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SIGNIFICANCE OF SHORT-TERM VARIABILITY IN MIDDLE MIOCENE PALYNOFLORAS OF OREGON AND IDAHO

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Many efforts have been made to understand global and regional vegetation responses to Cenozoic climate change based on syntheses of palynofloras—using palynofloras as discrete points in long spatiotemporal frameworks. Through limited sampling and time-averaging across localities, these approaches suffer from the condensation of short-term ecosystem dynamics. To understand the degree to which the structure and composition of Cenozoic vegetation varied on short timescales, we present high-resolution pollen analysis and U-Pb geochronology of sections of the Middle Miocene Succor Creek flora, Mascall flora, and Clarkia lagerstätte (Oregon and Idaho). The Succor Creek flora was studied from six localities, each representing ~10-50 kyr intervals in which vegetation varied rapidly and widely between relatively cool- and warm-adapted plant associations. Distinctly cool-temperate conifer forests (*Picea*) were starkly contrasted with herbaceous associations and cool-temperate mixed forests (*Alnus*, *Celtis*, *Carya*). Variability within Succor Creek localities is largely attributed to volcanic succession, but differences between localities are thought to be climate driven. The Mascall flora was characterized from a pair of lignitic shales in the Hawk Rim locality from which primarily terrestrial deposition occurred for ~180 kyr. Hawk Rim vegetation varied from open (Poaceae) and forested vegetation (*Ulmus/Zelkova*). The Clarkia lagerstätte, part of the Latah flora, was studied from a single ~30 m composite section, representing ~300 kyr of deposition. During that interval, Clarkia vegetation was strikingly unvarying, dominated by cool-temperate broadleaved association (*Castanea/Lithocarpus*, *Quercus*). This unvarying composition was largely maintained despite orbitally-paced Middle Miocene climate variability and the deposition of five thick (>10 cm) tuffs. These comparisons show that variation among individual paleofloras and localities makes it difficult to assign a single, central tendency of the flora that would be in sync with prevailing Cenozoic climate trends. It is vital to consider the dynamism of ecosystems which occurs on short timescales and makes characterizations of a flora by a single data point risky.

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306 / 307 (David L Lawrence Convention Center)

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