https://giphy.com/explore/abcnews

SCEC TAG: Mendocino triple junction

Overview of the regional tectonics in the MTJ

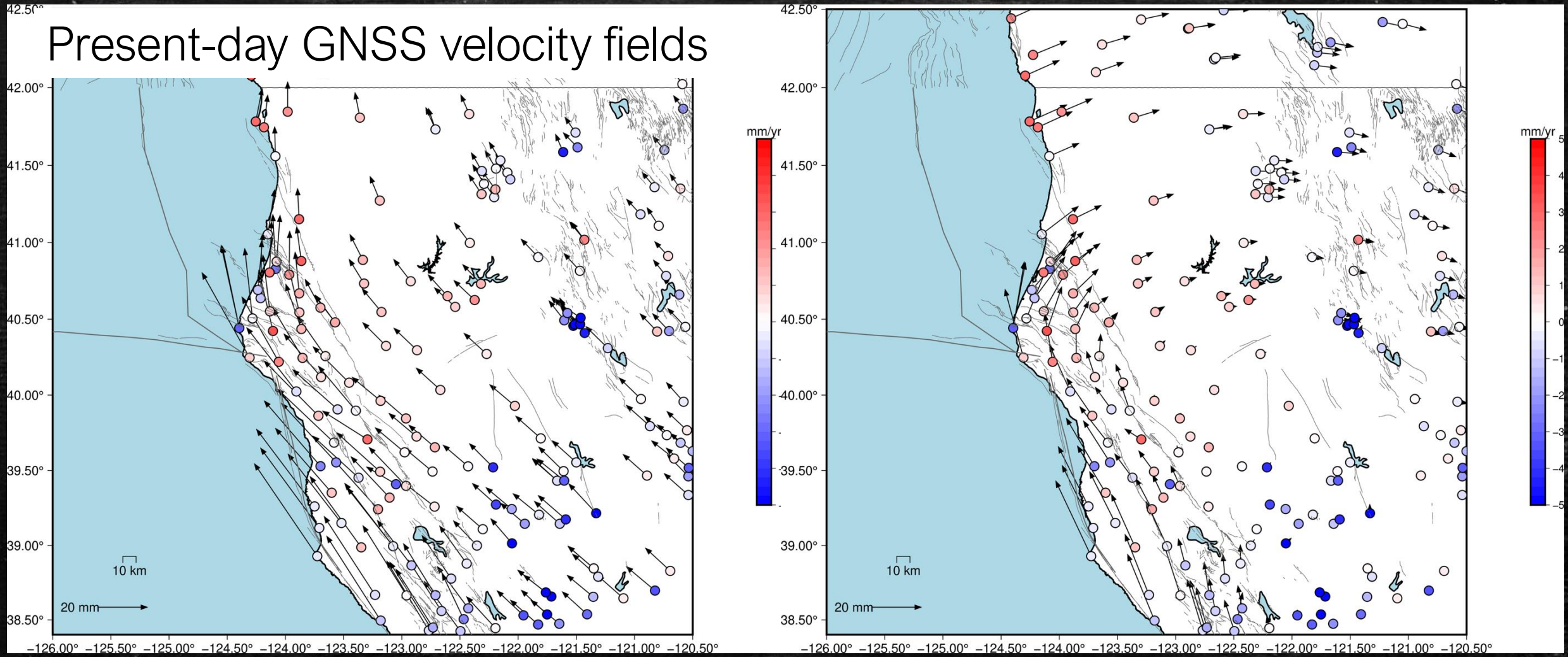
Planning Committee:

Vera Schulte-Pelkum
Kathryn Materna
Matthew Herman
Amanda Thomas
Deborah Kilb
Jason "Jay" R. Patton

Jason "Jay" R. Patton Ph.D. PG 9758
Engineering Geologist, California Geological Survey
Tsunami Unit/Seismic Hazards Program
Jason.Patton@conservation.ca.gov

Notes on recent space-geodetic observations

Present-day GNSS velocity fields



UNR MIDAS from 2026, converted with SNGV Euler Pole, Dixon et al., 2000
Faults from Qfaults; thick faults from McPherson and Prentice

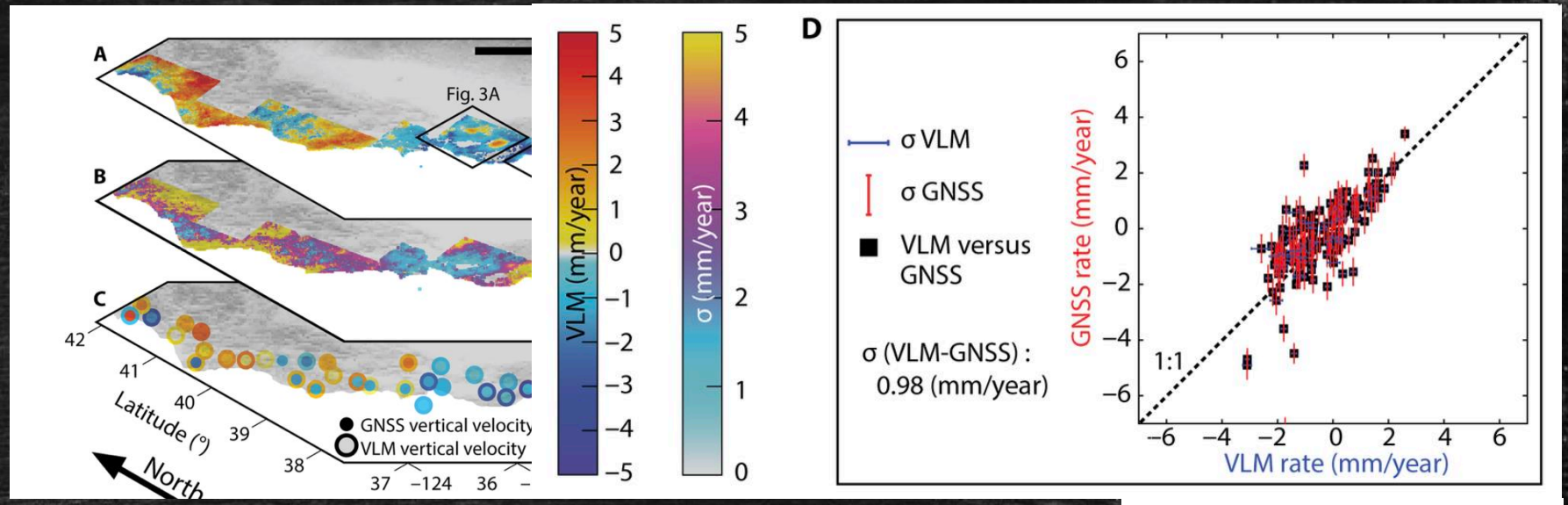
InSAR at MTJ

Can we determine the interseismic velocity field at the MTJ with higher spatial resolution than GNSS?

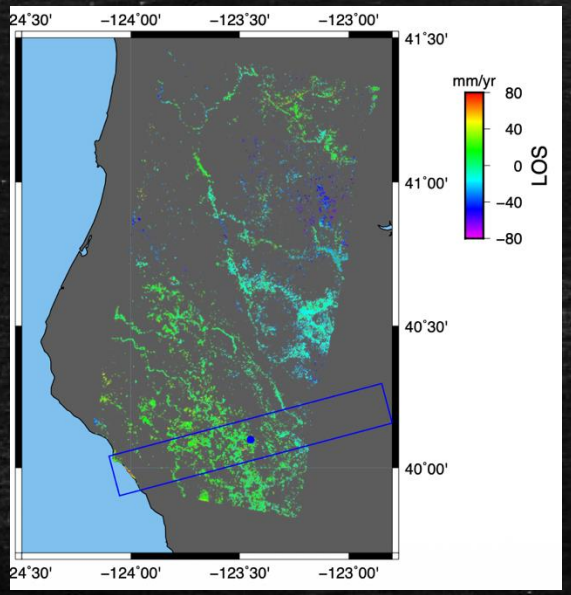
This would enable more detailed determination of high-resolution strain features, for studying a range of tectonic and non-tectonic processes (uplift, landslides, groundwater).

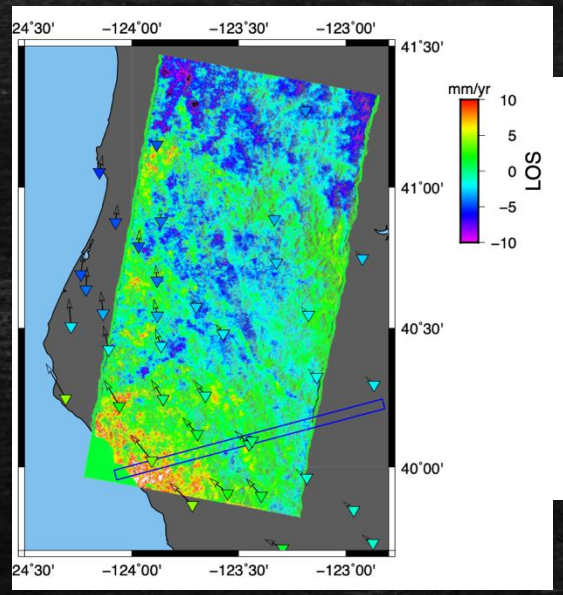
But the dense vegetation challenges the use of traditional C-band InSAR.

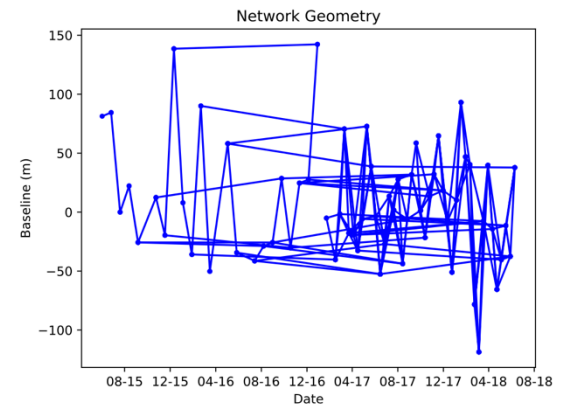
At right: Attempts to recover InSAR velocity field from Sentinel-1 (C-band)



Blackwell et al., 2020







Materna, Mohanna, Sandoe, et al., AGU poster 2019

Interseismic InSAR velocity field, ALOS-2, 2016-2024

Lindsay et al., 2026

JGR Solid Earth

RESEARCH ARTICLE
10.1029/2025JB032718

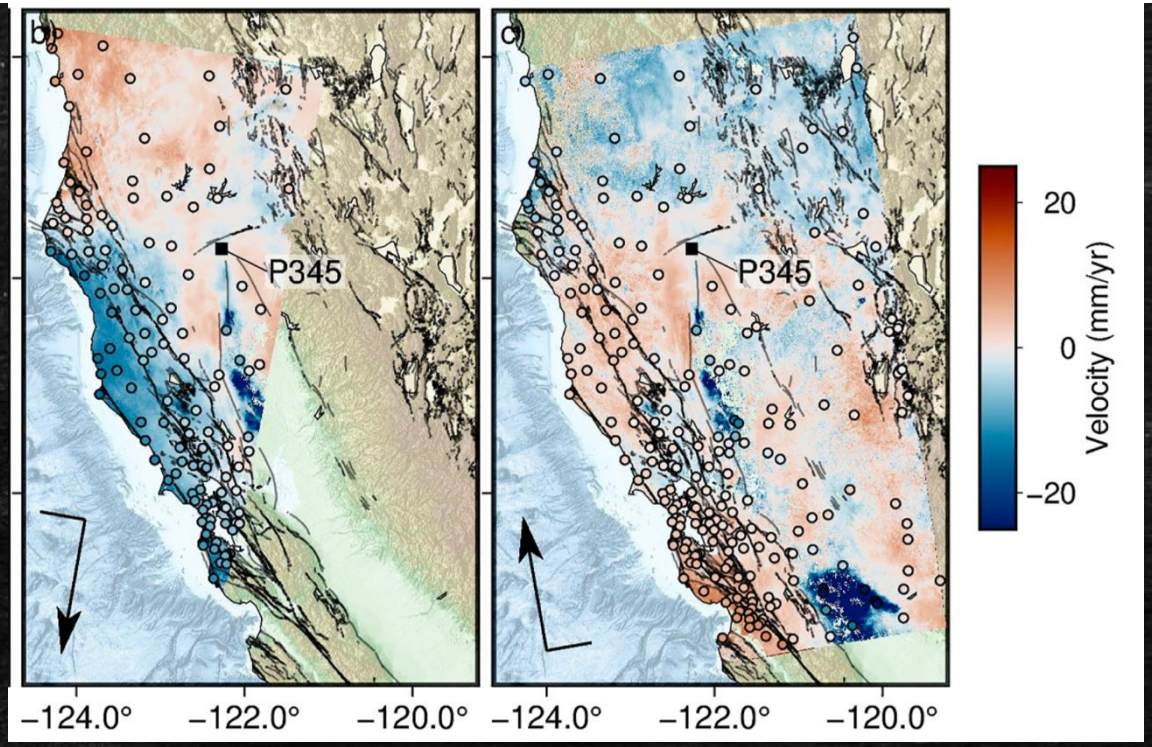
Nine-Year L-Band InSAR Time Series of Tectonic and Non-Tectonic Surface Deformation in Northern California

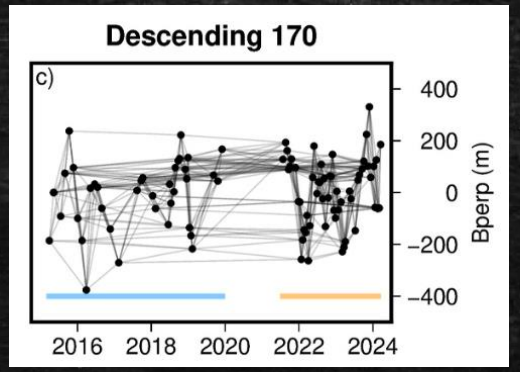
D. Lindsay[1,2], R. Bürgmann[1], K. Materna[3], and E. J. Fielding[4]

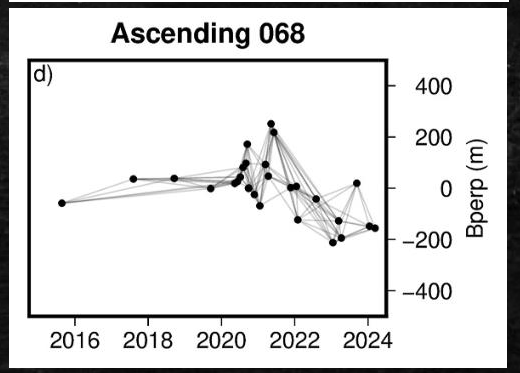
[1]Department of Earth and Planetary Science, University of California Berkeley, Berkeley, CA, USA, [2]Now at: Earth Sciences New Zealand, Lower Hutt, New Zealand, [3]CIRES and Geological Sciences, University of Colorado Boulder, Boulder, CO, USA, [4]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

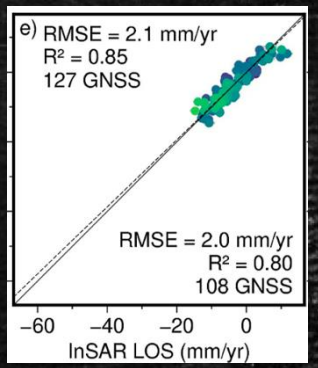
Key Points:

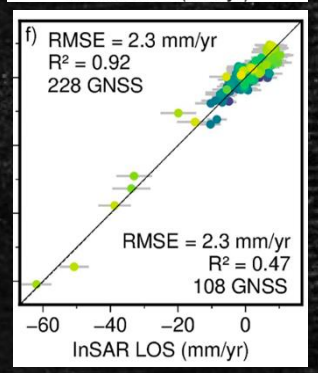
- We produce 9-year ALOS-2 ScanSAR time series and velocity maps for Northern California and validate them with GNSS and Sentinel-1
- 14-day L-band time series resolves time-dependent aquifer subsidence and landslide accelerations in vegetated





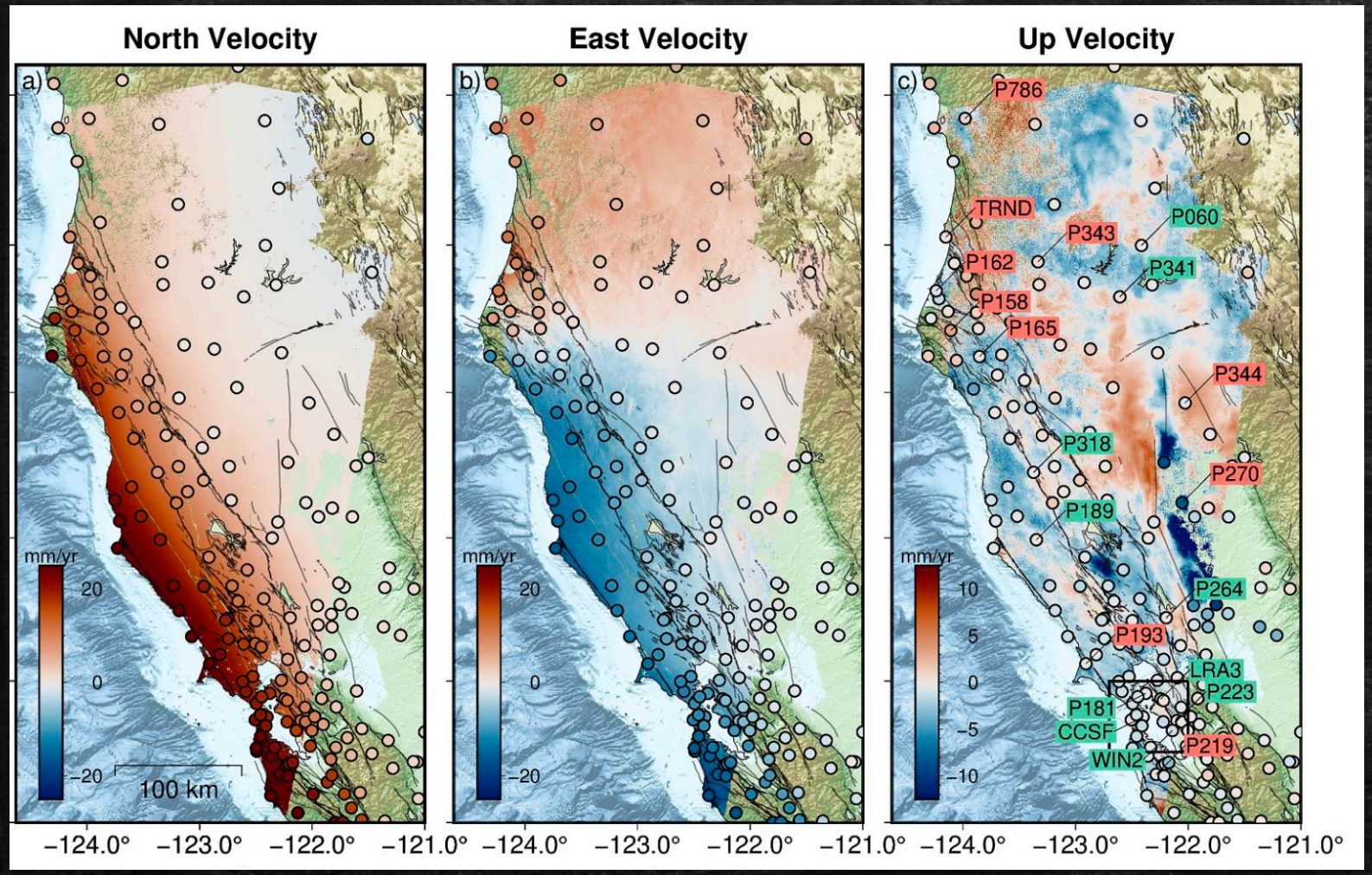


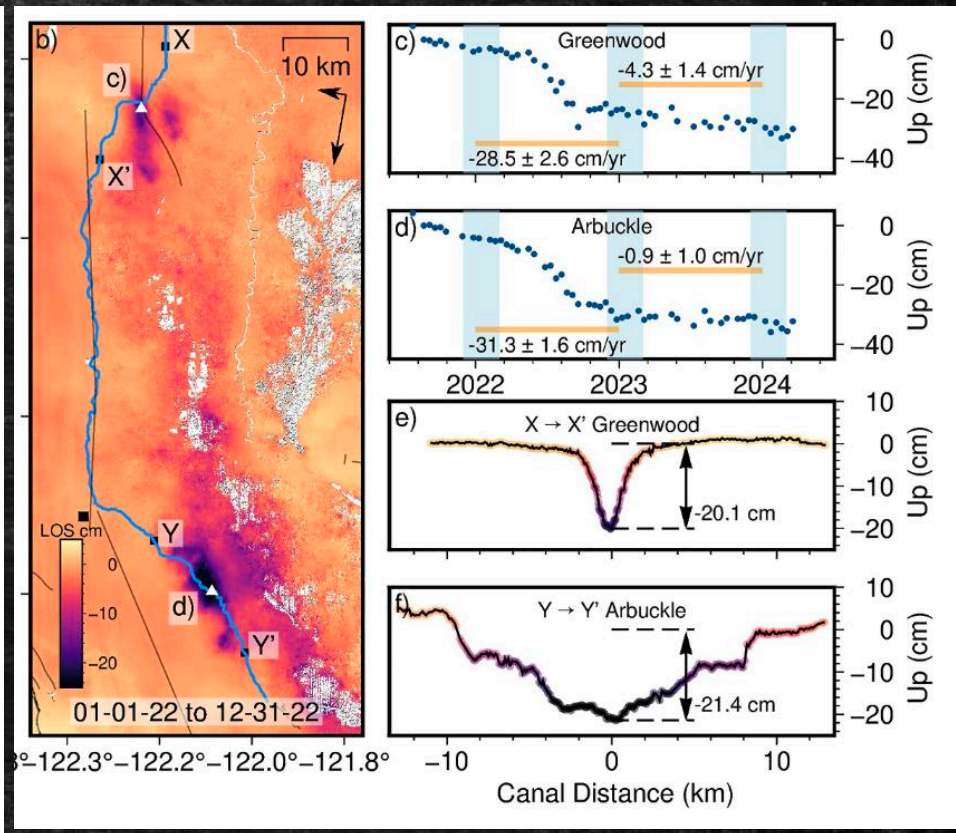




Linear Velocity - Solid Earth Tides - Troposphere - DEM Error - Bulk Plate Motion Residuals - Quad. Ramp

Interpolated Interseismic InSAR velocity field, ALOS-2, 2016-2024





Lindsay et al., 2026