

Ge102 HW#3

Due Monday, February 4, 2007 to Francisco

1. An extensive GPS survey of Middleonia finds that the horizontal displacements measured over a year follow the analytic description:

$$\begin{aligned}U_x &= 3x + 4y + 2 \\U_y &= 10x + 7y + 3\end{aligned}\tag{1}$$

Where (x, y) describe the respective coordinate axis (e.g., Eastings and Northings).

- Make a vector plot (arrows) of the displacement field for values of x and y that range from 0 to 10 km in increments of 2.
 - Estimate the strain rate and rotation tensor associated with this velocity field. Does the strain rate field vary with position or is it constant?
 - Make a vector plot with the affects of translation and rotation removed.
 - What are the directions of the principal axes of extension and compression?
2. FOG Chapter 3 Exercise 7
 3. FOG Chapter 3 Exercise 8
 4. Read: H. Kanamori, Lessons from the 2004 Sumatra-Andaman earthquake, *Phil. Trans. R. Soc. A* **364**, 1927-1945, 2006. PDF available on class web page. See guidelines on class web page for providing a written summary of the paper including important conclusions as well as any outstanding issues.