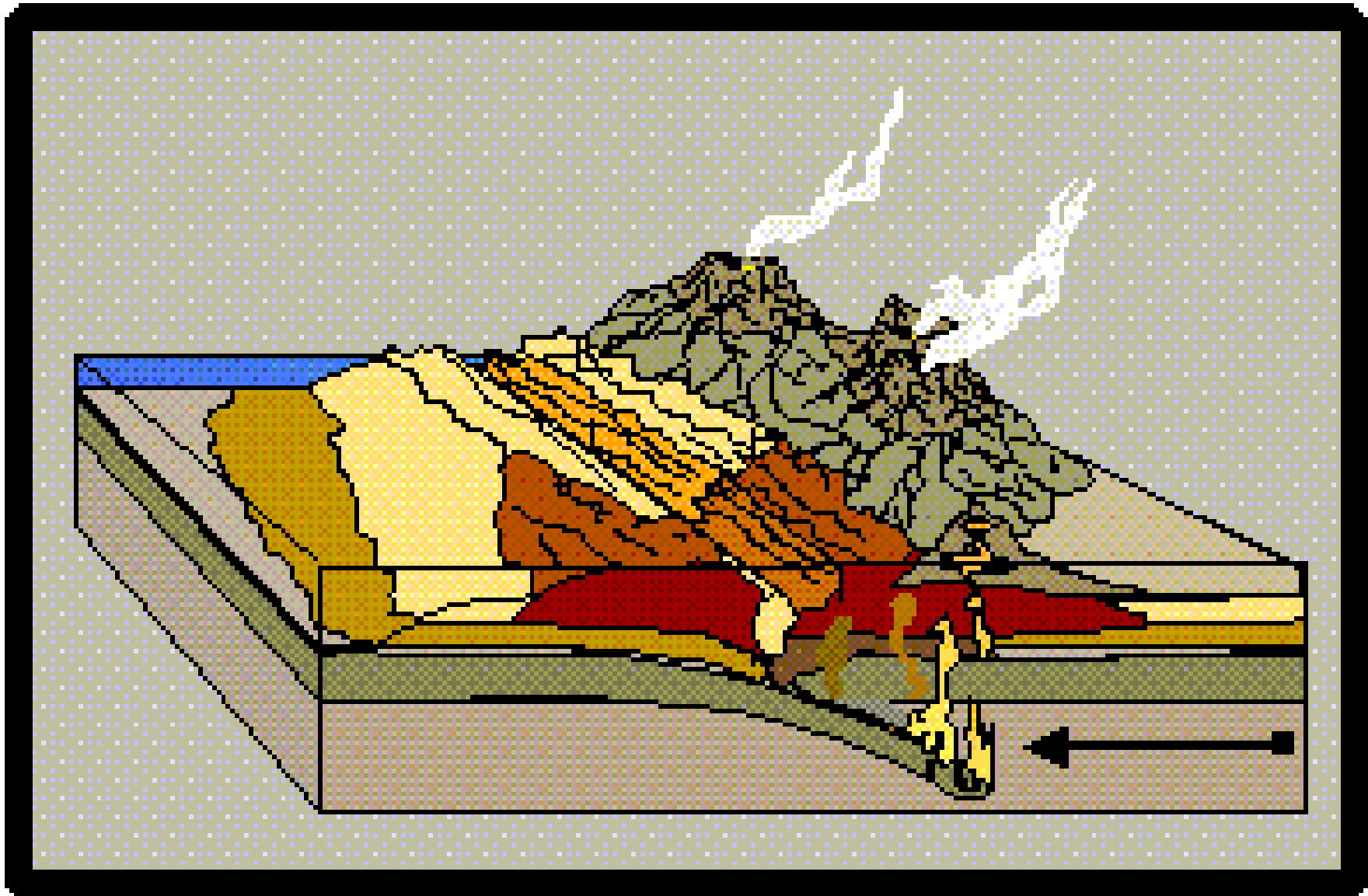


Crustal Deformation

Convergent plate boundary



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

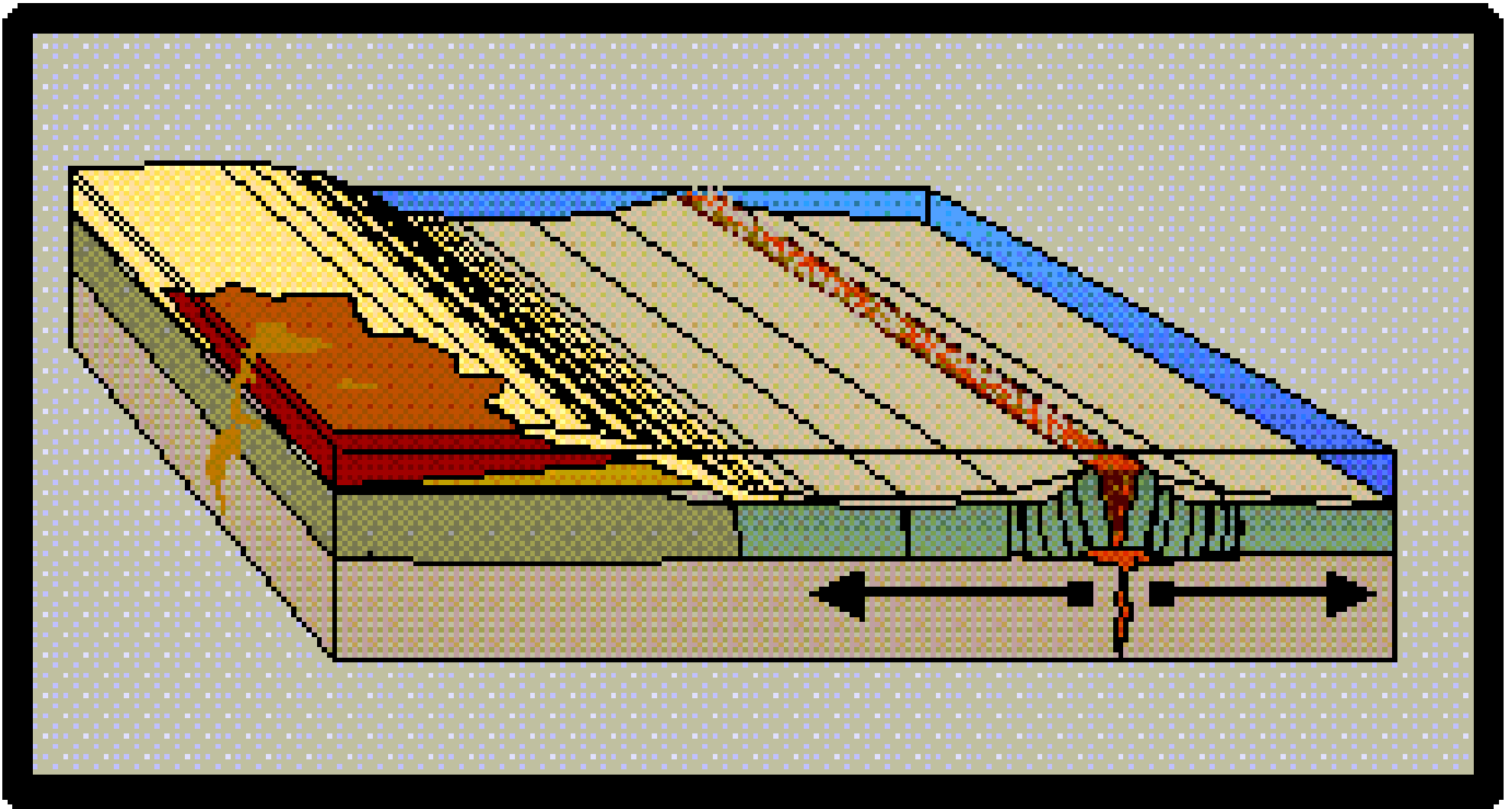
Plate Tectonic Settings and Magma

- 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

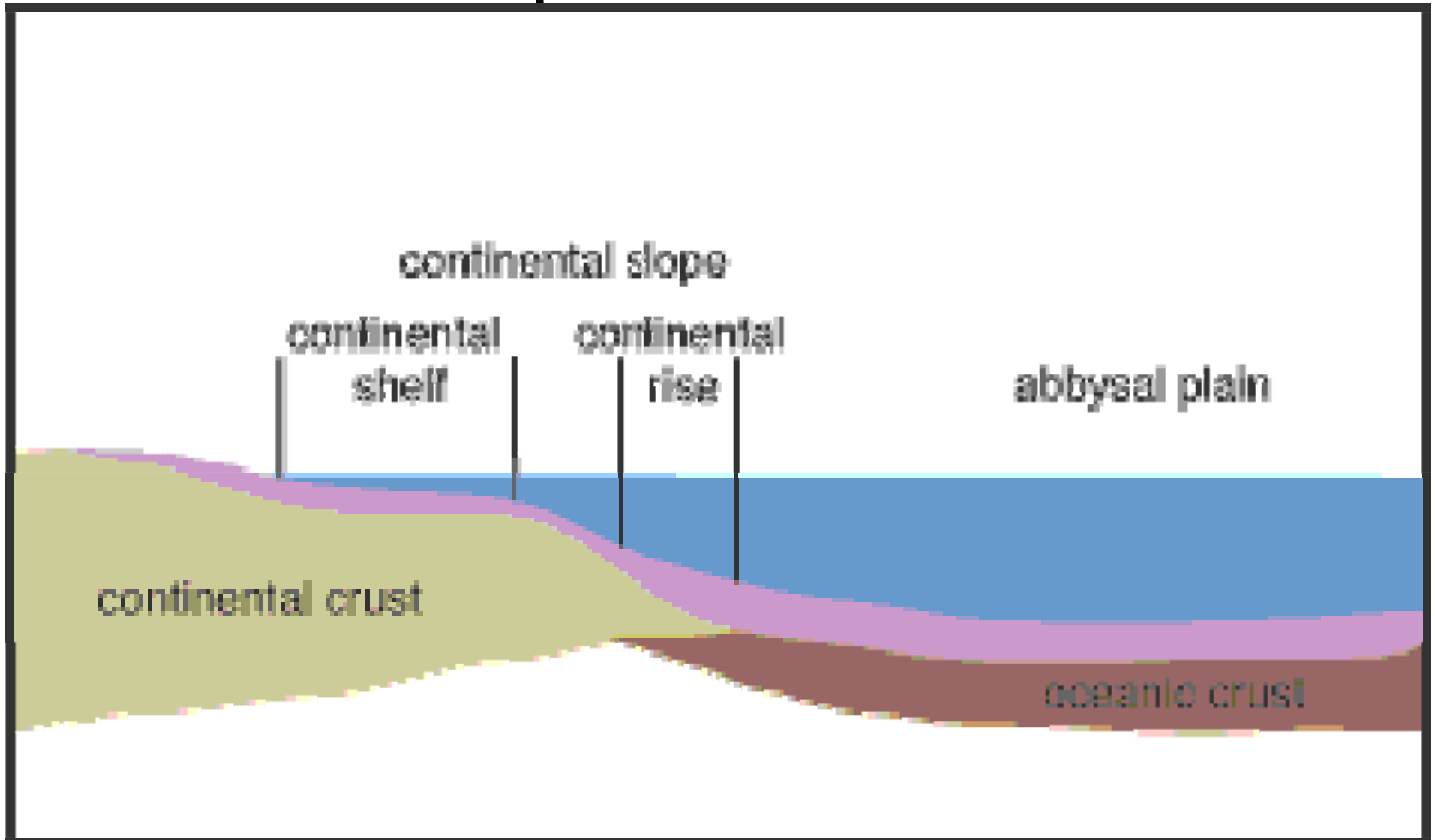


- <http://my.execpc.com/~acmelasr/mountains/geogramsnf.html>

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>



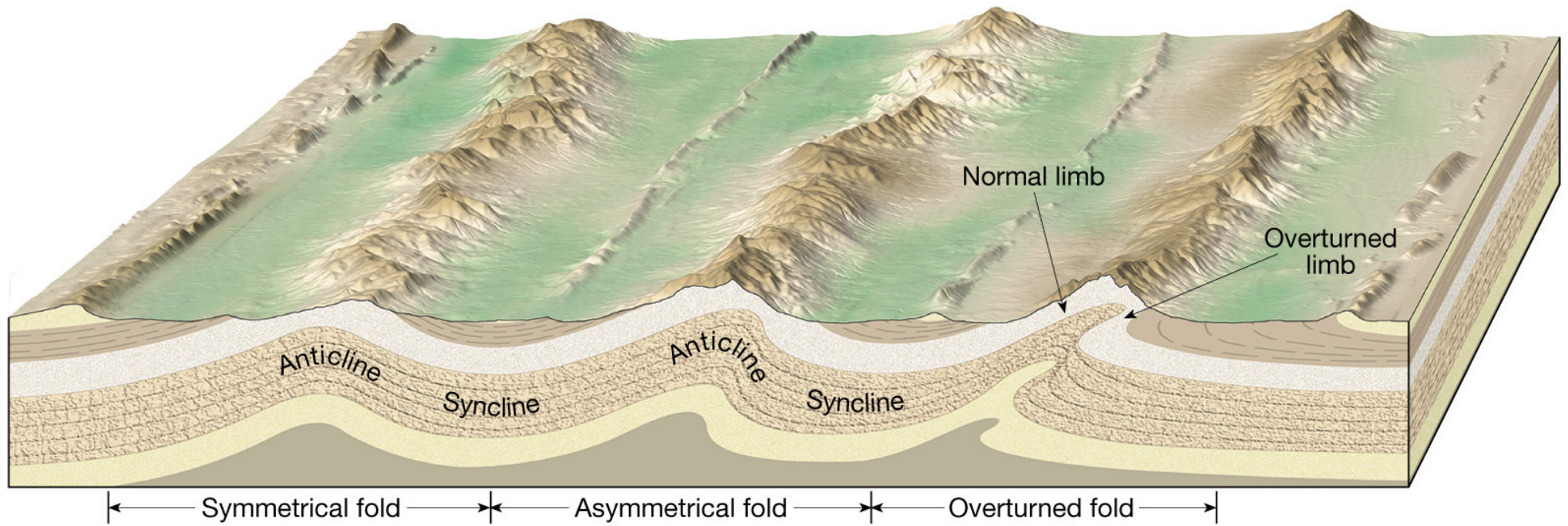
Isoclinal 1C folds in Quartzite of Maria Mountains,
Riverside County, California.
Photo by Warren B. Hamilton USGS



http://www-class.unl.edu/geol101i/09_structural.htm



Names of fold types





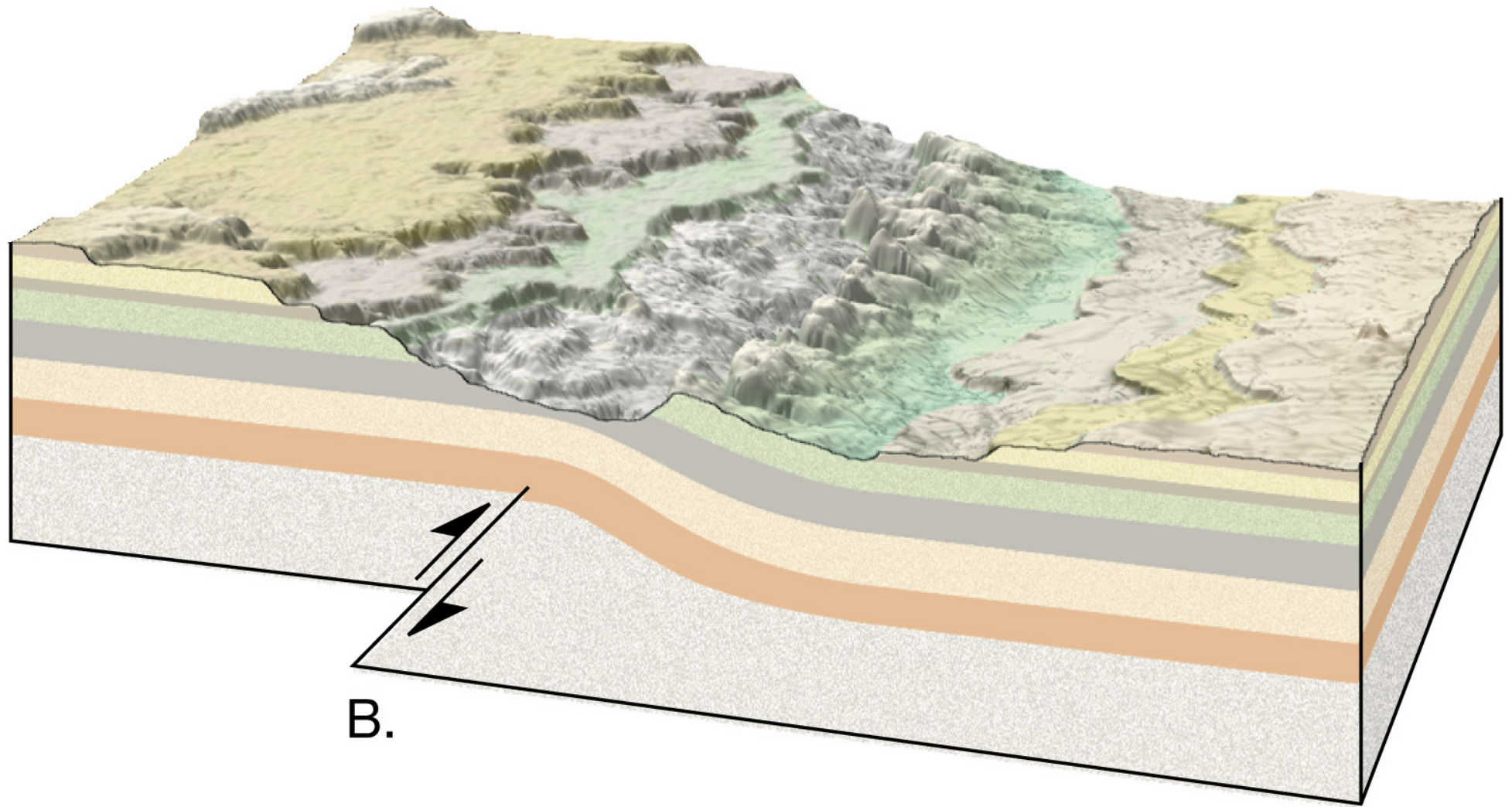
<http://www.whbschools.org/Teachers/Cohen/sciweb/earthscience/geologichistory/folding.htm>





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

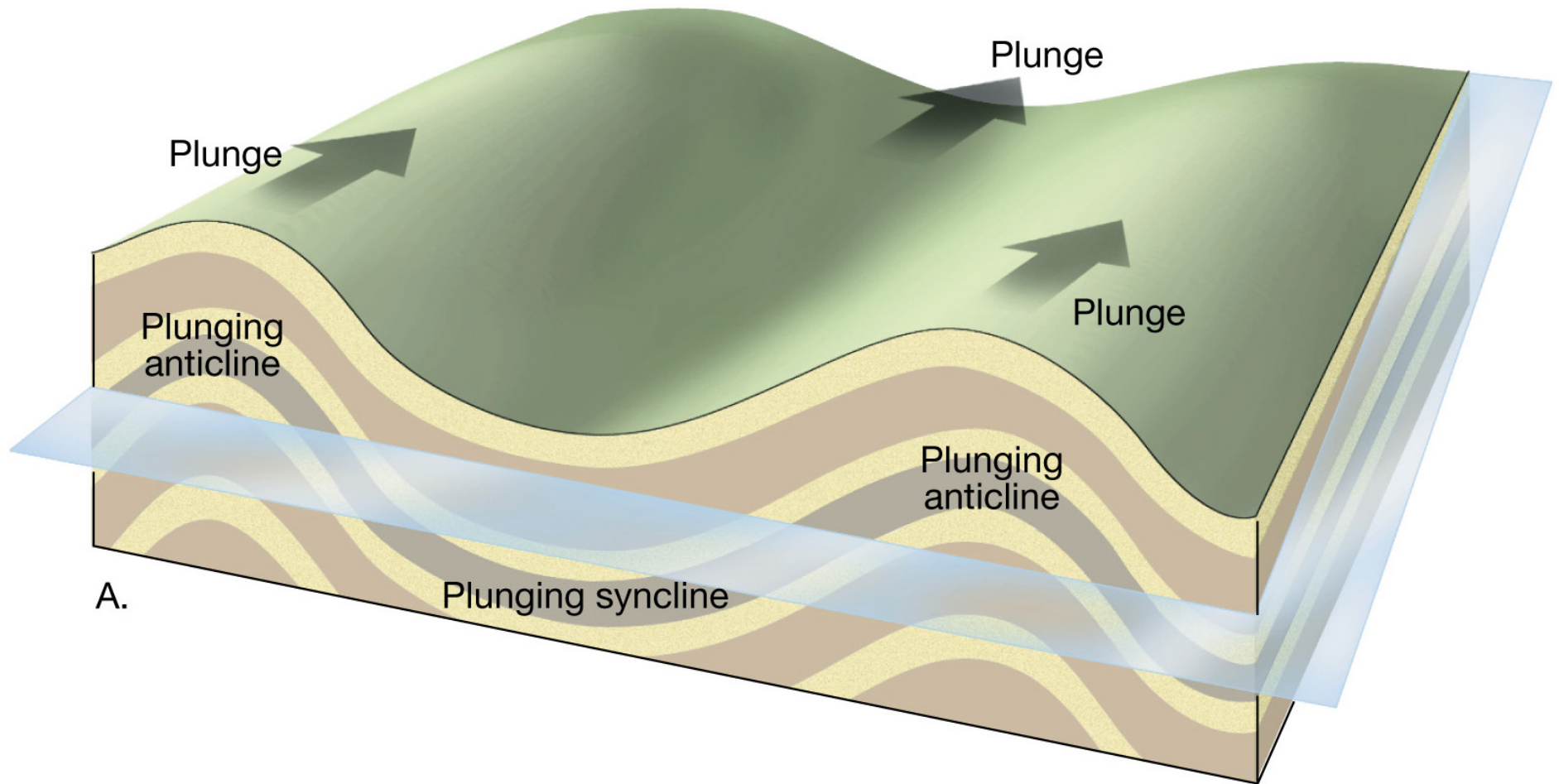
Monocline



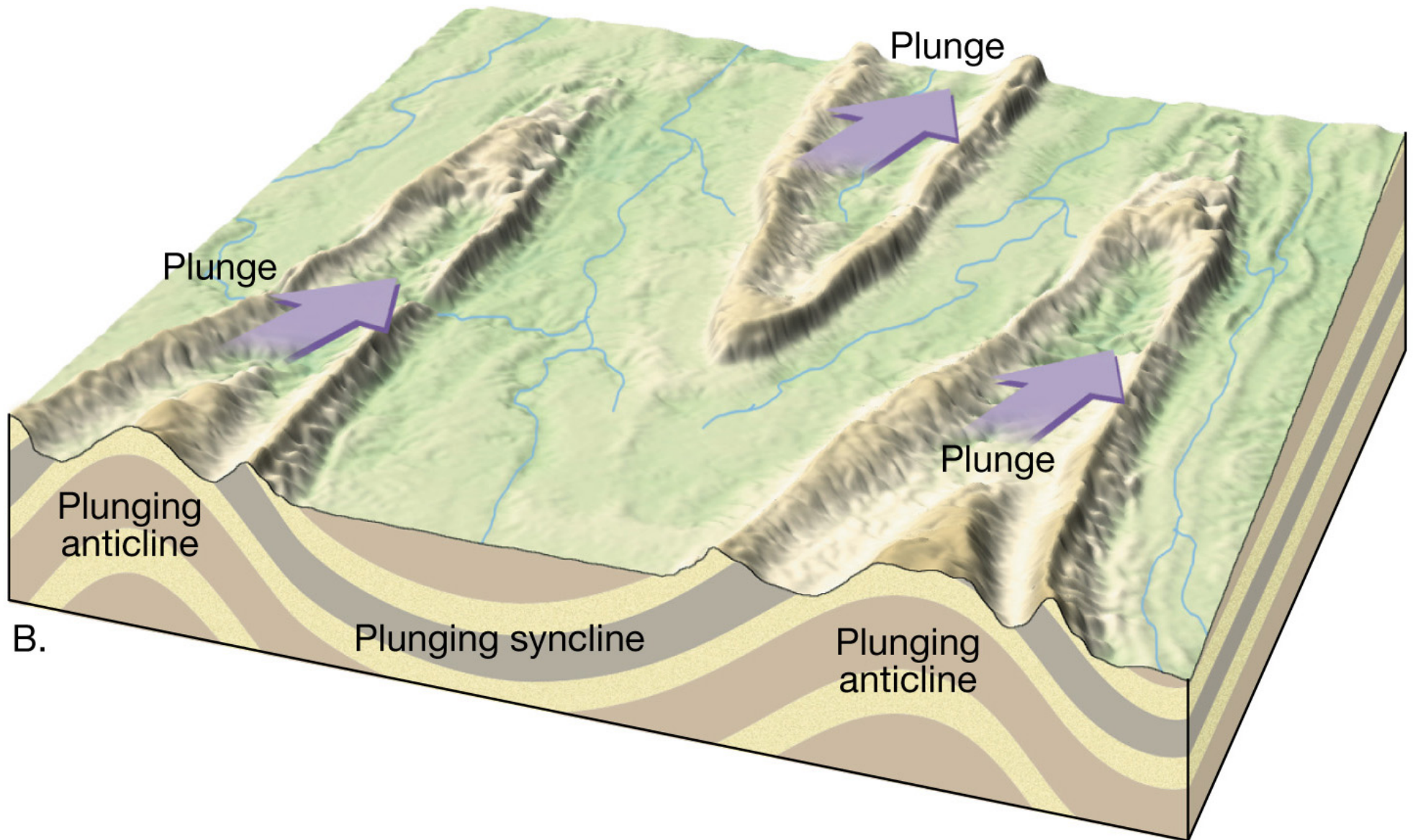


<http://www.eas.purdue.edu/physproc/HTM%20Files/monoclines.htm>

Plunging fold geometry



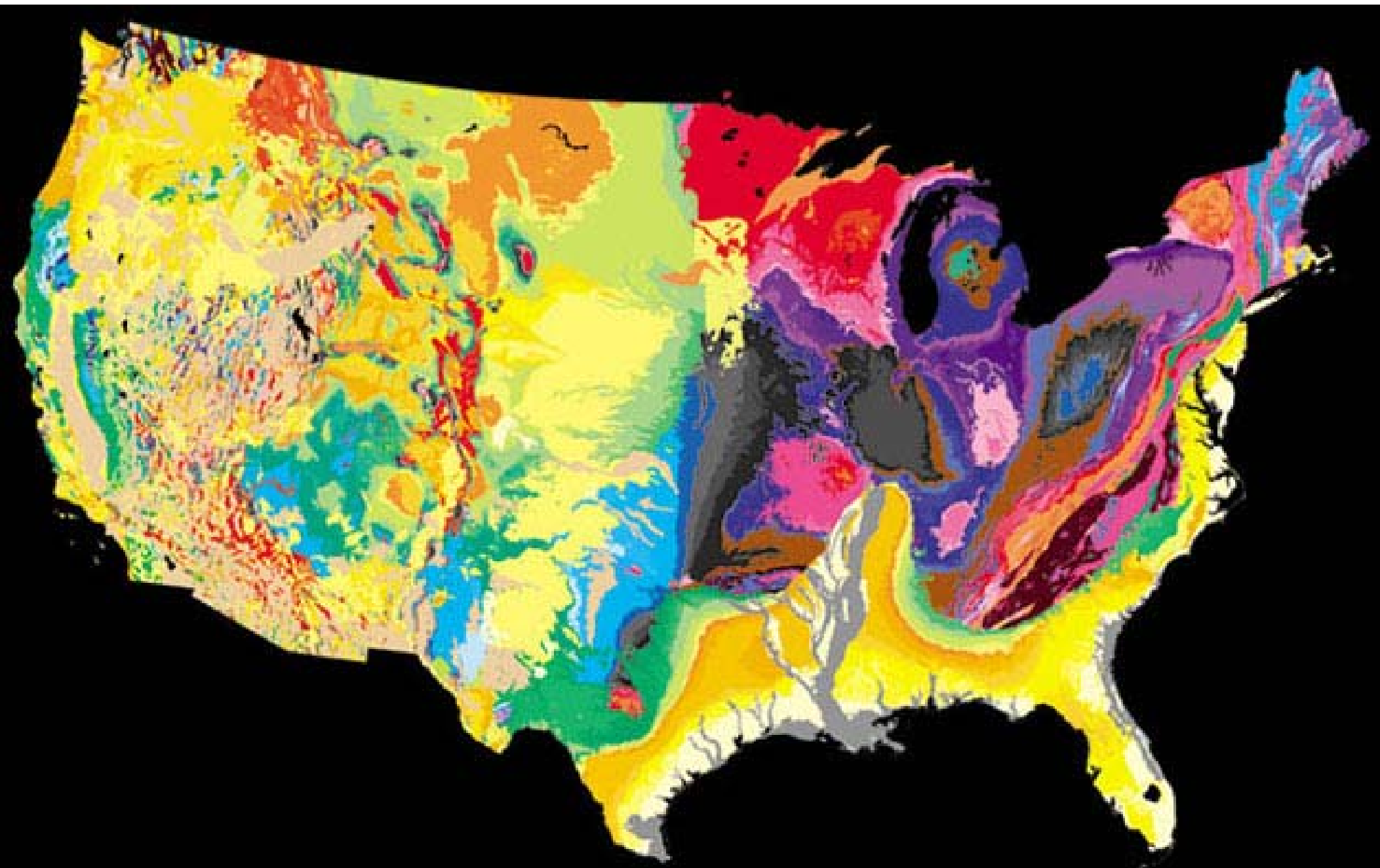
Plunging fold outcrop pattern







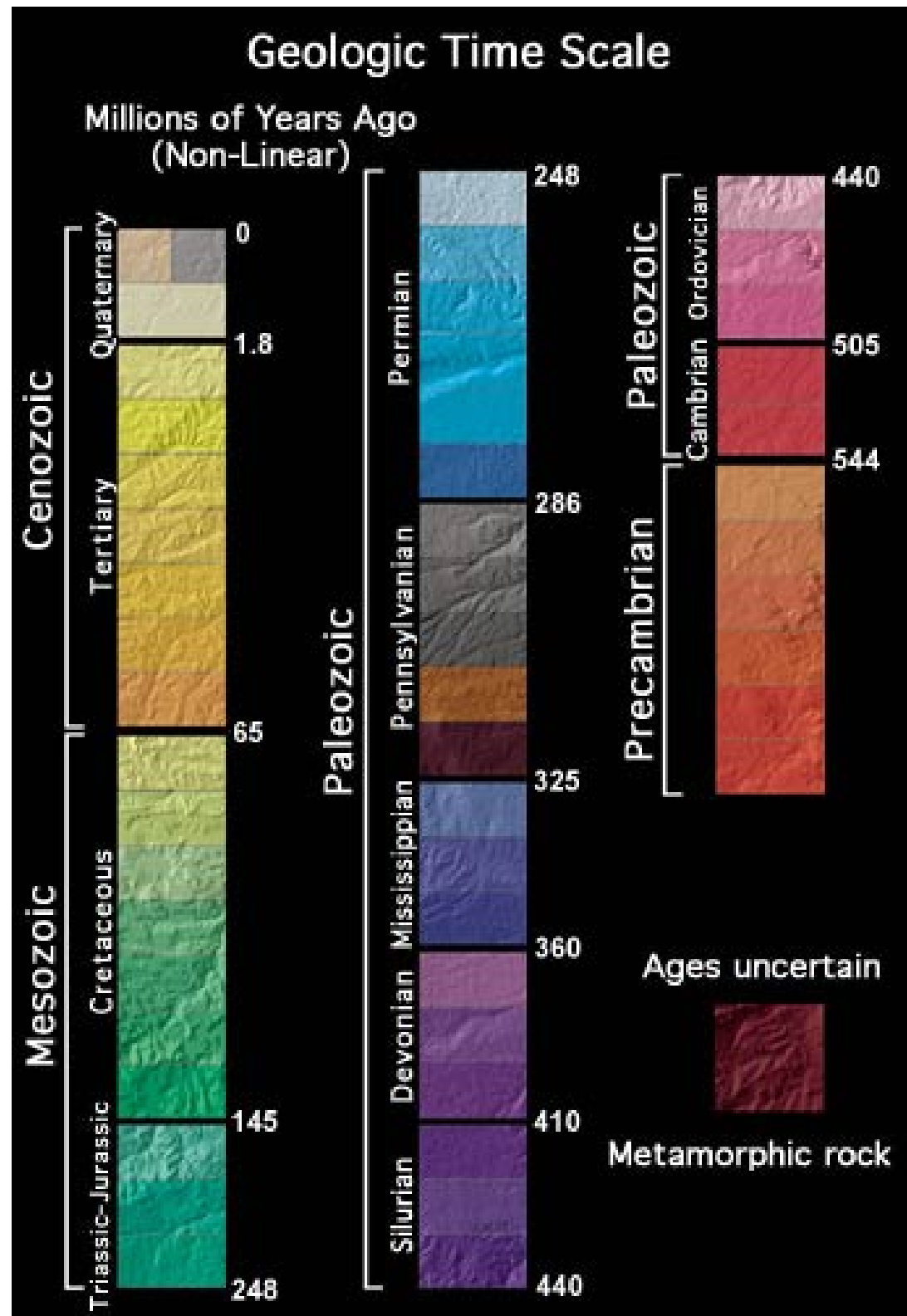
<http://www.geology.wisc.edu/~rschott/g112/lecture3.html>

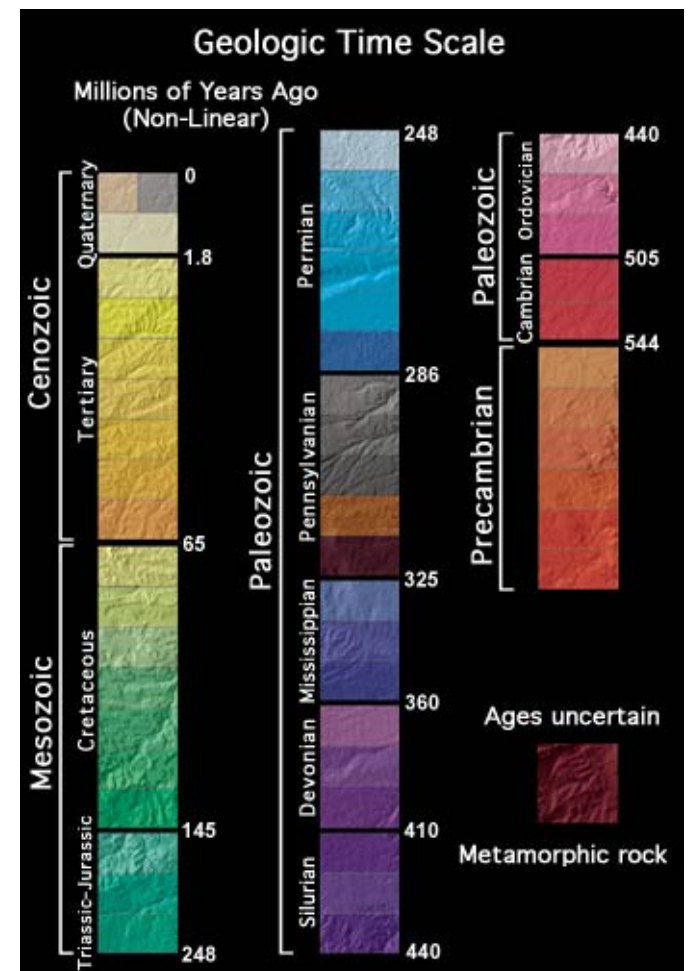
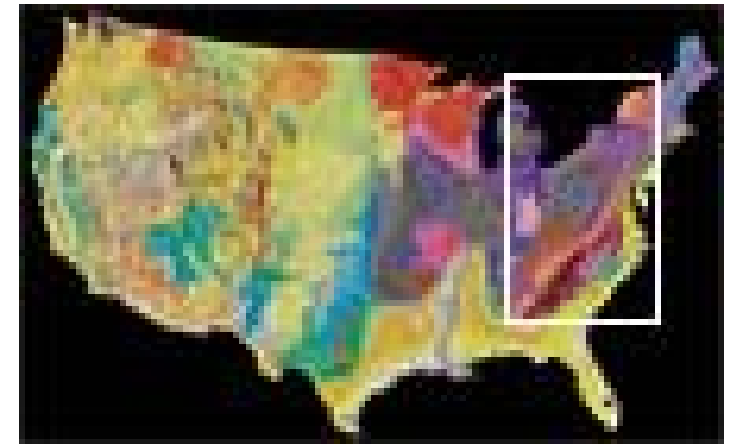


<http://pubs.usgs.gov/of/2000/of00-443/>

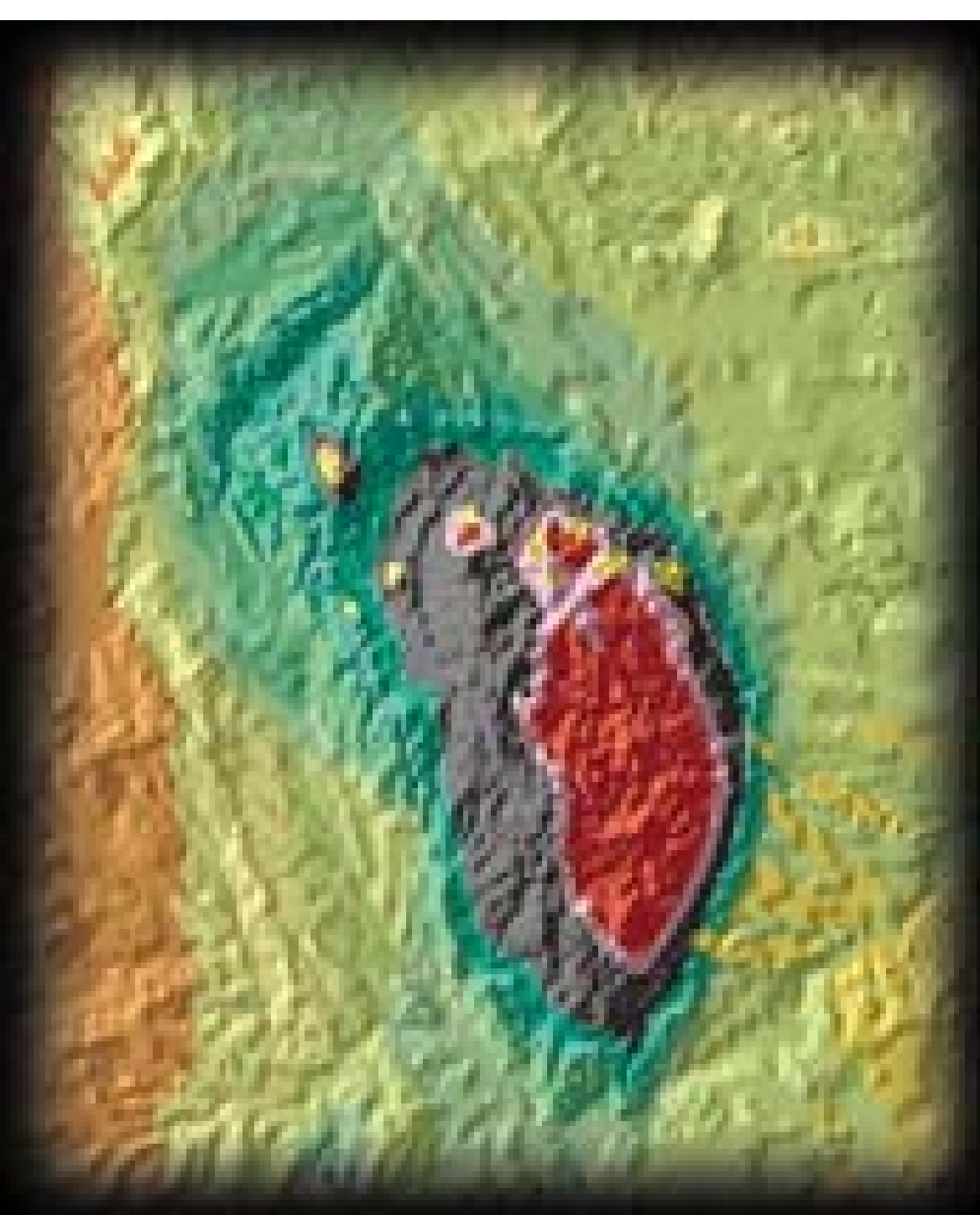
Legend for Tapestry of Time and Terrain Map

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

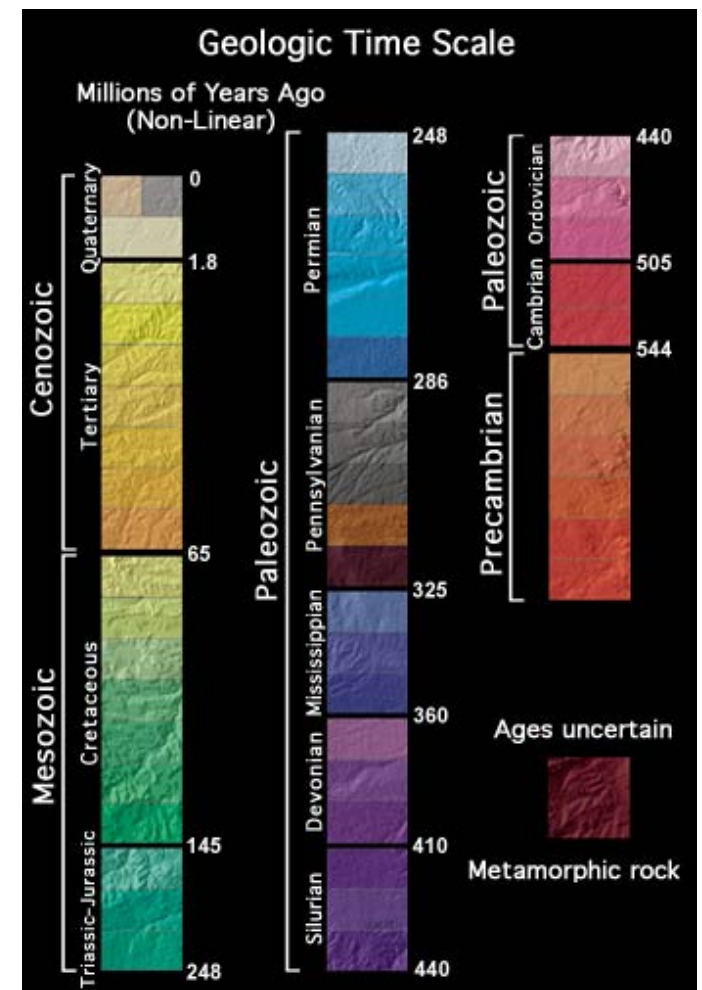
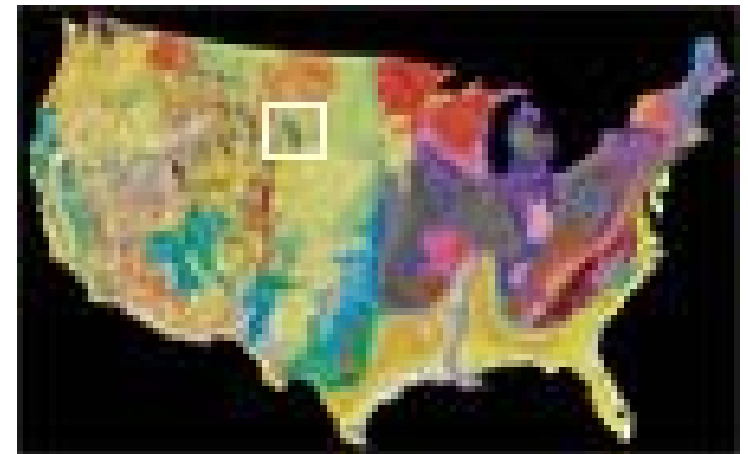


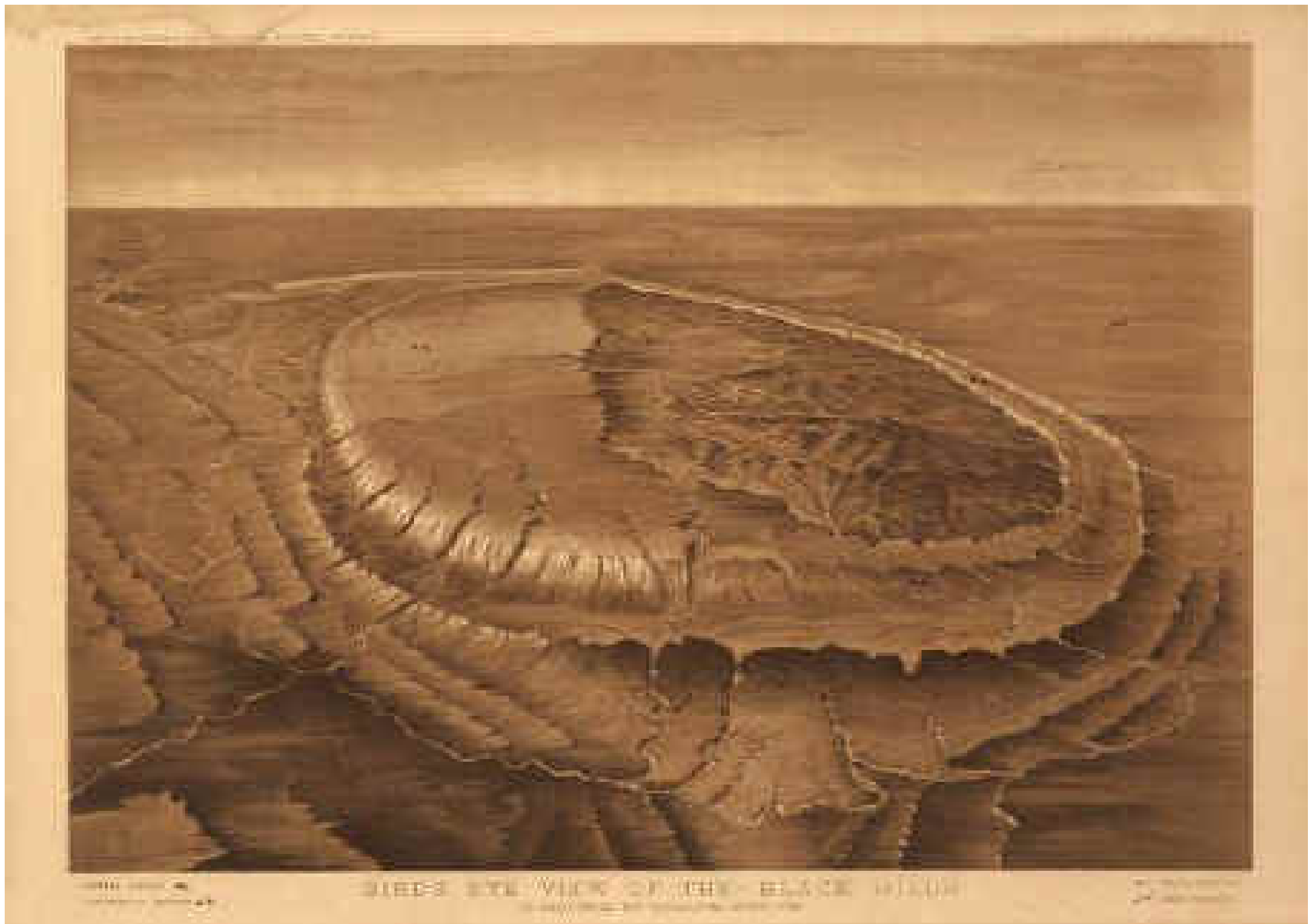


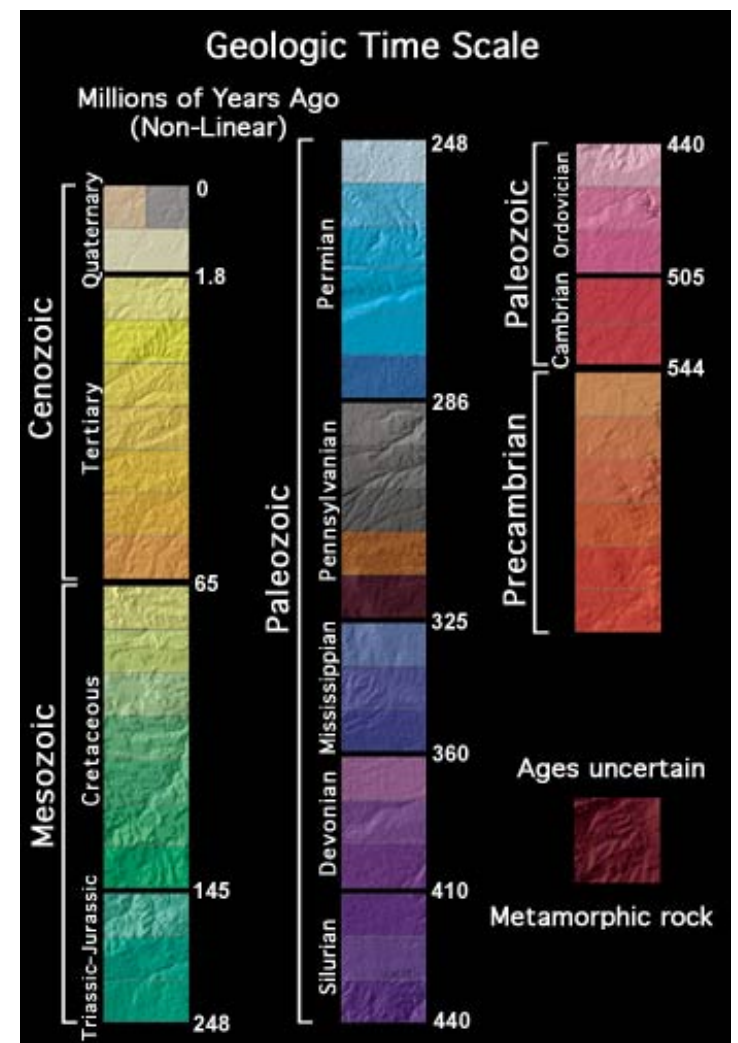
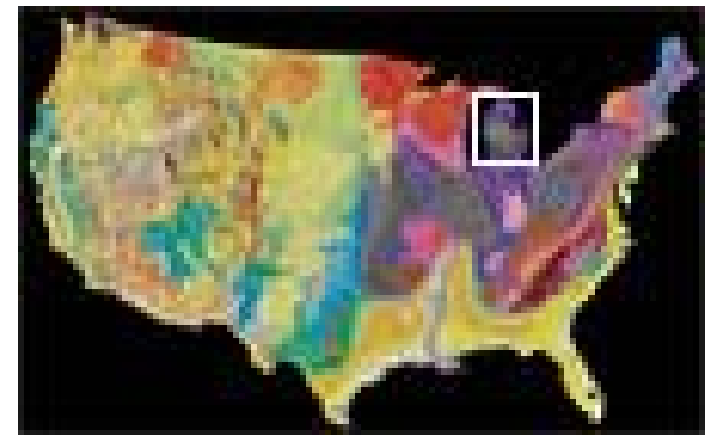
<http://tapestry.usgs.gov/features/06valleyridge.html>



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







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

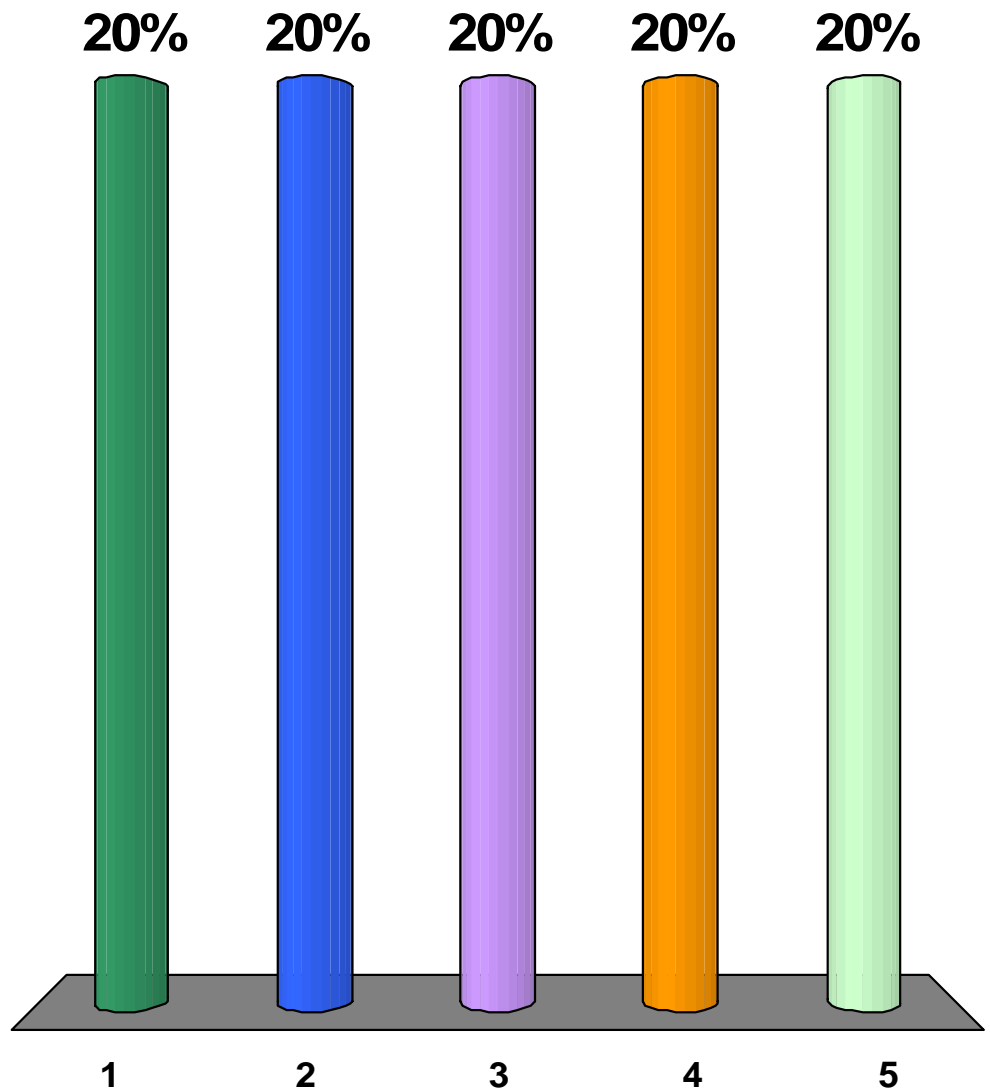
If you make a mistake, reenter the proper number

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!!

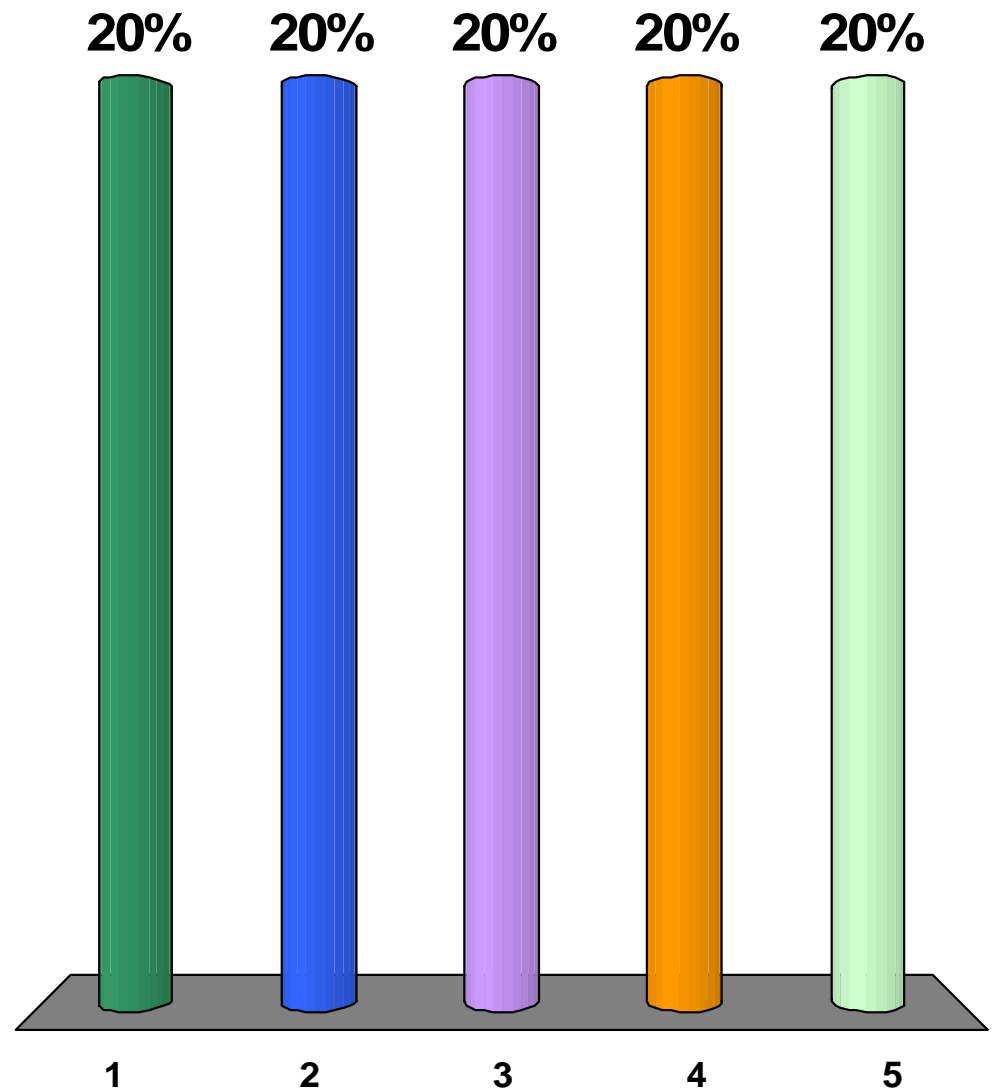
Type of fold with older rocks in the center, usually of arched geometry

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



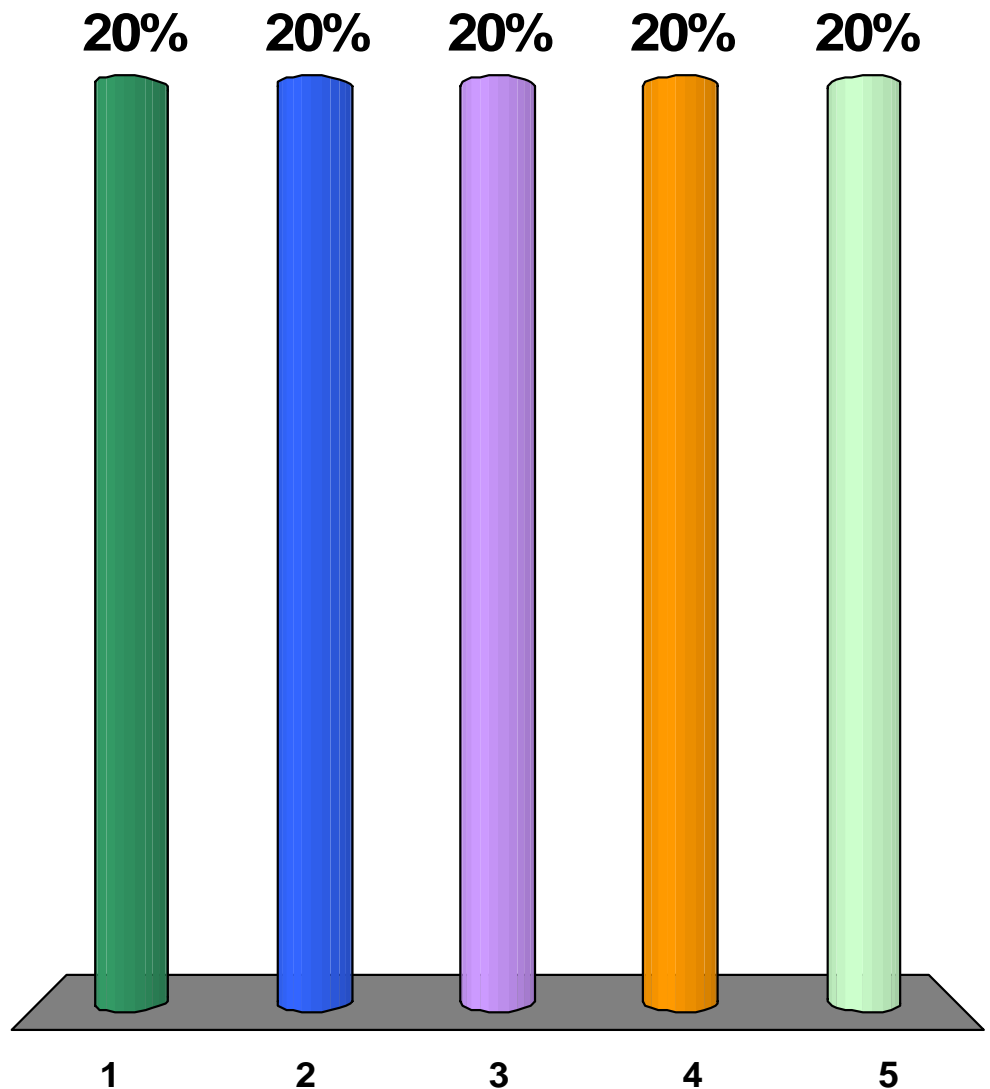
Type of fold with younger rocks in the center, usually of trough geometry

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



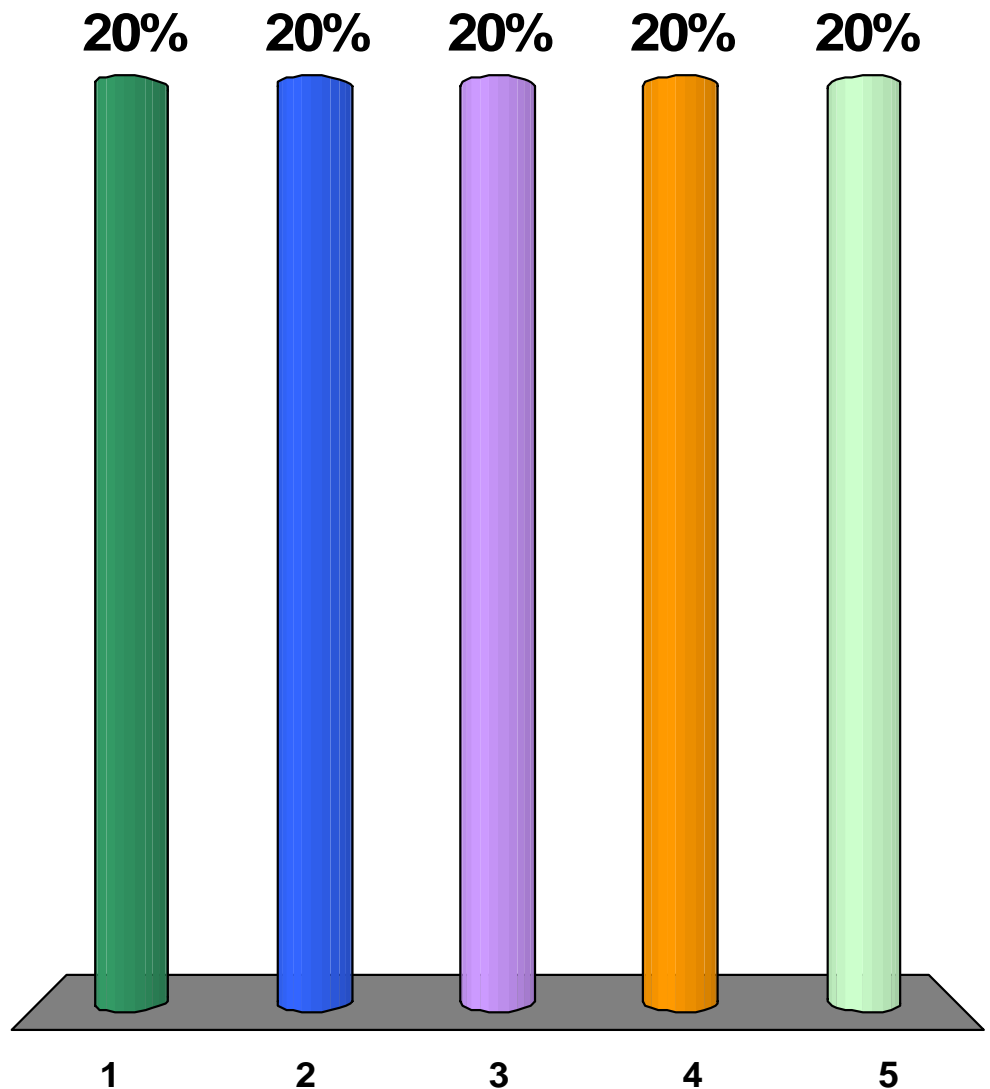
Regional deformation with older rocks in the center, dipping away from center

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



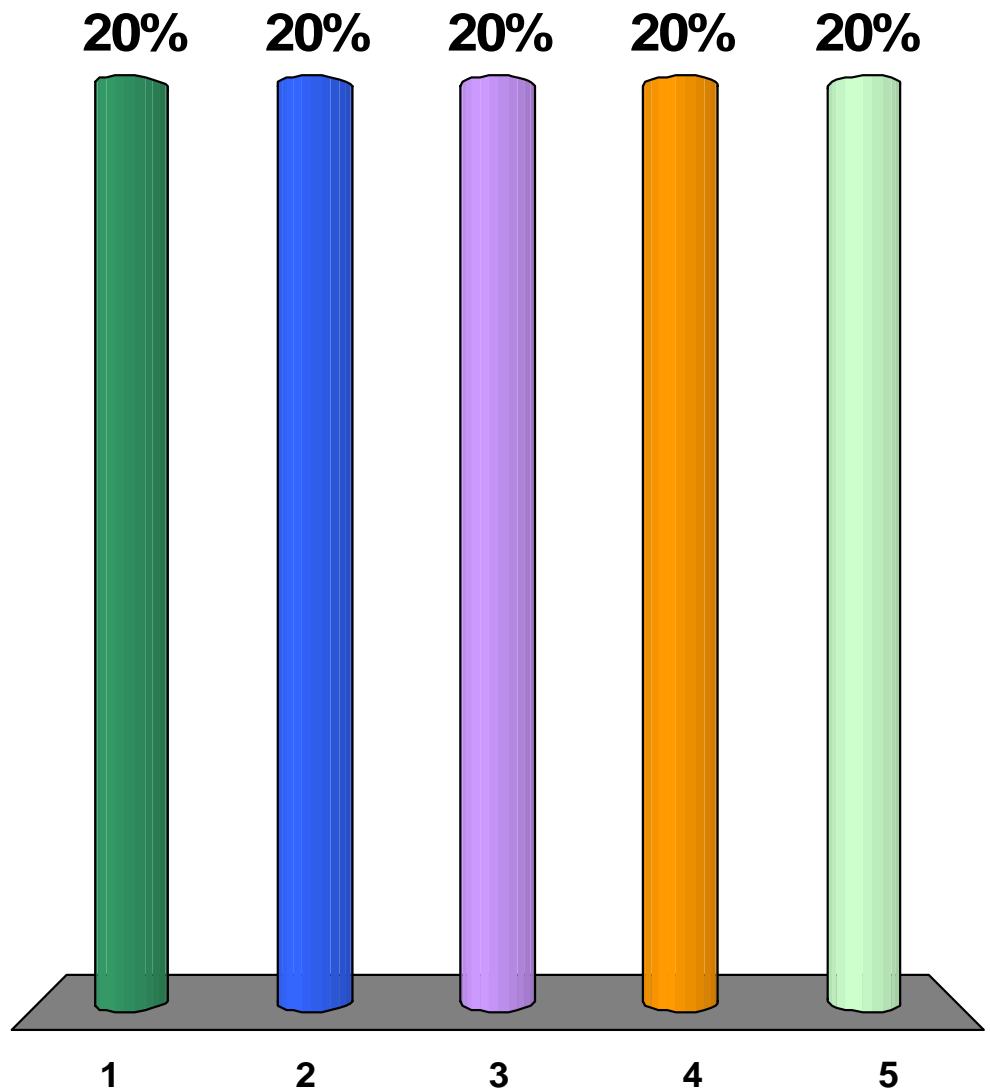
Regional deformation w/younger rocks in the center, dipping toward center

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

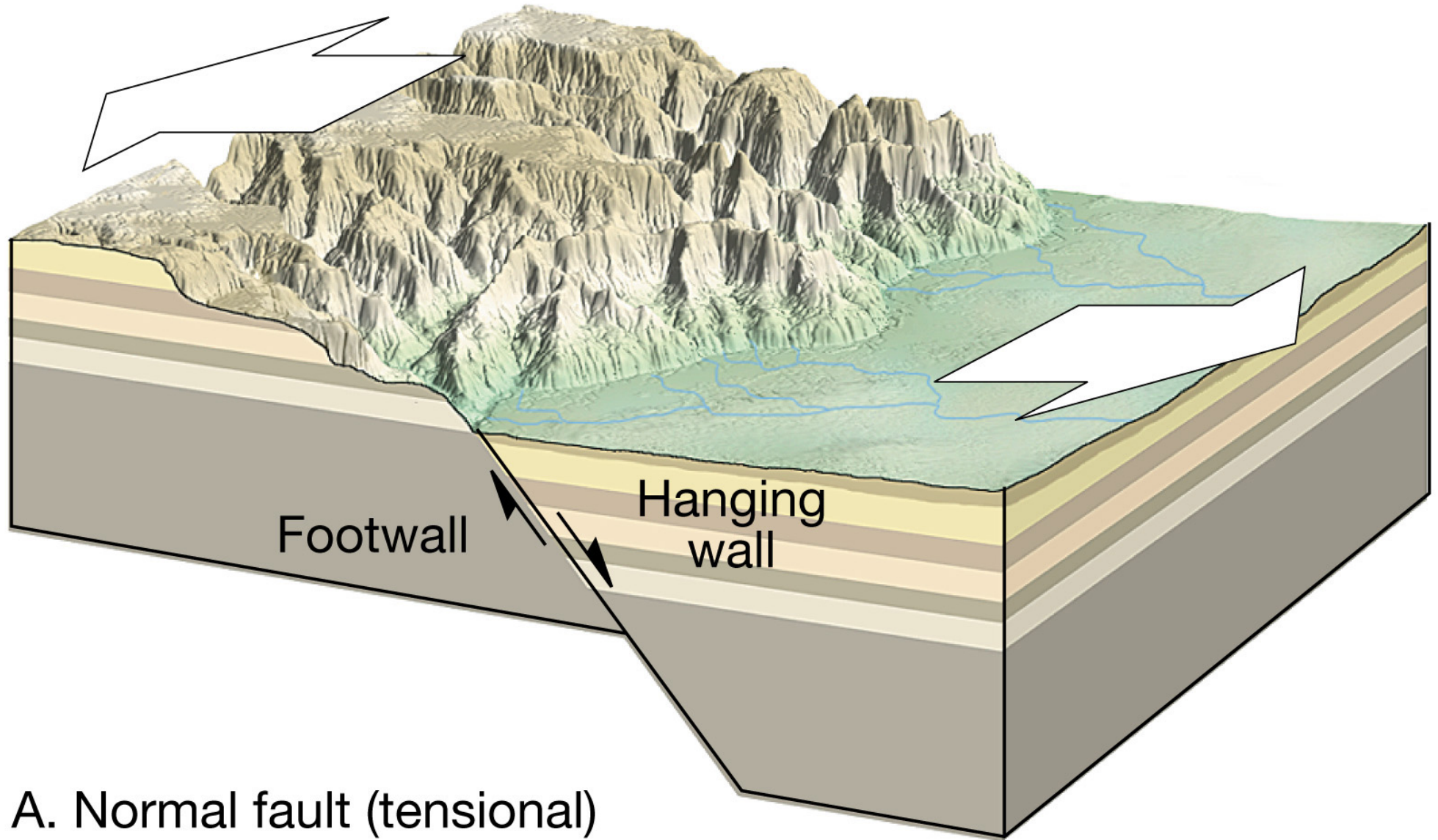
1. Anticline
2. Basin
3. Dome
4. Recumbent
5. Syncline





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

Normal fault formation



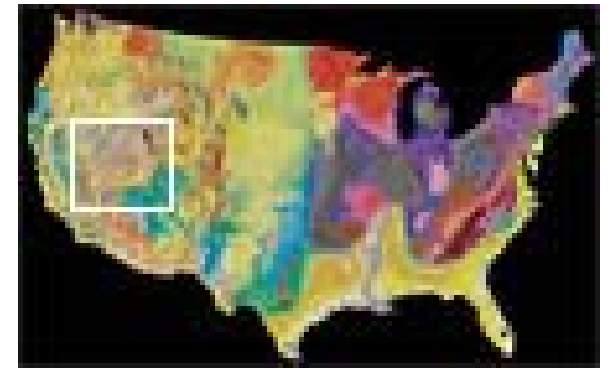




<http://www.uwsp.edu/geo/faculty/hefferan/geol320/normalfaults.html>

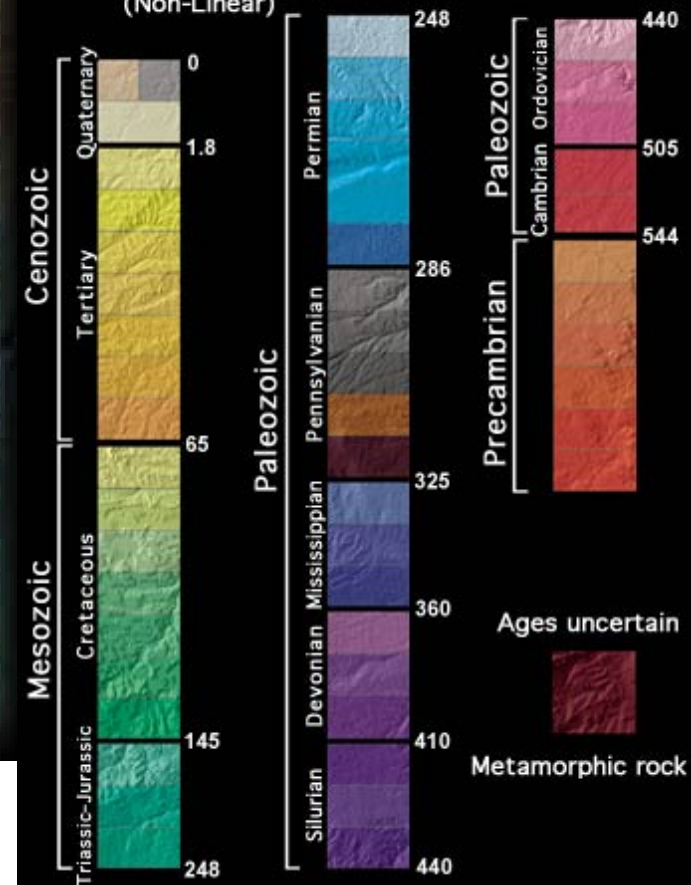


<http://www.geology.wisc.edu/courses/g112/lecture3.html>

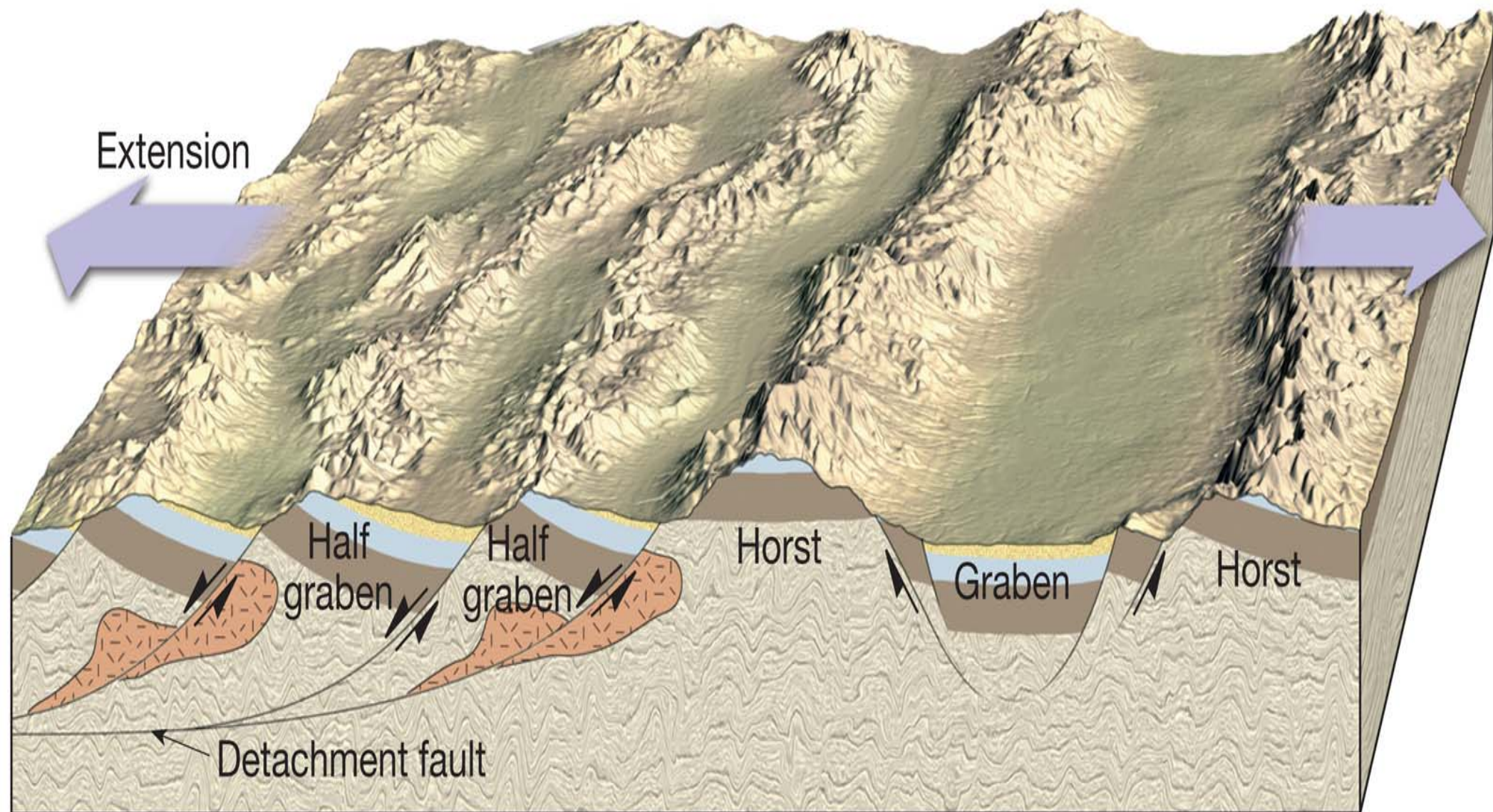


Geologic Time Scale

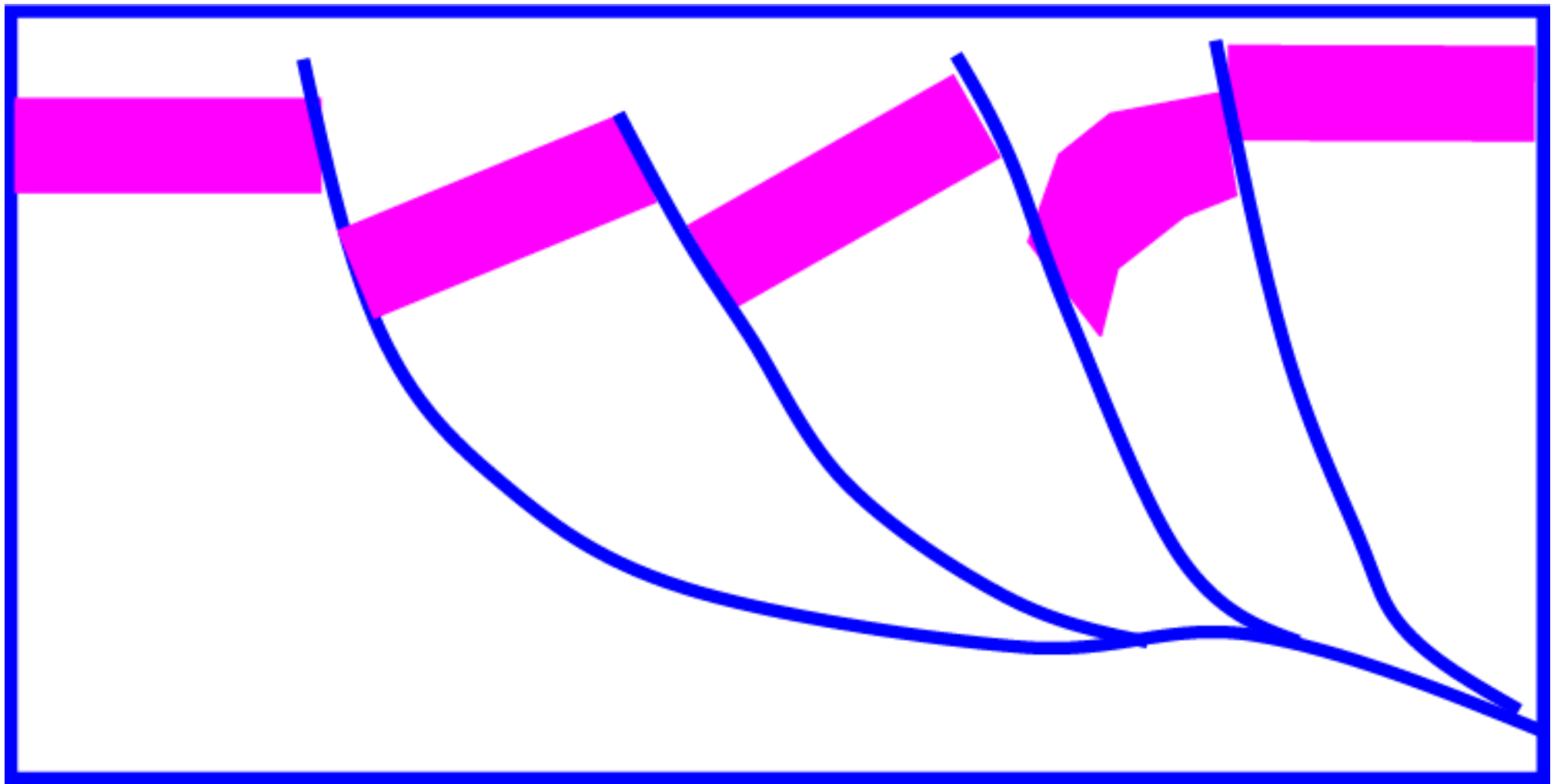
Millions of Years Ago
(Non-Linear)

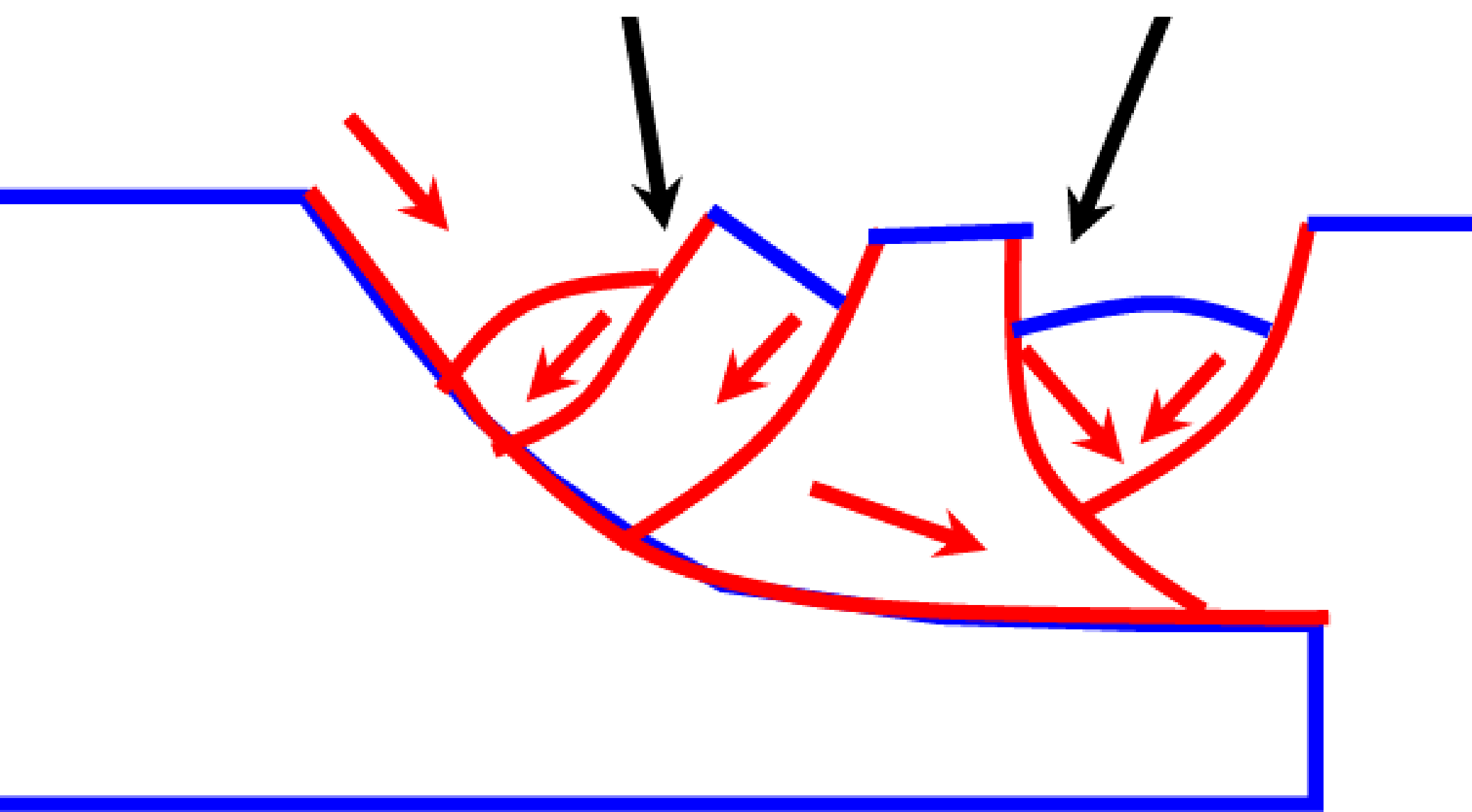


<http://tapestry.usgs.gov/features/22basinrange.html>



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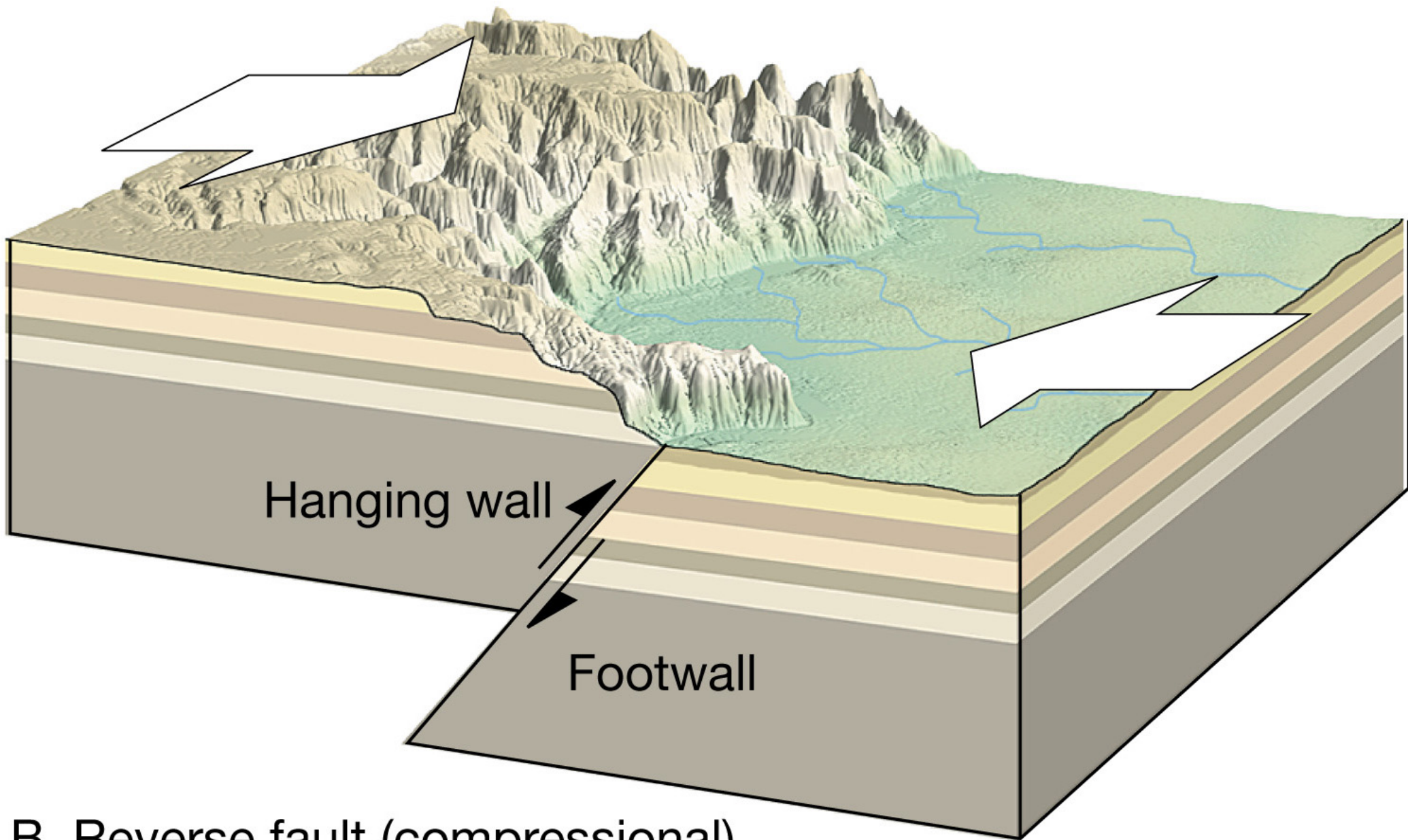
<http://www.uwgb.edu/dutchs/EarthSC202Slides/EQKSLIDE.HTM>



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



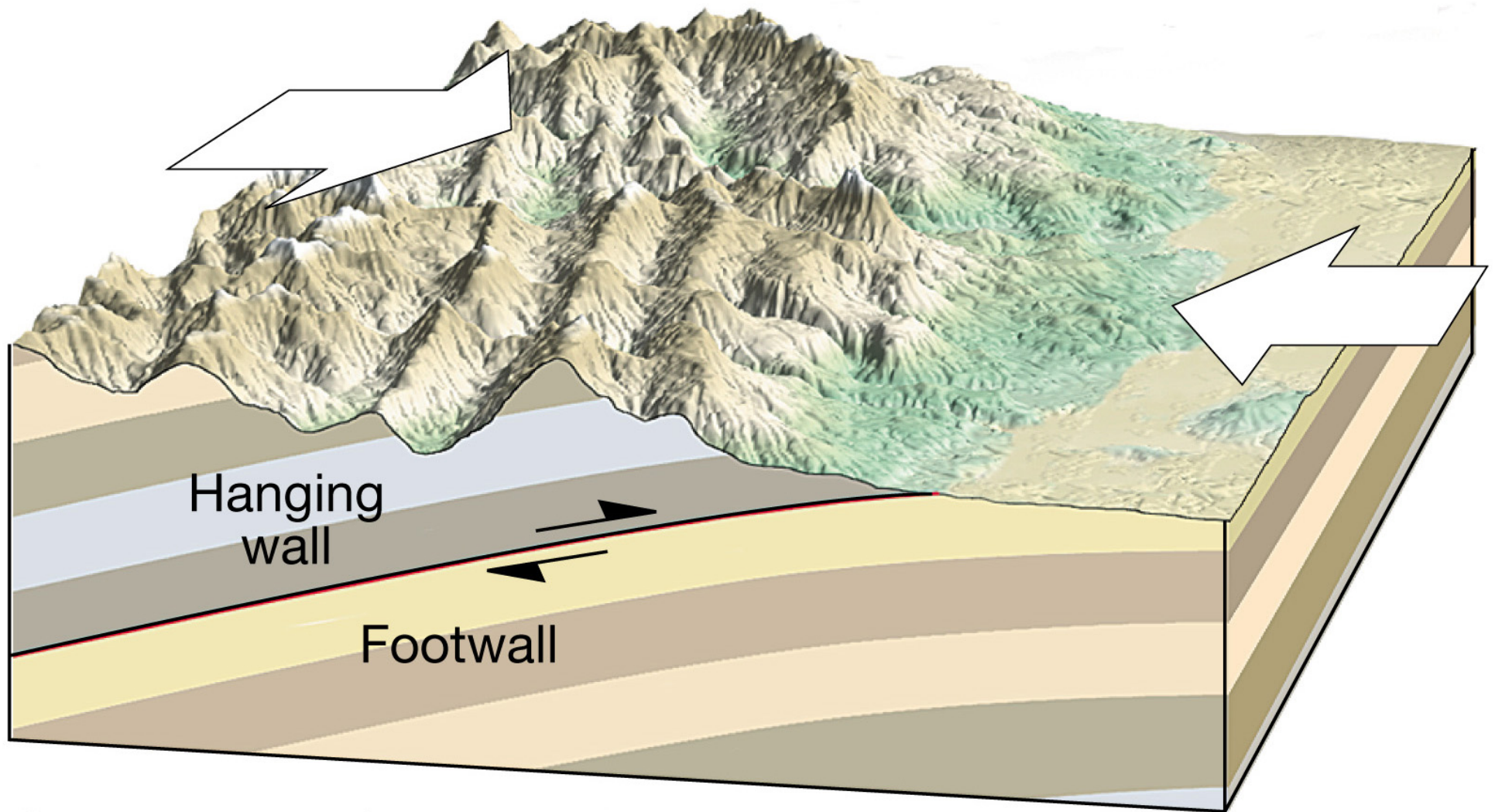
<http://www.geosci.unc.edu/faculty/glazner/Images/Structure/Faults.html>



B. Reverse fault (compressional)



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



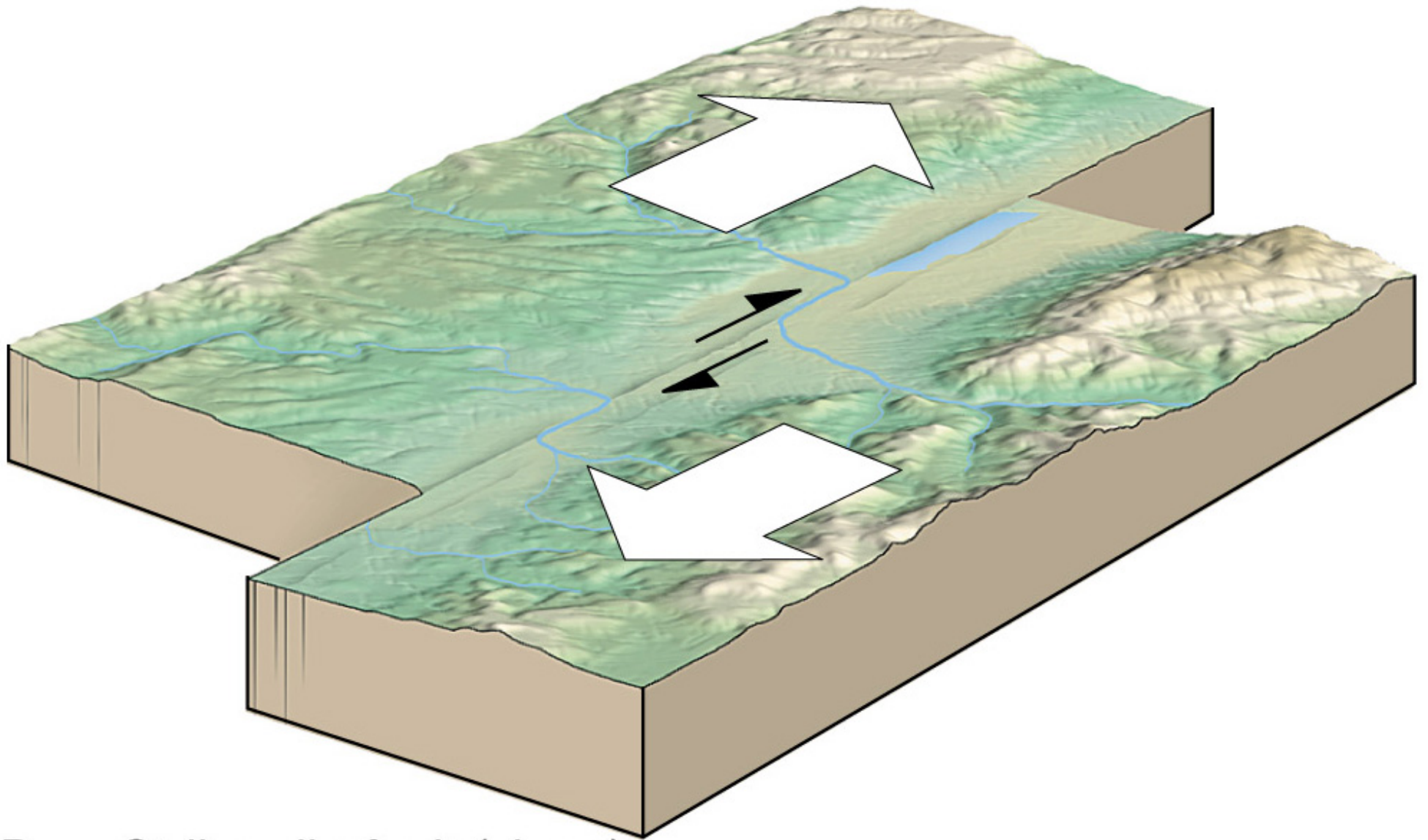
C. Thrust fault (compressional



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

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



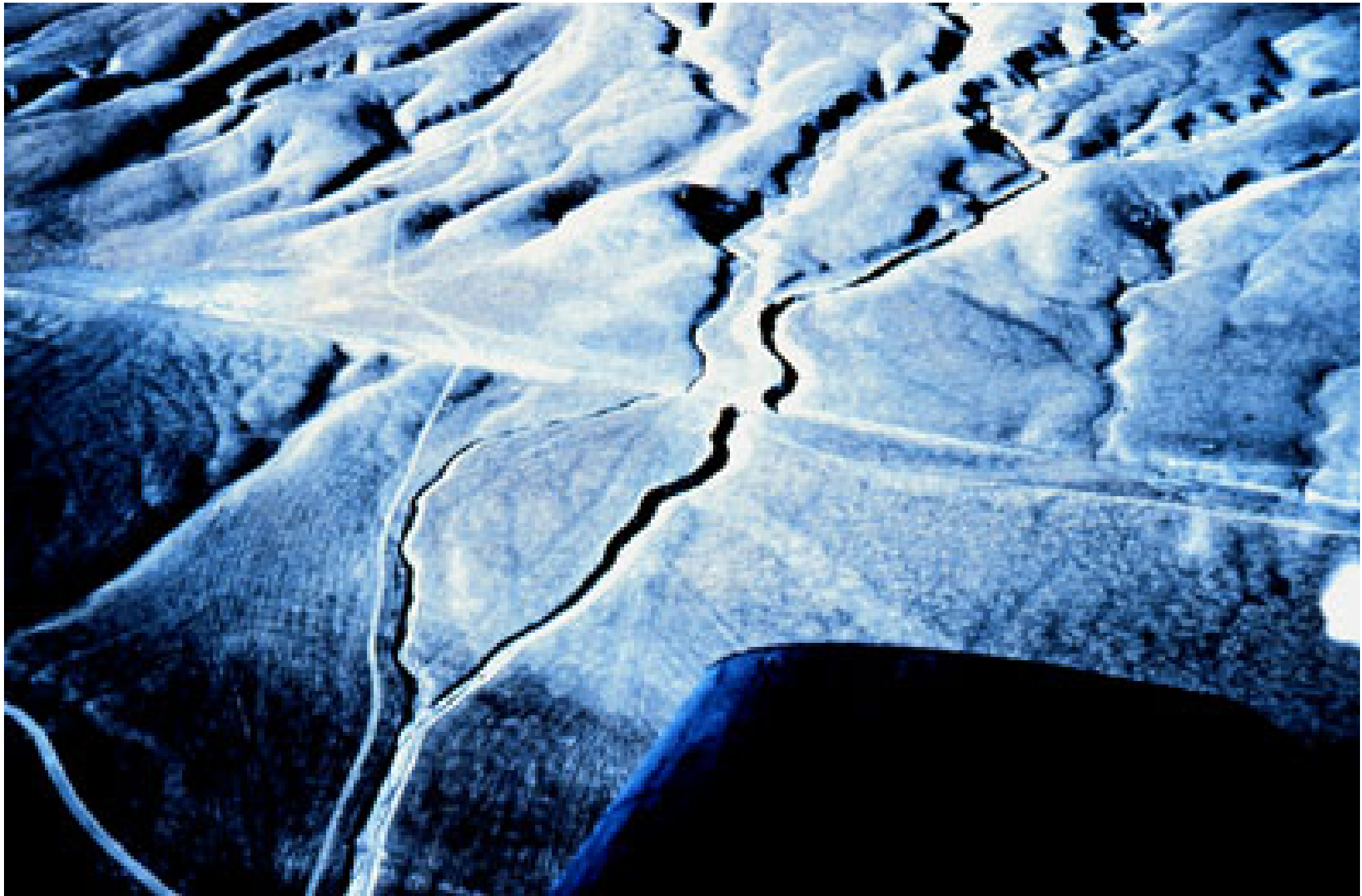


D. Strike-slip fault (shear)



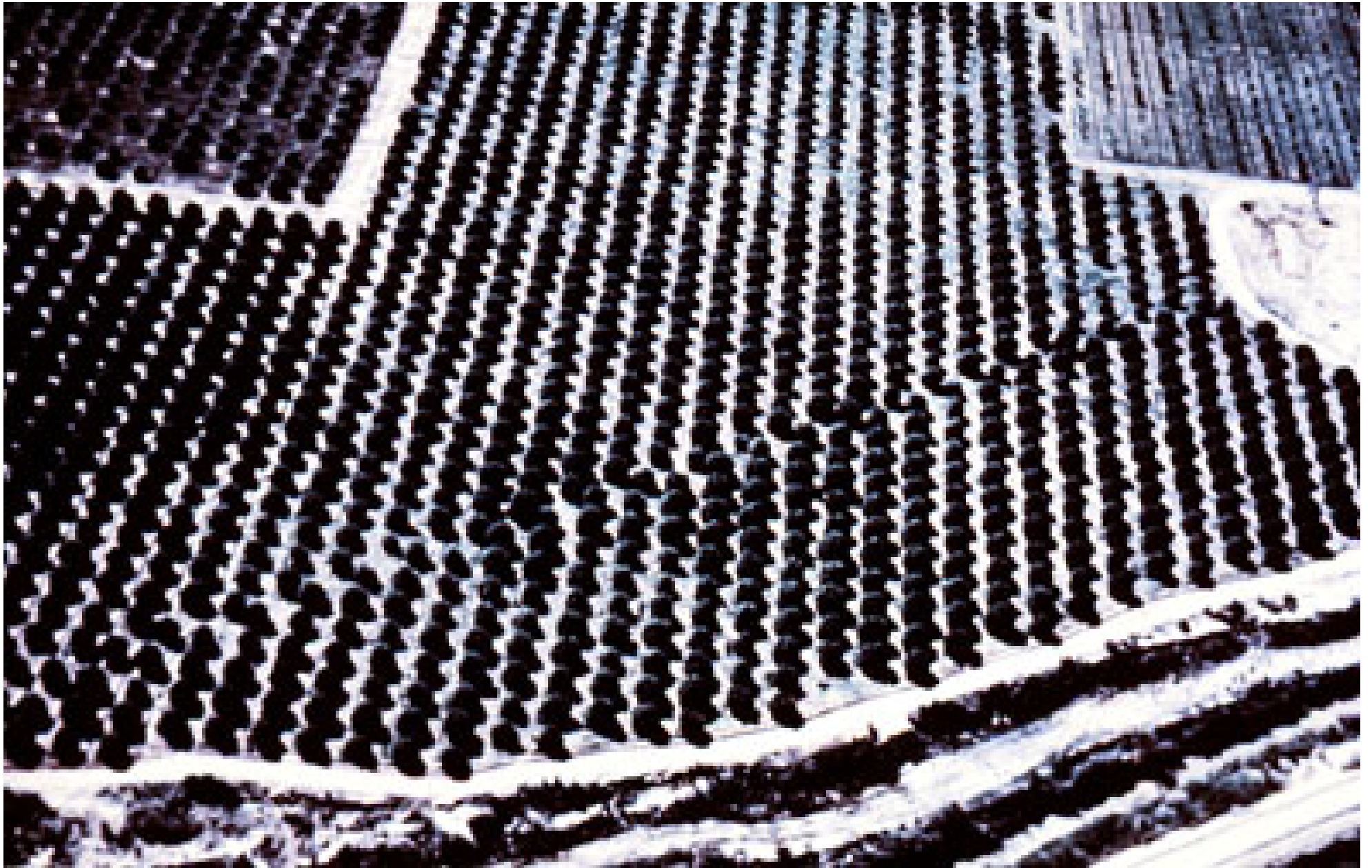
San Andreas Fault

Offset in stream

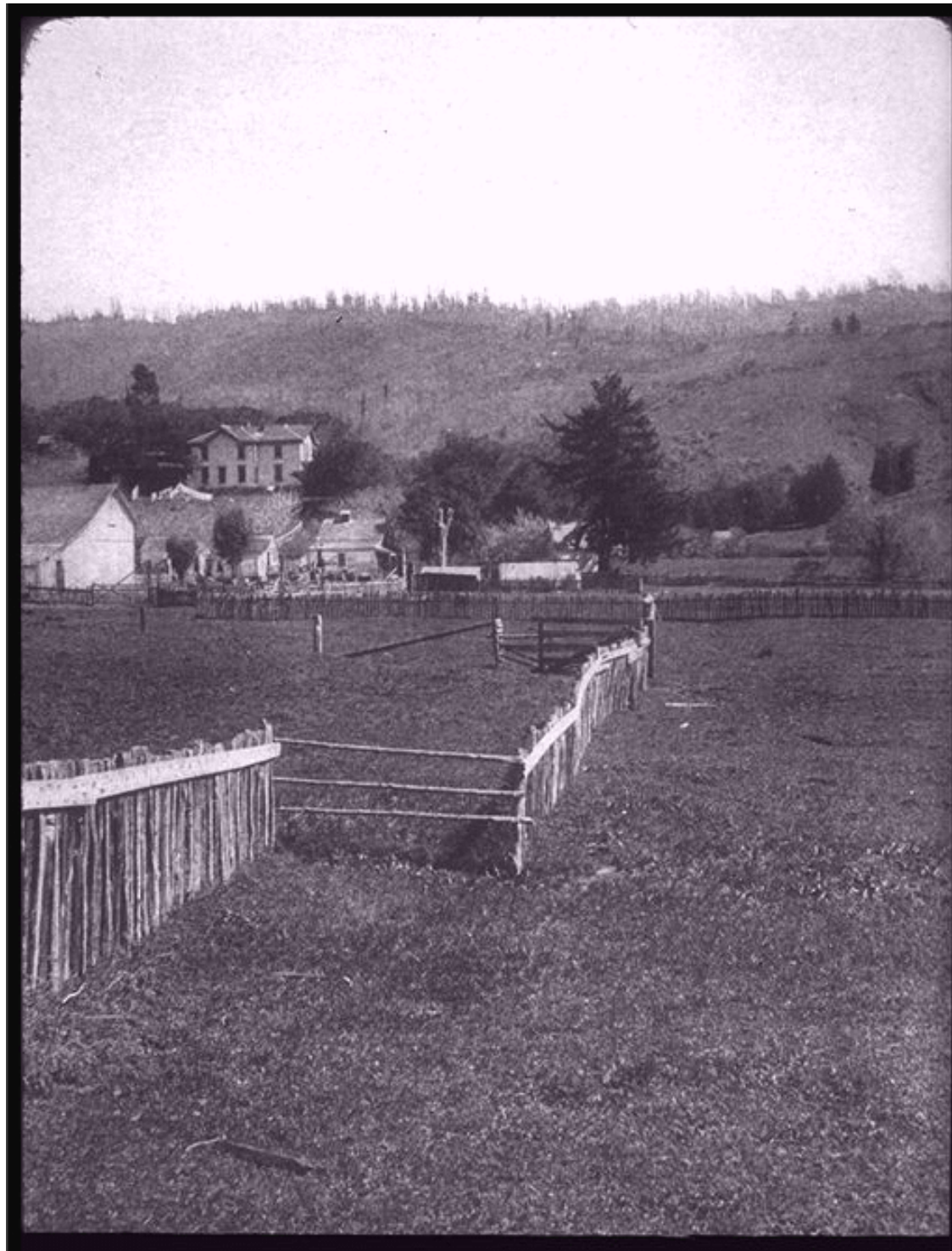


<http://www.geology.wisc.edu/courses/g112/lecture3.html>



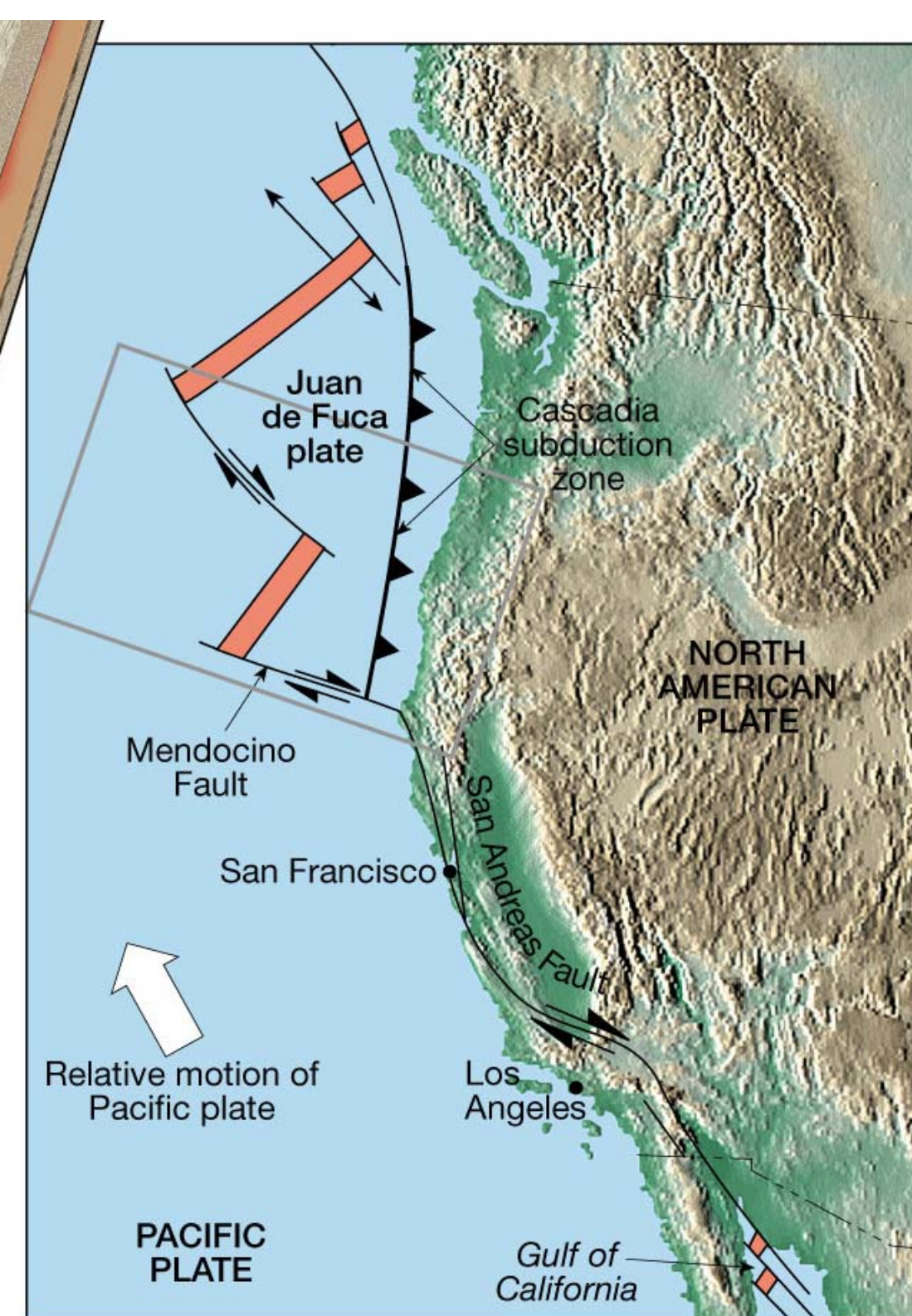


<http://www.geology.wisc.edu/courses/g112/lecture3.html>



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>



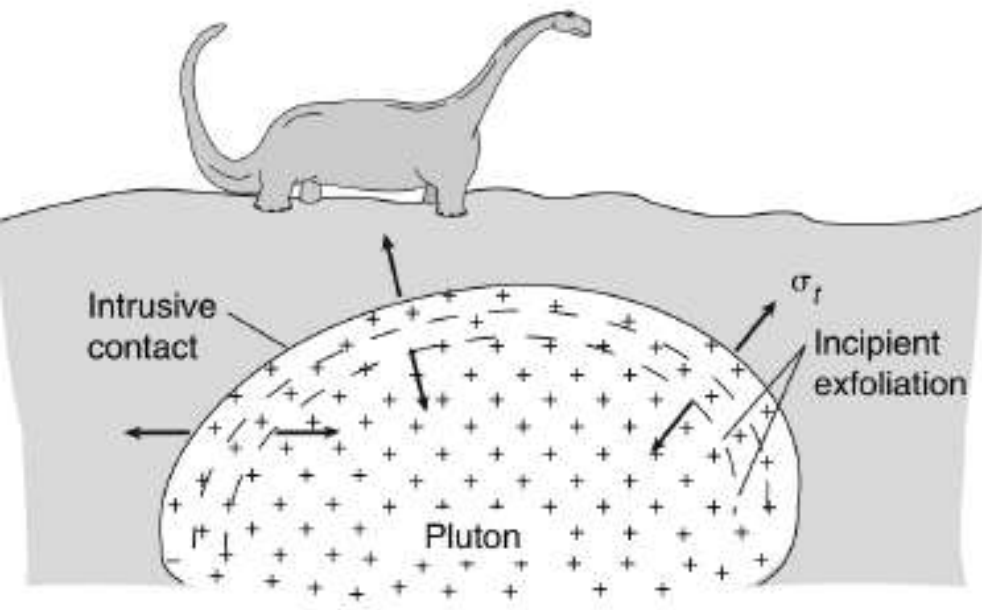
<http://www.cs.biu.ac.il/~plot/USA/>



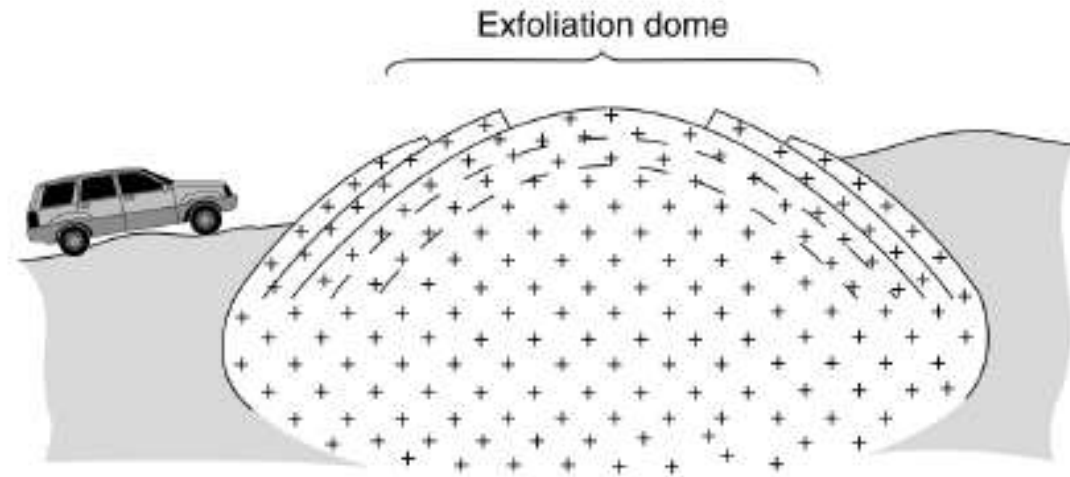
<http://www.ic.ucsc.edu/~casey/eart150/Lectures/Joints/JointsPics.html>



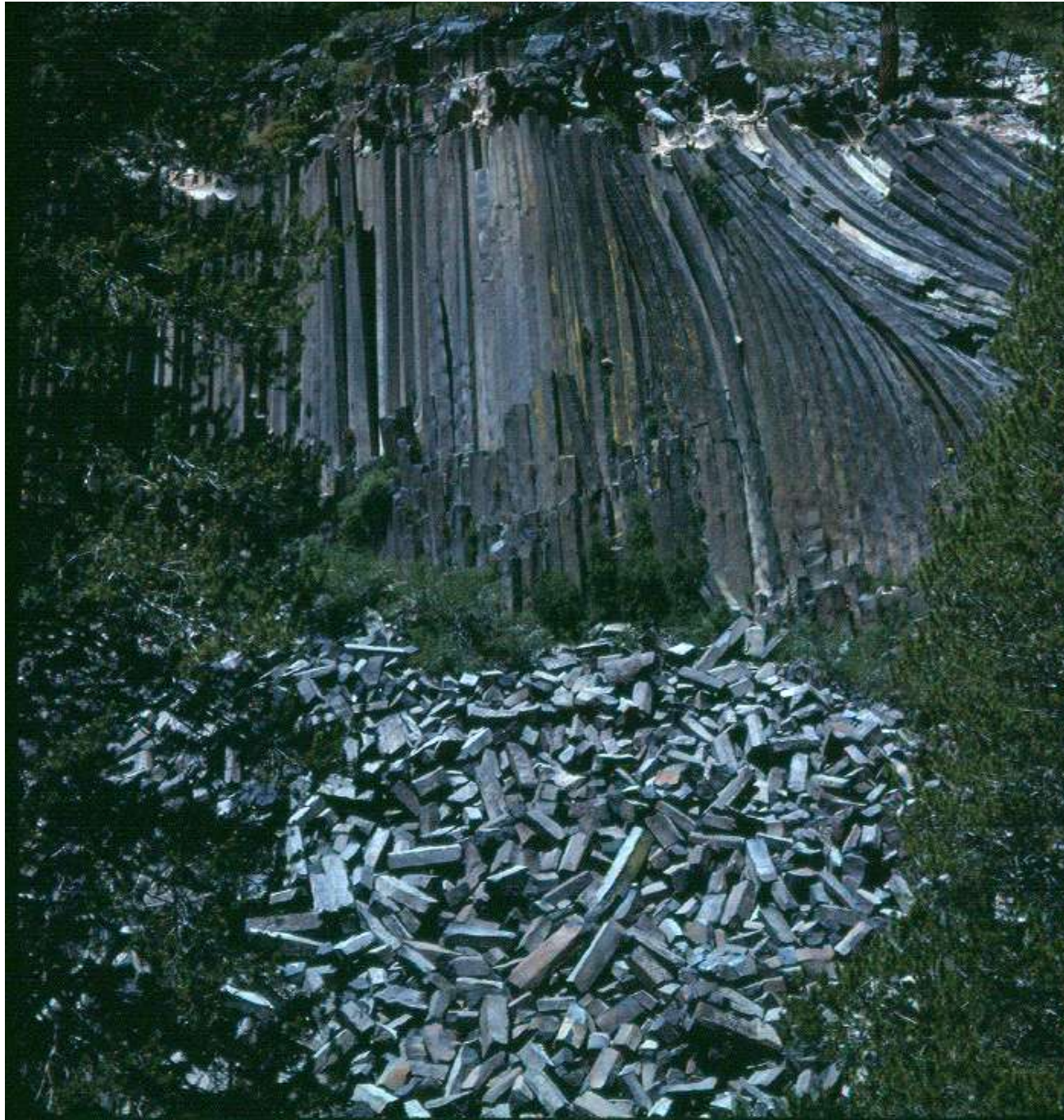
<http://darkwing.uoregon.edu/~millerm/exjoints.html>



Past



Present



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



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