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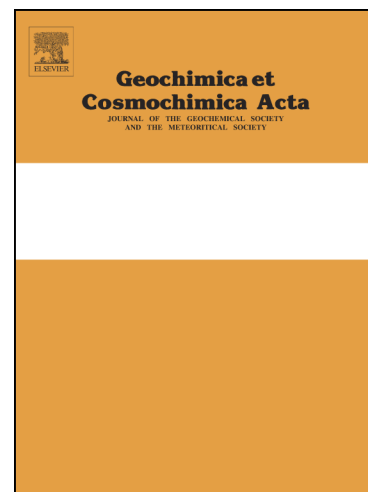
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Geochemical characterization of critical dust source regions in the American West

Sarah M. Aarons^{a,1,*}, Molly A. Blakowski^a, Sarah M. Aciego^{a,2}, Emily I. Stevenson^{a,3},
Kenneth W. W. Sims^b, Sean R. Scott^b, and Charles Aarons^c

^a*Department of Earth and Environmental Sciences, University of Michigan, 1100 N. University Avenue, Ann Arbor, MI 48109*

^b*Department of Geology and Geophysics, University of Wyoming, 1000 E. University Avenue, Laramie, WY 82071*

^c*Medical Park Family Care, 2211 East Northern Lights Boulevard, Anchorage, AK 99508*

¹*Current address: Department of Earth System Science, University of California, Irvine, 3200 Croul Hall Street, Irvine, CA 92697*

²*Current address: Department of Geology and Geophysics, University of Wyoming, 1000 E. University Avenue, Laramie, WY 82071*

³*Current address: Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge, Cambridgeshire, CB2 3EQ, United Kingdom*

*Corresponding author: Department of Earth System Science, University of California, Irvine, 3200 Croul Hall Street, Irvine, CA 92697, smaarons@uci.edu

Abstract

The generation, transport, and deposition of mineral dust are detectable in paleoclimate records from land, ocean, and ice, providing valuable insight into earth surface conditions and cycles on a range of timescales. Dust deposited in marine and terrestrial ecosystems can provide critical nutrients to nutrient-limited ecosystems, and variations in dust provenance can indicate changes in dust production, sources and transport pathways as a function of climate variability and land use change. Thus, temporal changes in locations of dust source areas and transport pathways have implications for understanding interactions between mineral dust, global climate, and biogeochemical cycles. This work characterizes dust from areas in the American West known for dust events and/or affected by increasing human settlement and livestock grazing during the last 150 years. Dust generation and uplift from these dust source areas depends on climate and land use practices, and the relative contribution of dust has likely changed since the expansion of industrialization and agriculture into the western United States. We present elemental and isotopic analysis of 28 potential dust source area samples analyzed using Thermal

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