



Meeting Booklet

LT18: Fast biostratinomic destruction of previously diagenized human bones: an explanation for a lagged bioarchaeological records in Patagonia

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Human occupation in South America is recorded from 15100 to 16600 years BP. However, in Northwestern Patagonia, the oldest open-air sites bearing human skeletal remains are ~4000 years BP. Then, a low bioarchaeological signal characterizes the first 10000 years. The bioarchaeological record in Northwestern Patagonia is characterized by burial sites. Hence, taphonomic history consists of a short biostratinomic period immediately after death, restricted to mortuary practices of corpse preparation, being diagenesis the main phase of bone modification. In a sort of natural experiment, we studied bones naturally exposed to weathering after 4000 years of diagenesis, with control of the time they were in the (second) biostratinomy. Macroscopic and microscopic taphonomic analysis of 9074 bone remains indicated a remarkable deterioration after only 5-6 years of exposure to weathering. The results revealed an enhanced negative impact of biostratinomic processes on previously diagenized bones, which helps to understand the low bioarchaeological signal recorded before the late Holocene. The fact that bones remain visible for little time before being unrecognizable or eventually destroyed, and the low current population density of Patagonia, reduces the probability of finding the bioarchaeological record. Low density of early-middle Holocene human populations is part of the explanation as well.

F17: Eldonids, REE, and dolomitization oh my: Primary, secondary and tertiary preservation signals in the middle Cambrian Spence Shale Lagerstätte

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The Spence Shale Lagerstätte is a key Cambrian (Wuliuan) fossil deposit in northern Utah and southern Idaho, USA. It preserves over 74 genera, in at least 10 phyla, of biomineralizing and soft-bodied taxa, and represents the only major Lagerstätte of Wuliuan age outside of the Burgess Shale in Laurentia. In addition to taxonomic diversity, the Spence Shale outcrops represent a variety of depositional environments along a continental shelf and has potentially been affected by several orogenies, making it a compelling setting to understand taphonomic and diagenetic pathways. Analyses of eleven taxa from six localities using scanning electron microscopy (SEM) and integrated energy dispersive X-ray spectrometry (EDS) featured some surprising results. While taxa are predominantly preserved as a combination of carbonaceous compressions, iron oxide and pyritic replacement, eldonids of the genus *Eldonia* consistently show enrichment in Rare Earth Elements (REE). The REE, predominantly Lanthanum and Cerium, are enriched in the phosphate