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Dangling Slab Dynamics

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Recent seismic imaging of the mantle beneath western North America reveals complexities interpreted to include structures ranging from plumes to drips and dangling slab fragments. One model interprets a high-velocity 'curtain' to be a remnant of subducted Farallon plate that may have been dangling within the upper mantle for 50 My while subduction continued nearby. Such observations provide motivation for better understanding the rheologic and dynamic conditions under which a slab fragment might persist in the upper mantle, particularly during nearby subduction. Our dynamic numerical models explore the effects of slab and mantle rheology and geometries on the dynamics of subducting and dangling slabs.