NAGT Geo2YC Division

FOUNDATIONS

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# More-Inclusive Field Experiences: Where curiosity can surmount hurdles

**by Caitlin N. Callahan**
*Michigan State University,*
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Last spring, the International Association for Geoscience Diversity (www.theiagd.org) announced that it would be organizing a fully-accessible fieldtrip just prior to the 2014 Geological Society of America conference in Vancouver, British Columbia. As part of the effort to recruit participants, Dr. Chris Atchison wrote an article about the motivation, purpose, and plan for the fieldtrip in the May 2014 issue of FOUNDATIONS (d32ogoqmya1dw8.cloudfront.net/files/nagt/divisions/2yc/newsletter_3.2.pdf). In brief, the main intent of the fieldtrip was two-fold: 1) provide an accessible field experience during which students and faculty could work together and learn from each other's perspectives, and 2) provide Earth science instructors with insight into how to develop similar field experiences for their own students. Another important aspect of the fieldtrip was that the organizers collected data and reflections from participants before, during, and after the trip in order to develop accessibility guidelines for more inclusive Earth science field-based experiences (gsa.confex.com/gsa/2014AM/webprogram/Paper242930.html).

A total of 15 faculty and 15 students were selected to be part of the fieldtrip. I was fortunate to be selected as one of the faculty participants. A notable aspect of the fieldtrip design was that each faculty participant was paired with at least one student. I was paired with an undergraduate who had not yet declared a major but who had a definite interest in geology. To preserve her anonymity, I will refer to her as Rebecca. Although she does have a limited amount of visual ability, Rebecca is legally blind and is assisted by a service dog. To put her ability in context, at one point during the day, I noticed her reading the fieldtrip guide by holding the paper a few inches from her face; yet I also noted a couple of times when she asked where I was when I was standing a couple of feet from her. My purpose here is to share some of the lasting memories that I took from that day. In particular, there is the story of Rebecca, a steep hill slope, and me.

Almost immediately upon meeting me, Rebecca asked me what, if any, experience I had working with someone who is blind. "None" was my answer. I had had some experience interacting with students with other kinds of disabilities, but not blindness. At the first stop of the fieldtrip, Rebecca asked to hold my arm as we walked across the parking lot. A few moments later, she asked if I always walked that slowly and commented that others often assume that she has to walk slowly because she is blind. Although I considered that I was walking at a pace similar to others around us, I could not say for sure if I was walking slowly for her presumed benefit or not. Rebecca's early comments were a definite reflection of her ability to advocate for herself.

Toward the middle of the day, we stopped at Garibaldi Provincial Park near Rubble Creek. At that particular location, the stream is confined to a relatively narrow channel. On the day we were there, the water level was lower than its maximum, given that we could walk out onto terraces that clearly would have been below water level on higher-flow days. When I offered to Rebecca that

we could go closer to the creek, she declined. Instead, she suggested that I could bring her a rock sample for us to discuss. I did as she suggested, and we had a good conversation about the igneous rocks in the area. What made this experience memorable, however, is how it contrasted with our experience at the end of the day.

The last stop of the fieldtrip was at a rest area and parking lot along a divided highway. On the opposite side of the highway from us was a massive granite rock face, the Stawamus Chief. On our side of the road, there were several large exposures of rock in an otherwise grassy hill slope that was roughly five meters high. Mostly the exposures were smoothed or rounded with distinctive glacial striations. Of course, a special thing about striations is that even when one cannot see them, one can feel them.

Participants of the *Full Access to the Geology of the Sea to Sky Highway* 2014 GSA pre-meeting field trip standing in front of outcrops with glacial striations.

While most of the group dispersed across the parking lot and up the hillside, Rebecca and I ended up talking about the rock exposure nearest to the vans. After we finished our conversation about the relationship between the rock at our location and the rock face across the highway, she heard someone mention another exposure further up the hill. She immediately said she wanted to go there, too. Given Rebecca's decision earlier in the day not to explore the creek terraces, I was hesitant.

To get to the higher exposure, we would have to navigate a rather steep slope that was loaded with boulders, mostly larger than beach-balls. Above that, the hillside was grassy up to the other outcrop. I was nervous for Rebecca. I knew that I could not easily give her my arm—as I had been doing earlier in the day—while we went up that rocky slope. Moreover, I did not see how her dog could help much either. Rebecca, however, did not seem worried. She let go of her dog's harness and started climbing, using her hands when necessary. I followed, but Rebecca did not wait. By the time I reached the top of the boulders, Rebecca was a couple of meters uphill from me. I hustled to catch up with her and the rest of the group who had remained at the higher exposure.

The higher exposure turned out to be especially valuable for understanding the geology of the lower exposure and the geology of the area more generally. Rebecca and I could have waited at the base of the slope to hear a report of what others saw once they came back down, but that was evidently not enough for Rebecca. I am not sure what made Rebecca decide to charge up that hillside. Was she more comfortable than she was at the Rubble Creek location? That is really her story to tell. For me, seeing Rebecca charge up that hill slope was a powerful image. I had been unsure. But my uncertainty did not matter. She knew her limits. She also knew her own curiosity. And isn't that what a fieldtrip is meant to inspire: curiosity that must be satisfied regardless of the hurdles?

**Are you interested in learning how to develop inclusive classroom and field-based instruction?** The International Association for Geoscience Diversity (IAGD) can help. The IAGD is an organization charged with advocating for improved access to the geoscience disciplines for students and geoscientists with disabilities, while identifying current research opportunities and instructional best practices that promote full inclusion. The IAGD network has access to experienced students and faculty from many disciplines who can help you plan and create inclusive classroom and field-based instructional opportunities. Consider focusing on a current field course, retrofitting an existing one, or designing a new course, all based on the diverse physical or sensory abilities of your students. If you are interested in learning more about inclusive instruction, or to learn about the IAGD's Consortium of Accessible Field Courses, please

visit the IAGD at www.TheIAGD.org, or contact the IAGD at info@theiagd.org.

***Acknowledgments***
I extend my thanks to my colleagues Christopher Atchison, Brett Gilley, Anthony Feig, and Alison Stokes, as well as to all of the participants on GSA Field Trip #416: *Full Access to the Geology of the Sea to Sky Highway*. The fieldtrip was conducted with the financial support of the National Science Foundation (NSF: GEO-1441185), the Society of Exploration Geophysicists (SEG), the International Association for Geoscience Diversity (IAGD), and the Geological Society of America (GSA) *On to the Future* program.

# President's Column

**by Ben Wolfe**
*Kansas University Edwards Campus, Overland Park, KS*

Our Vice President Kaatje Kraft recently posted some beautiful photos on Facebook of a local geoscience field trip she led with her students from Whatcom Community College in the Pacific Northwest that reminded me of why this is one of my most favorite times of the year. No, not because I have survived yet another school year, or that the trees are leafing out and the flowers are blooming, but that it is the start of another field season! In years past this would be the time where all of the semester's planning, travel paperwork, permissions, waivers, justification memos, paperwork, supply purchasing, van rentals, paperwork, and finally more paperwork would come to fruition in the form of 11 days spent with my students immersed in the geomorphology of the Sandhills of Nebraska, the stratigraphy and geologic history of the Big Horn Basin in Wyoming, and the geology of Yellowstone and the Grand Tetons. These were and are such great learning experiences for students, instilling in them an appreciation for the natural beauty of our planet and planting the seeds of life-long learning. But not just the students benefit from these engaging learning experiences. Field trips for me personally provide an opportunity for my own growth as an educator and an excellent way to recharge the batteries. Watching students work together on a complex geology problem, the awe they express at seeing an endless sea of rolling short grass prairie for the first time, or the excitement of collecting belemnites from the Sundance Formation reminds me of why I love teaching.

Ben and students in the Nebraska Sandhills – one of the few locations where it is possible to get a good look at the type section for "middle of nowhere".

Unfortunately, it is becoming more and more difficult for 2YC educators to provide field-based opportunities for their students. Funds are limited and field trips are expensive. Often costs are passed on to students, which for many who attend 2YCs are prohibitive. Many students have work responsibilities, family obligations, or for some, have never camped before and that anxiety or obligation can serve as a barrier to participation. Disturbingly, I have heard from some 2YC colleagues that their administrators look at field trips as glorified "vacations" for the faculty. However, the effectiveness of field study courses in improved student learning and comprehension is well-documented and many of us can vouch for the positive effects on students' values, interest, and attitudes field-based learning provides. It is critical therefore for our Division to provide support and encouragement for our 2YC colleagues, and advocate for field-based learning in 2YCs. This month's issue showcases some of the great work our colleagues are doing to bring field-based learning to 2YC students. Equally important, you the members have an opportunity to provide your feedback for a field education position paper drafted by the division that was first circulated at the GSA meeting last Fall in Vancouver. The current version of the draft of the position paper can be found on the Geo2YC website at http://nagt.org/nagt/divisions/2yc/feedback.html. Please take some time to look over the paper and provide your feedback. Thank you in advance for your constructive comments!

Some other important reminders: The registration period for the Earth Educator's Rendezvous is still open and I encourage interested 2YC faculty to participate. We are currently planning on a 2YC social gathering one evening of the Rendezvous and look for more information about that coming out in an email to our listserv soon.

EARTH EDUCATORS' RENDEZVOUS

Also, the abstract deadline for the GSA Annual Meeting this Fall in Baltimore is August 11th. The Geo2YC is sponsoring two sessions:

- T70. Digital Technology in Real and Virtual Geoscience Experiences (Posters)
- T87. Supporting Geoscience Student Transfer: Collaborations, Partnerships, and Practices for Success

I encourage interested folks to consider submitting to either of those two sessions!

1-4 NOVEMBER
GSA 2015
Baltimore, Maryland, USA

Lastly and most importantly, we have restocked our swag supply of the ever popular yellow Geo2YC scale pencils. I draw your attention to the call for action to take your best geology photo with the pencil as scale! Little River Research & Design (Emriver) graciously partnered with the Division again on the pencils and we are greatly appreciative of their support. However, we as a division are responsible for some of the costs of production and I encourage members to consider donating to Geo2YC to help cover some of these expenses. Have a great summer field season everyone and remember to take along your Geo2YC pencil on your adventures!

-Ben Wolfe

# The Geo2YC Pencils

Fellow Geo-2YCers,

As many of you may be aware, we have produced GEO2YC pencils to hand out as part of our marketing strategy at conferences where NAGT is represented (primarily at GSA and AGU). These pencils have been wildly popular, and pop up in photos regularly (here's a great example from one of our esteemed members: http://blogs.agu.org/mountainbeltway/2010/12/24/gosf6-graywacke-turbidites/).

These pencils are so popular, in fact, that we've run out! As in previous years, Emriver (http://www.emriver.com/) has agreed to donate half the cost of the pencils, and as we have in previous years, we are asking for any donations to offset the cost from the membership funds. If you are interested in donating to this cause, we welcome your tax-deductible donation. The Geo2YC amount due to Emriver for making the pencils is $750, so any amount you can donate would be greatly appreciated.

Any checks can be sent to Christine Witkowski made out to NAGT Geo2yc:

Christine Witkowski
Middlesex Community College
100 Training Hill Road,
Middletown, CT 06457

You will receive a thank you letter notifying you of your tax-deductible donation from GEO2YC

Thank you for your consideration,

The Executive Council

# Congratulations to Karen Bridges, Outstanding Adjunct Faculty Quarterly Honoree!

**by Karen M. Layou**
*Reynolds Community College*

After reviewing an amazing pool of nominees, the OAFA Committee is pleased to recognize Karen Bridges as this quarter's Outstanding Adjunct Faculty Honoree. Karen teaches a variety of geoscience courses at Howard Community College, including Physical Geology, Oceanography, Earth and Space Science, and Technical Physical Science. Karen was nominated for this recognition by Sharon Lyon.

Sharon writes, "I nominate Professor Karen Bridges for the National Association of Geoscience Teachers Geo2YC Outstanding Adjunct Faculty Award. Karen has taught at Howard Community College since Fall 2010, as an adjunct instructor, advancing to Senior Adjunct Instructor. Karen has taught Physical Geology, Oceanography, Earth & Space Science and Technical Physical Science at HCC. She was the first to teach Oceanography as a face-to-face class at HCC (it had been previously offered only online), and she was responsible for developing all of the curricula for her class, including her lecture powerpoints, class activities, homework assignments, quizzes and tests. She has joined in the college's Sustainability efforts, incorporated sustainability activities into her Oceanography and Geology classes. In addition, for the past 2 summers, Karen has been a faculty member on our Bermuda Science – Study Abroad Program, at the Bermuda Institute of Ocean Sciences. Although being a faculty member in Bermuda may sound like an undemanding assignment, it actually is a lot of work. Karen was responsible for students on boats, snorkeling both in the daytime and at night, on fieldtrips on land, and in transit at airports. She was responsible for handling student issues and crises, which included everything from seasickness to ant infestations. She handled everything in her usual cheerful, yet calm manner.


Karen Bridges on location in Bermuda

To observe Ms. Bridges in the classroom is to see a master teacher at work. Her enthusiasm is contagious, as often commented on by students. She is equally as enthusiastic in teaching about sedimentary rocks as she is about chemical bonds. She has a special affinity for breaking complex ideas into manageable learning elements, and she uses many active learning activities and strategies in her classroom. Ms. Bridges is adept at using the Learning Management System, Canvas. She has taught face-to-face, hybrid and online courses. Her student evaluations are consistently outstanding. This past semester one of Karen's students, from the Earth & Space Science class, which is for education majors/future teachers, commented that, "while the class was good, Prof. Bridges was great and being in Prof. Bridge's class made me want to be a better teacher in my own classroom." Because of her hard work, her enthusiastic teaching style, and her willingness to go the extra mile for her students, I believe that Professor Karen Bridges deserves to be recognized by NAGT."

Karen will receive a one-year complimentary membership to the NAGT Geo2YC Division, and will be entered into the pool of quarterly honorees under consideration for the Annual Outstanding Faculty Award this fall, which is sponsored by a $750 professional development stipend from Pearson Publishing.

If you are an adjunct faculty working to enhance your classrooms or department, or if you have adjunct colleagues who are doing great things the Geo2YC community should know about, please consider completing a nomination form available at: http://nagt.org/nagt/divisions/2yc/oafa_nomination.html.

***Nominate your Outstanding***
***Teaching Assistants***
***http://nagt.org/nagt/students/ta.html***
***Deadline is June 15th!***

# Urban Geology

**by Amber Kumpf**
Muskegon Community College, Muskegon MI

There are several scenarios where traditional geology field sites, like road cuts or river gorges or mountainsides, are just not available. In my case, most of the bedrock geology in Lower Michigan, despite containing the somewhat famous 'Michigan Basin' structural feature, is unfortunately covered by vast amounts of glacial sediment. Other scenarios might include teaching in a largely urban or suburban setting, where fill and pavement cover interesting outcrops. Finally, there are cases where traditional field sites are available, but student access to them is limited due to financial or time constraints. For example, most of my students work, at least part time, if not, full time. Some are raising families that they would be unable to leave behind for a weekend field trip.

In order to introduce students to field study methods, such as rock identification, description and interpretation, I developed an urban geology scavenger hunt assignment. I recently discussed this activity during an EarthEd2YC webinar, hosted by NASA's Science Mission Directorate and NAGT's Geo2YC division. Read on for more detail and you can also find a recording of the webinar at: http://youtu.be/EOTlpWyM_TI

The scavenger hunt activity required students to visit several locations including downtown buildings, a monument company, a cemetery, a local restaurant, and a home-improvement store. The Muskegon downtown district has several historic and modern buildings, as well as monuments. Most of the monuments and some of the buildings are made of granite, which can limit the range of materials available for the students to examine. However, this presented an opportunity for the students to compare grain sizes of different granites for an interpretation of cooling history. The monument company provided another location where a slightly wider range of material could be available; it was here that my students examined some metamorphic rocks, for example. At the cemetery students were able to compare different rates of weathering and erosion of grave markers made from different materials, such as granite and marble.

At one of our local restaurants customers are able to cook their own food on a "lava" rock. I did not require students to order food, but arranged with the restaurant owner for students to be allowed to examine one of the cooking rocks (a gabbro). The fireplace in the restaurant was also lined with the sedimentary rocks, which exhibited sedimentary structures such as cross-bedding that the students could identify. Home-improvement stores, such as Home Depot or Lowe's, were a great place for students to build confidence and prove their superior knowledge. For example, students enjoyed pointing out countertops that were called "granite" but were actually another rock type or laminate that more closely represented another rock type.

The activity was largely successful, with a few areas that would benefit from improvement. The main goal of the activity, to have students go out into their environment and make observations and interpretations was greatly successful. Students also particularly enjoyed being able to bring family and friends along with them to enjoy the scavenger hunt. Some challenges with the activity did exist regarding the amount of time involved, variable weather conditions, as well as limited transportation for some students. Another challenge included duplicate home-improvement stores with different layouts, so specific objectives needed to be more generalized. Finally, students sometime struggled

with mistakenly identifying common building materials such as brick and cement as rock.

In future iterations of the activity, I plan to split the assignment into two parts. I would facilitate the downtown portion during a lab period. This would give me the opportunity to walk the students through what level of detail constitutes a 'good' description and would help me identify some of the more common pitfalls, such as pointing out the differences between brick, cement, and rock. I would then assign the remainder of the scavenger hunt as a homework or follow-up lab assignment.

A few excellent suggestions were made during the webinar that would also improve the assignment. Regarding grading and assessment of the scavenger hunt, I had mentioned that the files students were required to turn in, with photos of themselves on location pointing to features were somewhat onerous to email. One suggestion was to have students upload photos and text via google forms, which could then be graded electronically. Another suggestion was to incorporate mapping skills into the activity, potentially using phone apps to track site locations and tag descriptions. Lastly, a suggestion was made to have students investigate the source of the building construction stone ahead of the field activity.

Overall, both designing this activity and presenting it for feedback with the EarthEd2YC webinar, has been an entertaining and fulfilling experience. Many thanks go out to my husband and son, who helped scout out field locations. Thanks, also, to the Geo2YC community for your valuable feedback. If any of you are interested in presenting an activity during a future EarthEd2YC webinar or have questions or feedback about my urban geology activity, please do not hesitate to contact me!
Amber.Kumpf@muskegoncc.edu

**EarthEd2YC June Webinar**

**Friday June 5th (1pm Eastern)**

**"Geosciences of Dwarf Planets"**

**Suzanne Metlay, Western Governors University**

go to https://zoom.us/join and enter meeting ID: **652-616-777#**

*See February issue of FOUNDATIONS for further information: http://nagt.org/nagt/divisions/2yc/newsletters.html*

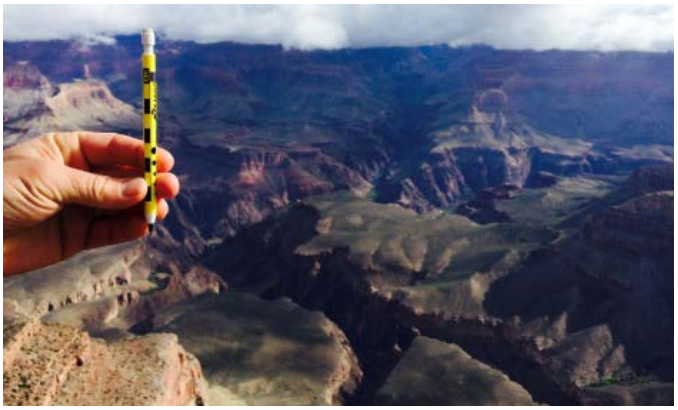
# Contest Announcement!

**by Merry Wilson**
Scottsdale Community College, Scottsdale AZ


Geo2YC and Emriver have joined forces once again to produce the best schwag of all times, the scale pencil. You may have snagged one of these little beauties at GSA or other NAGT related events, and if you didn't….well, you're dying of jealousy right about now.

Send me a picture of you utilizing your pencil (as well as GPS coordinates), and I will feature it in an upcoming column in FOUNDATIONS. Don't have a pencil? Just send an email to me at merry.wilson@scottsdalecc.edu, and I will send one out to you.

Let's see how far we can get the pencil to travel. I've got the Grand Canyon covered….in case you needed to know just how thick the Paleozoic sequence truly is…



# *Letter from the Editor*

**by Tom Whittaker**
*University of New Mexico Valencia Campus, Los Lunas, NM*
*twhittak@unm.edu*

Dear Colleagues,

I have a couple of items I wanted to bring to your attention:

First a reminder of the abstract submission deadlines for two major geoscience meetings:

- Geological Society of America Annual meeting in Baltimore MD
  - August 11th
- American Geophysical Union Fall Meeting in San Francisco CA
  - August 5th

Second… Many of us at 2-year colleges are constrained in our activities with our students by tight budgets. This extends to our ability to take fieldtrips and purchase related equipment. The almost ubiquitous nature of smart phones and proliferation of geologic applications for these devices mean that in some cases equipment does not need to be purchased, but merely downloaded (provided the app is free). Do you, or have you in the past, made use of this technology? If so, would you be willing to share your experiences with your fellow reader? Please contact me for further information about submitting an article to FOUNDATIONS.

If you have questions or comments about the content of FOUNDATIONS, or have suggestions for future newsletter items please contact me at twhittak@unm.edu.

Thank you!