4/5/10
Week 2, Monday

Rock Review

Minerals make up rocks!

"Minerals are substances that are formed naturally in the Earth. Minerals must be solid, inorganic, have a crystal structure, and happen naturally (by themselves). The study of minerals is called mineralogy.

A mineral is a solid and has a crystal structure. It also has a known chemical composition.

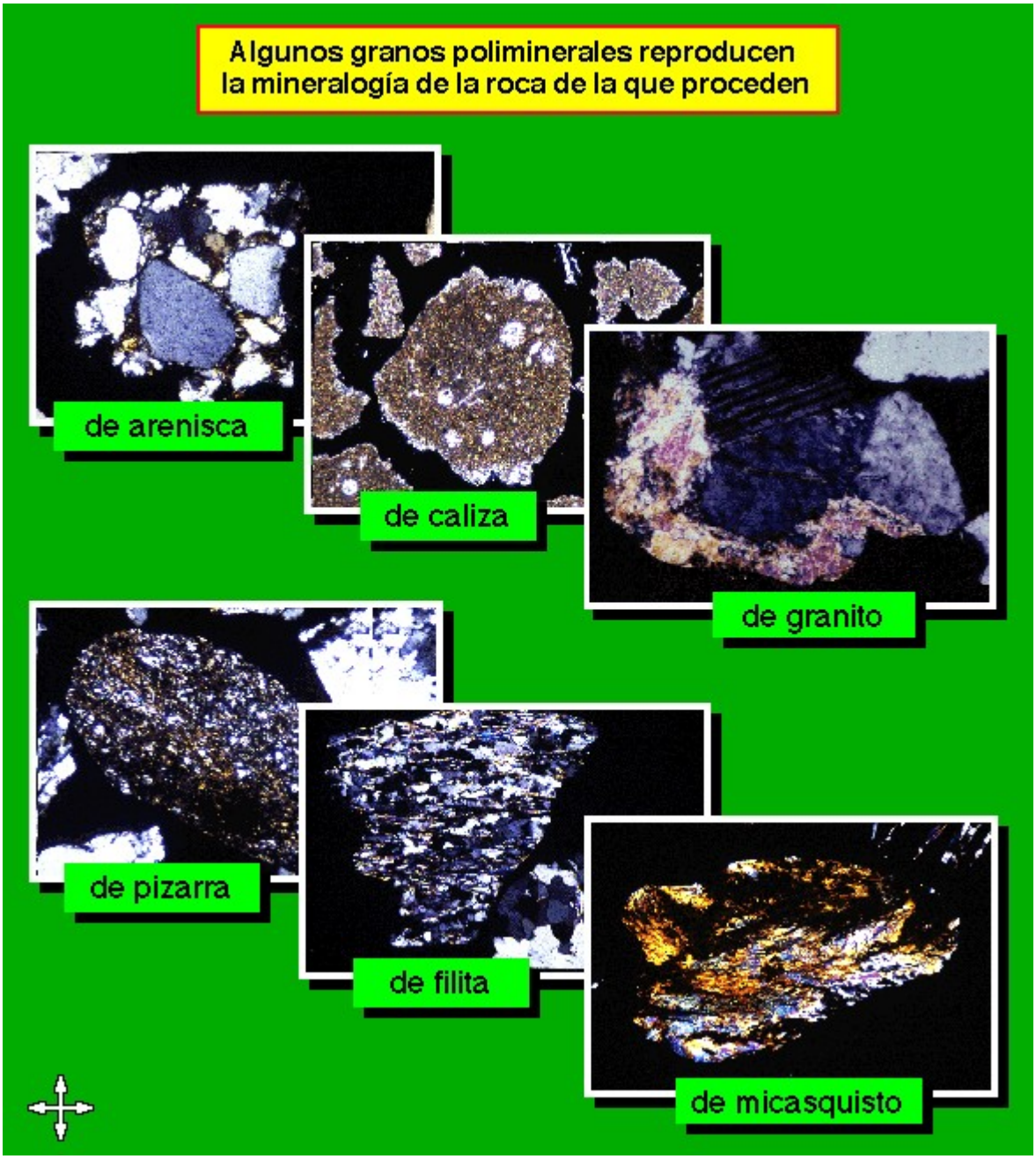
A mineral can be a hard object chemical element or in most cases a solid compound. There are over 4,000 types of known minerals. Two common minerals are quartz and feldspar."

http://simple.wikipedia.org/wiki/Minerals

Monomineralic rock: rock with the same mineral everywhere.

Monomineralic piece of chlorite
http://www.dvminerals.com/img2008/C-465.jpg

Polymineralic rock: rock that contain different minerals.



http://edafologia.ugr.es/arenas/media/rocsoil2.gif

3 rock types-

Igneous: formed from cooling of magma; volcanic rocks.

http://www.beg.utexas.edu/mainweb/publications/graphics/granite-400.jpg

Sedimentary: consolidation of fragments of existing rock by weathering and erosion or chemically precipitated from solution.

http://www.xian.cgs.gov.cn/uploadfile/english/uploadfile/200809/20080910100748514.jpg

Metamorphic: original form has changed in solid state due to increased temp and pressure.

http://www.bcssa.org/newsroom/scholarships/great8sci/Photos/Earth_Photos/metamorphic.jpg

Types of sediments-

Clastic/detrital: fragments of rock or mineral categorized by grain size- gravel, sand or mud.

http://geology.com/rocks/pictures/conglomerate.jpg

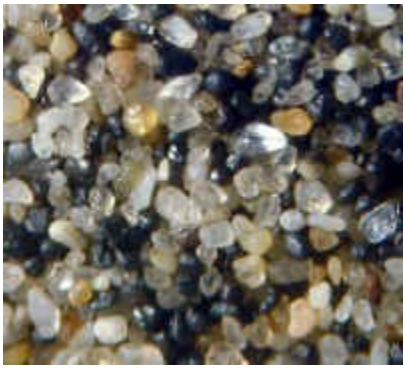
Chemical: formed from ions in solution.

http://geology.com/rocks/pictures/black-limestone.jpg

When transported by wind and water, sediments go from immature to mature.

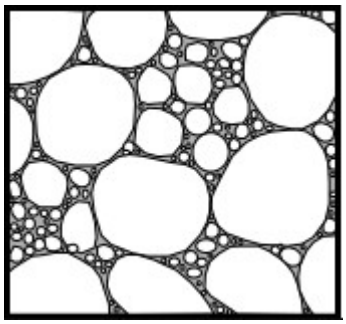
Sorting: measure of variation in the range of grain sizes in clastic rock or sediment.

Well – sorted: prolonged water or wind transport.



http://www.gc.maricopa.edu/earthsci/imagearchive/Kelso.JPG

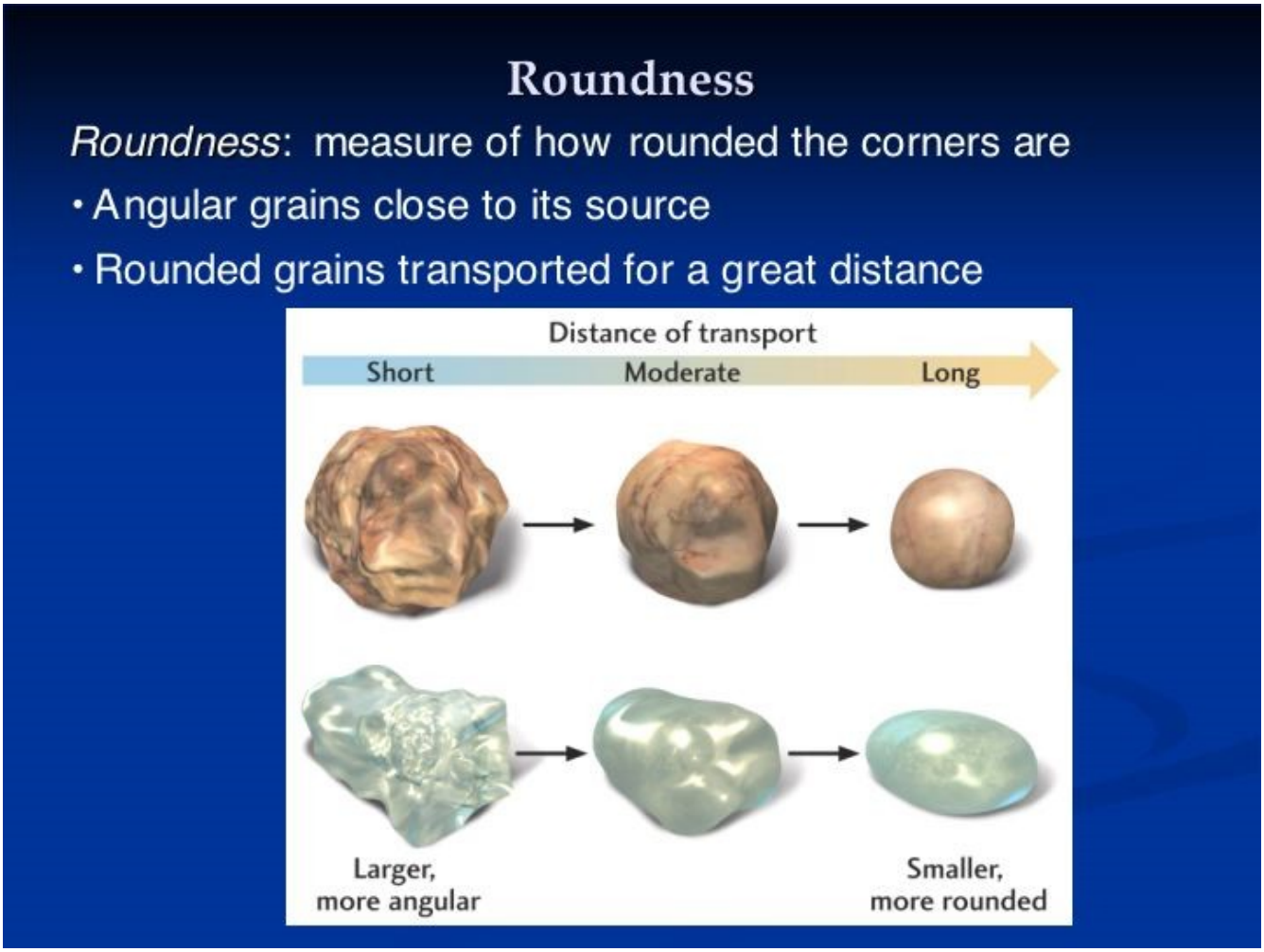
Poorly – sorted: not far – removed from source or deposited by glaciers.



http://earthsci.org/education/teacher/basicgeol/groundwa/poorsort.jpg

Roundness: angular grains indicate close to source.

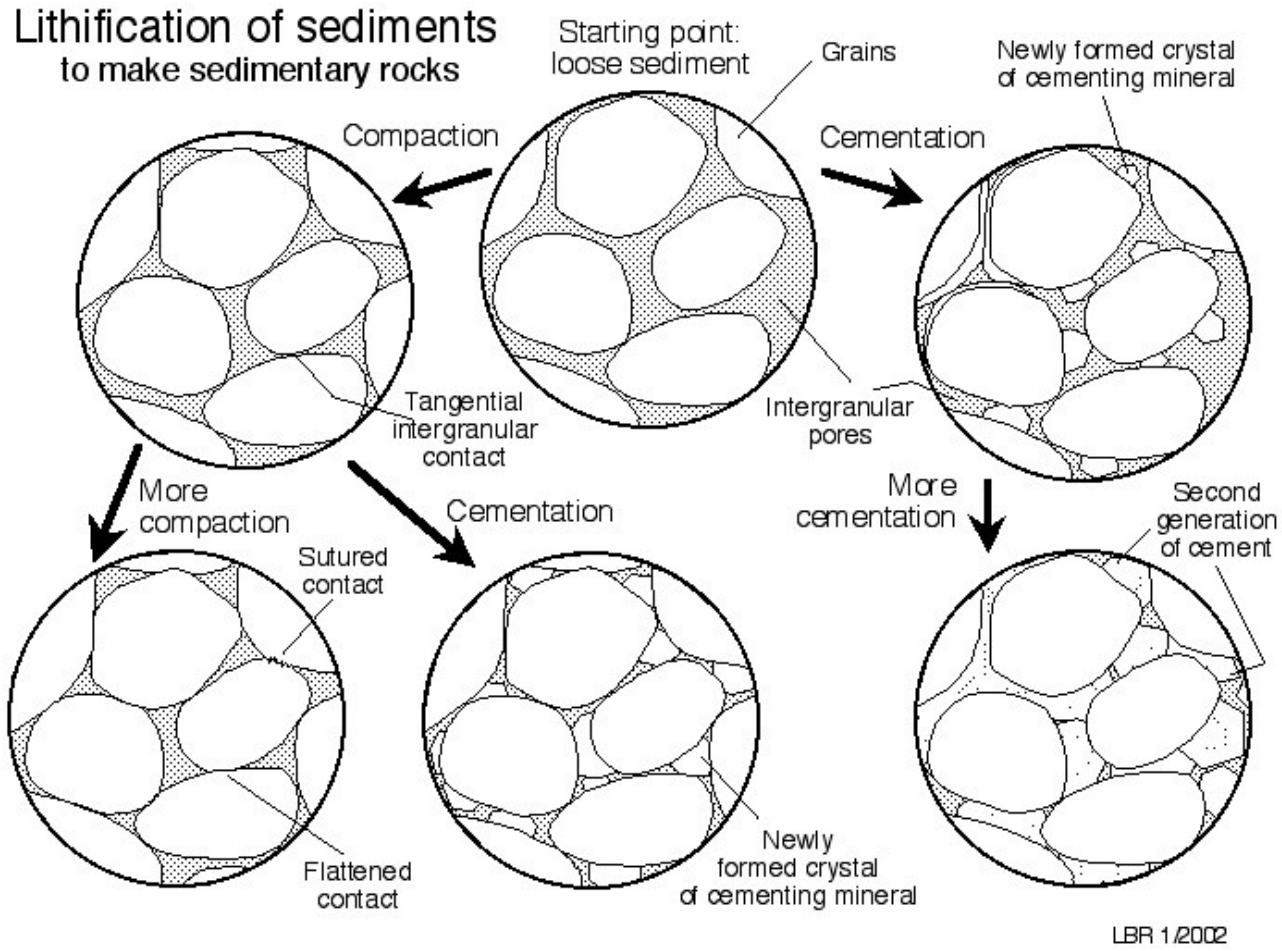
Rounded grains indicate transported a great distance.



http://www.gly.fsu.edu/~salters/GLY1000/11Seds_sedrocks/Slide7.jpg

Formation of sedimentary rocks from sediments-

If clastic/detrital sediments pressent, lithification takes place which involves compaction and precipitation of a cement.



http://www.gly.uga.edu/railsback/1121SedimentLithification.jpeg

If no clastic/detrital sediments, then ions in solution precipitate out to form rocks such as rock salt.

http://www.thunderhealing.org/rock/rocksalt.jpg

Types of sedimentary rocks-

Mineral grain size	Gravel	Sand	Mud
Rock	Breccia, conglomerate	Sandstone	Shale

Clastic/detrital:

Breccia: rock made up of angular rock fragments. Poorly – sorted.

http://flexiblelearning.auckland.ac.nz/rocks_minerals/rocks/images/breccia3.jpg

Conglomerate: rounded rock fragments. Poorly – sorted.

http://library.thinkquest.org/05aug/00461/images/conglomerate.jpg

Sandstone:

Quartz sandstone > 95% quartz.

http://www.mii.org/Minerals/Minpics1/Quartz%20sandstone.jpg

Arkose > 65% feldspar

http://www.eserc.stonybrook.edu/terryville/Rocks/Arkose.jpg

Greywacke: poorly sorted, orogenic or mountain building, underwater landslide.

http://flexiblelearning.auckland.ac.nz/rocks_minerals/rocks/images/greywacke2.jpg

Shale: mud – sized particles. Fossil friendly.

http://energytechstocks.com/wp/wp-content/uploads/2007/11/shale-rock330.jpg

Chemical precipitation:

Limestone: calcium carbonate precipitated from solution.

http://www.beg.utexas.edu/mainweb/publications/graphics/limestone400.jpg

Chert: SiO2 waxy, hard. Used for primitive weapons such as arrow heads. Found close to hot water (hydrothermal vent).

http://www.mii.org/Minerals/Minpics1/Chert.jpg

Color of sedimentary rocks-

Black and dark gray: pressence of carbon (organic material). Low oxygen.

Red beds: oxidizing environment. Continental: alluvial fan, flood plains, deltas.

Turbidite: underwater landslide, orogenic, also associated with earthquakes.

Cross-bedding:

Wind: huge cross beds.

http://nicholas.duke.edu/eos/geo41/win050.gif

Water: small cross beds.

http://www.answersingenesis.org/assets/images/am/v2n2/cross-bedding-2.jpg