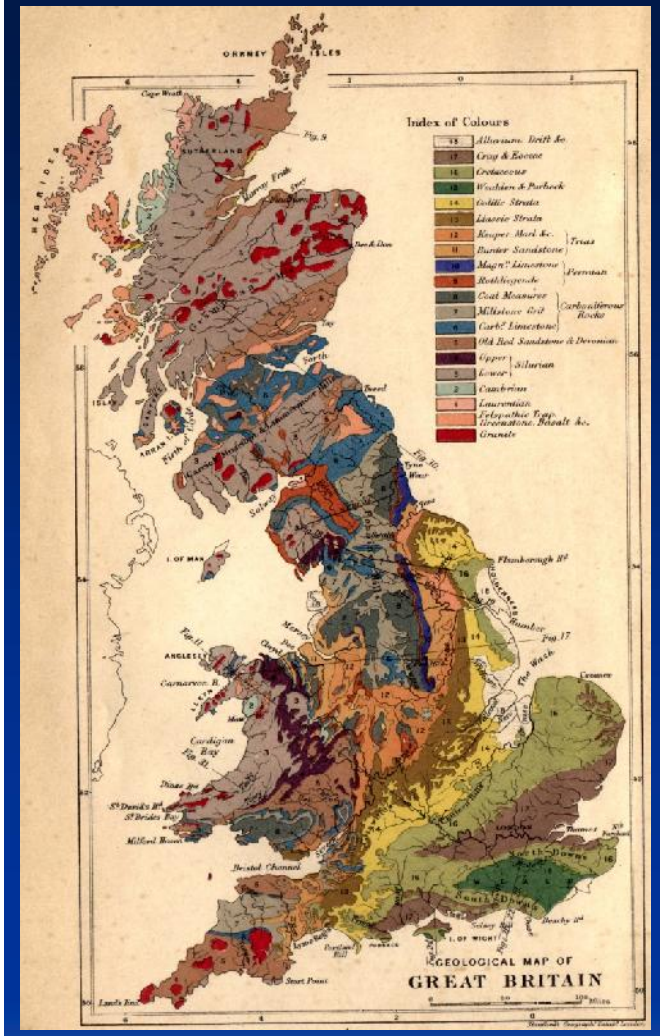
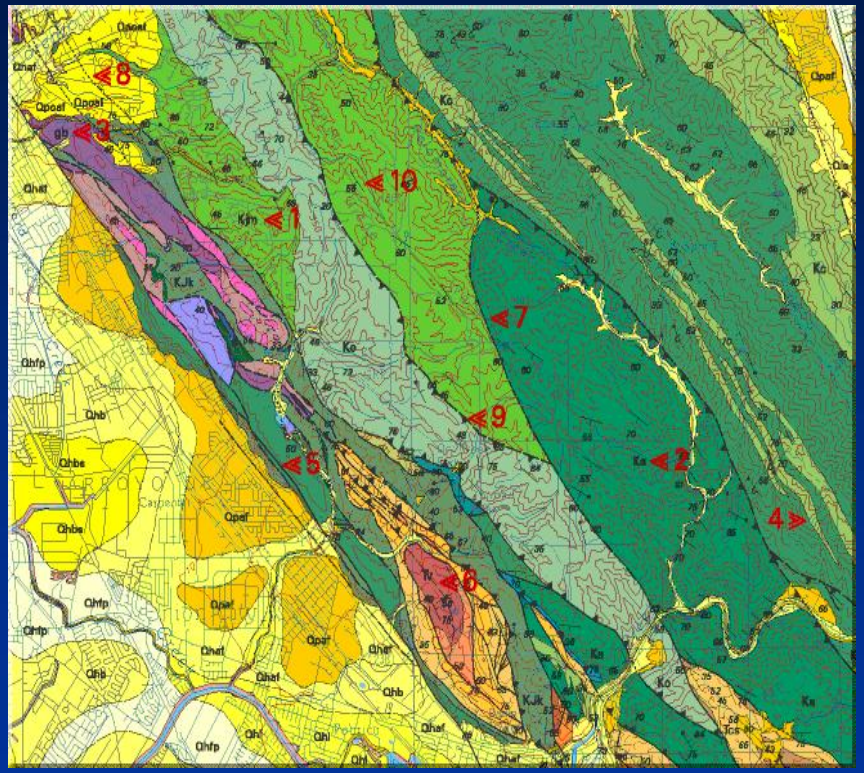
Geology Map Laboratory





Geology 101 Lab

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Geologic Map Lab Learning Objectives

The student should understand and know:

1) The terminology and basic symbols of geology maps

2) How to read and understand a geology map legend

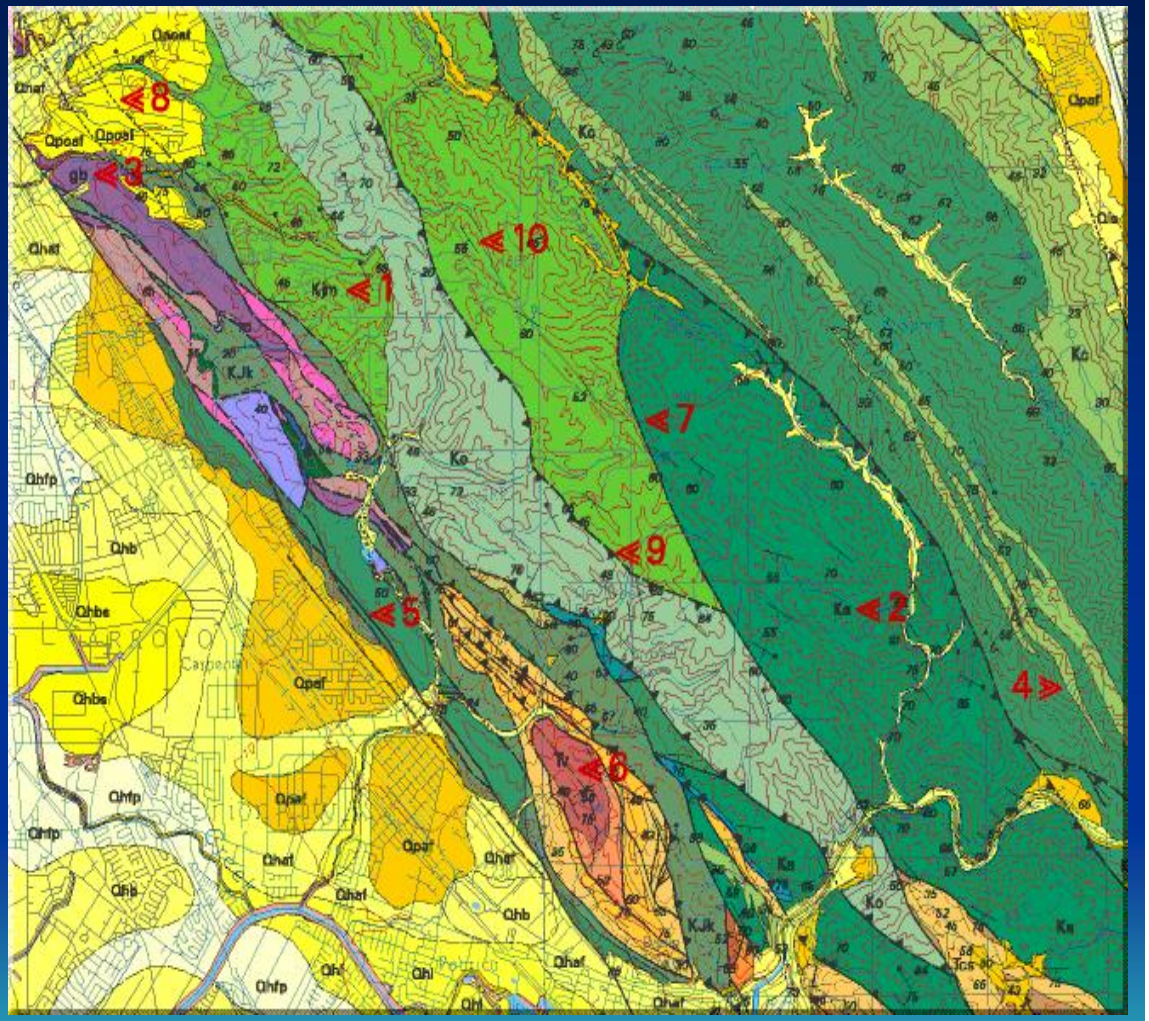
3) The general concepts and field methods used in making a geology map

4) How to successfully recognize structures on a geology map such as contacts, bedding orientation, folds and faults

5) How to reconstruct the geologic history of the mapped region based on the geologic map information.

What is a Geology Map

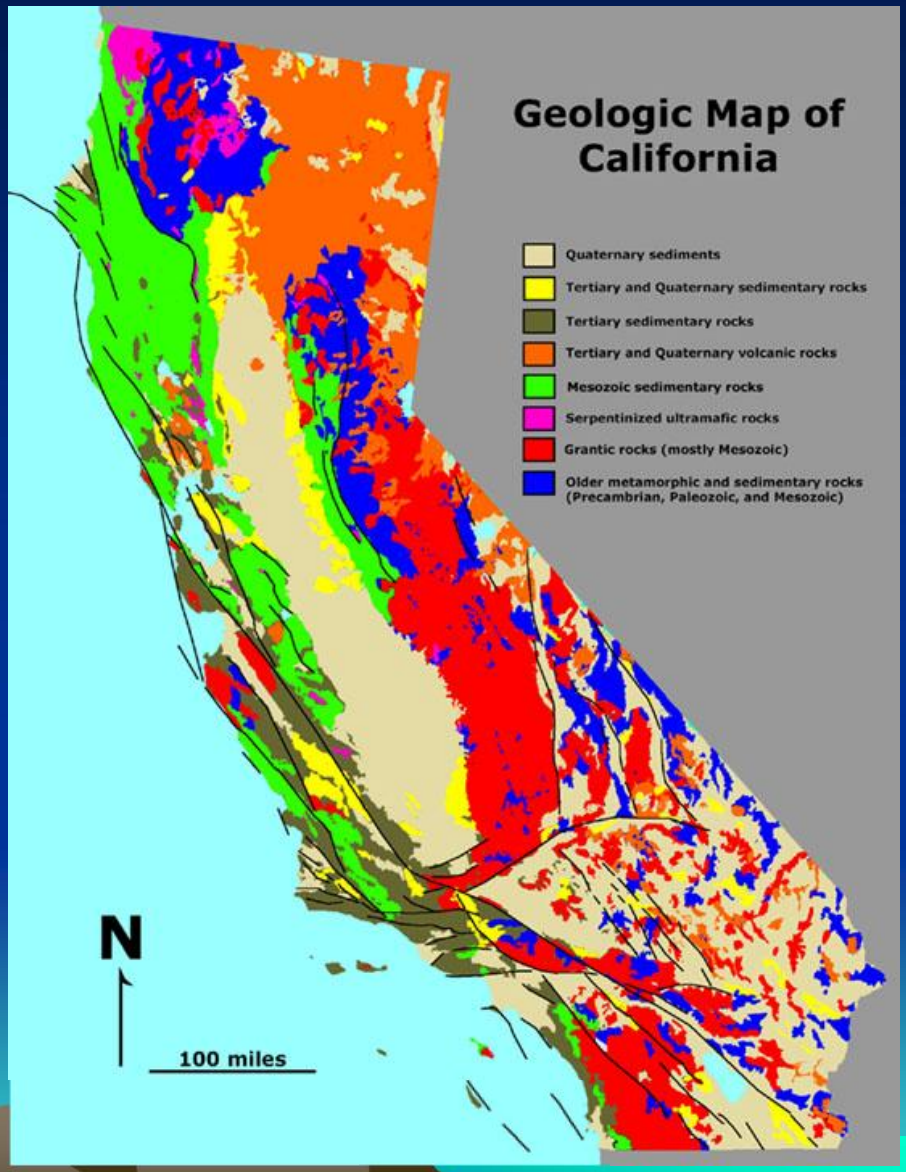
1) A map that displays the types of rocks and sediment exposed at the surface
2) Displays the spatial orientation of rock units and rock structures like folds and faults.
3) Geology information is typically overlain on a topographic base map



Usefulness of Geology Maps

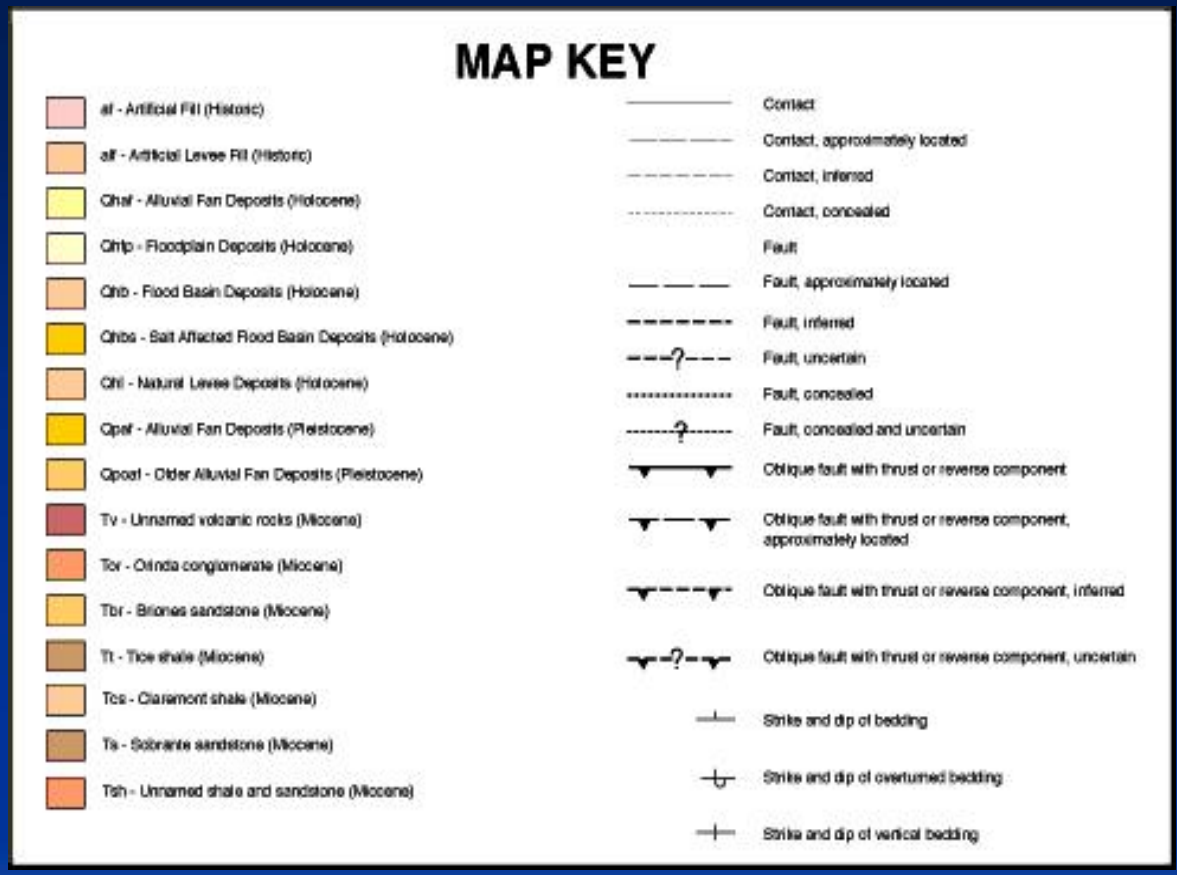
1) Geology maps have many vital uses:
   - ✓ Mineral Prospecting
   - ✓ Engineering
   - ✓ Earthquakes
   - ✓ Historical geology
   - ✓ Landform studies
   - ✓ Soil development
   - ✓ Biological studies

2) Geology maps are even useful when buying a home. Why?



Geology Map Key or Legend

1) The map key lists and explains the geologic rock formations and the structural symbols
   - ✓ Rock Names
   - ✓ Rock Types
   - ✓ Rock Ages
   - ✓ Contacts
   - ✓ Strike and Dip
   - ✓ Faults and Folds



2) Each rock unit has a unique letter symbol and is color-coded

3) Map key is vital to understanding the accompanying geology map

The Basic Rules of Structure

1) Strike of beds is always parallel to the direction of the contacts.

2) Rock layers dip towards the youngest exposed rock layers.

3) Oldest rocks exposed in the center of eroded anticlines and domes.

4) Youngest rocks exposed in the center of eroded synclines and basins.

5) Horizontal folds form parallel sets of belt-like outcrop patterns.

6) Plunging synclines form ”V” of “U" shaped, belt-like outcrop patterns.

- ✓ Fold plunges toward *open* end of “U” pattern.

7) Plunging anticlines form “V” of "U" shaped, belt-like outcrop patterns.

- ✓Fold plunges toward *closed* end of “V” or “U” pattern.

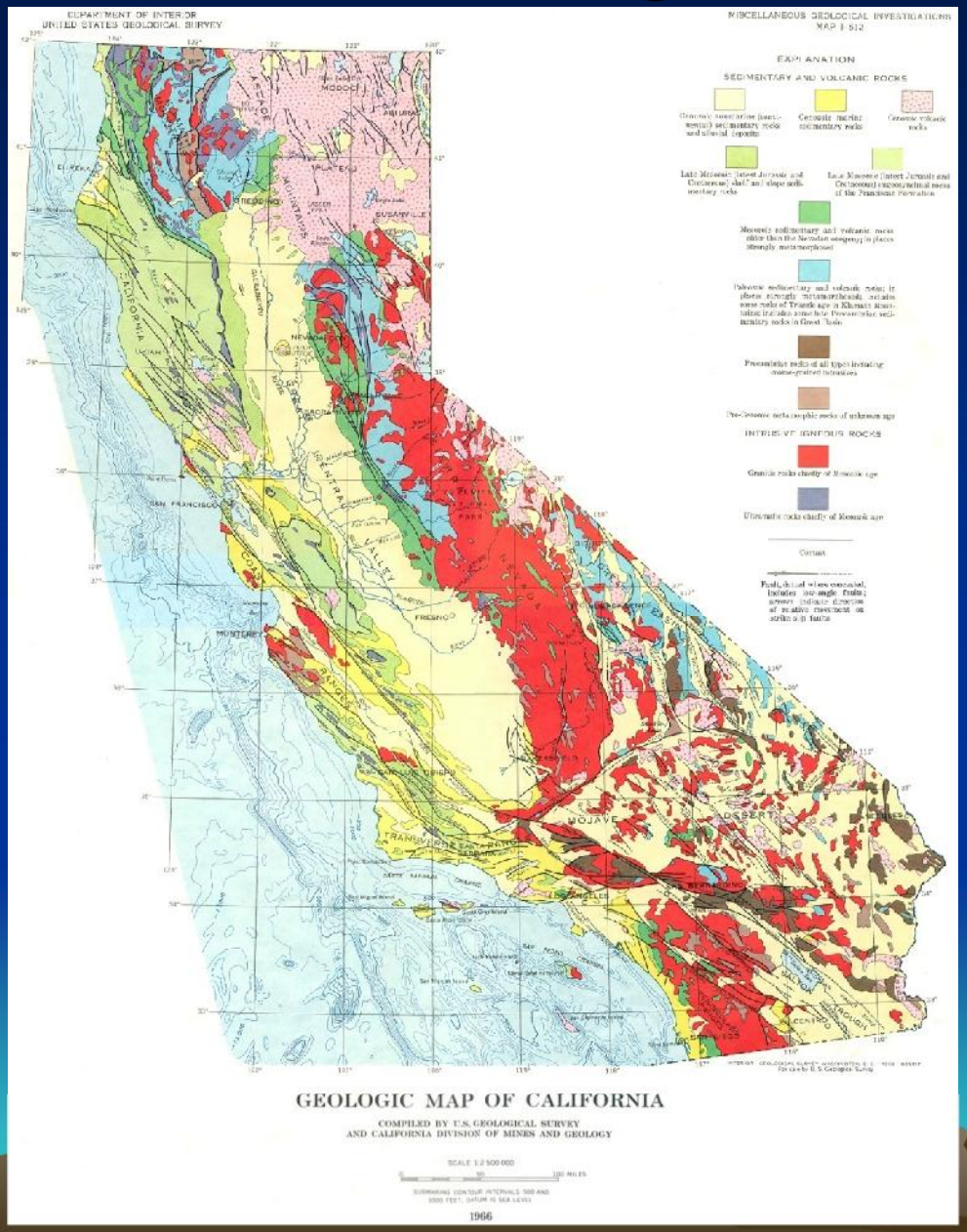
8) Steeper the dip of the layer, the more narrow the width of its outcrop.

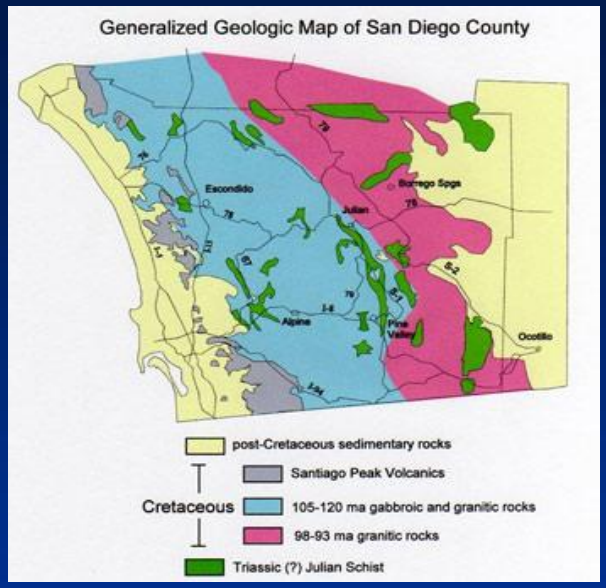
9) Hanging wall *moves up* relative to foot wall in reverse and thrust faults.

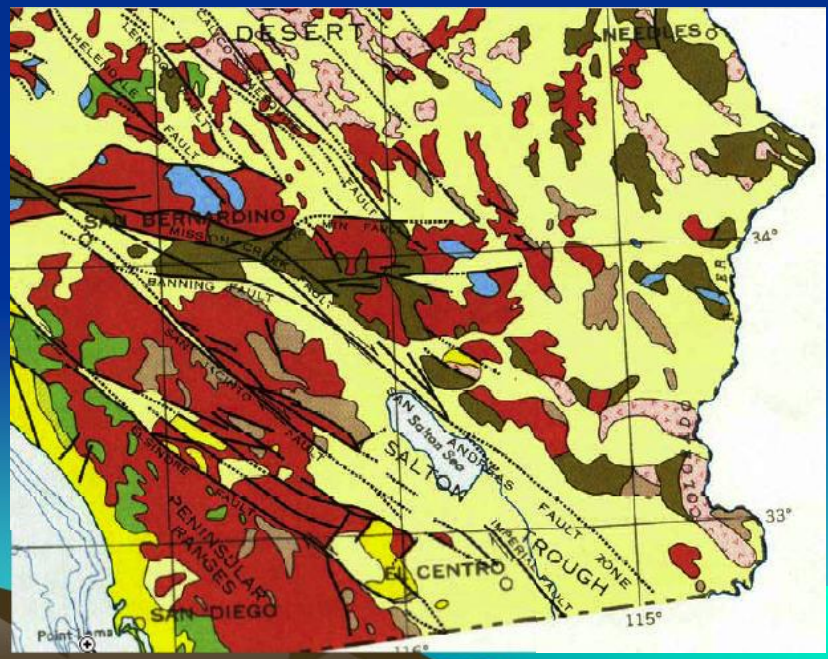
10) Hanging wall *moves down* relative to foot wall in normal faults.

Geologic Map of North America

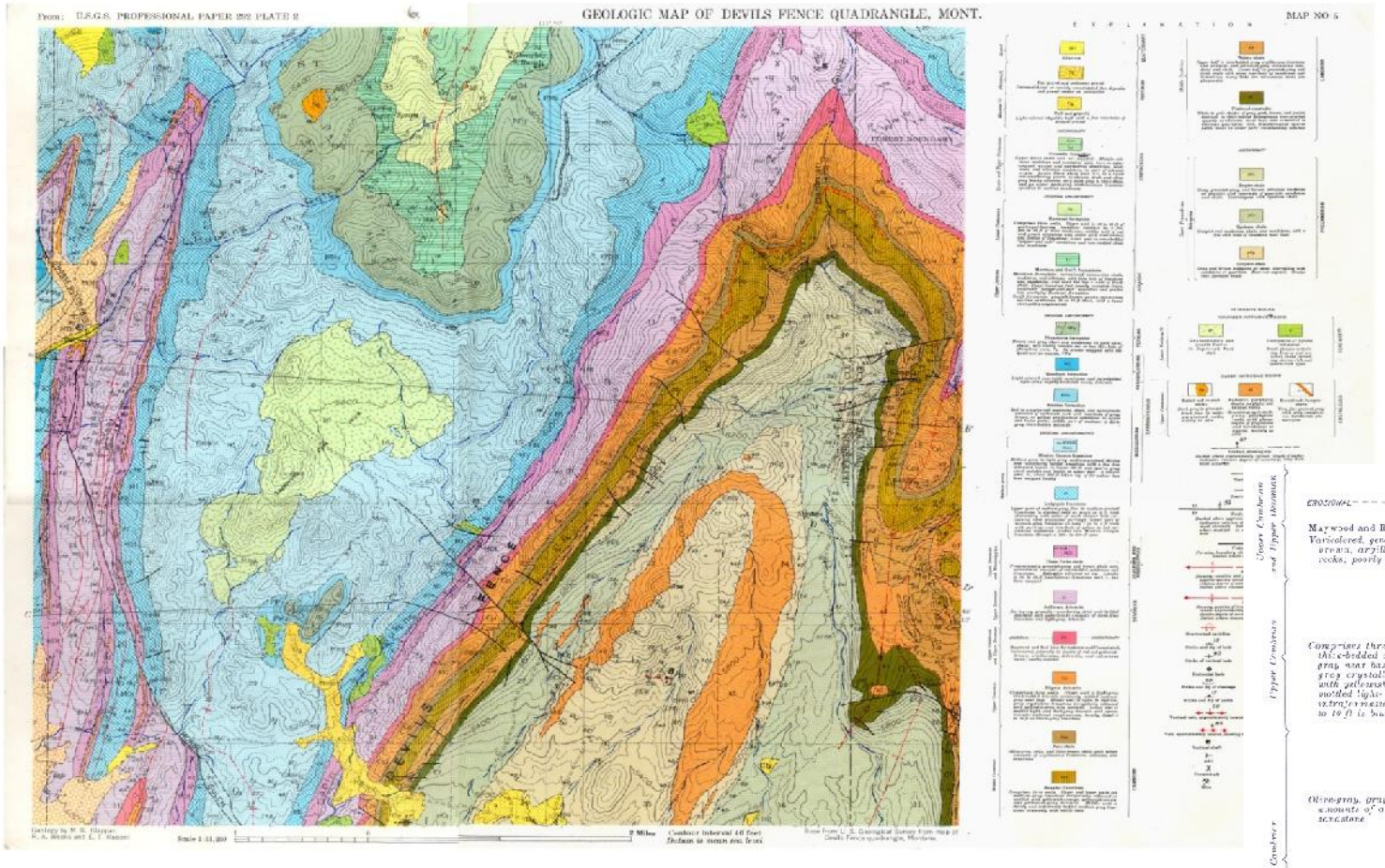
Geologic Map of California

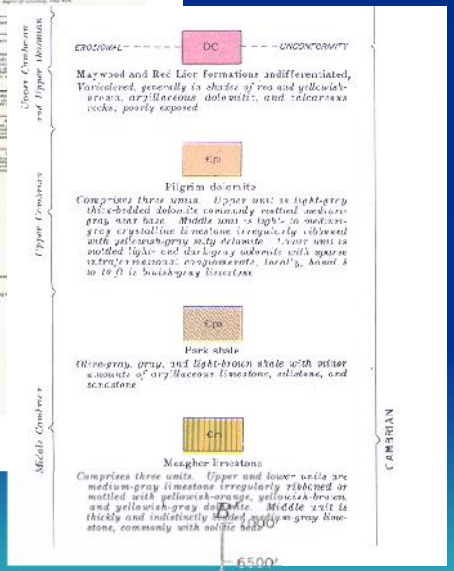


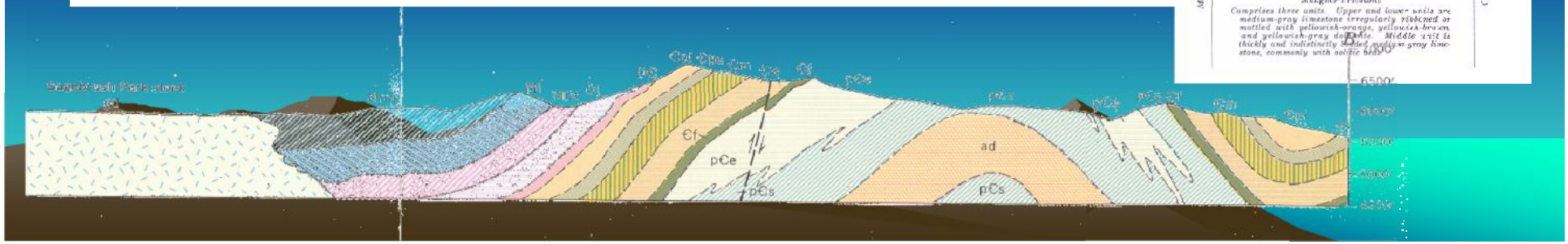




Geologic Maps – Devil's Fence Quad

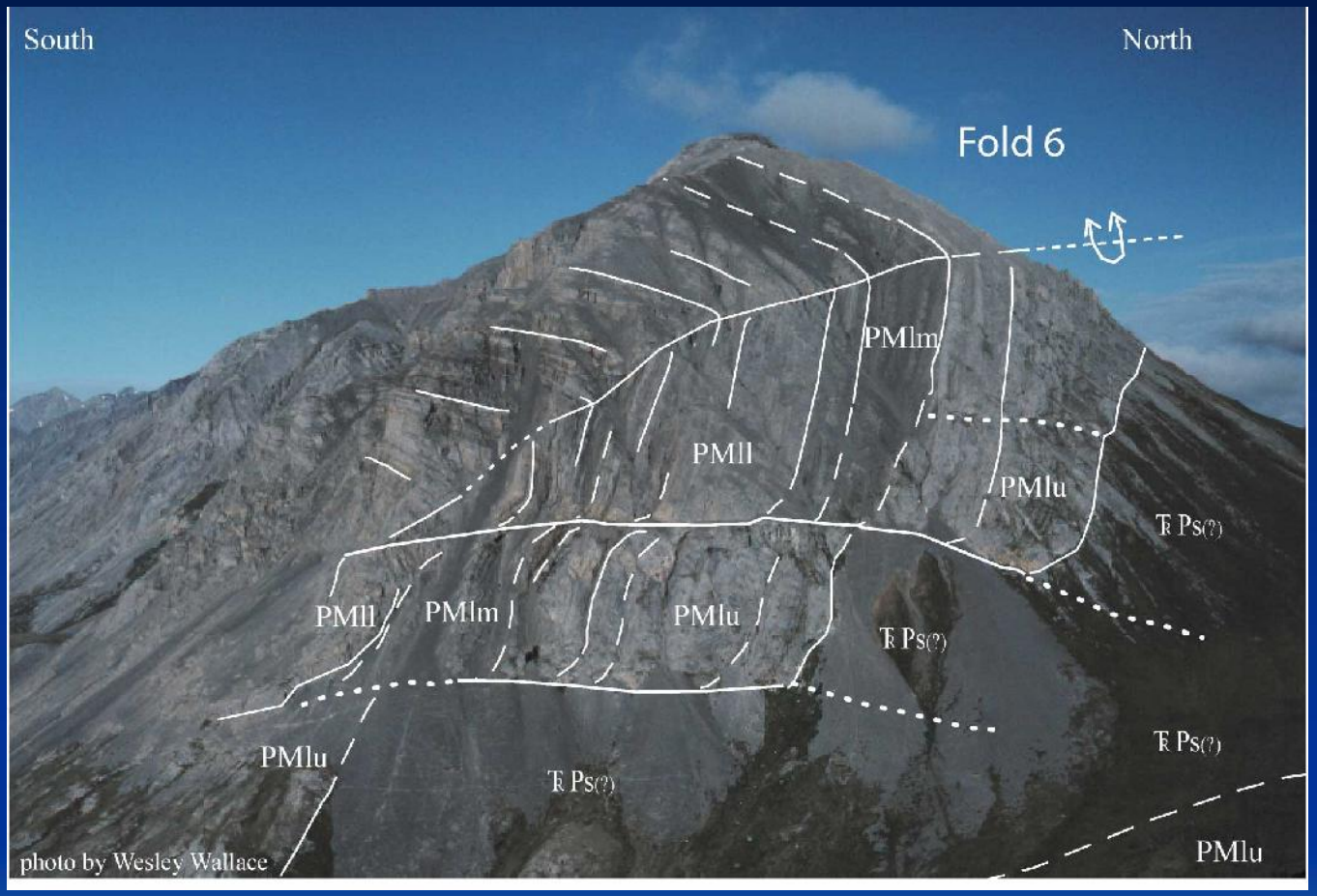






Devil's Fence Topographic Feature

Geology Map Web References



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