

Summit on Improving Geoscience Graduate Student Preparedness for the Future Workforce
Department Head, Chairs & Graduate Program Directors
May 11-13, 2019

Saturday, May 11th

- 7:30 a.m. Breakfast & check in, Holland Family Student Center (*JGB, 2nd floor; main entrance*)
- 8:30 a.m. Welcome, Introduction (*Boyd Auditorium; JGB 2.324*)
- Project goals and expected workshop outcomes
 - Logistics
- Sharon Mosher, Organizing Committee Chair; Dean, Jackson School of Geosciences, University of Texas at Austin
- 8:45 a.m. Current landscape and drivers for change – Sharon Mosher
- Future of Undergraduate Geoscience Education initiative results as baseline - What skills/competencies should students learn as undergraduates
 - Overview of STEM outcomes – Jeff Ryan, Organizing Committee Co-chair, University of South Florida
 - National Academy of Sciences (NAS) report on Graduate STEM Education for the 21st Century
 - Council of Graduate Schools report on Professional Development Shaping Effective Programs for STEM Graduate Students (CGS)

Part 1. Identify the skills and competencies that should be part of graduate geoscience education for Ph.D. & M.S. students in Earth, Ocean, & Atmospheric Sciences

- 9:30 a.m. Geoscience Employers Workshops results: skills/competencies needed by Earth, Ocean & Atmospheric Science graduate students for the future workforce: Sharon Mosher, Organizing Committee Chair (*Boyd Auditorium; JGB 2.324*)
- 10:10 a.m. Coffee Break (*Boyd Auditorium Foyer & Holland Family Student Center*)
- 10:30 a.m. Breakout session in working groups (10-12 people per group; individual rooms as assigned)
Questions to be addressed:
- Do your entering graduate students have the preparation that employers expect undergraduate geoscience graduates to have? What generally do they have and what do they lack?
 - Do students graduating with a Ph.D. or M.S. from your program have the preparation that employers expect graduate students to have when they finish? What generally do they have and what do they lack? Does this vary with their specialty, sub-discipline or discipline?
- 11:30 a.m. Working group reports & all participant discussion (*Boyd Auditorium; JGB 2.324*)
- 12:15 p.m. Lunch, Holland Family Student Center (*JGB, 2nd floor; main entrance*)
- 1:15 p.m. Employer Panel: skills/competencies needed to prepare graduate students for future careers in the geosciences (*Boyd Auditorium; JGB 2.324*).

Addressing these questions:

- What skills and competencies make Ph.D. and M.S. graduates successful in the workplace today?
- What changes do you see in your field and organization over the next ten years that will require different competencies? What new or improved skills do you predict graduates will need in the future?
- What level of competency is needed? How does the relative weighting vary with employers, with Ph.D.'s versus M.S. graduates?
- Overall, which skills do you find most current graduates have acquired and which do they generally lack?

Panelists:

- Abhishek Chatterjee, GMAO GESTAR Group Lead, NASA Goddard Space Flight Center
- Claudia Hackbarth, Shell, Manager, Technology Learning
- Michael Schackne, Senior Project Manager, Langan Engineering and Environmental Services, Inc.

2:15 p.m. Breakout session in working groups (10-12 people per group; individual rooms as assigned)

Questions to be addressed:

- Which of the skills/competencies expected by employers (from panel and results of Geoscience Employers Workshop) does your program address and to what level of competency?
- What would be needed to achieve these expectations? How proactive is your program at preparing your students for both current and future workforce needs?
- How different or similar are these skills/competencies from those needed for future faculty at a range of educational institutions?

3:30 p.m. Coffee Break (*Boyd Auditorium Foyer & Holland Family Student Center*)

3:50 p.m. Working group reports & all participant discussion (*Boyd Auditorium; JGB 2.324*)

4:45 p.m. Discussion of Action Planning – Sharon Mosher, Organizing Committee Chair

5:00 p.m. Reception followed by dinner, Holland Family Student Center (*JGB, 2nd floor; main entrance*)

Sunday, May 12th

8:00 a.m. Breakfast, Holland Family Student Center (*JGB, 2nd floor; main entrance*)

Part 2. Investigate best means of developing these skills/competencies in graduate geoscience programs nationally

8:50 a.m. Scientific Society Panel/Presentations (*Boyd Auditorium; JGB 2.324*)

- Graduate Program survey data – what are departments doing and how are they structured. Chris Keane, American Geoscience Institute.
- Career Compasses – alternative ways to achieve and demonstrate skills/competencies. Pranoti Asher, American Geophysical Union

- New Minds for New Science: The Forecast for Work in Weather, Water, and Climate.
Andy Miller, American Meteorological Society

Panel Discussion – What role can professional societies play?

10:00 am Breakout session in working groups (10-12 people per group; individual rooms as assigned)
(Coffee available in Boyd Auditorium Foyer & Holland Family Student Center)

Addressing these questions:

- Integrating needed skills and competencies into curriculum, courses, programs & documenting achievements.
- What are the best ways to impart different skills? How do you implement these into graduate programs?
- Which skills and/or competencies can students get from graduate coursework versus student research experiences versus other graduate professional experiences?
- How aligned are these skills to student research experiences? Are there skills that employers value that are not gained conducting research?
- What balance is needed between developing specific skills needed for future careers and conducting research within a graduate program?

11:15 a.m. Working group reports & all participant discussion (Boyd Auditorium; JGB 2.324)

12:15 p.m. Lunch, Holland Family Student Center (JGB, 2nd floor; main entrance)

1:00 p.m. Employer Panel: Employer roles and expectations. (Boyd Auditorium; JGB 2.324)

Addressing these questions:

- How is the workforce evolving? What impact will that have on the skills and competencies needed by graduate students?
- How can employers assist, during formal education, co-curricular opportunities, professional development activities, or other means?
- What training should be a responsibility for the employer post-graduation versus what do employers expect students to have when they graduate?
- How can graduate students demonstrate that they have developed skills and competencies?

Panelists:

- Alex Martinez, Geoscience Staffing and Development Manager, ExxonMobil
- Bruce Nocita, Principal Geologist, S&ME;, Inc. & Adjunct Professor, University of South Florida
- Nicholas Tinsley, Chairman, Gulf Coast Branch, The Institute of Marine Engineering, Science and Technology
- Overview from Geoscience Employers Workshop – Sharon Mosher, Organizing Committee Chair

2:00 p.m. Breakout session in working groups (10-12 people per group; individual rooms as assigned)

Questions to be addressed:

- What can we do to ensure graduate students develop a portfolio of skills and competencies that they need for employment in future careers?

- Are there defined learning outcomes graduate programs could use to document skills and competencies beyond just coursework taken by students?
- How can employers assist, during formal education, co-curricular opportunities, professional development activities, or other means? What training should be a responsibility for the employer post-graduation?

3:00 p.m. Coffee Break (*Boyd Auditorium Foyer & Holland Family Student Center*)

3:15 p.m. Working group reports & all participant discussion (*Boyd Auditorium; JGB 2.324*)

Part 3 Heads/Chairs and Graduate Program Directors work on implementation strategies to develop the skills and competencies identified by the geoscience employers workshop & other efforts

4:00 p.m. Individual or Group Planning: how to move own institution forward (individual rooms as assigned)

5:00 a.m. Dinner on own. Continue working on individual or group plans

Monday, May 13th

8:00 a.m. Breakfast, Holland Family Student Center (*JGB, 2nd floor; main entrance*)

9:00 a.m. Working groups reconvene to discuss individual plans & finish preliminary plans for submission (individual rooms as assigned)

9:45 a.m. Overcoming barriers, finding solutions, creating incentives and rewards - presentations from Future of Undergraduate Geoscience Education action plan reports and chairs. Sharon Mosher, University of Texas at Austin (*Boyd Auditorium; JGB 2.324*)

10:00 a.m. Breakout session in working groups (10-12 people per group; individual rooms as assigned) (*Coffee available in Boyd Auditorium Foyer & Holland Family Student Center*)

Questions to be addressed:

- How do you change culture – i.e. training Ph.D.'s only for academia/replicating self? Or that M.S. degrees are important gateways for employment?
- How do you overcome resistance to change, create incentives and rewards?
- How can you integrate this into your action plans?

11:00 a.m. Working group reports & all participant discussion: Individual and group plans for moving forward after returning home; unresolved issues, external help needed (*Boyd Auditorium; JGB 2.324*)

12:00 a.m. Lunch, Holland Family Student Center (*JGB, 2nd floor; main entrance*)

1:00 p.m. Final Discussion: Summary of Progress, Next Steps and Roadmap for Future Organizing committee; moderated by Sharon Mosher; *submit action plans (JGB, 2nd floor; main entrance)*

1:45 p.m. Shuttles depart for airport. Airport arrival estimated at 2:15 p.m.