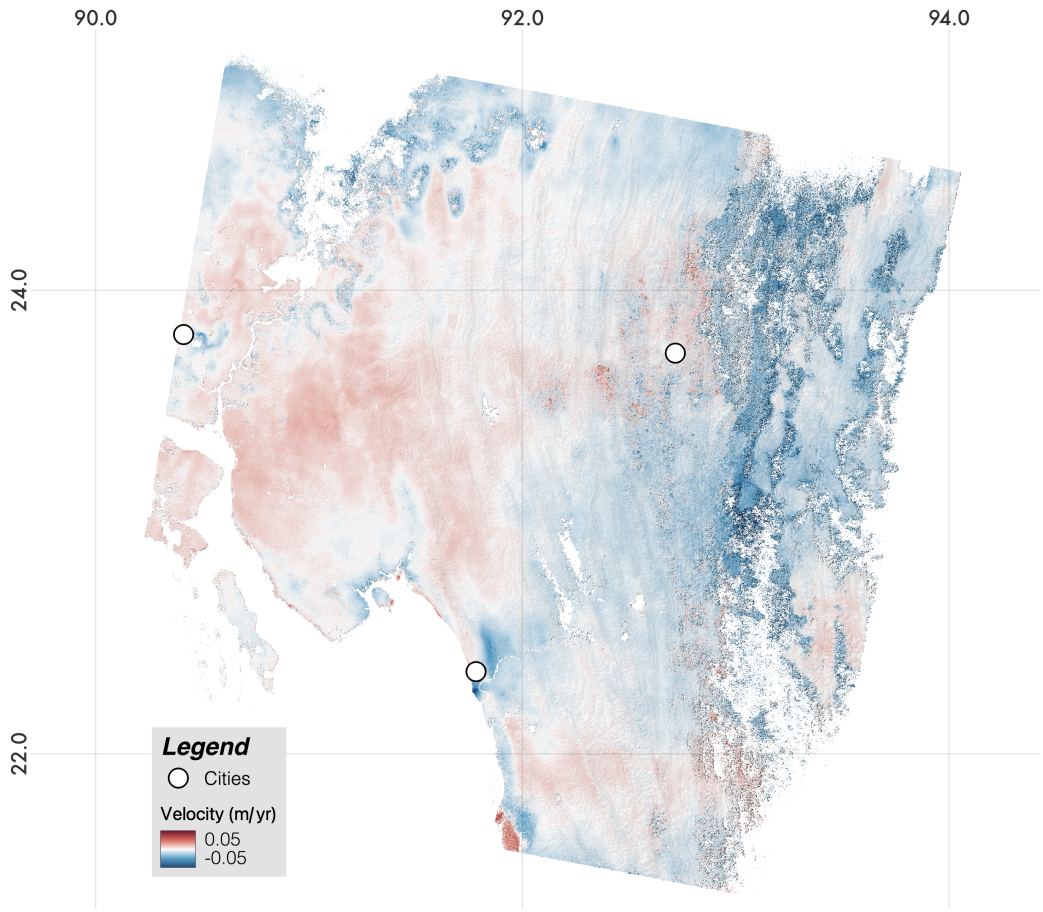
Inspecting the interseismic strain accumulation at the Rakhine-Bangladesh megathrust using L-band InSAR time-series

Chong, Jeng Hann. [1], and Lindsey, Eric. [1]

1. *University of New Mexico, Albuquerque, New Mexico, USA*

The Rakhine-Bangladesh megathrust extends from offshore Myanmar to central Bangladesh and is actively accommodating convergence between the Indian plate and the Burma micro-plate. The dextral-oblique collisional strain is partitioned across several tectonically active structures including the megathrust, the Indoburman Ranges (fold-and-thrust belt), and the dextral Sagaing Fault. The megathrust and Indoburman ranges have been historically under-studied compared to comparable active regions worldwide due to the region's dense vegetation and limited accessibility. Remote geodetic observations such as L-band Interferometric Synthetic Aperture Radar (InSAR) have greatly improved our ability to map tectonic strain accumulation in dense vegetation. In this study, we seek to answer how strain is partitioned in the Indoburman Ranges using L-band InSAR and an improved, 3D modeling approach.

We use observations from ALOS-2 wide-swath imagery to perform InSAR timeseries in the central Indoburman Ranges. We corrected our InSAR timeseries for variable ionospheric and tropospheric delays using the split-spectrum method and the ERA5 weather model, as implemented in the ISCE and MintPy software packages from JPL. We then use the resulting map of line-of-sight velocities to assess the pattern of interseismic strain across the central fold-and-thrust belt and construct a three-dimensional model of slip on the active structures at depth. We use a modeling approach that considers deformation resulting from the finite thickness of the subducting plate. This approach allows us to accurately estimate both horizontal and vertical velocities in subduction zones and refine the seismic hazard in the region.


90.0
92.0
94.0
24.0
22.0
Legend
Cities
Velocity (m/yr)
0.05
-0.05