Environmental Controls on Landslide Motion Revealed by InSAR and Pixel Offset Tracking

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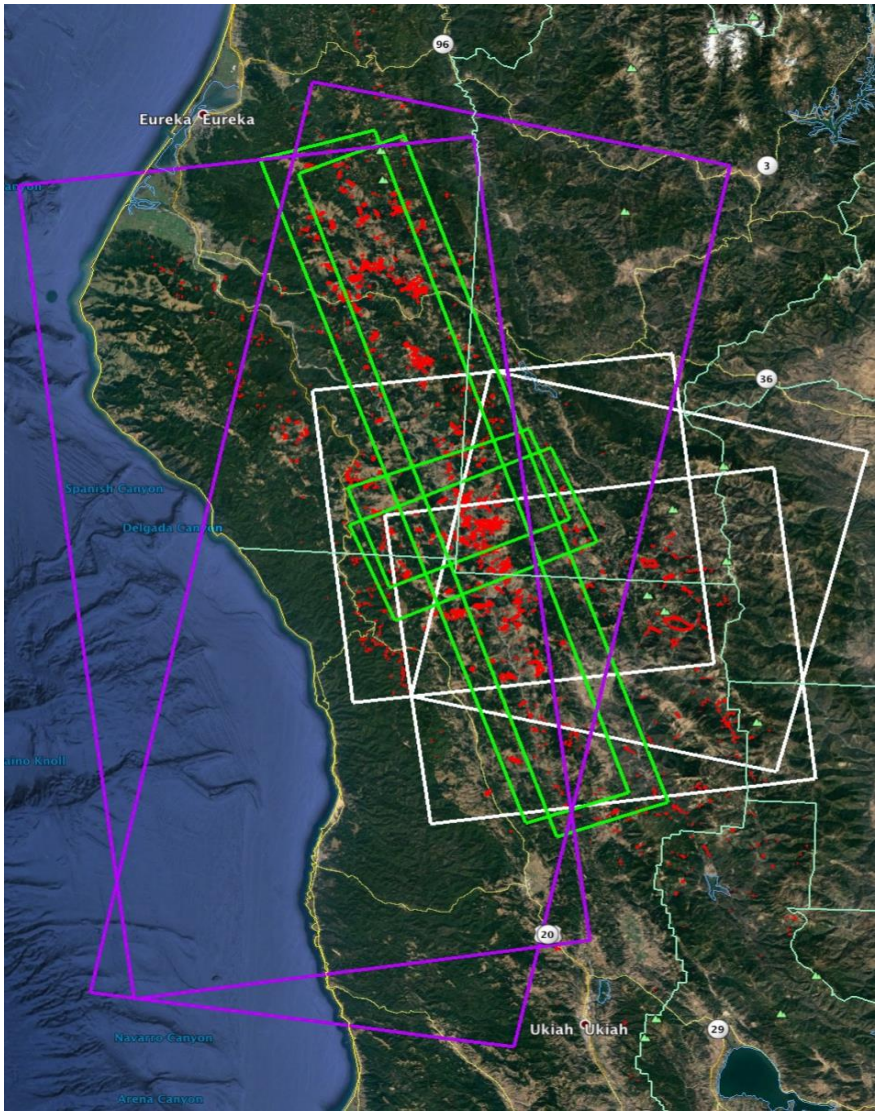

SAR coverage

- Purple = Sentinel 1A/B with 6 day minimum acquisition
- White = ALOS2 with 14 day minimum acquisition
- Green = UAVSAR, irregular acquisition interval
- Red polygons = landslide inventory (Mackey et al., 2011; Handwerger et al., 2015; Bennett et al., 2016)

Bennett, G. L., Miller, S. R., Roering, J. J., & Schmidt, D. A. (2016). Landslides, threshold slopes, and the survival of relict terrain in the wake of the Mendocino Triple Junction. *Geology*, *44*(5), 363-366.

Handwerger, A. L., Roering, J. J., Schmidt, D. A., & Rempel, A. W. (2015). Kinematics of earthflows in the Northern California Coast Ranges using satellite interferometry. *Geomorphology*, *246*, 321-333.

Mackey, B. H., & Roering, J. J. (2011). Sediment yield, spatial characteristics, and the long-term evolution of active earthflows determined from airborne LiDAR and historical aerial photographs, Eel River, California. *Geological Society of America Bulletin*, *123*(7-8), 1560-1576.

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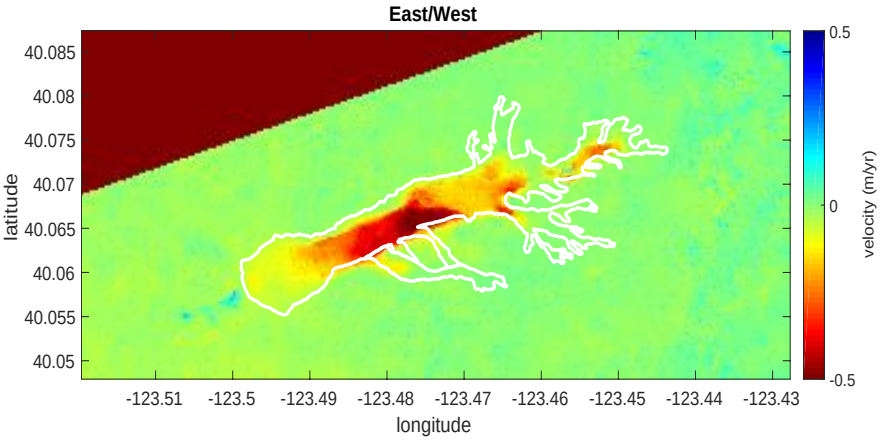
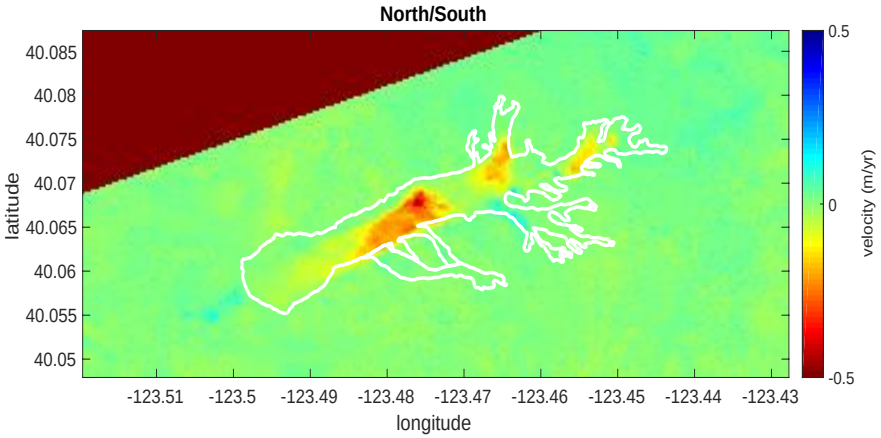
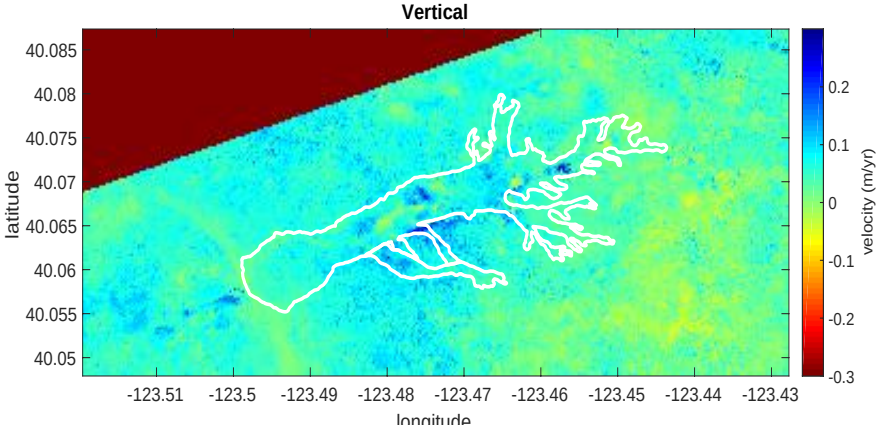
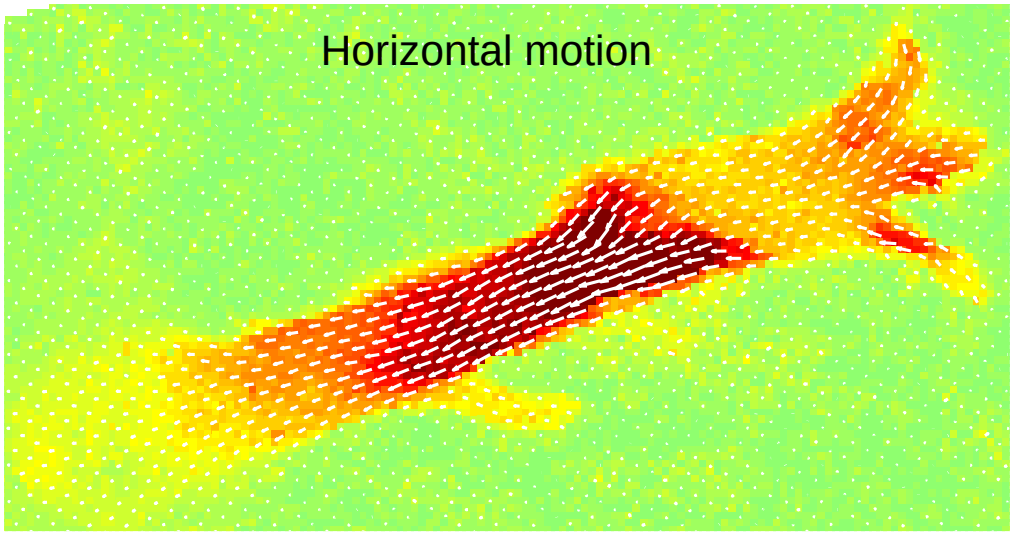
UAVSAR







- We use 4 line-of-sight interferograms to invert for 3D deformation
- We will use 3D deformation maps along with mass conservation techniques to estimate landslide thickness



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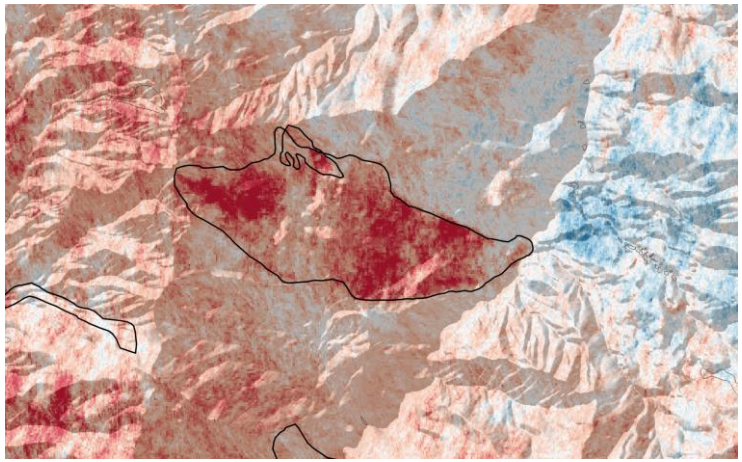
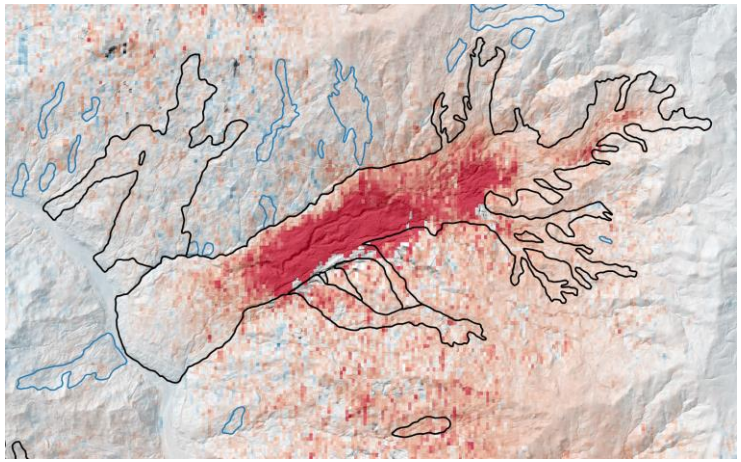
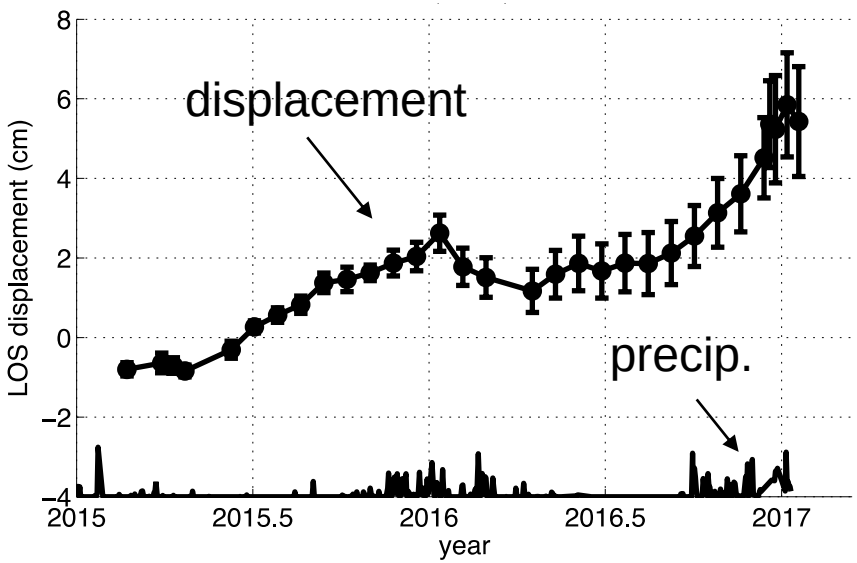
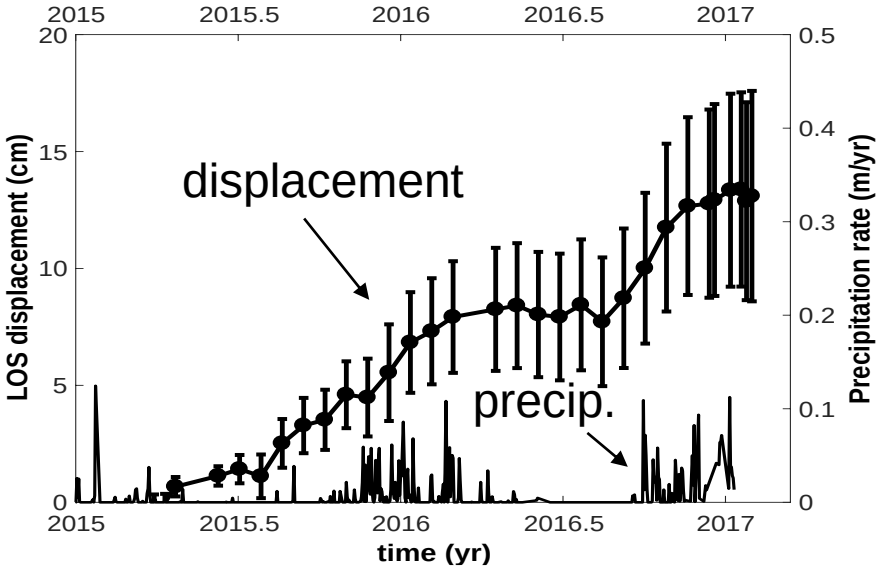
InSAR time series

Sentinel 1 A/B

- Seasonal velocity changes driven by precipitation