

**ESS 502: Homework #3; Heat Flow and Grand Paper;
Due Wednesday, Jan 31, 2018.**

Answer questions 3, 10, 17 and 21 in Fowlers Chapter 7 on Heat. For #21 simplify the problem as much as possible and clearly state your assumptions.

Read the paper by Grand et al 1997 and answer the following questions. Turn in your answers on Wednesday and we will discuss these questions in small groups in class on Wednesday.

1. The science “set-up” : What are the essential features of the “paradigm” (the over arching conceptual framework) presented? What “tensions” (problems with the prevailing paradigm) are described? (see article by Anderson for additional help here).
2. New seismic data are presented – 2-D slices through 3-D global tomography models.
 - a. What is being plotted?
 - b. How do the authors lend “credibility” to these results?
 - c. What are the general features?
 - d. How are the models parameterized?
 - e. What data went into each of the two models?
3. Discussion
 - a. What is the “fate of slabs”
 - b. What can be said about upwellings?
4. How compelling is this presentation?
 - a. Do the authors support "conventional wisdom" or confront it?
 - b. Do the new observations give robust interpretations?
5. What weakness can you identify in the presentation?
6. What do you not understand?
7. List three papers in the bibliography that you would want to read next to better understand key features of this paper.