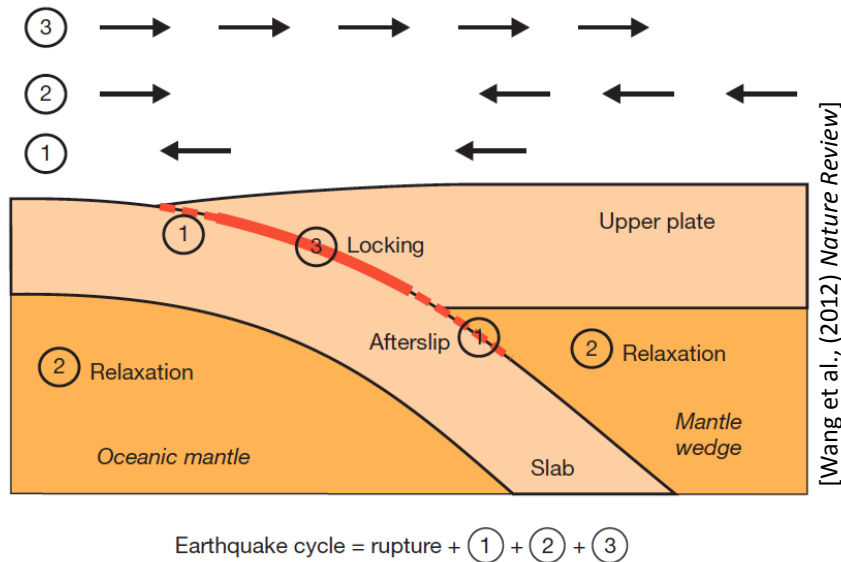




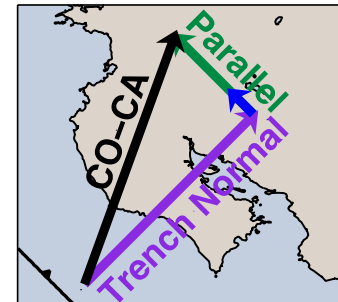
Episodic forearc sliver translation during relocking of the Nicoya, Costa Rica megathrust: an unexpected observation

Hobbs, T.E., Newman, A.V., Protti, M.



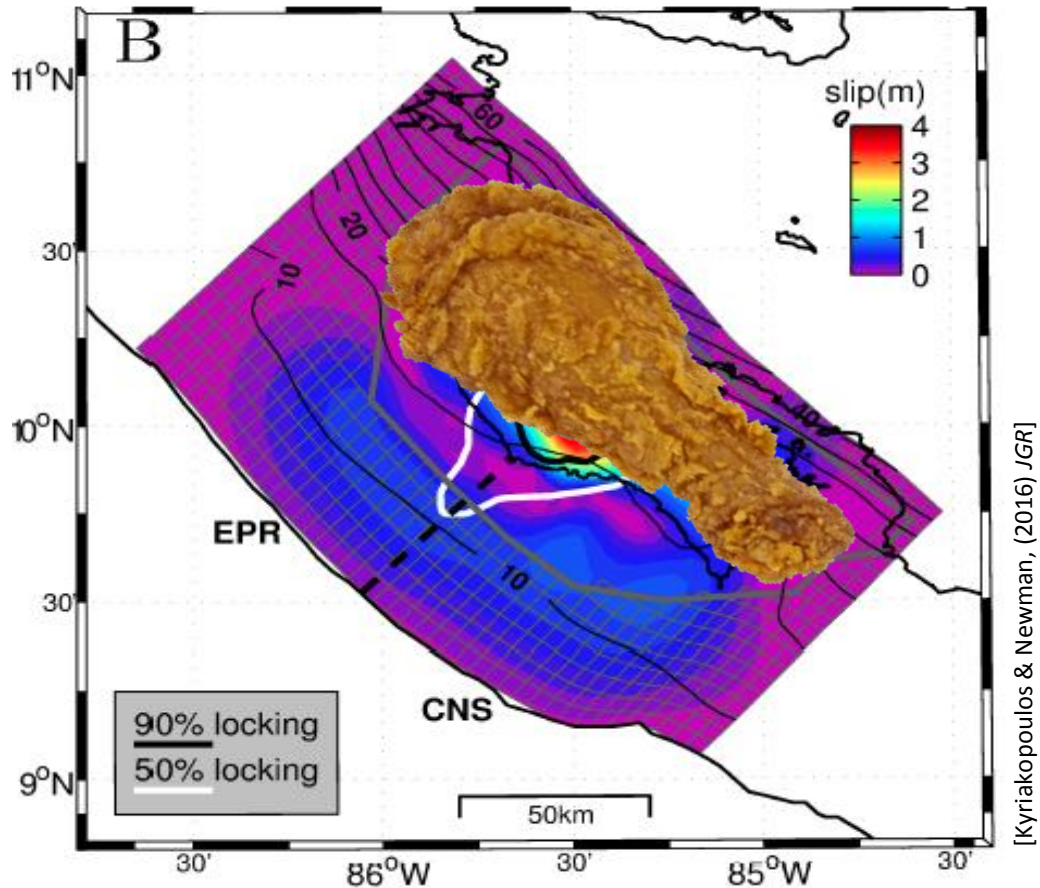


POSTSEISMIC RECOVERY



What is the spatiotemporal pattern of postseismic recovery **in an oblique subduction zone?**

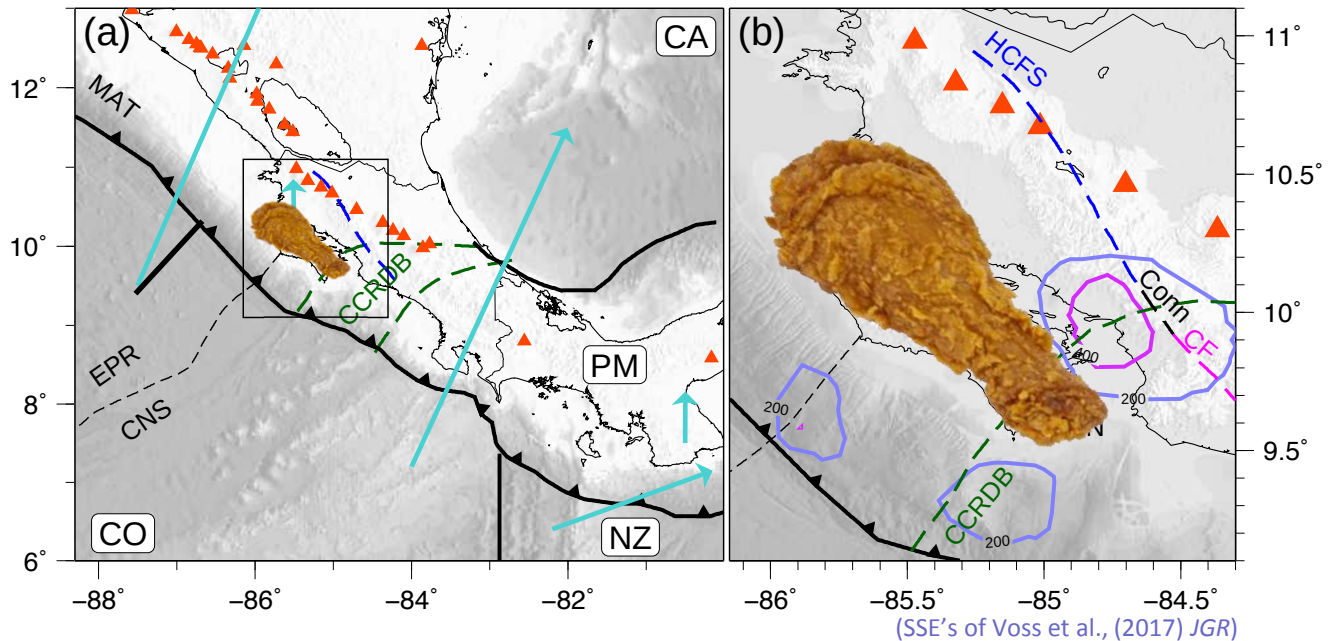
2012 Mw 7.6 NICOYA EARTHQUAKE



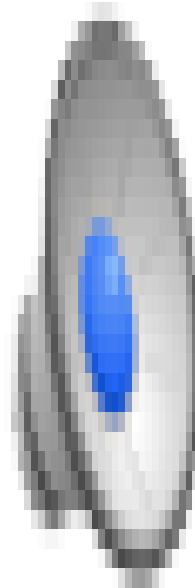
STUDY AREA

Oblique
Subduction

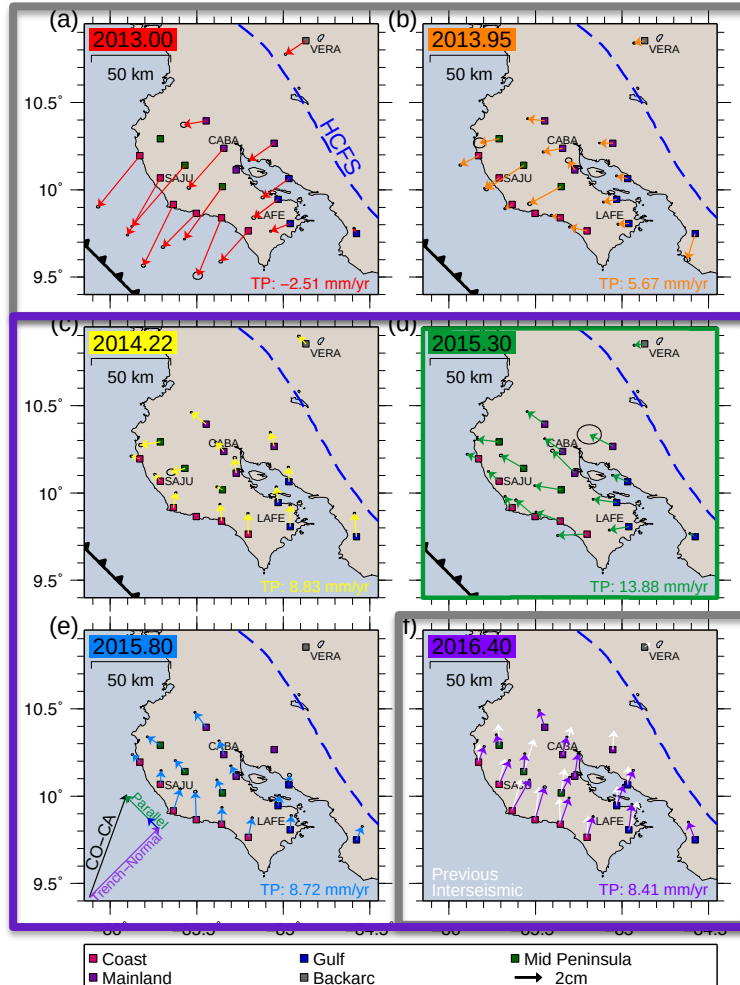
Arc-bounding
Fault



SURFACE VELOCITIES



AFTERSLIP



LESS
AFTERSLIP

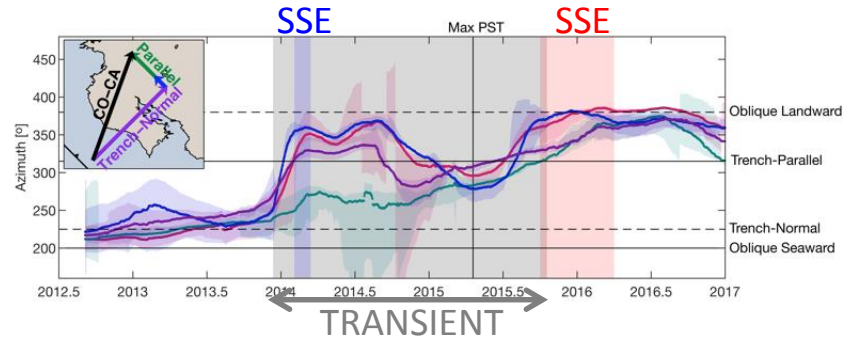
TRANSIENT
START

PEAK
TRANSIENT

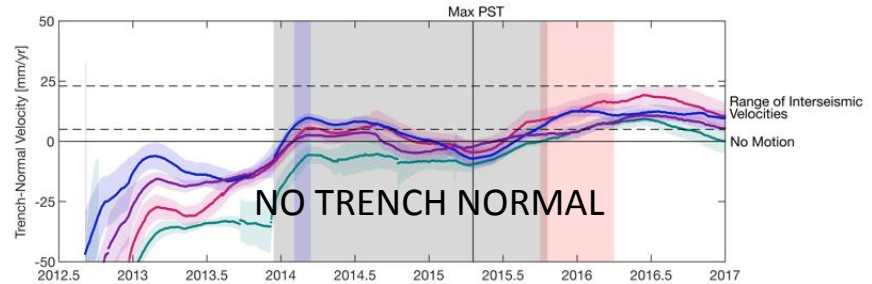
RE-
LOCKING

INTER-
SEISMIC

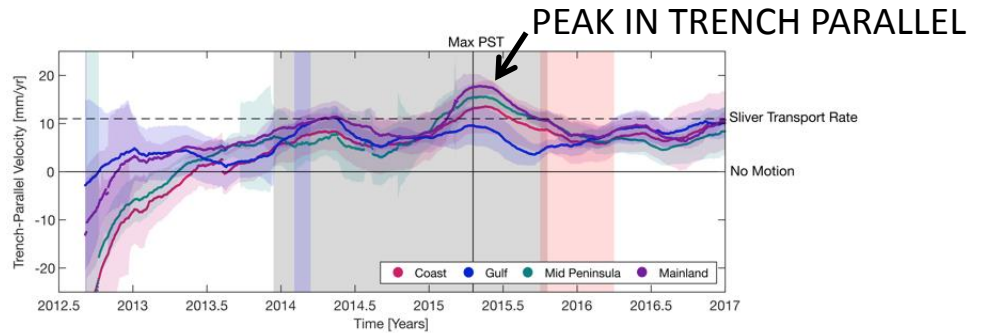
AZIMUTH



TRENCH
NORMAL

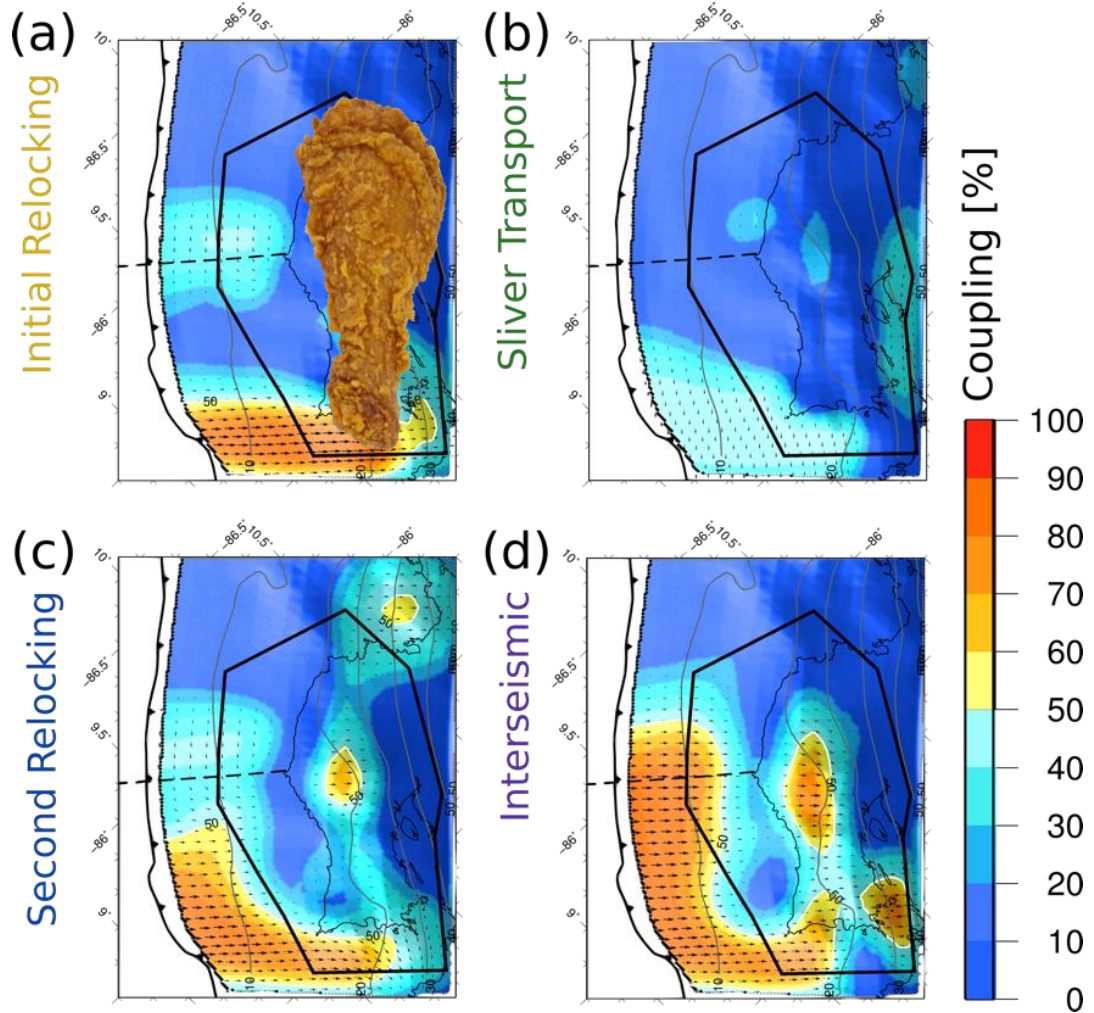


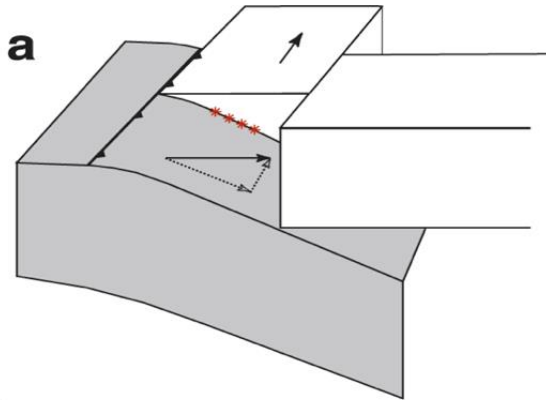
TRENCH
PARALLEL



BACKSLIP

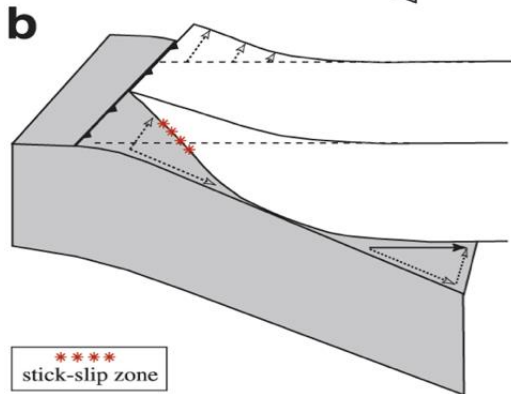
* Without average trench parallel velocity





WEAK COUPLING

-> PARTITIONING

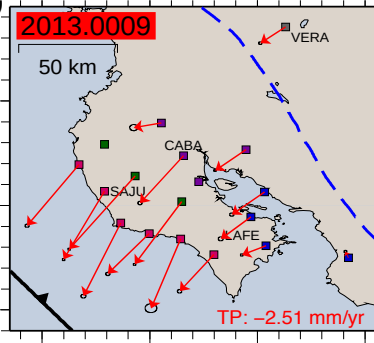


[Bevis & Martel., (2001) G3]

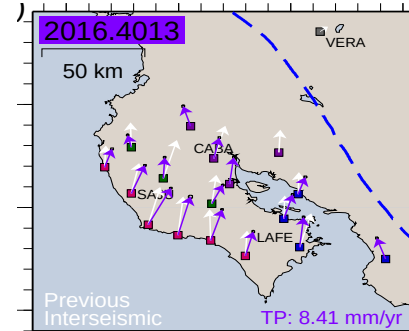
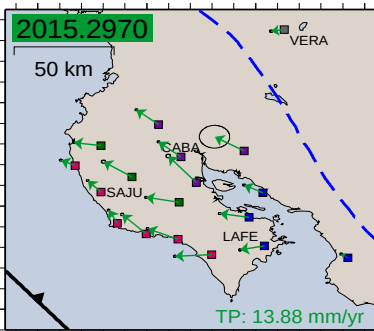
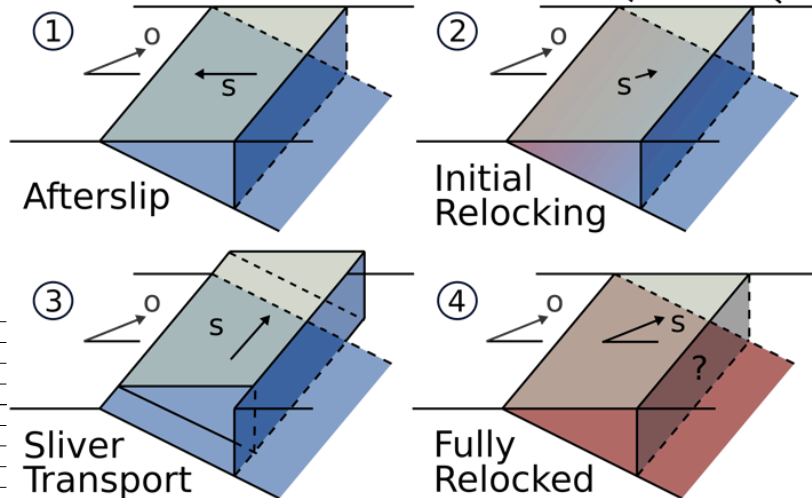
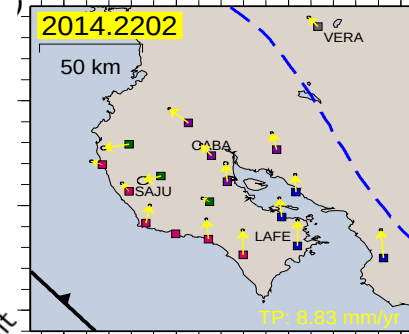
STRONG COUPLING

-> OBLIQUE
CONVERGENCE

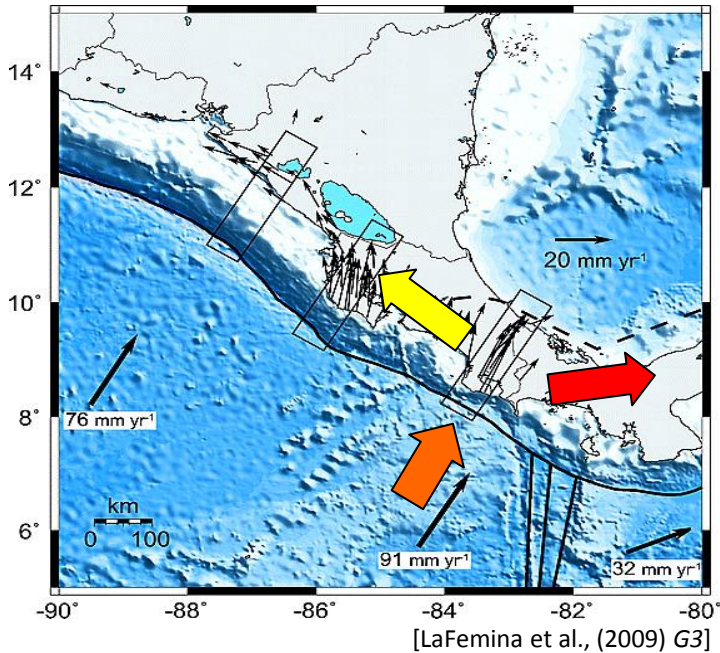
POSTSEISMIC CONDITIONS DRIVE EPHEMERAL SLIP PARTITIONING



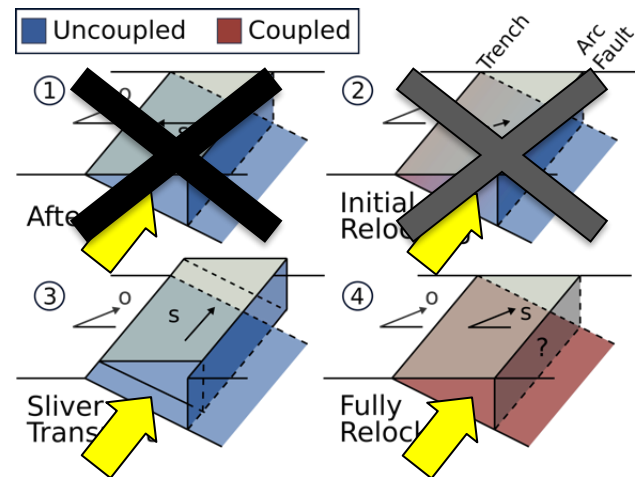
■ Uncoupled ■ Coupled



TECTONIC IMPLICATIONS: INDENTER MODEL?



We have documented variable trench-parallel velocities, which are incompatible with an indenter model.



CONCLUSIONS

- Nicoya forearc experiences short-term, aseismic, trench-parallel motion:
This has never been observed before
- Sliver transport rate is not constant
- Weakened sliver-bounding faults = partitioning?
- Central American Forearc is not driven by a Cocos indenter [current paradigm]

Merci!



Thanks to K. Gardner, J. McAdams, S. Kemmerlin, A. Williamson, J. Buffo, J. Mendez, D. Sanchez, C. Muller & OVSICORI

Contact: tiegan.hobbs@eas.gatech.edu

Green Time (PST)

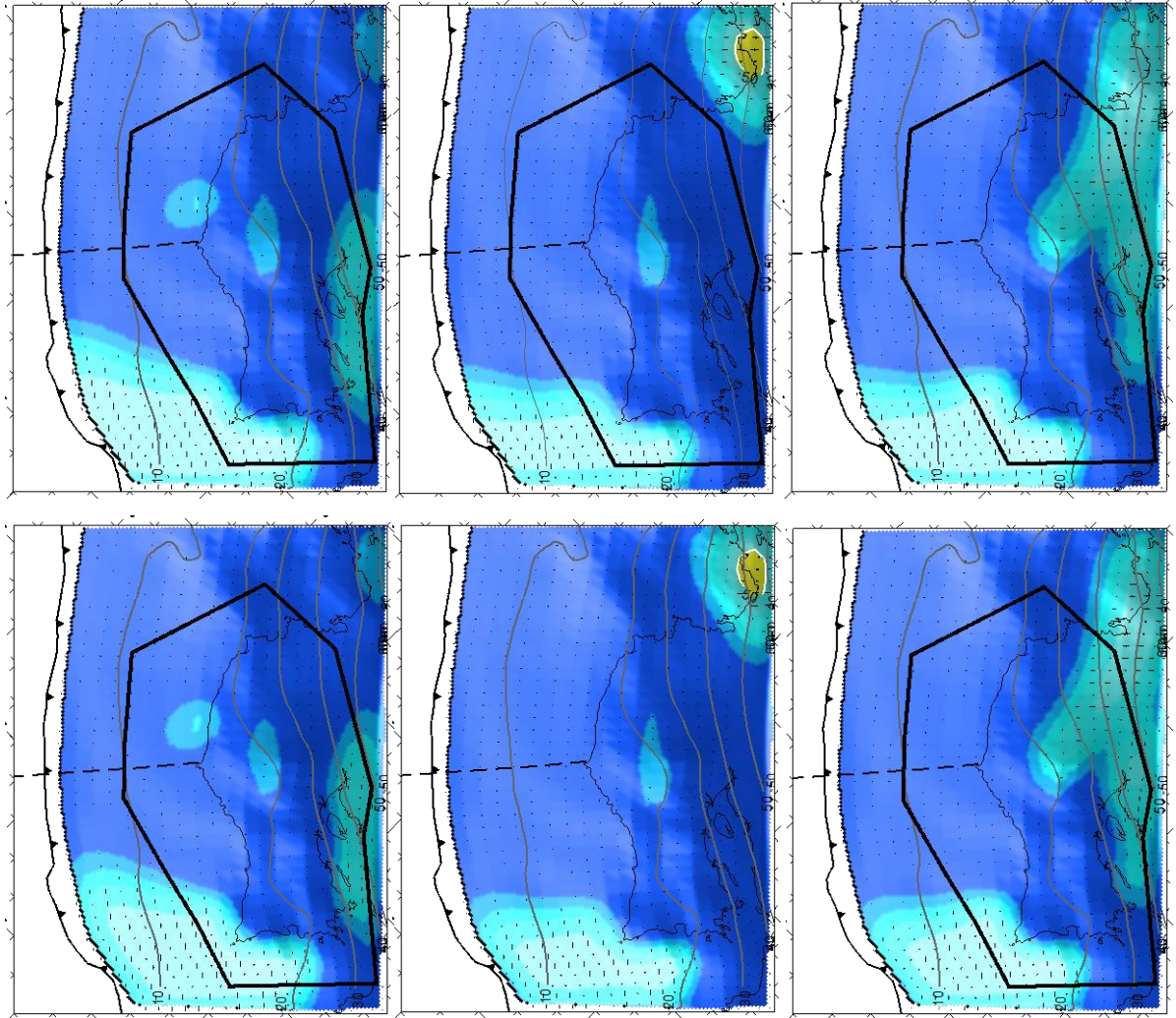
Fixed

Free

- Avg TP

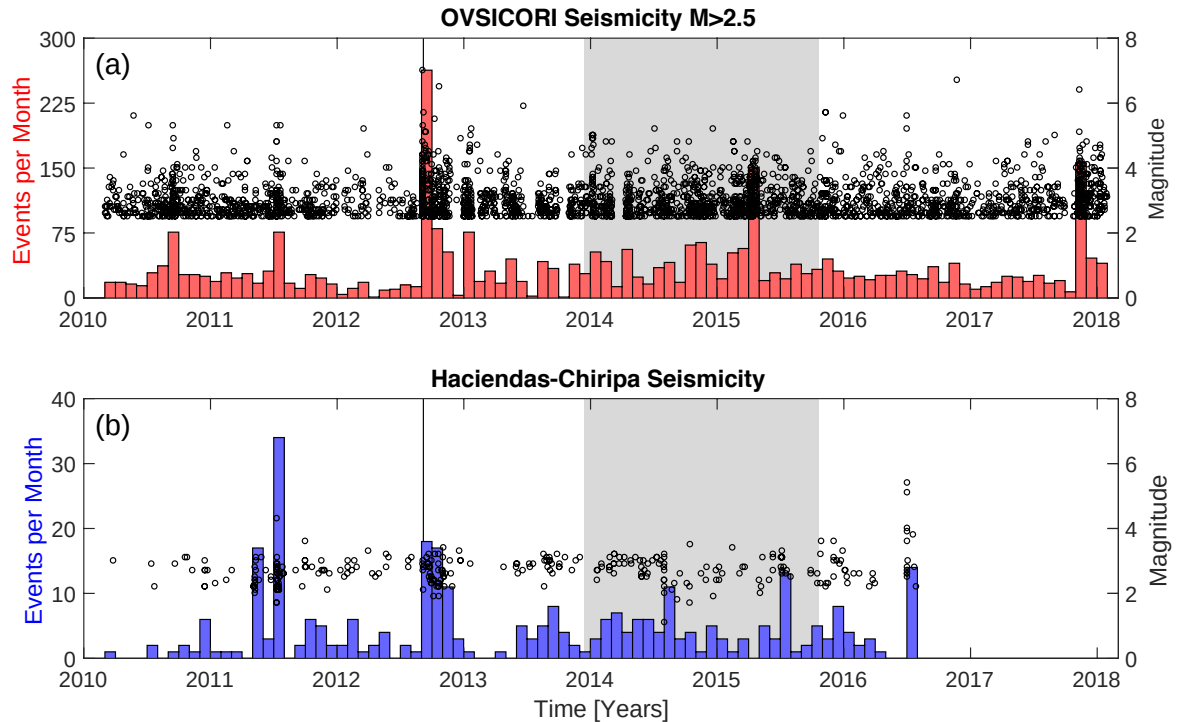
- 11 mm

- 11 mm & SSE



Inversion results are relatively robust to choice re: trench parallel velocity & SSE

ANCILLIARY GEOPHYSICAL DATASETS ARE INCONCLUSIVE



ANCILLIARY GEOPHYSICAL DATASETS ARE INCONCLUSIVE

