

Subsurface Imaging for Archaeology; Final Exam, Spring 2011: Who? _____

1. Assume you are trying to sell a combined magnetic and GPR survey to a USFS archaeologist who has not had this class. You need her to understand and appreciate the processes or complications; explain:

a. Why your raw magnetic data are corrugated and how decorrugation works.

b. How can you use a fire hearth on the surface to demonstrate that you can find one that is buried a meter deep in built-up soil?

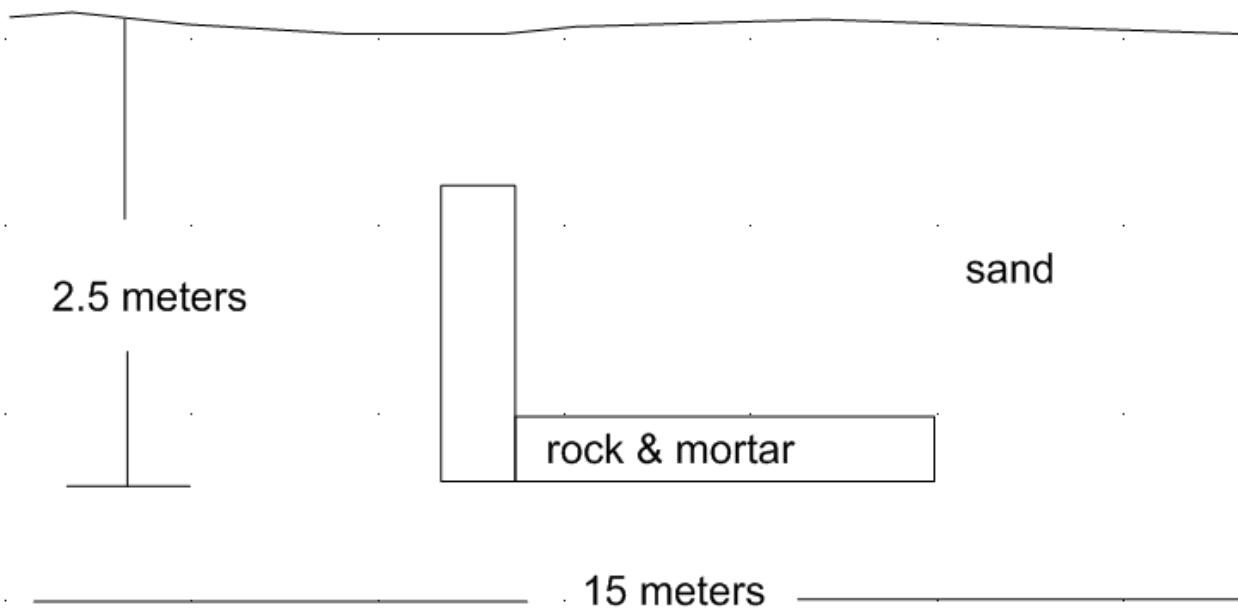
c. What are GPR time-slices and how they will help you delineate buried foundations and slabs in a historic mining camp?

2. Describe and carefully sketch what a GPR profile across a stone wall & slab buried in sand dunes would look like (label, describe, and explain as best you can).

GPR Profile



cross section



3. Suppose you collected total field magnetic observations over a $2,500 \text{ m}^2$ searching for buried stone rings (tipi rings) and fire hearths buried about a meter deep. The rocks are a mix of glacial erratics (granite, basalt, gneiss, sandstone, etc.) of various types with different amounts of magnetite in them. Unfortunately, there is also a scatter of small ferromagnetic debris on the surface (e.g. historic nails, horseshoes, old soup cans, etc.).

a. Explain carefully what you could do, and why it would work, while processing the data to reduce the impact of the surface debris and keep the signal from the rings and hearths.

b. Explain carefully how the mix of rock types affects the magnetic anomalies you expect from the stone rings.

c. How does the fact that some of the rocks are in camp fire hearths affect their magnetization? Why?

GPR Profile



cross section

