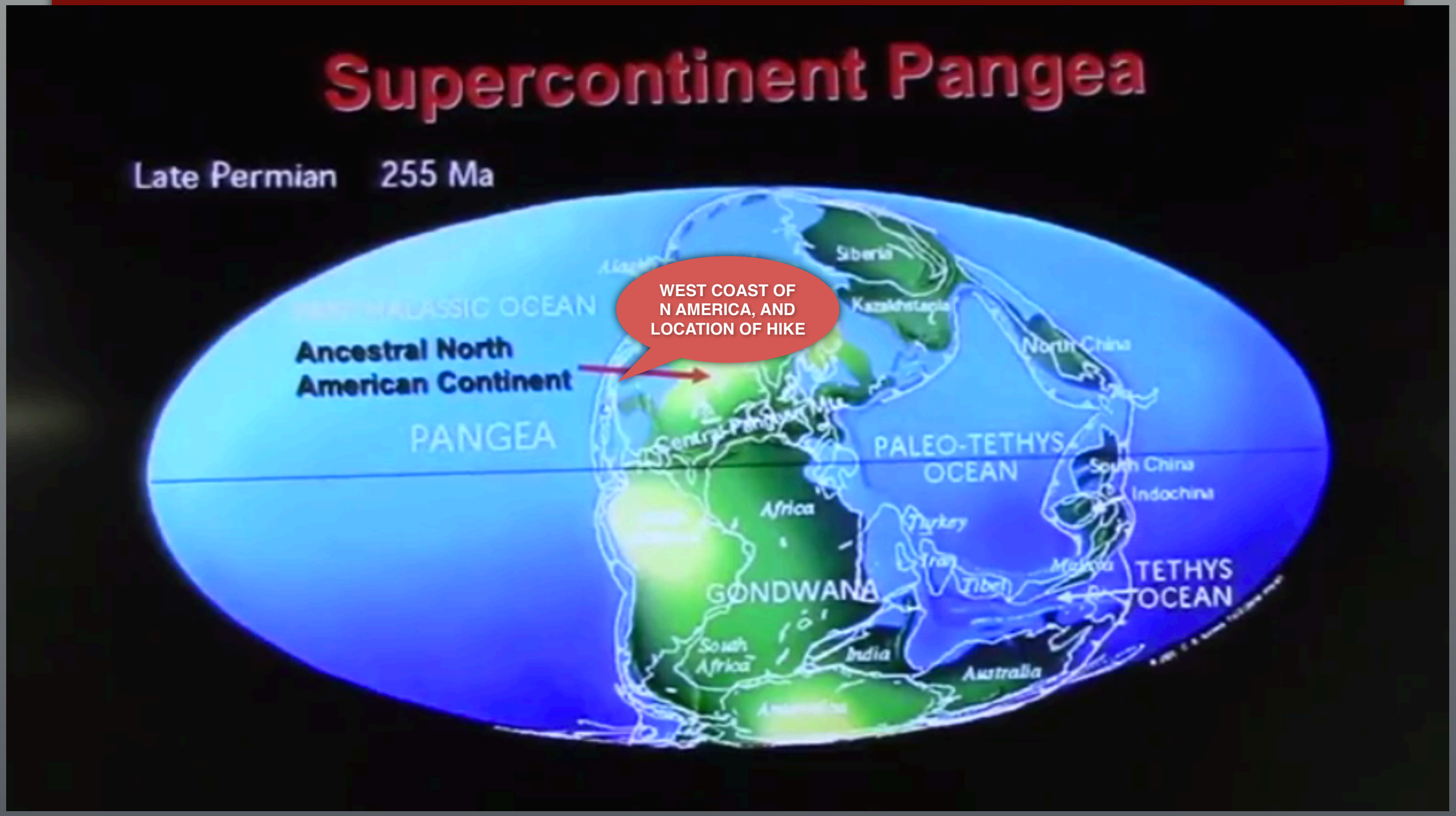
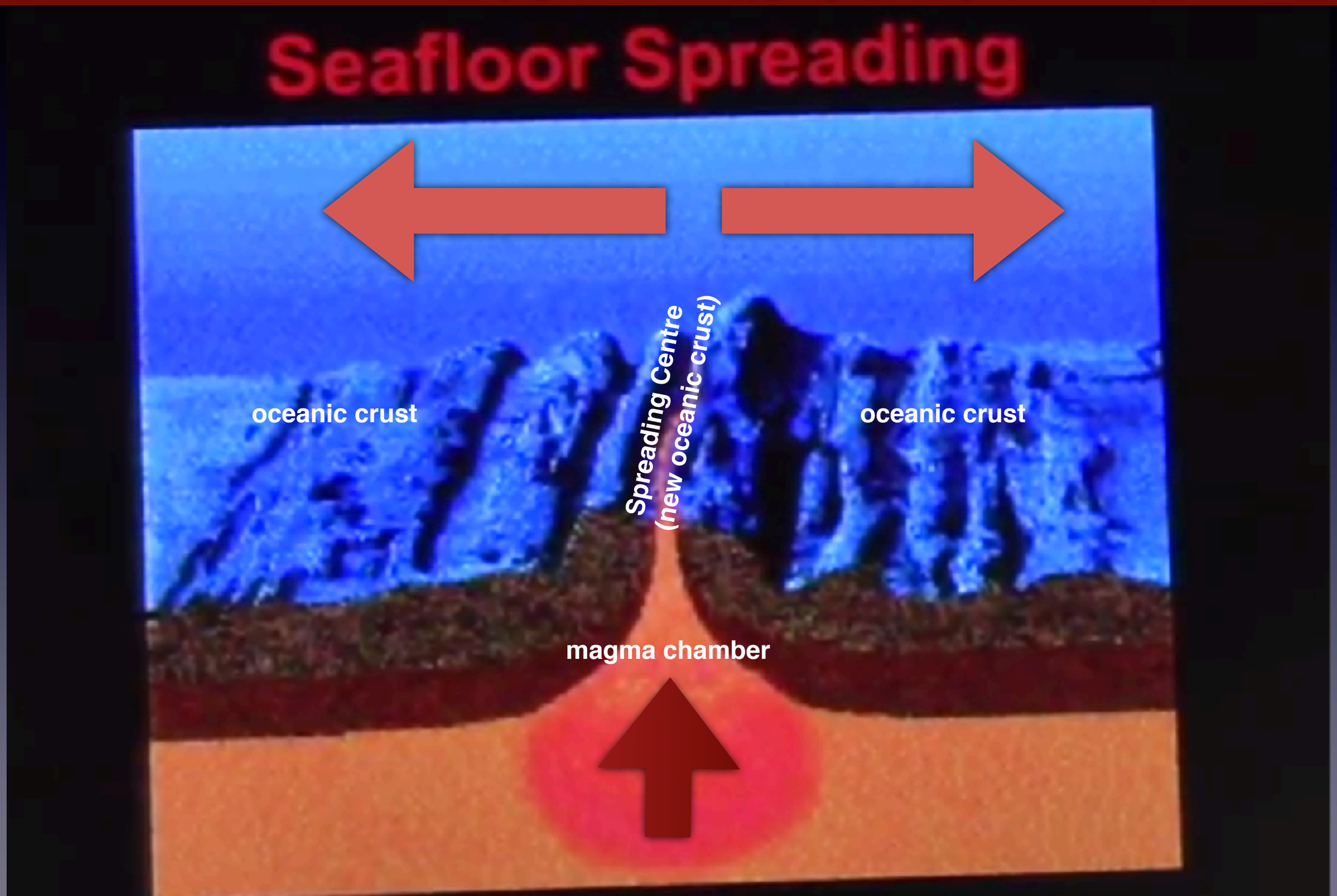
NOTES FROM THE TWINKIES AND BEER HIKE, NORTH SIDE OF SAN JACINTO MTN - NOV 2018

- All the continents were once part of a huge landmass known as Pangea, about 250 million yrs ago (mya).
- Antarctica, India and Australia were the first to break off (about 150 mya), followed by Africa and S America (about 120 mya), and finally N America as it split from S America (about 80 mya).



- The earth consists of plates made of oceanic (denser) and continental (lighter) material which move around on the earth's mantle (molten rock)
- New crust is being constantly created at Mid Ocean Ridges, and consumed at subduction zones (eg Pacific Ring of Fire) as the plates move
- Seafloor Spreading - Magma rises up through the crust forming new oceanic crust, and forcing the plates to slide apart
- This movement sets up a convection cell which drives oceanic crust down under continental crust where the two come together
- Volcanics result from this subduction in the overlying continental crust (eg Oregon, Washington, N California)

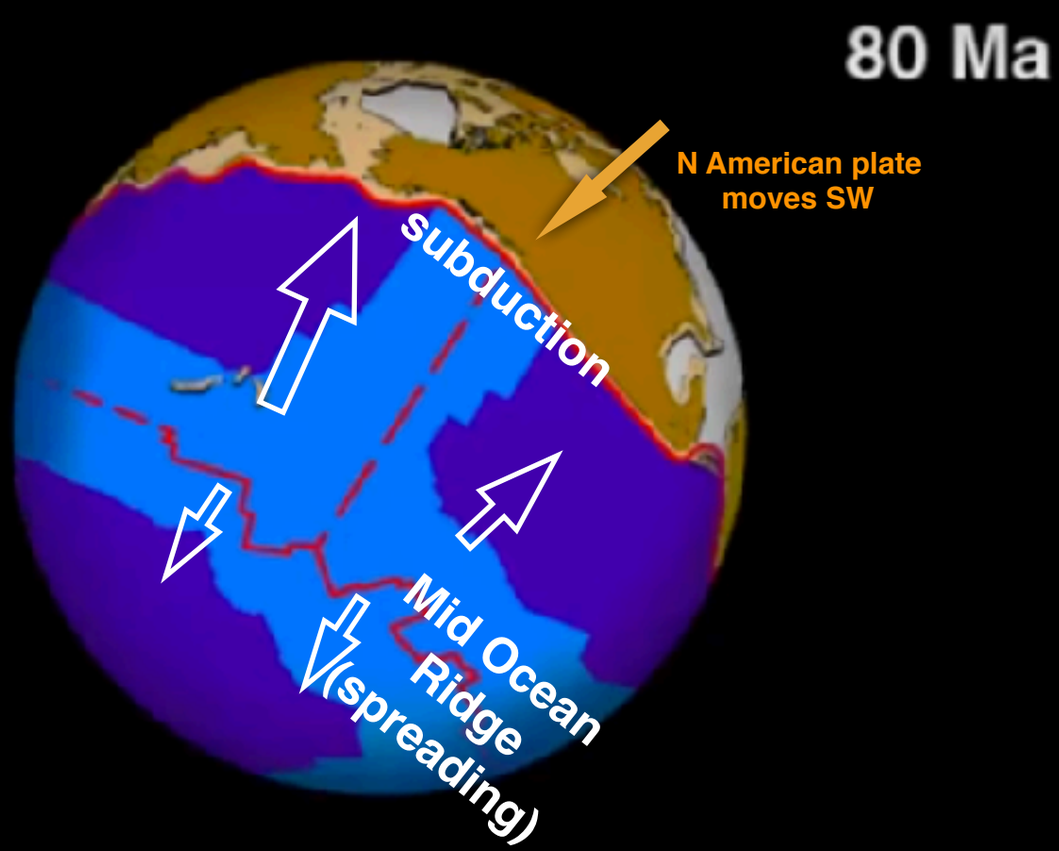


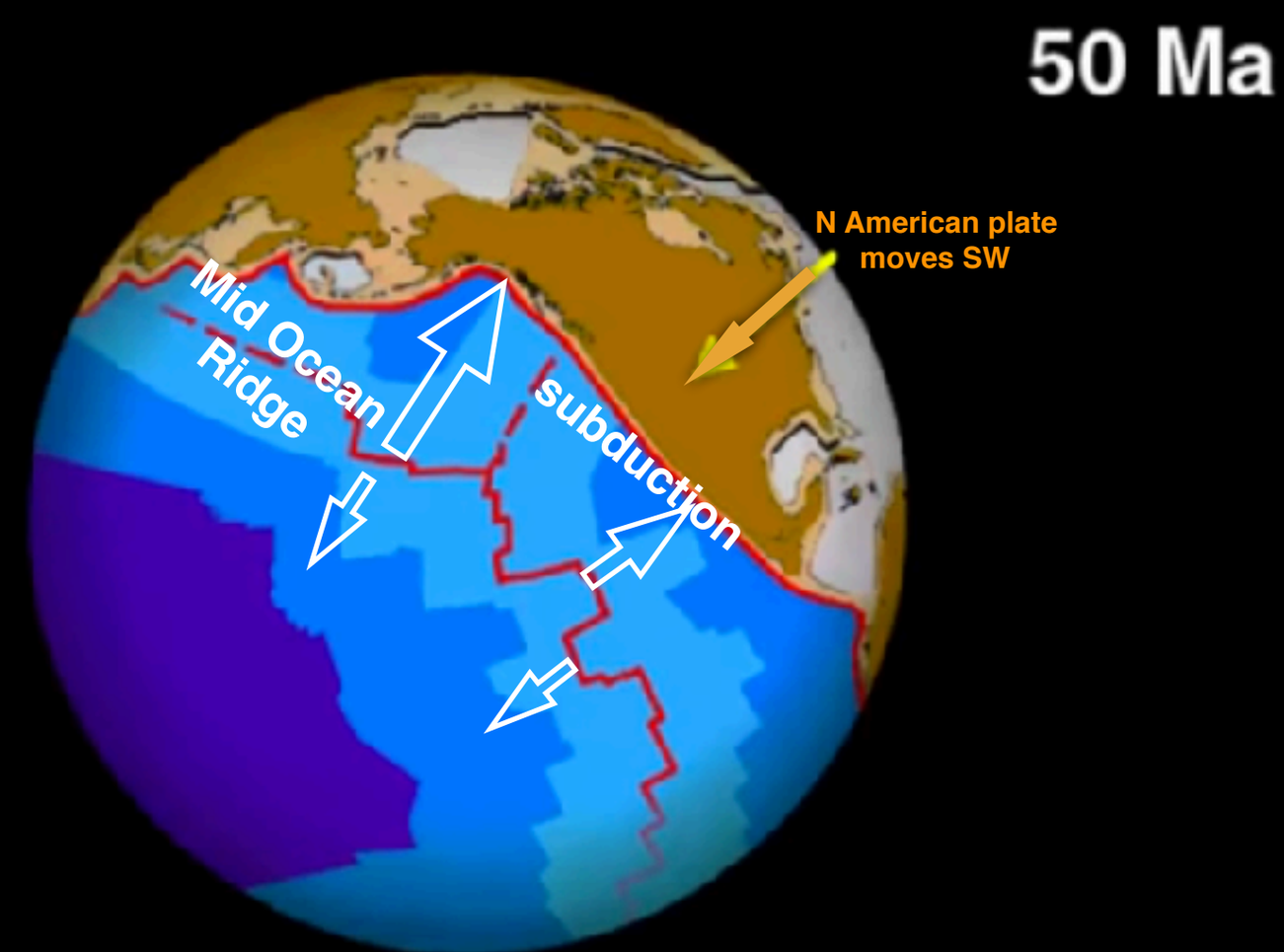
Tectonic Plates - Active margins

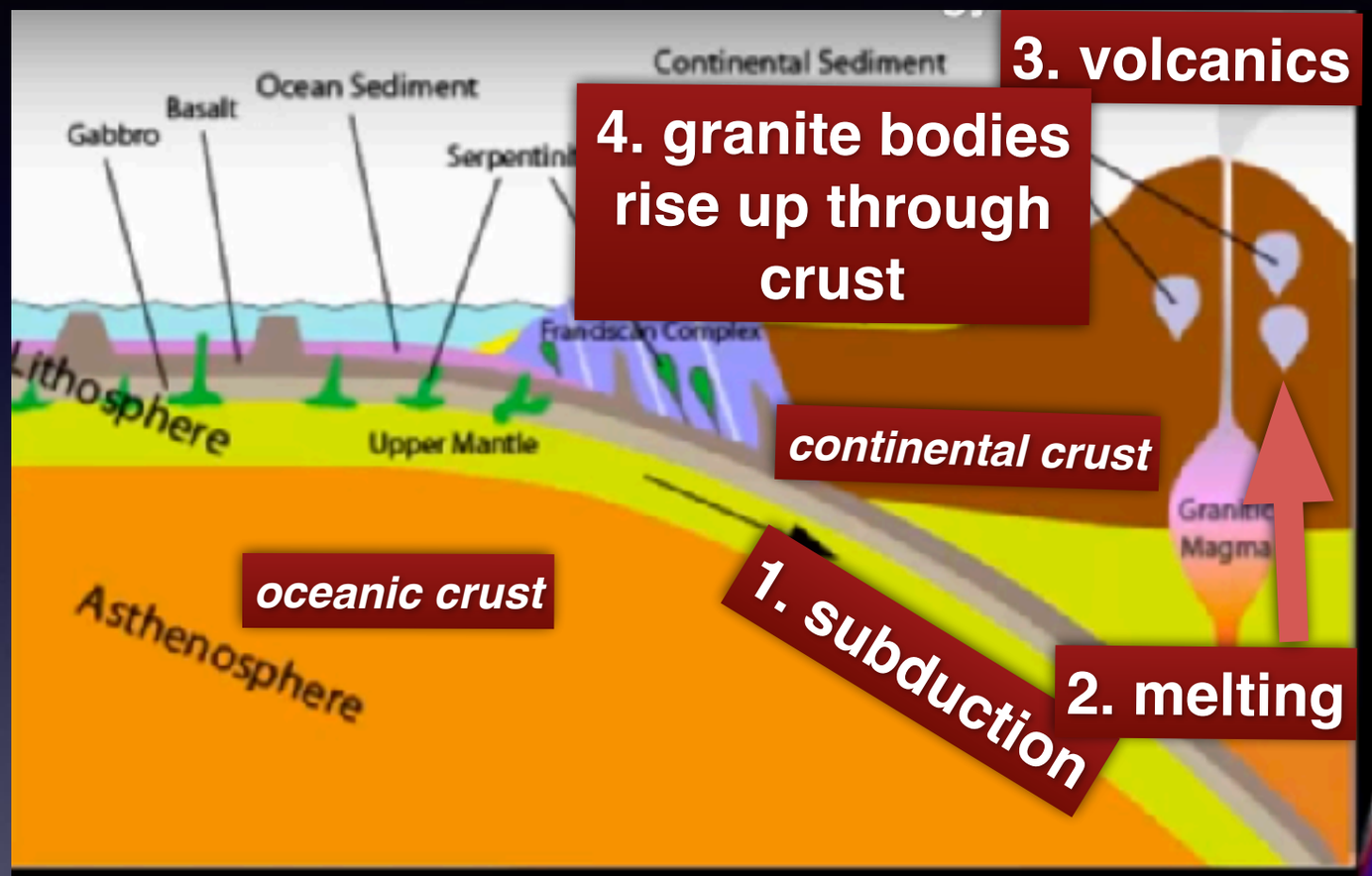
Divergent

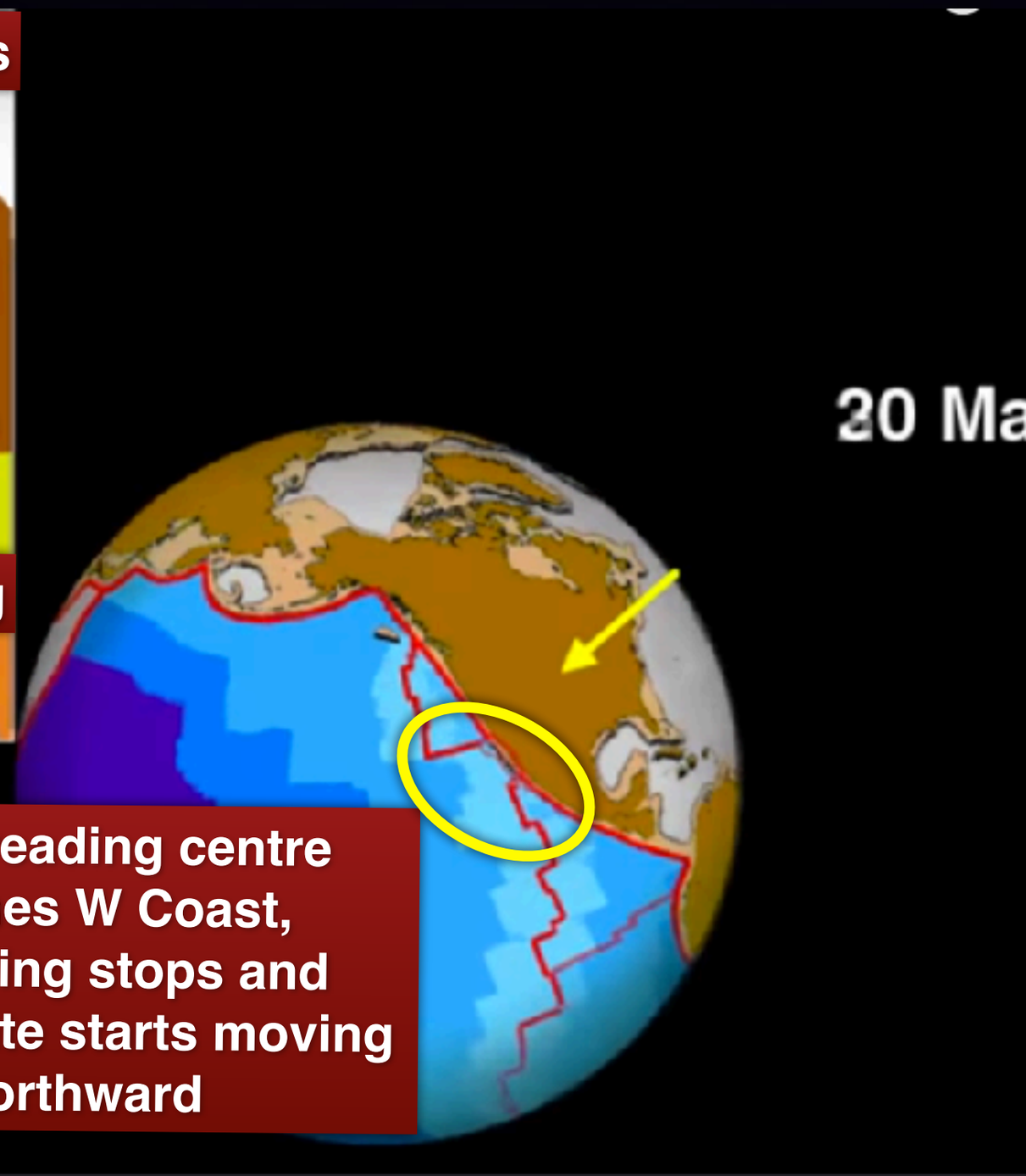
History of plate movement in Pacific basin

- from 80 million years ago to 50 mya, N American continental plate slides SW over Pacific oceanic plate
- mid ocean spreading centres get subducted beneath N Am plate, resulting in W Coast volcanism



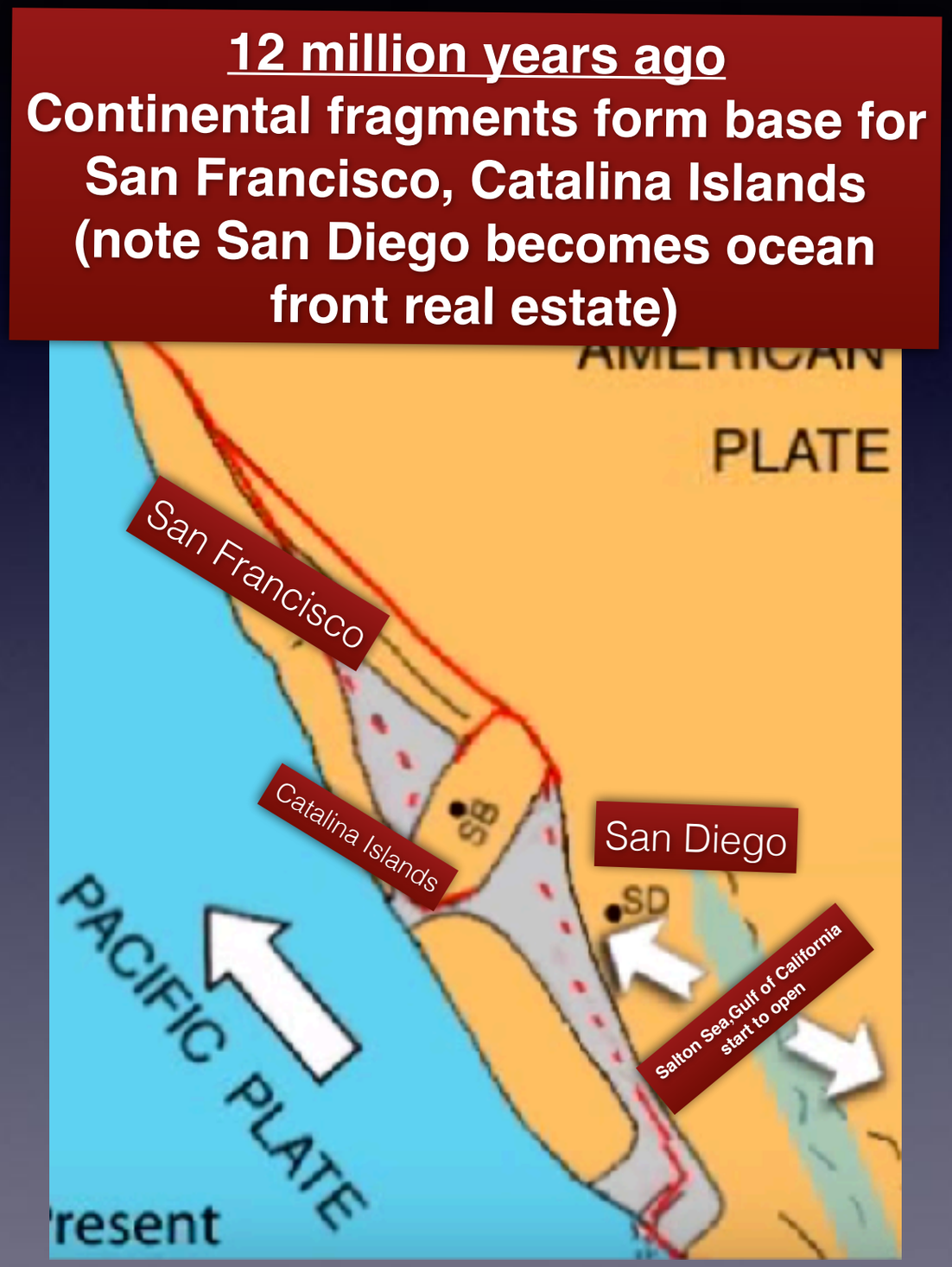






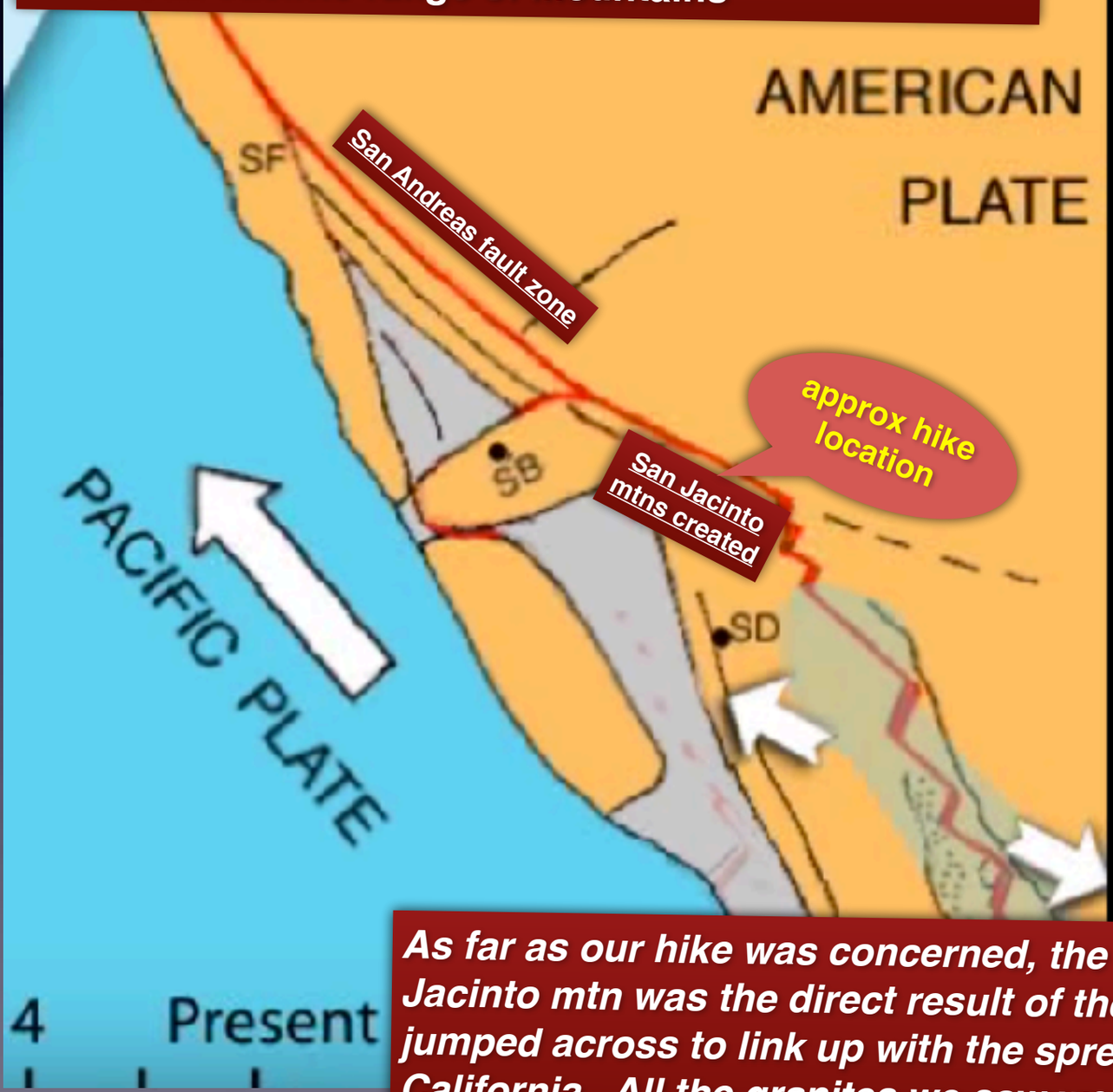
old spreading centre reaches W Coast, spreading stops and ocean plate starts moving northward


20 million years ago
As spreading centre locks up, Pacific plate starts to slide northward (early San Andreas fault)
AMERICAN
PLATE
San Francisco
SF
SB
San Diego
SD
PACIFIC PLA
Present


12 million years ago
Continental fragments form base for San Francisco, Catalina Islands (note San Diego becomes ocean front real estate)
AMERICAN
PLATE
San Francisco
Catalina Islands
SB
San Diego
SD
Salton Sea,Gulf of California start to open
PACIFIC PLATE
resent

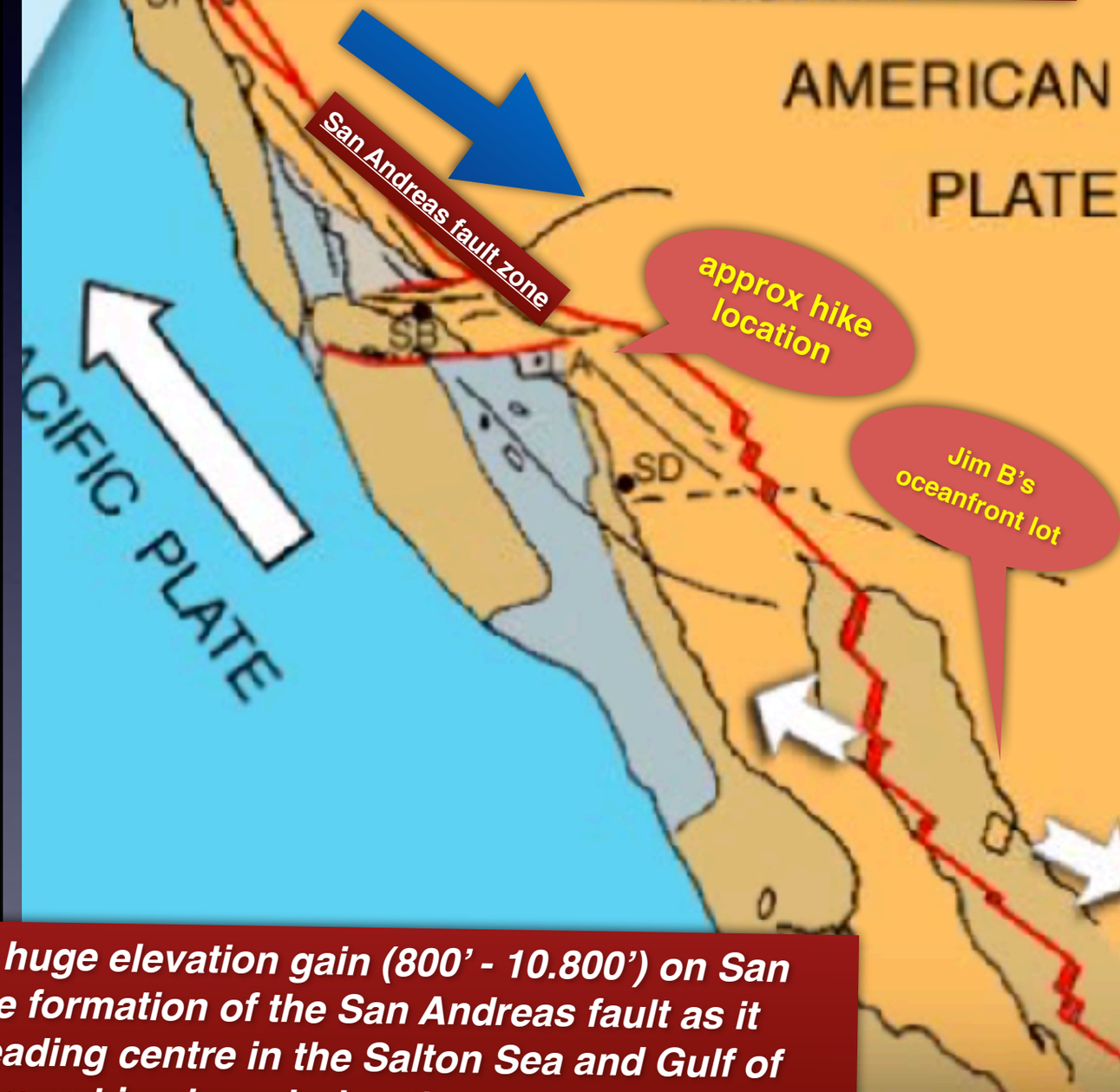
4 million years ago

- San Andreas fault makes major jump to hook up with spreading continuing in Salton Sea, Gulf of California
- The resulting stresses in the crust were spectacular, leading to huge uplift and creation of the San Jacinto range of mountains



Present Day

Pacific plate continues northward slide, movement across San Andreas fault periodically wreaks havoc on human habitation along W Coast (and creates Jim B's oceanfront property on the east side of the Salton Sea - in a few million years…)



As far as our hike was concerned, the huge elevation gain (800' - 10.800') on San Jacinto mtn was the direct result of the formation of the San Andreas fault as it jumped across to link up with the spreading centre in the Salton Sea and Gulf of California. All the granites we saw were put in place during that process of uplift and erosion, leaving them exposed present day.