The Mantle Flow Field beneath Western North America


Abigail L. Bull

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Motivation: Western US Tectonics

www.earth.northwestern.edu
Motivation: Mantle Flow Pattern


**Motivation:** Modeling Mantle Flow

* Flow: due to plate motion

![Diagram of plate tectonics and mantle flow](http://www.geo.lsa.umich.edu/~crlb/)

* Flow: due to density anomalies

![Density anomaly map](http://www.cas.muchio.edu)
Data: Surface Deformation and Splitting data

Results

Conclusions and Implications

- Mantle constitutes weak drag force

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Discussion Topics

* Is mantle flow related to velocities of overlying plates?
* Does mantle flow have any effect on a plate’s motion?
* Are there other methods to determine mantle flow?
* What would flow field look like in various tectonic regions?