

Exercises — Introduction to the GEOROC database

1. Which GEOROC locality do the Pb–Nd–Sr isotopic analyses of whole-rock volcanic samples published in a 2013 paper with O. Shorttle as an author come from? What is the lithology and age of the samples?

Bonus: What fractionation correction values were used?

2. Querying by Geography, select all plutonic and volcanic samples from Norway that contain $^{207}\text{Pb}/^{206}\text{Pb}$ age information and plot a histogram of their respective distributions through time.

3. Compile the rare earth element whole-rock analyses of volcanic rocks from oceanic plateaus published in the years 1990–2000 (with method and location, location and rock name). What percentage of analyses contains values for all elements of the rare earth group?

4. Using the TAS diagram for your query, calculate the Ba/La ratio of rhyolites (whole-rock analyses). What other options could you use to extract these data?

Bonus: Do you get the same result if you select samples by rock name instead?

5. Where do the majority of garnet analyses of wehrlitic xenoliths in the database come from?

6. On a $\text{SiO}_2/(\text{K}_2\text{O}+\text{Na}_2\text{O})$ chart (TAS diagram), plot the volcanic whole-rock concentrations for basalts, andesites and rhyolites from Askja volcano, Iceland. What do you notice about sample distribution?

Bonus: Some samples are designated as rock name NOT GIVEN. Which groups do they belong to?

Extra Bonus: Add olivine hosted melt inclusions to your diagram. Where do they plot compared to the whole-rock analyses?