

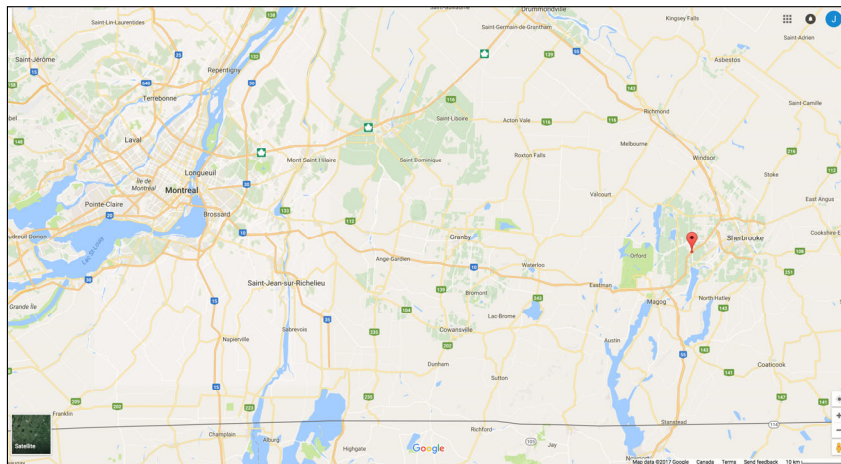
EPSC 240: GEOLOGY IN THE FIELD

INTRODUCTION TO DEFORMATION STRUCTURES



WEEKEND FIELD TRIP 2

- Depart: 8:30 am @ Milton Gates, Return: 5:30 pm
- Bring: lunch, snacks, water, cold weather clothes, geology equipment, notebook



RECAP: IGNEOUS ROCKS

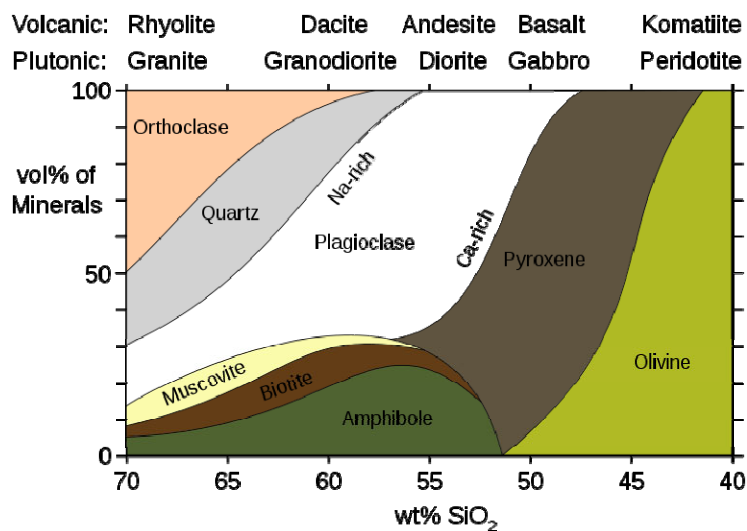


- Crystalline
- Intrusive or extrusive
- Composition varies

	COMPOSITION			
MODE OF OCCURRENCE	FELSIC	INTERMEDIATE	MAFIC	ULTRAMAFIC
INTRUSIVE	<u>GRANITE</u>	<u>DIORITE</u>	<u>GABBRO</u>	<u>PERIDOTITE</u>
EXTRUSIVE	<u>RHYOLITE</u>	<u>ANDESITE</u>	<u>BASALT</u>	<u>KOMATIITE</u>

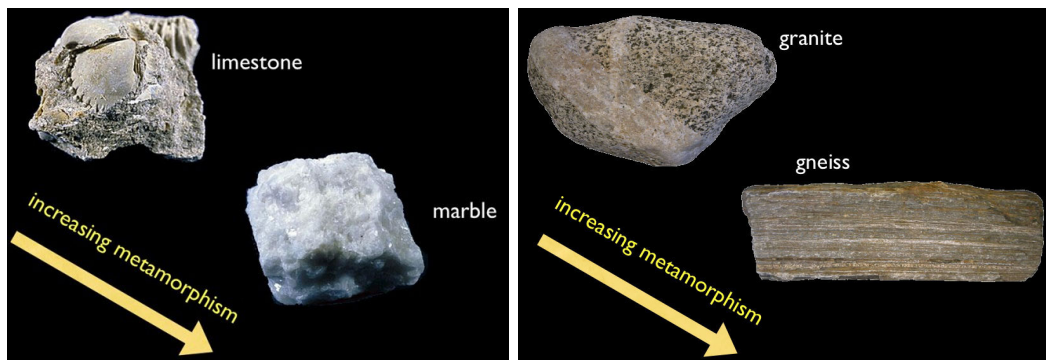
CLASSIFICATION

- Rock type classified according to silicon content



METAMORPHISM

- High pressure and/or temperature causes minerals in a rock to change, chemical composition stays same
- Atoms inside a rock are rearranged into a different suite of minerals



ROCK FABRIC

- The characteristics of the geometry and spacing of the elements that make up a rock.
 - Linear
 - Planar
 - Random



FOLIATION

- Any fabric-forming planar feature or structure
- May be primary or tectonic
- Cleavage, banding, banding + grain alignment

CLEAVAGE



SCHISTOSITY

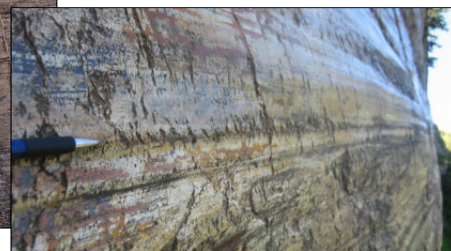
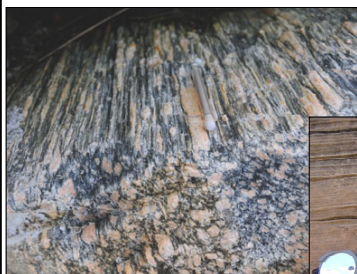


GNEISSIC
BANDING



LINEATION

- Any fabric-forming linear feature or structure
- May be primary or tectonic
- Stretching lineation, intersection lineation, striation



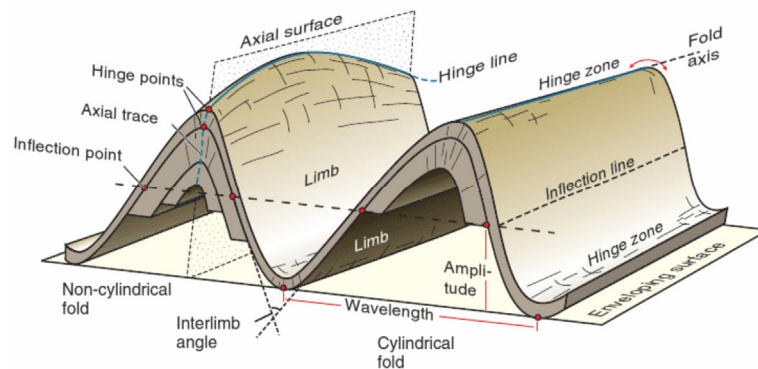
SHEAR ZONES

- Zones of deformed rock across which relative displacement occurred
- Changes: reduced grain size, grain alignment, foliation



FOLDS

- Defined by a curve or bend in an originally straight surface - approximate a sine wave
- Form when rocks are compressed → can use folds to tell the direction of past compression events



FOLDS

- Elongation = a 1D measure of the change of shape of a system

video link: <http://www.ged.rwth-aachen.de/index.php?cat=Media&subcat=Videos&page=Videos>



AXIAL PLANAR CLEAVAGE

- Parallel to the axial plane!



STEREONETS

- Used to represent 3D orientation of planes and lines
- Graphical calculator for analyzing 3D data

