

Madeline Bartels, University of Calgary, Calgary, Alberta, Canada for her project: *Towards hydrogen: Constraining geochemical evolution during serpentinite carbonation*.

Madeline Bartels is a third year PhD candidate studying geochemical solutions to the climate crisis. Her interest in climate change solutions was sparked at Yale University, where she researched enhanced rock weathering at the Yale Geochemistry Center and worked on carbon dioxide removal projects with the Carbon Containment Lab. Madeline also spent time at Pacific Northwest National Laboratory researching carbon storage and critical mineral recovery strategies in deep mafic rock. Now, Madeline is pursuing graduate research with the Reactive Transport Group at the University of Calgary.



Her current work aims to support the development of climate change solutions hubs in Canada and beyond by constraining the rates and mechanisms of in situ carbon mineralization and geologic hydrogen production in ultramafic rock. Madeline is designing experiments to understand the ways in which the coupled processes of carbon mineralization and geologic hydrogen production may geochemically inhibit or enhance one another. She also hopes to discern the viability of implementing these subsurface technologies in ultramafic rocks by evaluating novel permeability enhancement mechanisms such as reactive fracturing and acid-assisted dissolution. Madeline is interested in developing integrated geochemical solutions to the climate crisis using multi-instrumental characterization, laboratory experiments, and subsurface reactive transport modeling.

Outside of pursuing academic interests including carbon capture, renewable energy, and geoen지니어ing, Madeline is an avid reader and hiker. She is grateful for the generosity of the Lipman Foundation and the Geological Society of America which enables her work.