

## **Tephrochronostratigraphy of the Paleocene Fort Union Formation: implications for coal deposition?**

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During the early Paleocene fluvial sediments were deposited in the US Western Interior Williston Basin, USA. We will investigate if the formation of the coal seams in these deposits can be related to orbital climate forcing or to processes intrinsic to the sedimentary system. The latter is commonly accepted, but the former provides the potential for the development of a high-resolution time scale for Cretaceous-Paleogene terrestrial sediments. That would allow direct correlation of terrestrial and marine records such that rates of processes after the Cretaceous-Paleogene bolide impact can be compared globally. Furthermore, orbital climate control of coal formation might help to better understand processes underlying observed cyclic  $\delta^{13}\text{C}$  variations in marine records during this time interval. Episodic burial of isotopically light organic carbon in coals is one mechanism proposed to explain the variation in  $\delta^{13}\text{C}$  implying that cyclic occurrence of coal beds is caused by orbital climate forcing<sup>[1]</sup>. Until now these coals received little attention in the context of the global carbon cycle, as coals are assumed to result from autogenic, i.e. local, processes. Hence, if climate forcing can be proven, this new line of research may shed light on the role of coal formation in the global carbon cycle.

[1] Zachos *et al* (2010), *EPSL* **299**, 242-249