

Geology

with Dr James Mungall,
Samuel Robb
and Karim El Ghawi

Talking points

Knowledge & Comprehension

1. Why is copper so in demand, and where does it come from?
2. How are remote sensing tools such as satellite imagery and airborne geophysical surveys used, and what are their benefits?

Application

3. What questions would you ask James, Samuel and Karim to learn more about their research?
4. Why is geology important in our modern world?

Analysis

5. What are the steps Karim is following in his research, and why are they important for the future of metal mining?
6. What actions do James and Samuel take to prevent harm to the environment, and to ensure that their activities are sustainable and respectful, and why is it important that they do this?
7. James and Samuel emphasise the importance of communication and consultation with local communities. Why is this so important? What concerns do you think local community members might have? What benefits can there be to them?

Evaluation

8. What topics in geology do you find most interesting, and why?
9. What do you find most appealing about a career in geology, and why? What interests or skills do you already have that would be relevant to working in the field?

Activities

1. Plan a fieldtrip

James, Samuel and Karim are passionate about fieldwork. James explains some of the wonderful sights he has seen through his work as a geologist:

"I have had the opportunity to meet people in remote places far from tourist areas and actually get to know them, spending days hiking and working side by side in the sun and the rain, looking at rocks and talking about our lives.

"The Canadian Arctic is a stunning place; it is harsh, dangerous and intoxicatingly beautiful. Standing on a rocky ridge under a limitless sky with a strong wind whipping at my face, looking out to sea over ridges and valleys, rocks, ice and water never gets old, even when my hands are freezing or I'm being assaulted by mosquitos.

"I also recall working in the French Pyrenees as a high point. The mountains there are beautiful, and it is thrilling to me to realise that the same people who left the cave paintings at Grotte de Niaux 17,000 years ago probably looked out over the same foothills I worked on in 2018."

With any fieldtrip, good preparation is key. "It can be risky depending on where you are going, and there often isn't anyone else to organise things for you," says Samuel. "You need to do research ahead of time to learn which vaccinations you might need, what time of year it is safe to cross rivers or wander around in the bush, which wildlife to avoid, and many more things."



In a small group, spend some time researching parts of the world that are of geological significance, such as the Canadian Arctic or the Andes mountains for minerals and metals, the French Pyrenees for continental collision, or the Sahara Desert for fossils and preserved ancient seas.

Use your research to create a 'Geologist's Guide' to the region of your choice:

- Explain why the region is of interest.
- Describe the environment and local conditions.
- Include practicalities that should be considered when arranging a fieldtrip to the location, such as transport, clothing, sustainability, and communication with local communities.

Decide how you would like to present your guide – ideas could include a video, poster or podcast.

2. Communicate with communities

An important part of the team's work is engaging with local communities. Imagine you are a member of Bronzite Exploration and design a series of social media posts aimed at members of the local community.

Your posts should:

- Explain what Bronzite Exploration is doing, what it will involve, why it is important, and what the benefits will be for the local communities.
- Convey information about how you are ensuring your exploration respecting the local environment.
- Invite members of the local community to share their views, concerns and ideas.

The posts should be clear, engaging and suitable for an audience where not all members will have an understanding of geology and Bronzite Exploration's work.

More resources

The Department of Earth Sciences Outreach Program at Carleton University is designed to increase awareness of the Earth sciences and foster Earth science literacy through school visits and public events. Opportunities include an Earth Science and Sports Summer Camp for 8 to 12-year-olds, Geoheritage Day (celebrating the diversity of exceptional sites of geological significance in the National Capital Region with in-person site visits and tours), a Discovering Earth Sciences workshop, and half-day visits to the Department of Earth Sciences. Find out more: earthsci.carleton.ca/outreach

Watch a selection of TED talks about all sorts of topics in geology: ted.com/topics/geology

Listen to podcasts from PlanetGeo (planetgeocast.com/episodes) and Don't Panic Geocast (dontpanicgeocast.com/episodes) to hear conversations about earthquakes, landslides, minerals, and much more.

Learn more about Bronzite Exploration and the Somerset Trough project: bronziteexploration.com