

Flexible fieldwork

Anita M. S. Marshall, Jennifer L. Piatek, David A. Williams, Elisabeth Gallant, Sean Thatcher, Stephen Elardo, Amy J. Williams, Trevor Collins & Yesenia Arroyo

 Check for updates

GeoSPACE is addressing the barrier of inaccessible field courses with a planetary mission approach, combining online participation with accessible in-person field work.

Fieldwork can be an inspiring way to learn about the Earth firsthand. As such, field courses are often viewed as a crucial rite of passage for students transitioning from geoscience novices to practitioners. However, it can also become a 2-to-6-week logistical nightmare filled with accessibility issues, creating a substantial barrier to the discipline for people with disabilities and other marginalized identities. If left unaddressed, these problems can drive students to leave field-intensive degree programmes.

The GeoScientists Promoting Accessible Collaborative Experiences (GeoSPACE) field course addresses these issues by developing an accessible, inclusive field course that participants can attend in person or online. The two-week course takes place in northern Arizona, USA, where the variety of landscapes and historical use as a planetary analogue presents numerous field opportunities within a short drive of Flagstaff.

By using a planetary mission framework, GeoSPACE gives both virtual and in-person participants a connected and mutually beneficial working relationship. Prior to field work, ‘Mission Control’ (virtual students) brief the ‘Ground Team’ (in-person students) about sites using remotely sensed data. The Ground Team collects information in real-time with classic field mapping techniques and surveys using drones and ground-based cameras. In the field, real-time communication through social apps and live streaming keeps everyone involved in field activities. Debriefs and collaborative project reports create opportunities for everyone to bring their respective data sets together to interpret each location. During the culminative project, student teams comprised of both in-person and remote students are responsible for mission planning,

execution, analysis and presentation of results for a new field site. The collaborative nature of these hybrid field studies reflects modern geoscience working environments, enhancing students’ communication and project management skills.

Close collaboration between students and staff ensures that access needs, accommodations and dietary requirements for each student are met during the experience. Students participate in co-developing the code of conduct, creating a document that reflects community values. Mentoring, both faculty-to-student and student-to-student, creates a space where students are comfortable acknowledging their limitations and learning how to approach collaborative field work in a supportive environment. This approach creates an environment of honesty and teamwork that enables students to focus on learning and gain confidence in their scientific abilities.

GeoSPACE demonstrates how field courses can meet the needs of all students while maintaining a high level of academic rigor. Most of all, the success of the GeoSPACE 2022 pilot year

demonstrates that geoscience field courses can be an inspiring, accessible, inclusive, and welcoming space for all, regardless of the mode of participation.

Anita M. S. Marshall ¹✉, Jennifer L. Piatek ², David A. Williams ³, Elisabeth Gallant ⁴, Sean Thatcher ⁵, Stephen Elardo ¹, Amy J. Williams ¹, Trevor Collins ⁶ & Yesenia Arroyo¹

¹Department of Geological Sciences, University of Florida, Gainesville, FL, USA.

²Dept. of Earth and Space Sciences, Central Connecticut State University, New Britain, CT, USA.

³School of Earth and Space Exploration, Arizona State University, Tempe, AZ, USA. ⁴Hawaiian Volcano Observatory, United States Geological Survey, Hilo, HI, USA.

⁵College of Staten Island, City University of New York, Staten Island, NY, USA.

⁶Knowledge Media Institute, The Open University, Milton Keynes, United Kingdom.

✉ e-mail: anita.marshall@ufl.edu

Competing interests

The authors declare no competing interests.

