**GUIDANCE FOR POSTING READING RESPONESES**

Your reading responses should be posted on the Canvas Discussion board **by MIDNIGHT on the SUNDAY prior to class** unless otherwise specified. Put your name by your responses. Taking the time to thoughtfully complete the online discussion component of the course is the best way to ensure a fun and interesting discussion in class.

Each paper response should have two parts:

1. A brief ~1 paragraph summary of the paper motivation, goals, approach and findings. The summary should be a clear overview of the big-picture message of the paper.
2. Your reflections on the reading, described below.

For the “reflection” portion, please reflect on each reading and develop your discussion points, comments, or questions. There is no right or wrong response.  The goal is to reflect on what interests and/or confuses you.

This type of individual reflection helps both extroverts and introverts prepare for in-class discussion, and posting the comments online helps your peers, the discussion leaders and the instructor focus the discussion and research the appropriate supplementary materials needed to guide it productively. The responses are visible to everyone in the class, and you are encouraged to build on the questions and comments of your peers.

Since we are a diverse group of students, I will offer some guidance.

In general, many good analytical questions:

- focus on a real confusion or ambiguity of the text

- yield answers that are not obvious

- are broad enough to allow room for exploration

- are specific enough to sustain discussion, analysis and reflection

“How” and “why” questions tend to motivate good discussion | If you don’t understand something, please say so, and try to offer some details regarding where the confusion arises so the instructor and the discussion leaders can respond better. | Good analytical questions can highlight patterns and connections or contradictions and problems. | Good analytical questions can also refer to some implication or consequences of the analysis. | Vague musings are completely acceptable as well, especially if you are new to the subject!

Some examples of possible discussion points etc.:

- Seems like X shouldn't influence Y because.., but it does.  What am I missing?

- As a person without prior background in Q, I was really confused by Z, and wonder what the implications are for conventional stable isotope methods vs. clumped isotopes?

- I thought Q was a key point and would be interested in discussing why this is the convention. Is it an arbitrary choice or is there a reason to do it this way?

Example of summaries and reading responses to two papers:

**Student Name: XXX**

**Response to Quade et al., 2012**

Summary: This study attempted to calibrate the relationship between paleosol carbonate Δ47 and mean annual air temperature (MAAT).  The authors measured Δ47 of Holocene soil carbonates from several sites across a range of modern climates.  For all sites except Kona, Hawaii, they observed strong correlations between MAAT and soil carbonate Δ47.  The correlation was much better for soil carbonates that formed at depths greater than 100cm, and it seems that the temperature recorded by the soil carbonates is the warm season soil temperature.  The authors also investigated the affect of diagenesis on paleosol carbonates by measuring Δ47 in paleosol carbonates that had been buried several kilometers.  They observed unreasonably high temperatures for paleosol carbonates that had been buried at depths greater than 4km.

 Thoughts and questions

I was surprised to learn that paleosols remain intact at depths of several kilometers (I don’t really know much about them).  How common is it to find complete, well preserved soil horizons at depth?  What conditions are needed to preserve them?  What characteristics are used to identify them?

The authors present a series of empirical calibrations relating soil carbonate Δ47 to MAAT, warm season air temperature, and elevation.  These have high R2 values, but are based on a limited number of sites, and exclude data from one of the five sites that were studied.  While they present some reasonable arguments for excluding the Hawaii data (heating from nearby basalt flows or non equilibrium deposition because of contact with the atmosphere).  However, I wonder how one would determine that paleosol carbonates had not been influenced by similar situations and that it was therefore all right to apply the calibration presented here.

**Response to Passey et al., 2010**

Summary: The goal of this study was to determine what temperatures were like in the East African Rift Valley during the period of human evolution.  The authors addressed this question by measuring Δ47 of  paleosol carbonates from Turkana Basin, Kenya and observed similar temperatures to today (very hot).  They also did an initial calibration of how well soil carbonate Δ47 records mean annual temperatures (MAT).  In East Africa, which has little seasonal variability in temperature, modern soil carbonate Δ47 did a good job at capturing MAT.  However, in temperate regions such as California and China, soil carbonate Δ47 is skewed towards summer temperatures and is therefore higher than MAT. The authors inferred that the ancient sample temperature reflect environments with hot summers – showing that the area was hot and dry over the last ~4 My.

Thoughts and questions

I’d appreciate a bit of background about how soil carbonates form.  I felt like I couldn’t really evaluate the argument that the paleosol carbonates were likely deposited throughout the entire record.  From my understanding, soil carbonates only form during relatively dry times, so it is unclear to me that they would be representative of average conditions if the climate was fluctuating between wet and dry regimes.

How well are paleosols in general (not just paleosol carbonates) preserved from different climates?  Is soil more likely to be preserved in tact if it formed in certain environments and if so, how does this affect paleoclimate interpretations from paleosols?