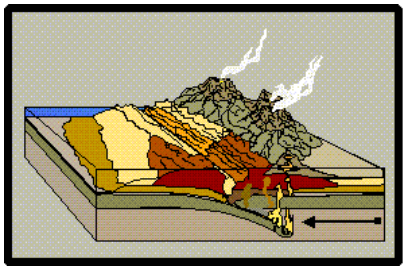
Crustal Deformation

Convergent plate boundary



- http://my.execpc.com/~acmelasr/mountains/geogramsnf.html

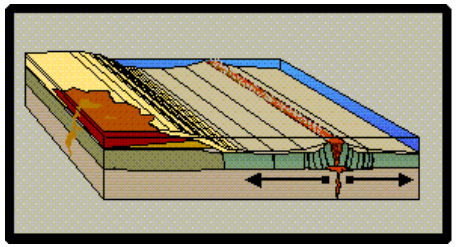
Plate Tectonic Settings and Magma

- Where plates **CONVERGE**, water is driven off the subducting plate, and added to the overlying lithosphere
- This water acts as a **FLUX** to reduce the melting temperature, and cause hot solid rock to melt without a change in temperature
- The lithosphere here is continental (granitic) in character, and the magma generated is **GRANITIC** (felsic) in chemical composition.

Tectonic environment of Magma

- Draw a diagram showing the relationship of tectonic plate interaction and the location of magma formation. Indicate the chemistry of the magma likely to form.

Oceanic basin tectonics

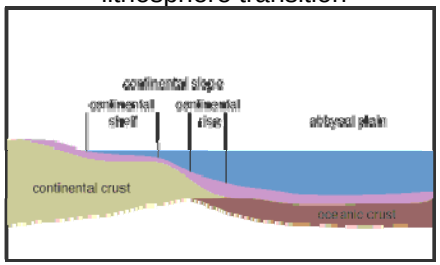


- http://my.execpc.com/~acmelasr/mountains/geogramsnf.html

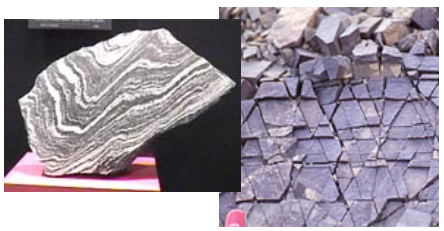
Plate Tectonic Settings and Magma

- The type of magma generated in different plate tectonic settings is different
- **DIVERGENT PLATES** and **MANTLE PLUMES** produce magma by partial melting of mantle material due to pressure release
- This magma is **BASALTIC** (mafic) in chemical composition, and the resulting volcanism has distinct characteristics.

Passive continent-to-ocean lithosphere transition



- http://www.odp.usyd.edu.au/odp_CD/slope/slindex2.html



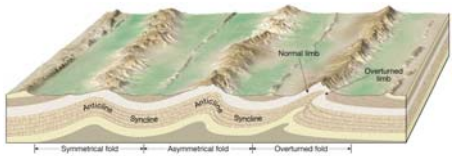
http://www.geology.wisc.edu/courses/g112/lecture3.html

http://www.uwsp.edu/geo/faculty/hefferan/geol320/folds.html

Isoclinal 1C folds in Quartzite of Maria Mountains, Riverside County, California. Photo by Warren H. Hamilton USGS

http://www-class.unl.edu/geol101/i09_structural.htm

Names of fold types

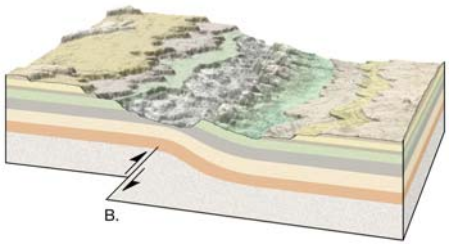


http://www.whbschools.org/Teachers/Cohen/sciweb/earthscience/geologichistory/folding.htm

http://www.uwsp.edu/geo/faculty/hefferan/geol320/folds.html

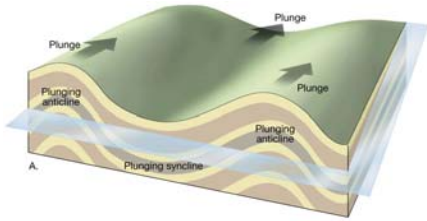
http://home.barton.ac.uk/curriculum/sc_env/geology/Structural%20Geology/RecumAnt.htm

Monocline

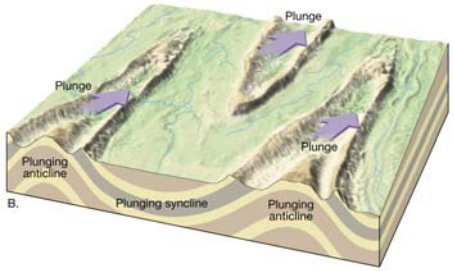


http://www.eas.purdue.edu/physproc/HTM%20Files/monoclines.htm

Plunging fold geometry



Plunging fold outcrop pattern

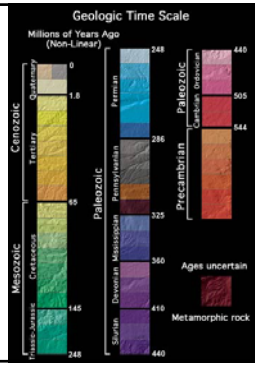


http://www.geosciences.ou.edu/~msoreg/structure/structureintro.html

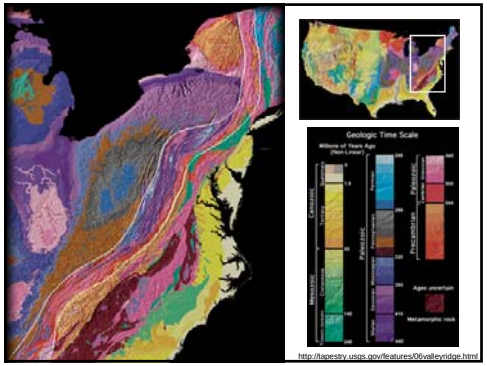
http://www.geology.wisc.edu/~rschott/g112/lecture3.html

http://pubs.usgs.gov/of/2000/of00-443/

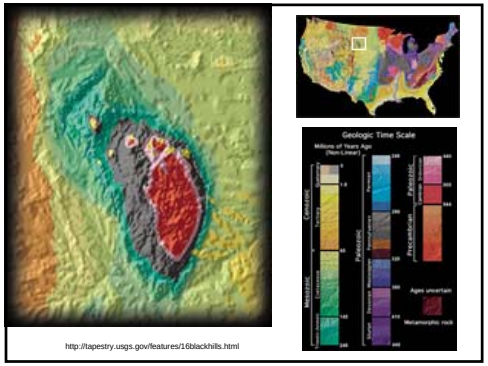
Legend for Tapestry of Time and Terrain Map



http://tapestry.usgs.gov/ages/ages.html

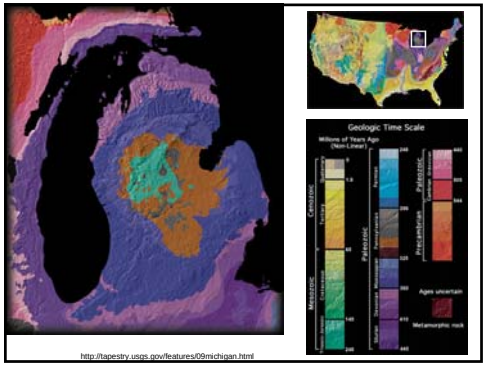


http://tapestry.usgs.gov/features/06valleyridge.html



http://tapestry.usgs.gov/features/16blackhills.html

http://www.dakotamatrix.com/South_Dakota_Geology.asp



http://tapestry.usgs.gov/features/09michigan.html

We are up to the 4th number of your V#

At this time, press the fourth digit of your v #
Such as, if your number is V00123456, you would press '4'

Do not go on to the next digit until I go to the next slide

If you make a mistake, reenter the proper number before we go on to the next slide
If you didn't get an entry, enter the proper one for this slide, not the one for the previous slide

Do not push the GO button for any reason!!

Input the 5th digit now

At this time, press the next to last digit of your v #
Such as, if your number is V00123456, you would press '5'

Do not go on to the next digit until I go to the next slide

If you make a mistake, reenter the proper number
If you didn't get an entry, enter the proper one for this slide, not the one for the previous slide
Do not push the GO button for any reason!!

Input the LAST **DIGIT** of your v # with the clickers

At this time, press the 6th digit of your v #

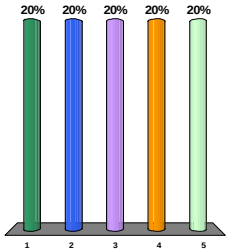
Such as, if your number is V00123456, you would press '6'
Do not go on to the next digit until I go to the next slide

If you make a mistake, reenter the proper number
If you didn't get an entry, enter the proper one for this slide, not the one for the previous slide

Do not push the GO button for any reason!!

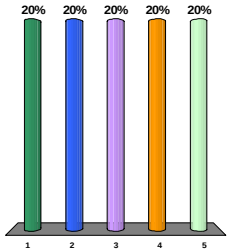
Type of fold with older rocks in the center, usually of arched geometry

1. Anticline
2. Basin
3. Dome
4. Recumbent
5. Syncline



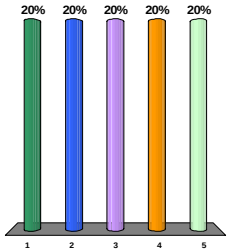
Type of fold with younger rocks in the center, usually of trough geometry

1. Anticline
2. Basin
3. Dome
4. Recumbent
5. Syncline



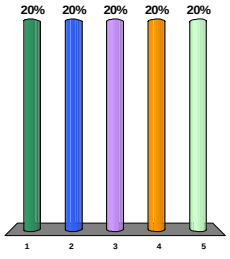
Regional deformation with older rocks in the center, dipping away from center

1. Anticline
2. Basin
3. Dome
4. Recumbent
5. Syncline



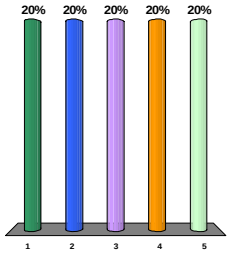
Regional deformation w/younger rocks in the center, dipping toward center

1. Anticline
2. Basin
3. Dome
4. Recumbent
5. Syncline



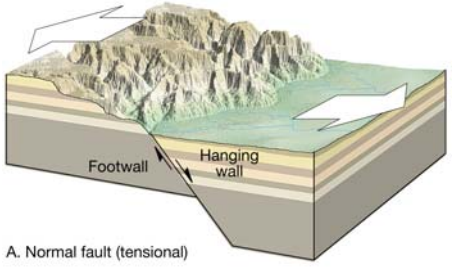
Type of fold with limbs arranged so that one is on top of the other: overturned

1. Anticline
2. Basin
3. Dome
4. Recumbent
5. Syncline

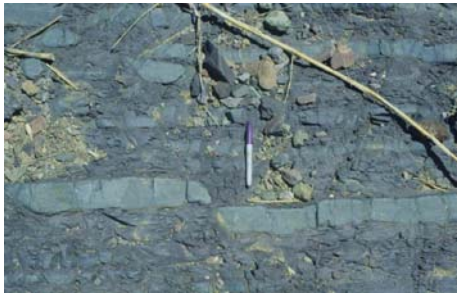


http://www.aucegypt.edu/faculty/hamroush/CE331/CE331-%20Rock%20Deformation%20and%20Unconformities.htm

Normal fault formation

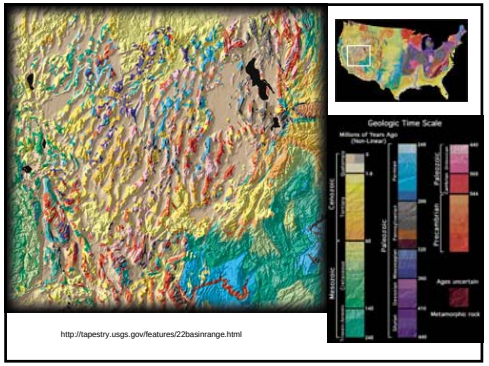


A. Normal fault (tensional)

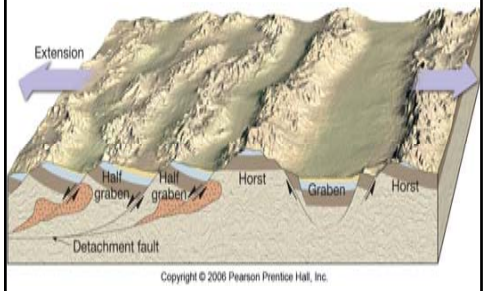


http://www.uwsp.edu/geo/faculty/hefferan/geol320/normalfaults.html

http://www.geology.wisc.edu/courses/g112/lecture3.html



http://tapestry.usgs.gov/features/22basinrange.html



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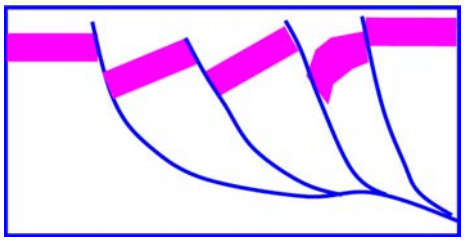
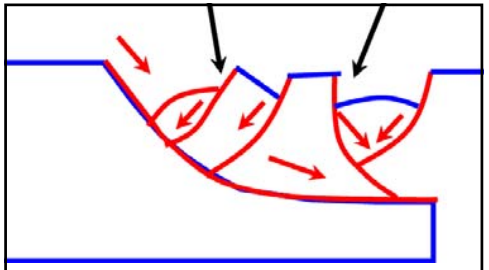


http://www.uwsp.edu/geo/faculty/hefferan/geol320/normalfaults.html

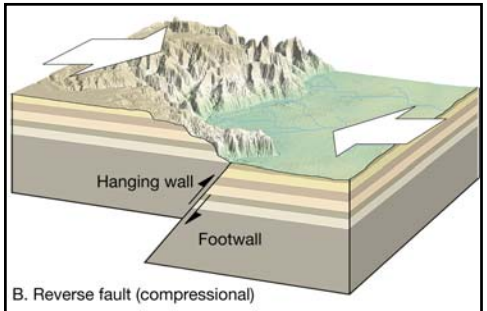


http://www.uwsp.edu/geo/faculty/hefferan/geol320/normalfaults.html

http://www.uwgb.edu/dutchs/EarthSC202Slides/EQKSLIDE.HTM

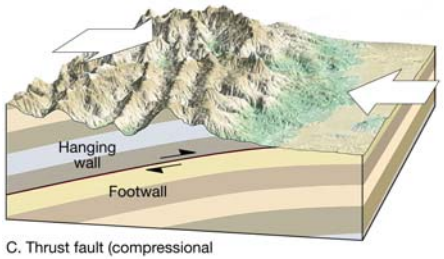
http://www.uwgb.edu/dutchs/EarthSC202Slides/EQKSLIDE.HTM

http://www.geosci.unc.edu/faculty/glazner/Images/Structure/Faults.html



B. Reverse fault (compressional)

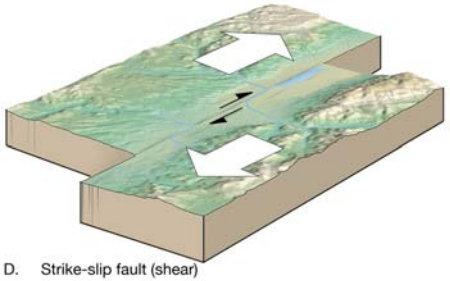
http://www.uwsp.edu/geo/faculty/ritter/glossary/o_r/reverse_fault.html



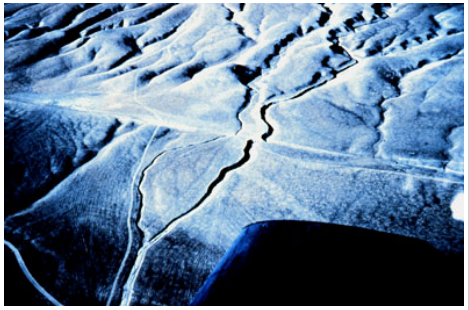
C. Thrust fault (compressional

http://earth.leeds.ac.uk/assyntgeology/geology/deformation/gallery/thrust1.htm

http://complabs.nevada.edu/~jkula/Geowna.html



D. Strike-slip fault (shear)



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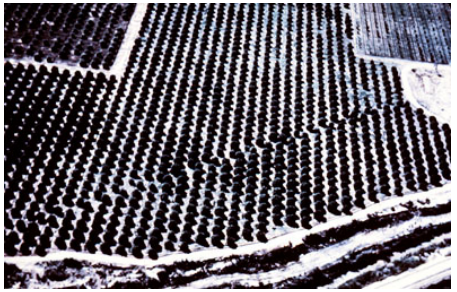
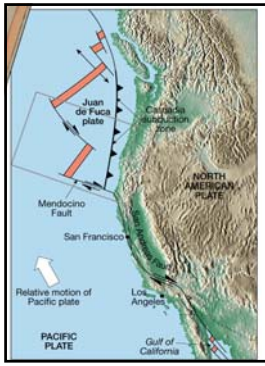


http://www.geology.wisc.edu/courses/g112/lecture3.html

http://quake.wr.usgs.gov/info/1906/images/fenceoffset_big.html



Tectonics of Western North America

http://www.geology.wisc.edu/~maher/air/air05.htm

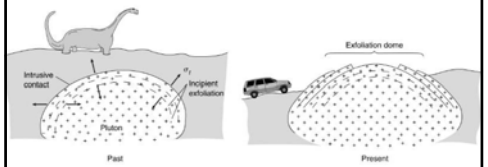
http://maps.unomaha.edu/Maher/geo117/part3/structures/structureatlas.html

http://www.ce.berkeley.edu/~nsitar/ce281/Sierra%20Nevada%202000/Attitude%20Measurement%20Lake%20Spaulding.jpg

http://www.cs.biu.ac.il/~plot/USA/

http://www.ic.ucsc.edu/~casey/eart150/Lectures/Joints/JointsPics.html

http://darkwing.uoregon.edu/~millerm/exjoints.html



http://www.ic.ucsc.edu/~casey/eart150/Lectures/Joints/joints.htm

http://www.ic.ucsc.edu/~casey/eart150/Lectures/Joints/joints.htm

http://www.wooster.edu/geology/bjordan/Iceland2003PK.html