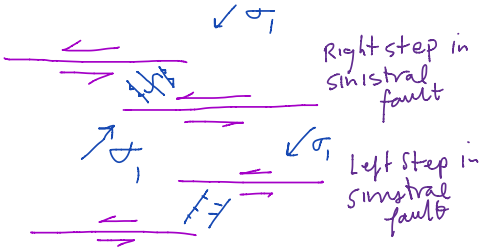
Continental strike-slip faults - occur in every setting, on every scale. Topographic expression is highly variable. Big ones can show some segments of highly localized deformation (10s km) or be 100s km wide.

Topographic expression:
As strike slip faults are ideally vertical, their surface trace usually makes a straight line across topography. Fault core itself may be excavated (damaged/weathered rock) so might see valleys. Alpine fault is straight trace ~850 km. Lateral =displacement means that surface deposits may be offset and can date displacement more easily than on other kinds of faults which involve more throw. Alpine fault many generations of moraines etc. demonstrate 21-24 mm/yr since Pleistocene.

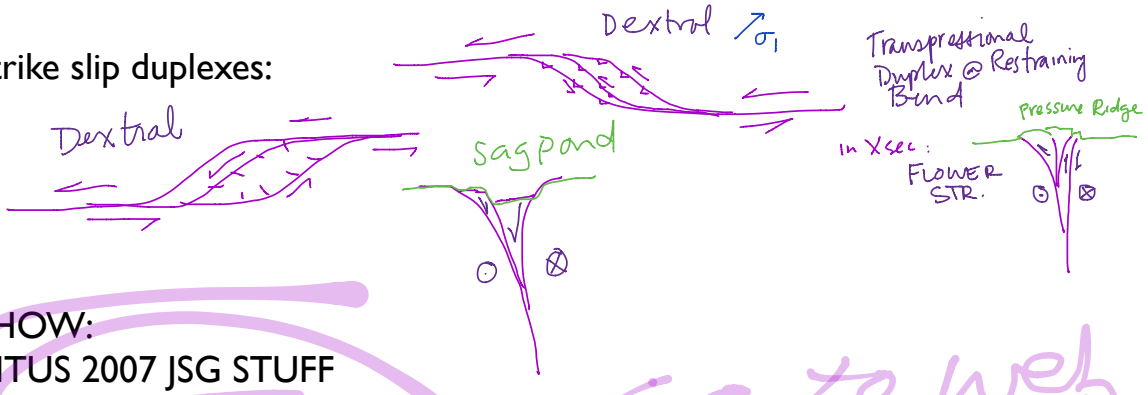
However, commonly splay at surface so multiple strands must be considered. Splaying requires curvature - which means splays often in transtension or transpression - resulting in characteristic structures within the zone. These are also found at stepovers (restraining or releasing bends or stepovers)

Transpression - Uplift - "push up" or "pop ups" or "pressure ridges"

Transtension - subsidence - "sag ponds" or "pull-aparts" "pull-apart basins"



Strike slip duplexes:



SHOW:
TITUS 2007 JSG STUFF
WAKABAYASHI 2007 GSA SP STUFF
ten Brink

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Large scale - The Big Bend - vertical axis rotation.

What happens to big Strike-slip faults at the Moho?

- Sometimes, lateral offset of crusts of different thickness against each other can create steps in the crust-mantle boundary or in the lithospheric boundaries between two crustal blocks - stress concentrators - encourage mantle flow
- Some areas on the southern San Andreas - where fault is transpressional - there is actually a crustal root along the fault trace - thickening structures form at depth as well as at surface
- seismic anisotropy and velocity structures locally indicate that felsic crust flows to even out the depth - helps create low-angle thrust detachments where faults shallow into lower crust.
- due to orientation changes, the surface trace may be offset from the deeply deforming zone. e.g. Alpine fault in the south

Along strike complexity
- Bay Area fault map with ruptures (Google Earth)
- Central creeping segment
- Southern SAF community fault model
- rupture simulations

GOT THIS FAR

different strands hand off on short and long timescales.

Strong/weak fault paradox! stress orientations around continental faults, trade-off with frictional strength. Heat flow paradox.