

Summary of GSA Planning Meeting (10/5/08)

Preliminary Results

- Scott Wing reported on preliminary results from the drilling that was carried out in "Gould Swamp" west of Basin, WY in 2007. Geochemical (Aaron Diefendorf, Kate Freeman) and pollen analyses (Guy Harrington) were performed on cuttings and there seems to be evidence for the CIE in the $\delta^{13}C$ of bulk organic carbon but there was no recovery of GDGTs. Pollen preservation was good toward the base of the drill hole but became quite poor higher in the hole where there were red beds. Based on the current data, however, it looks like there might be good pollen preservation in the base of the CIE.

- Phil Gingerich reported that he is working to develop a 3-D GIS model of Polecat Bench to help in guiding any future drilling there.

- Will Clyde and Henry Fricke reported on high resolution isotopic sampling of an outcrop section at Gilmore Hill targeting Elmo. These data may guide future drilling in this area although a large sandstone body occurs at the top of that section and could cause problems for drilling and reduce section completeness.

Next Steps

- Three major driving questions for the BBCP emerged from the Powell workshop in 2007. (1) What are the causes and effects of hyperthermals (e.g. PETM, Elmo, others?) during the Paleogene greenhouse world? (2) Do continental sedimentary systems, like that preserved in the Bighorn Basin, exhibit astronomically controlled cyclicity? (3) What is the detailed paleogeographic evolution of the Bighorn Basin during its early Paleogene phase of tectonic evolution? (See the BBCP Meeting Summary at <http://earth.unh.edu/clyde/BBCP/BBCPSummary.pdf> for details)

- We received feedback from several people saying that a core may be worse than the outcrops for testing cyclostratigraphic models because it is impossible to avoid channel sandstones when coring these types of fluvial deposits. This means Question #2 may be better addressed using outcrop data rather than core data.

- It was agreed that Question #1 is of greatest concern to the group and most relevant to ongoing research programs and thus should be the focus of any BBCP coring proposal. Key factors in determining Question 1 are understanding the lead and lag of events surrounding hyperthermals and applying new analytical methods (e.g. biomarkers) that could illuminate more details about the processes responsible for, and effects of, hyperthermals and associated carbon isotope anomalies.

- In order to investigate further whether we might recover a lead/lag record across the CIE using emerging geochemical proxies and pollen on a core record in these continental facies, we decided to do the following before we move to the proposal stage. (A) Scott

will send some additional cutting samples to Marcel at NIOS to analyze for potentially useful organic geochemical compounds now that new separation methods have been developed. (B) Guy Harrington (not present at meeting but contacted since) will contact Rahman Ashraf at Tübingen to discuss pollen preparation techniques that might work better in these oxidized sediments. (C) Scott will send some additional cuttings to Gabe from the lower part of the hole to analyze the $\delta^{13}\text{C}$ of bulk organic carbon to confirm that these actually represent "pre-CIE" values.

Attending:

Will Clyde

Scott Wing

Phil Gingerich

Gabe Bowen

Ellen Currano

Henry Fricke

Kirk Johnson

Ian Miller

Dan Peppe

Marcel T. J. van der Meer

Francesca Smith

Ron Waszczak

Peter Wilf