Simple Elastic Dislocation Models for Interseismic Deformation in Subduction Zones
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I. Motivation
To understand the physical rationale behind the success of the backslip model for interpreting subduction zone geodetic data (Savage, 1983) by studying a kinematically more consistent model for subduction. Specifically, we want to know under what conditions the backslip model is a good approximation for predicting surface deformation on the over-riding plate.

II. The Backslip Model (BSM) as a special case of the Elastic Subducting Plate Model (ESPM)

III. Synthetics: Comparison of BSM & ESPM predictions

IV. Inversion Software Developed (PYTHON package)

V. Sumatra Results

VI. Conclusions & Future work

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**ESPM** experiences deformation in the subducting plate due to bending at the trench:

Due to a change in momentum associated with bending, the ESPM experiences compression in the over-riding plate, adjacent to the trench (above), as well as a deceleration in the subducting plate (below). Surface displacement on the footwall is zero, while the over-riding plate, not the expected plate convergence velocity.

**BSM** notes: artificial extensional slip along incline interface.

**Net shear strain = 2 Tan(θ/2)**

**Surface displacement on the footwall is ~ zero w.r.t. the overriding plate, not the expected plate convergence velocity.**

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**III. Synthetics: Comparison of BSM & ESPM predictions**

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