

EarthScope Seminar 2010

02/23/2010 - Discussion Notes (Jeff Lockridge)

Topic: Magnetotellurics

- Several minute delay setting up computers
- Discussed Hill 2009 Paper
 - o Figure 1
 - Discussed source of data for contours
 - Perhaps previous data (Egbert & Booker)
 - Seems to be a lot of interpretation for northern part, as main array is in southern part and only one station/measurement is in the northern part
 - Not much data displayed in area of dense array to southwest
 - Cut out size and scale do not appear to be exact with regional map. Sloppy?
 - o Figure 2
 - Same Model – Different shading colors. Confusing
 - Data shown in W. and S. portions not included in Figure 1 (i.e. no deep blue)
 - Skew angle represents change just E of Mt. St. Helens, which indicates a potential magma source located between the three volcanoes
 - o Figure 3
 - Color coding: Red = High conductivity
 - Figure shows reservoir, but NOT deeper reservoir source
 - Perhaps longer period source would reveal source.
 - o Figure 4
 - Reservoir not clear/strong (i.e. not deep red)
 - Inconsistent with Figure 3? Maybe data sensitivity issue
 - Red at surface E of Adams. Potential water table?
- Discussed Patro 2008
 - o Figure 2
 - Figure summarizes main point of entire paper
 - Used seismicity study to generate left figure & compared to their data. It agrees.
 - Discussed Seletzia placement and apparent slab dip placement/angle.
 - o Figure 3
 - Depth of peak similar for each province
 - High conductivity at lower crust can potentially mask lower mantle
 - Does C2 in Patro relate to Hill 2009 findings? It is possible, but wavelengths used in two studies not compatible, Hill data located between 2 Patro stations.

- What is C1? Huge area. Paper says that this may be the result of magmatic underplating from Basin and Range extension.
- Compared the two papers. Patro starts to build image, but not much interpretation. Hill has more interpretation.
- Closed by exploring ideas on short timescale changes in MT results. Could you map a small scale fluid flow with MT?