INTERMEDIATE AND FELSIC ROCKS OF THE SIERRA NEVADA BATHOLITH

Objective: In this lab, you will look at a suite of samples collected from the Sierra Nevada batholith of California. The SNB contains hundreds of individual intrusions of intermediate to felsic plutonic rocks that served as feeder chambers to continental arc volcanics during the Mesozoic era. During this time, the Farallon Plate was subducting beneath California. But this plate boundary transitioned into a transform fault system (the San Andreas) during the Tertiary period (~20 Ma) causing arc magmatism to cease. Subsequent erosion of the arc volcanics has revealed the complex suite of intrusions that stretch almost uninterruptedly for over 650 km in central California.

Procedure: Select 4 thin sections and hand samples from the SNB sample tray. Try to select a variety of rock types. Complete a petrographic description form for each sample. Use the QAP classification diagram below to define a modal rock name for your sample. Although some rocks may show foliated porphyritic texture, true cumulates are rare among these intermediate to felsic rocks. In fact, most of these rocks have compositions close to their parent magma indicating no significant segregation of crystals from liquid.