

Rock Comparison

Notes for instructors:

Hand samples that are part of the SERC collection can be requested by faculty members. These samples or others that a faculty member wishes to substitute can be used for this exercise. Ideally, the samples at each station should be about the same volume. The rocks for this exercise are 1) a mid-ocean ridge basalt, 2) a greenstone, 3) a blueschist, and 4) an eclogite.

The four hand samples should be placed at four stations around the room. Each rock should be numbered in a random order. Students should be divided into four groups and asked to spend ~3 minutes at each station. They should make observations about each rock including describing the colors of the rocks, identifying the different minerals in the rocks, describing any textures (e.g. large vs. small crystals, layering, foliations, veins, etc.), and the density of the rocks.

There is an introductory powerpoint that can be used to provide instruction and motivation for the exercise.

There is a table provided that students can fill in.

Bring everyone back together and ask students to describe and compare the rocks. Fill in a large version of the table on the blackboard or other medium that is readily visible to the entire class.

Tell the students that the rocks represent a sequence of progressive metamorphism of a metabasalt (MORB) that passed through different depths within a subduction zone.

Ask each group to try to order the rocks from the surface to depth. Which rock do they think represents the protolith (unmetamorphosed parent rock)? Which rock do they think has made it to the greatest depth? Why?