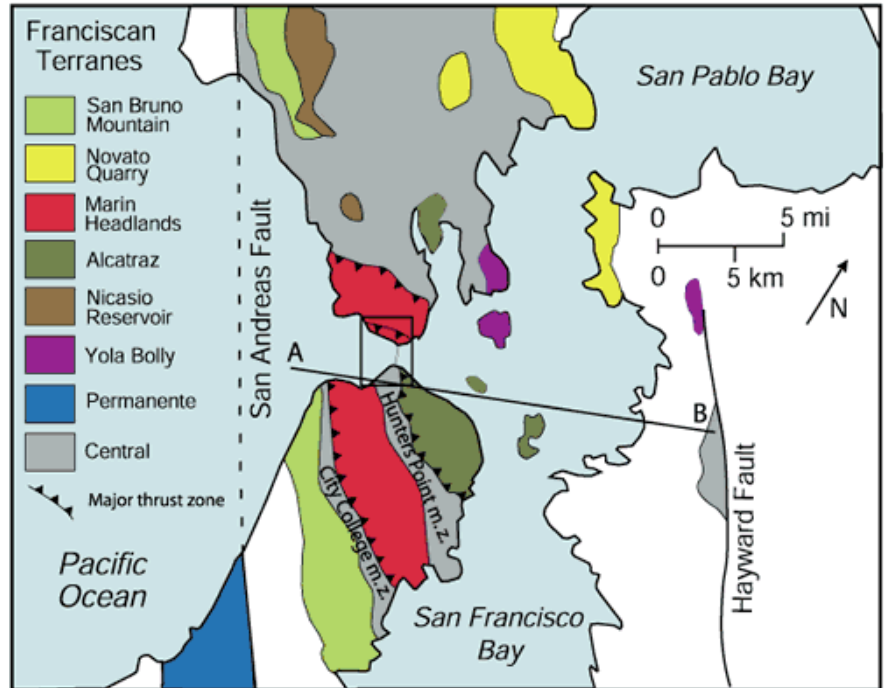


# Field Trip 3: Marin Headlands

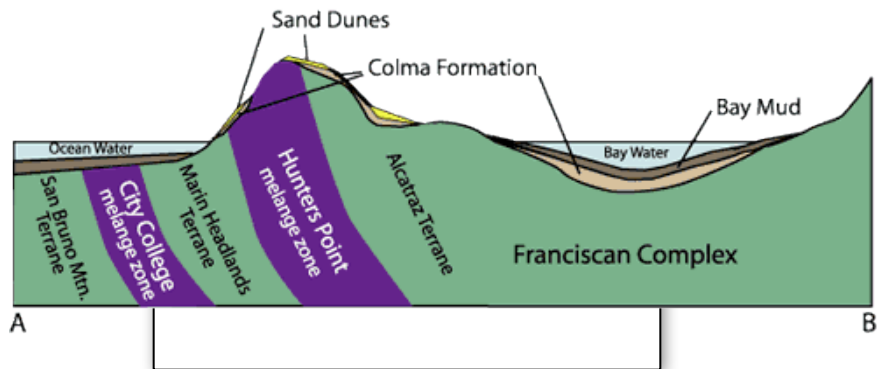
## Stop 1: Horseshoe Cove, Fort Baker, Sausalito

1. from campus, go south on 101 for 7 miles
2. Take the last exit before the Golden Gate Bridge—the Sausalito Exit.
3. However, there is **another** Sausalito exit much earlier... don't take it! Wait until you can see the Bridge!
4. At the Sausalito exit, turn right onto Alexander (Sausalito Lateral.) Follow under freeway.
5. Turn left onto Bunker Rd.
6. Before the tunnel turn a sharp right onto Bunker Rd.
7. Turn right onto Murray Circle and continue south to public fishing pier.

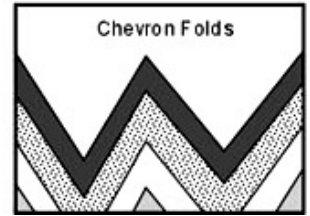
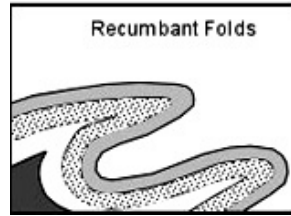
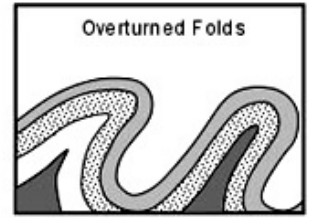
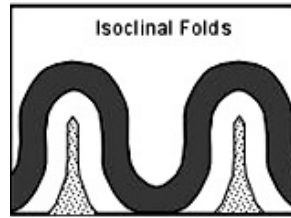
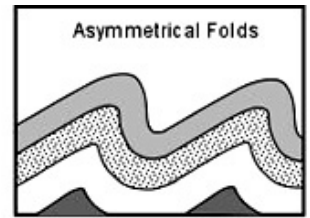
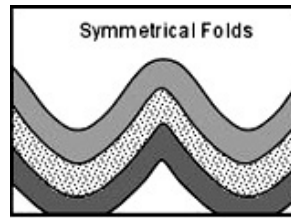
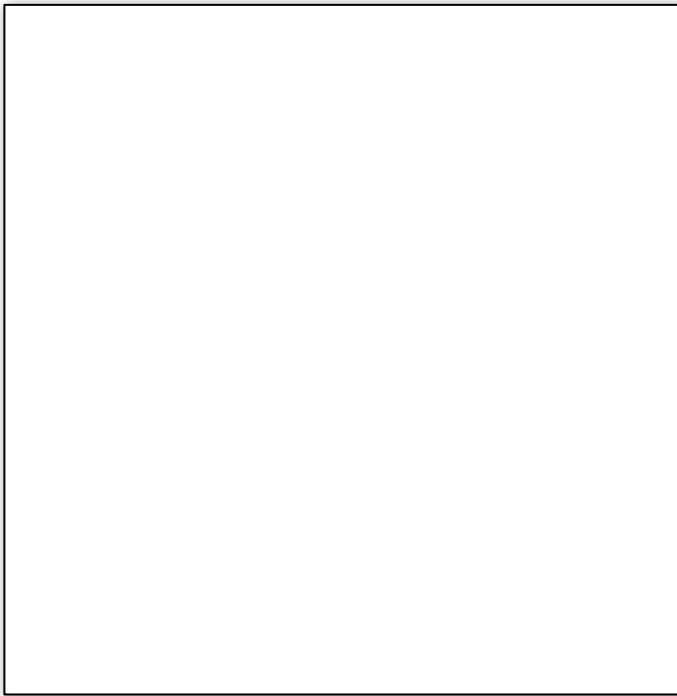


## Stop 2: Conzelman

1. Backtrack up Bunker Rd.
2. Turn left onto Alexander (i.e., not through the tunnel)
3. Back near the freeway exit, turn right on Conzelman. We'll stop on the side near nice exposures.

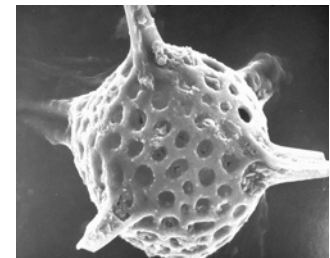


chert--Mack



### Stop 3: Old Quarry

1. *Continue on Conzelman, go right at fork.*
2. *Turn left onto Bunker Rd.*
3. *Just after the red house, when the road has curved to the north side of the lagoon, pull over in an old quarry.*



radiolarians--Pat

Franciscan Formation  
manganese

### Stop 4: Rodeo Beach

1. *Continue to Rodeo Beach.*
2. *Park near restrooms*

graywacke  
carnelian (chalcedony, quartz)

If this were to become rock, what would its name be?

Where did this sand come from?

Is this sand well-sorted? Poorly-sorted? Angular? Rounded?

## Stop 5: Battery Mendell

1. Backtrack on Bunker Rd.
2. Turn right on Field Rd
3. Continue past hostel, YMCA
4. Park at Battery Mendell

## Stop 6: Point Bonita Lighthouse

1. Continue on Conzelman Rd
2. Turn left at the YMCA
3. Park at Battery Mendell

what changes occur in the rocks as we walk down to the lighthouse?

Sandstone--95 Ma

Ribbon Chert--100-200 Ma, 80 m

Pillow Basalts > 200 Ma

Hagstrum & Murchey (1993) posit > 4000 km offset of cherts from latitude 0-2°, accretion w/ in 15°N latitude, and subsequent fault translation NW

cyanobacteria (*Trentepohlia*)

Pillow basalts--Julie

What does the chert between the pillows tell us?



## References & Resources:

<http://www.marin.cc.ca.us/~jim/ring/ggfieldtrip/headlands.html>

Jim's trip to this area

<http://bard.wr.usgs.gov/mrsid/bin/show.pl>

Mr. Sid, an air photo server from the USGS

<http://geopubs.wr.usgs.gov/map-mf/mf2337/>

<http://wrgis.wr.usgs.gov/docs/geologic/ca/california.html>

<http://virtual.yosemite.cc.ca.us/ghayes/Marin%20Headlands.htm>

Some pix of Pt. Bonita

<http://www.nps.gov/prsf/geology/geoguide.pdf>

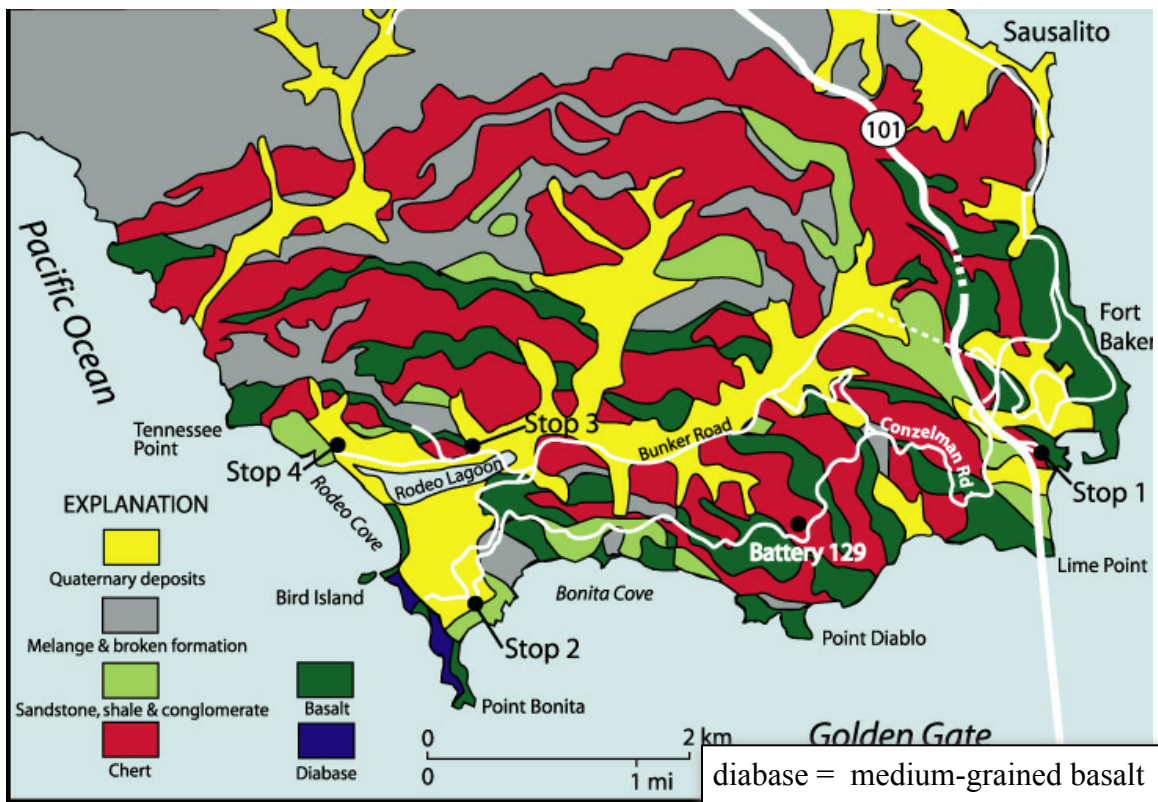
An NPS report with some good info.

<http://3dparks.wr.usgs.gov/goldengate/index.html>

A kick-ass site, esp. if you have 3-d glasses.

### Writeup:

For credit for the field trip, I want you to email me ([geology.prof@yahoo.com](mailto:geology.prof@yahoo.com)) a short descriptions of each stop. Include any pithy observations you made. This might be a good place for you to include photos you've taken. Due by next Sat



diabase = medium-grained basalt  
(between aphanitic and phaneritic)