Can Post-Ridgecrest Deformation Reveal Heterogeneous California Rheology?

With Kang Wang

Fred Pollitz et al., 2021 BSSA

Kaj Johnson, Jacob Dorsett et al., unpubl.
2019-2022 Cumulative Postseismic Displacements
Comparison with post-Landers&HM 1D Model

Biviscous Burgers rheology
transient/steady-state viscosity = 0.1

Shaozhuo Liu et al., 2020 Geology
Liu et al., 2020
Comparison with post-Landers&HM 1D Model

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Shaozhup Liu et al., 2020 Geology
Residuals reveal heterogeneous California Rheology

Biviscous Burgers rheology

transient/steady-state viscosity = 0.1
More information in very far-field transients
“used observations of the seismic properties of the Greenland upper mantle to constrain its thermodynamic state, and in turn self-consistently predict rheological behavior across a broad range of timescales... “

“The apparent viscosity of the Greenland upper mantle increases with the timescale of the forcing/loading being applied.“

“... three-dimensional models of mantle viscosity when simulating deformation over decadal timescales may be less of a priority than when modeling deformation over multi-millennial and longer timescales”