017. The Coaching Program is targeted towards exploration and development of your emotional intelligence competencies such as self-awareness, problem solving, interpersonal relationships, and empathy. I learned how to develop my weaknesses, enhance my strengths, and identify qualities of leadership habits in my daily interactions. This experience allowed me to gauge my emotional intelligence and interpret the strengths and weaknesses in character that allow me to be the best leader I can be.

Following the Coaching Program, I applied for the opportunity to participate in the year-long Peer Leader Development Training program in the Fall of 2017. Whereas the coaching sessions helped me visualize and develop my leadership character, the Peer Leader Development Training is currently putting my skills to the test and opening up opportunities for greater growth. I am applying the skills I learned in the Coaching Program with other student leaders through workshops, interactive activities, and even a field trip to Big Bend National Park. Additionally, I have had the opportunity to network with amazing leadership figures who have motivated me to be brave as I embark on a journey to remodel my perspectives about what effective leadership looks and feels like.

In a nutshell, the experience at the Doerr Institute has allowed me to become a better listener, more confident at expressing ideas, self-aware of intrinsic and extrinsic motivations, and more open to giving and receiving feedback. The coaches and peers in the program have been a crucial part in my development, and I am immensely grateful for having been able to share time with them. The experience has definitely exceeded my expectations and I would recommend it to anyone who is ready to change and grow their leadership presence.

PSM Program represented by students and staff

This fall current students represented the PSM program in several information sessions for Rice undergrads and helped promote our program at their Alma Mater.

The 4+1 option has seen increased interest by Rice students and their parents. We represented our programs during the fall Family Weekend, providing students and parents information about the option to receive a Rice undergrad and graduate degree within 5 years.
INTERNATIONAL STUDENT PROFILE
Minglong Pan, Subsurface Geoscience

Minglong Pan grew up in Jingzhou City, China, home to the Jianghan Oilfield, a city brimming with petroleum culture. He gradually developed a keen interest in geoscience, especially how subsurface geoscience is used in exploration.

After graduating from Yangtze University in 2016, with a bachelor’s degree in Resource (oil & gas) Prospecting Engineering, he enrolled in the "Outstanding Engineers Class", which helped him secure an internship at Sinopec to be trained as a petroleum geologist. The following two years he completed four field studies in North and South China, which helped him to be proficient in geological skills and seismic exploration.

“When a friend mentioned the Subsurface Geoscience program at Rice to me, I did some research and found that this program would be a great fit for my interests and background. It would help me enrich my knowledge, not only in geology/geophysics but also in management and business, and provide communication training to help me adapt to U.S. culture and the business environment,” says Minglong.

Minglong had a great experience competing in the 2017 Imperial Barrel Competition and the Petro Challenge at Rice. He also enjoyed his internship as an Environmental Management Researcher for a project Rice University is conducting in collaboration with the Memorial Park Conservancy Research.

Currently, he is participating in the Rice Sedimentology Lab where he is researching the sandbar migration in Yellow River. He says, “I am happy to report that my search for a job in the U.S. was successful, and after graduating in May, 2018, I will join CGG as a Seismic Imaging Analyst.”

Outside of his academic and career interests, he likes staying fit by working out, swimming and playing table tennis with his friends. He also enjoys playing guitar and listening to classical music, which help him relax after a busy day!

Minglong plans to continue supporting Rice and the SG program by mentoring new students and promoting the program to his friends in China and elsewhere.

Thank you to the sponsors of the 2018 Annual Corporate Reception:

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