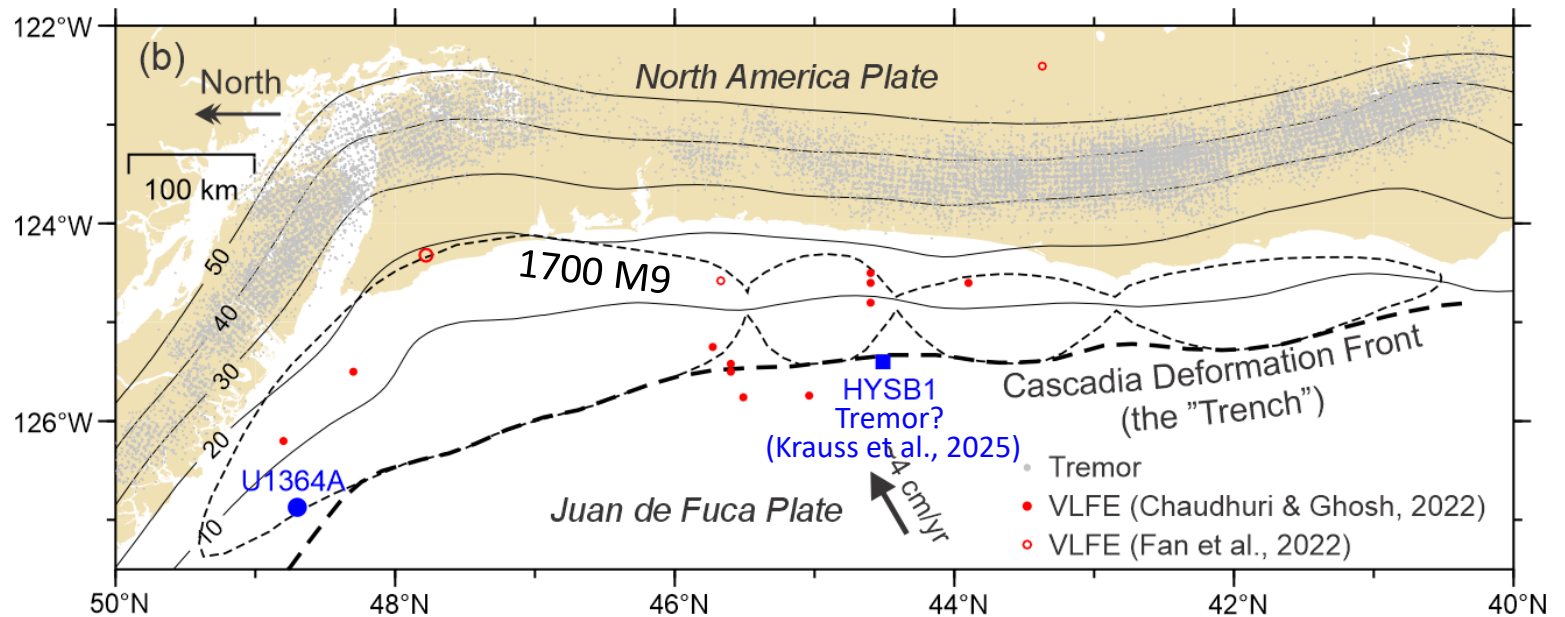
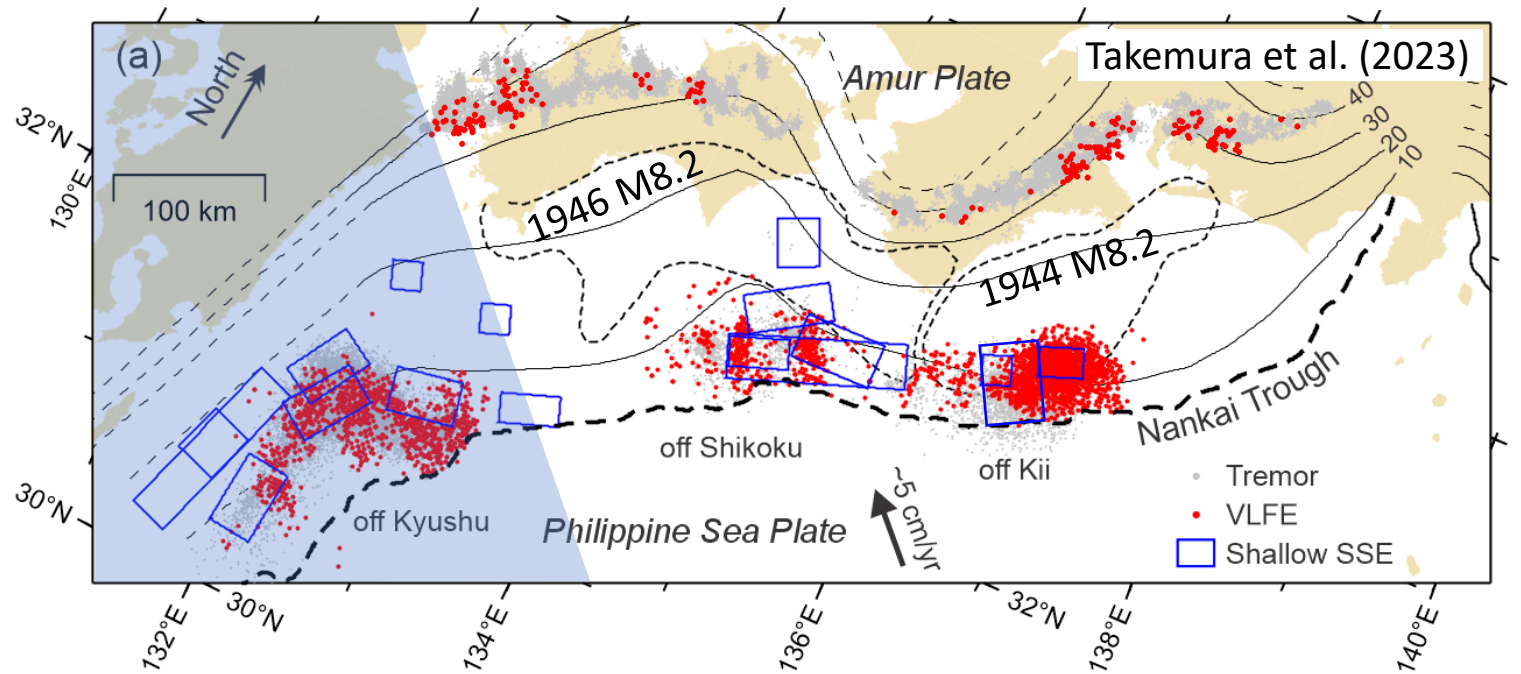


Shallow creep in the stress shadow of megathrust locked zone: Cascadia vs. Nankai

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Two mechanisms for shallow creep in stress shadow

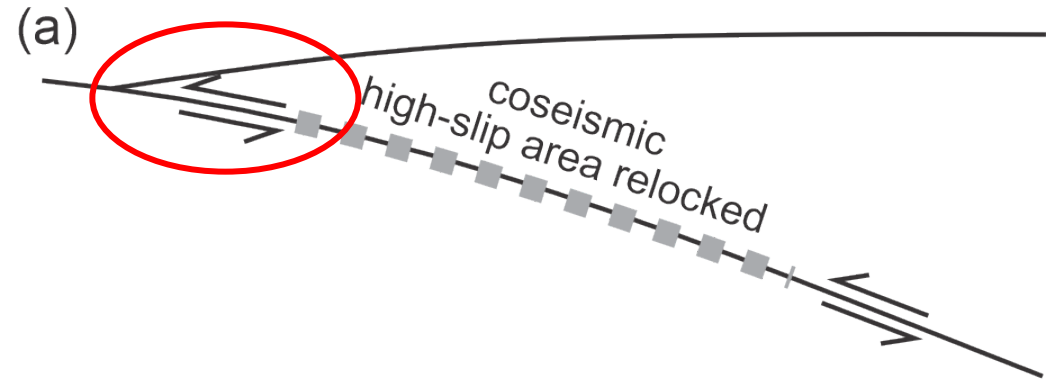
(1) Prolonged afterslip

- Stress increases in earthquake
- Stress is relieved by afterslip
- Creep rate decays with time

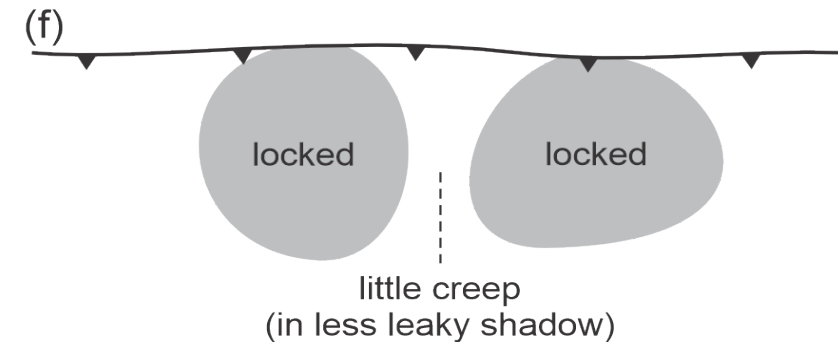
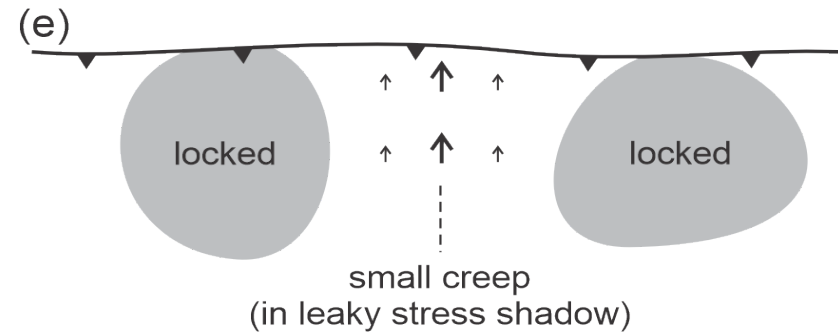
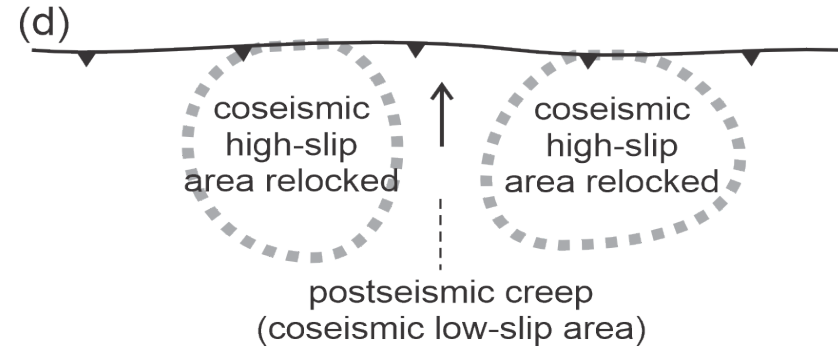
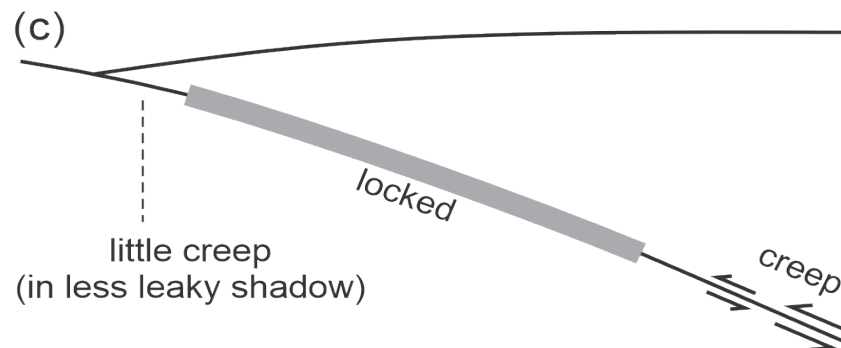
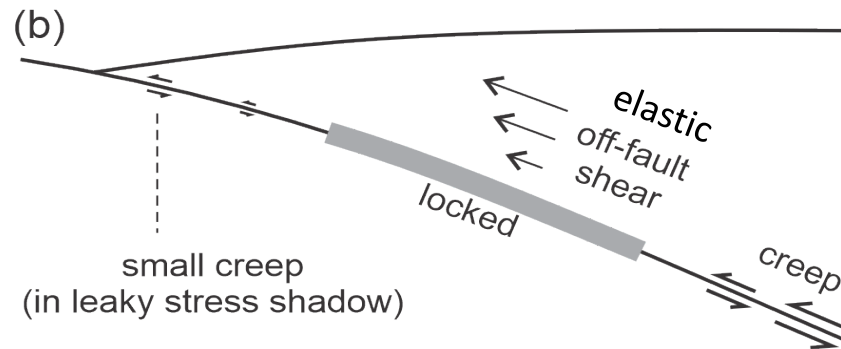
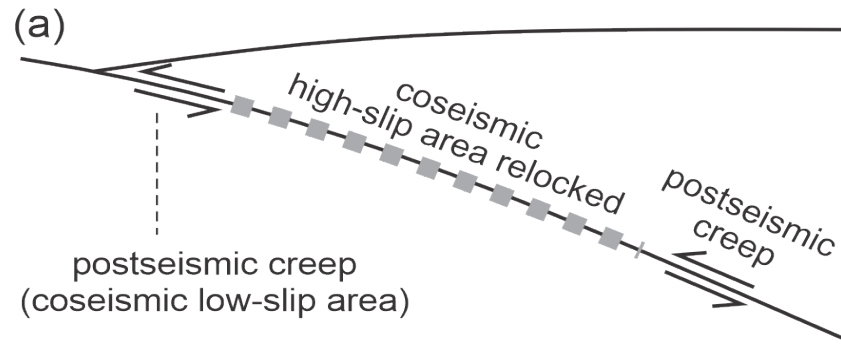
(2) Leaky stress shadow

- Interseismic off-fault deformation
- “Leaked stress” drives shallow creep
- Constant rate, does not relieve stress

Transition from (1) to (2) is very gradual, unless R is very small.



Similar principles apply also in the strike direction



Model results to appear
in a paper in preparation.

Stay tuned!

Conclusions

- Shallow creep in stress shadows is prolonged afterslip and/or interseismic creep in leaky shadows.
- Shallow creep in Nankai likely reflects both afterslip and leaky stress shadow.
- Rarity/absence of shallow creep at Cascadia indicates full locking to trench or very small shadow zones.

