

TO seminar
Tuesday 11/29/11
Erin Burkett's "Stalled Slab Dynamics"

Stalling and detachment of subducted tectonic plates are processes that have been increasingly associated with collisional scenarios and the end of subduction in various locations worldwide. Dynamic models allow an investigation of the time-dependence nature of such processes, particularly to better understand the origins and complexities of structures revealed in seismic images interpreted to be stalled or detached remnant subducted slabs. For instance, a model by Schmandt and Humphreys (2011) interprets a high-velocity 'curtain' beneath the western United States 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 tectonic 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, chemistry, and geometries on the dynamics of subducting and stalled slabs.