Group Project 09

Goal: To get a sense of the limitations of core date in (A) detecting, describing, and detecting Heinrich Layers; and (B) using changes in planktonic assemblages to define "dateable" marker horizons.

The project uses a simulated core that I created using seeds (representing plankton) and gravel (representing ice-rafted lithic debris). Using a real core is impractical in a classroom setting, owing to the scarcity of such cores and the overhead needed to work with it (e.g. learning to use a stereoscopic microscope).

This project is not "group-oriented" in the same sense as previous ones.

You will each be assigned a depth interval in the core. You will do that depth interval plus one other of your choosing. Depth intervals are in inches from the top of the core, as indicated by the yellow tape.

Weigh the empty sample container and the spoon core material into it from your depth integral and weigh it again, to determine how much sample you're working with.

Bring the sample to your work area and look at it carefully. Your cell phone camera can be used both to magnify the grains and to document them.

We will be creating a sheet at the front of class that names the seeds/gravel with one-letter plus one-number combinations; e.g. A1, R4, etc. Let's call this the Index. When you find a grain of a type that matches one in the Index, you must use that name. When no match is present, add the grain to the index and assign it a name.

Then separated your sample into grains of different types and count the number of grains in each type. Feel free to use approximation techniques for types with a large number of grains (e.g. dividing them into a few smaller groups of equal size, counting the number in one of the groups, and multiplying by the number of groups). Then convert your measurements to number of grains per gram of sample.

Prepare a table of the data with the types in alphabetical order, e.g. Also include the depth (in inches as measured by the yellow tape) of the sample in the core. Put your two sets of measurements in ascending depth order. E.g.

Sample at depth 20

- A1 10.6
- B1 0.7
- C4 6.0

Sample at depth 30

- A1 4.0
- D1 5.1
- C3 3.2

Then post your results to the "Grain data from Group Project 9" discussion broad. Just copy and paste the data into the discussion window; don't attach a separate file.

Take a photo of your final sorted grains, for reference.

Take a photo of the final Index, so that you document the identities of the grain.

As part of your written report

Sing Excel, create plots of the number or grains per gram for each "plankton tupe" and the "lithic material", as a function of depth in the core.

Address the following questions

(A) At what depth are the Heinrich Layers?

(B) How thick and how intense are the Heinrich Layers?

(C) Is the concentration of the plankton uniform or variable with depth? Discuss the issue of statistical variation for rare plankton.

(D) If you think there are any changes in planktonic assemblages, what is their nature and at want depth do they occur?