

Lab 7: Grenville field trip - Gneisses, scariness and granite
EPSC 240, Geology in the Field
Oct 20, 2018

Due date: Monday Oct 29

Meet: 9 am at Milton Gates. We will arrive at outcrop at about 10 am, and leave for home around 4 pm.

Bring: Field kit (notebook, hand lens, pencils, colours, magnet, camera, sample bags), lunch, snacks and lots of water.

Wear: WARM clothes, sun protection. Check the weather forecast before departure.

Instructions: We will visit three road cuts near the town of Grenville, QC off Highway 50. The goals of the day are to learn to recognize and describe intrusive rocks and the high-temperature metamorphic rocks which form the country rock to these intrusions, to record observations in your field notebook (**50% of your grade**, including sketches) and to write a report (**the other 50%**) based on these notes.

Source of the Grenville Province Geological map (and legend):

<https://geoscan.nrcan.gc.ca/starweb/geoscan/servlet.starweb?path=geoscan/download.web&search1=R=210100>

In your notebook:

1. The first road cut we will visit is on Hwy 50 at 45.655322, -74.617905 (3 km west of the exit to 344/148). It is about 500 m long. Pull off onto the gravel shoulder of the highway just after crossing a small bridge.
2. The second road cut is 1.5 km farther west on Hwy 50. Pull off the highway just before you see rocky road cuts on both sides of the road.
3. To get to the third road cut, continue 8.8 km west on Hwy 50. Exit on Chemin Avoca. Turn left (north) on Chemin Avoca. In 100 m, turn right on a gravel road. Drive 500 m until you see light-coloured rocks in low outcrops on both sides of the road.

At each outcrop, record the following information in your notebooks:

- a) Start with a broad overview of the outcrop, including size, orientation, location, and general characteristics. Draw a quick sketch of the layout so you can mark the locations of subsequent observations relative to the whole scene.
- b) How many rock types are present? Name each one and write a description which includes mineralogy, grain size, and the rock fabric (if any). You may wish to take samples of each rock type to help when you are writing up your report.
- c) Describe the contact between each of the rock types (as many as are exposed). Determine whether any of the contacts reveal the relative age of the rocks. Record the evidence.
- d) What structural features are present? Locate a fault or shear zone, and record a detailed description, including a sketch, orientation, size. Can you determine the direction of slip on the fault or shear zone? If so, report this direction and include supporting evidence.

Your report should include the following sections:

Lengths are just guidelines, not requirements, and the observation sections (ii. and iii.) should be as long as possible to completely report your observations. The three outcrops we have seen should be treated as one set of observations (e.g., do not divide between outcrops; summarize across the whole area).

- i. Introduction (500 words): Purpose of report, brief description of the Grenville Orogen including appropriate citations, location of field observations.
- ii. Rock descriptions, written out in prose (not bullets). Each rock described should include mineralogy, grain size, and rock fabrics. You may include figures (photos or sketches).
- iii. Description of structures, including scale, appearance, orientation, etc. Illustrate these descriptions with sketches or photos.
- iv. Interpretation (1000 words): Which rocks are older and younger? What was the sequence of events which affected the rocks in this region? Refer specifically to the observation sections II and III.
- v. Reference List

