



Arctic Interglacial and Pliocene Warm periods of the last 3.6 My: initial results from Lake El'gygytgyn, Western Beringia

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One of the primary objectives for ICDP deep drilling at Lake El'gygytgyn (67°30' N, 172°05' E), formed 3.6 Ma ago by a meteorite impact event, was to recover lacustrine sediments that would provide the first time-continuous Pliocene-Pleistocene paleoclimate record of different interglacials from the terrestrial Arctic. While discontinuous, spatially diverse Pliocene and Pleistocene marine interglacial records are known from the arctic borderlands at the outcrop scale, the Lake El'gygytgyn record is critically important for balancing the inherent marine bias we currently have in understanding the climate variability of a world warmer than today. Moreover, this continuous land record contributes to our knowledge of the terminal Pliocene transition, be it as steps, jolts or plunges, into the early Quaternary. The Pliocene portion of the lake record recovered extends from 130 m to 315 m depth below lake floor with nearly twice the sedimentation rate of Quaternary interval, presumably due to enhanced hydrologic systematics. Palynologically studied portions of the core are mostly dominated by tree pollen, providing us with a compositional idea of changes in Pliocene El'gytgyn forests of pine (*Pinus*), larch (*Larix*) spruce (*Picea*), fir (*Abies*), alder (*Alnus*), and, hemlock (*Tsuga*), not just scrubs. Interglacial portions of the core thought correlative with MIS 5e, 9, 11 and 31 differ in character, presumably due to orbital forcing and feed backs. We present here a preliminary compilation of the collective proxy results of many investigators and place the results in the context of earlier studies of Arctic interglacial records.