

## Week 9 - Day 18, Thursday October 22, 2009

### Preliminaries

Midterm - discuss answers

Homework #4 questions

Projects - If you haven't sent me your idea , do it!

Class on November 10, 2009.

Future Classes - readings, student driven. Next 9 class periods. Choose discussion leaders, 3 questions. Assignments, if you can't make it, work a trade with someone else.

Reading for next time.

**Postseismic Relaxation** - Viscoelastic relaxation of the upper mantle, lower crust.

Reading - Pollitz Paper

### Suggested New Reading Menu for Next 9 class periods

Please feel free to suggest or substitute papers (with approval) for reading.

**Postseismic** - including viscoelastic, poroelastic, fault afterslip

*October 27, 2009 - Amie & Bill*

Freed, A. M., R. Burgmann, and T. Herring (2007), Far-reaching transient motions after Mojave earthquakes require broad mantle flow beneath a strong crust, *Geophysical Research Letters*, 34, 19.

Owen, S., G. Anderson, D. C. Agnew, H. Johnson, K. Hurst, R. Reilinger, Z. K. Shen, J. Svarc, and T. Baker (2002), Early postseismic deformation from the 16 October 1999 M-w 7.1 Hector Mine, California, earthquake as measured by survey-mode GPS, *Bulletin of the Seismological Society of America*, 92, 4, 1423-1432.

*October 29, 2009 - Jayne & Joe*

Fialko, Y. (2004a), Evidence of fluid-filled upper crust from observations of postseismic deformation due to the 1992 M 7.3 Landers earthquake, *Journal of Geophysical Research*, 109, B08401, doi:10.1029/2004JB002985.

Savage, J. C., and J. Svarc (2009), Postseismic relaxation following the 1992 M7.3 Landers and 1999 M7.1 Hector Mine earthquakes, southern California, *Journal of Geophysical Research*, 114, B01401, doi:10.1029/2008JB005938.

*November 3, 2009 Sumant & Xiaohui*

Dixon, T. H., E. Norabuena, and L. Hotaling (2003), Paleoseismology and Global Positioning System: Earthquake-cycle effects and geodetic versus geologic fault slip rates in the Eastern California shear zone, *Geology*, 31, 1, 55-58.

Gourmelen, N., and F. Amelung (2005), Post-seismic deformation in the central Nevada seismic belt detected by InSAR: Implications for Basin and Range dynamics, *Science*, 310, 1473-1476.

### **Coseismic** - Case studies in inferring earthquake properties from geodesy

*November 5, 2009 - Amie & Bill*

Fialko, Y., M. Simons, and D. Agnew (2001), The complete (3-D) surface displacement field in the epicentral area of the 1999 M(w)7.1 Hector Mine earthquake, California, from space geodetic observations, *Geophysical Research Letters*, 28, 16, 3063-3066.

Fialko, Y. (2004b), Probing the mechanical properties of seismically active crust with space geodesy: Study of the coseismic deformation due to the 1992 M(w)7.3 Landers (southern California) earthquake, *Journal of Geophysical Research-Solid Earth*, 109, B3.

*November 12, 2009 - Jayne & Joe*

Hreinsdottir, S., J. T. Freymueller, R. Burgmann, and J. Mitchell (2006), Coseismic deformation of the 2002 Denali Fault earthquake: Insights from GPS measurements, *Journal of Geophysical Research-Solid Earth*, 111, B3.

Vigny, C., W. J. F. Simons, S. Abu, R. Bamphenyu, C. Satirapod, N. Choosakul, C. Subarya, A. Socquet, K. Omar, H. Z. Abidin, and B. A. C. Ambrosius (2005), Insight into the 2004 Sumatra-Andaman earthquake from GPS measurements in southeast Asia, *Nature*, 436, 201-206.

*November 17, 2009 Sumant & Xiaohui*

Kreemer, C., G. Blewitt, W. C. Hammond, and H. P. Plag (2006), Global deformation from the great 2004 Sumatra-Andaman Earthquake observed by GPS: Implications for rupture process and global reference frame, *Earth Planets and Space*, 58, 2, 141-148.

Blewitt, G., C. Kreemer, W. C. Hammond, H. P. Plag, S. Stein, and E. Okal (2006), Rapid determination of earthquake magnitude using GPS for tsunami warning systems, *Geophysical Research Letters*, 33, L11309, doi:10.1029/2006GL026145.

### **Plates and Plate Boundaries**, including rigid plate, postglacial, and interseismic deformation

*November 19, 2009 - Amie & Bill*

Larson, K. M., J. T. Freymueller, and S. Philipson (1997), Global plate velocities from the Global Positioning System, *Journal of Geophysical Research*, 102, B5, 9961-9981.

Larson, K. M., and T. van Dam (2000), Measuring postglacial rebound with GPS and absolute gravity, *Geophysical Research Letters*, 27, 23, 3925-3928.

*November 24, 2009 - Jayne & Joe*

Thatcher, W., G. R. Foulger, B. R. Julian, J. L. Svarc, E. Quilty, and G. W. Bawden (1999), Present-day deformation across the Basin and Range province, western United States,

*Science*, 283, 1714-1718.

Meade, B. J., and B. H. Hagar (2005), Block models of crustal motion in southern California constrained by GPS measurements, *Journal of Geophysical Research*, 110, B03403, doi:10.1029/2004JB003209.

November 26, 2009 Sumant & Xiaohui

McCaffrey, R., A. I. Qamar, R. W. King, R. Wells, G. Khazaradze, C. A. Williams, C. W. Stevens, J. J. Vollick, and P. C. Zwick (2007), Fault locking, block rotation and crustal deformation in the Pacific Northwest, *Geophysical Journal International*, 169, 3, 1315-1340.

Reilinger, R., S. McClusky, P. Vernant, S. Lawrence, S. Ergintav, R. Cakmak, H. Ozener, F. Kadirov, I. Guliev, R. Stepanyan, M. Nadariya, G. Hahubia, S. Mahmoud, K. Sakr, A. ArRajehi, D. Paradissis, A. Al-Aydrus, M. Prilepin, T. Guseva, E. Evren, A. Dmitrotsa, S. V. Filikov, F. Gomez, R. Al-Ghazzi, and G. Karam (2006), GPS constraints on continental deformation in the Africa-Arabia-Eurasia continental collision zone and implications for the dynamics of plate interactions, *Journal of Geophysical Research*, 111, B05411, doi:10.1029/2005JB004051.