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Disentangling geochemical signals at the dawn of animal life from the effects of Cenozoic oxidative weathering: A multiproxy core-outcrop comparison from Ediacaran strata in southern Namibia

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Geochemical records in sedimentary rocks (e.g., $\delta^{13}C_{carb}$, $\delta^{18}O_{carb}$, $\delta^{34}S_{CAS}$, $\delta^{34}S_{py}$, $\delta^{13}C_{org}$, TOC, iron speciation) are used to make interpretations about Earth's past surface conditions. Yet it is well known that surface outcrops sampled as part of geochemical studies are susceptible to surficial weathering processes that could alter their geochemistry. Here, I will present data from a core-outcrop multiproxy comparative geochemical study that leverages International Scientific Drilling Program–Geologic Research through Integrated Neoproterozoic Drilling–Ediacaran Cambrian Transition (ICDP-GRIND-ECT) core. We analyzed carbonates and fine-grained siliciclastic units of the Mooifontein to Spitskop members of the Kuibis to Schwarzrand subgroups of the late Ediacaran (ca. 550-538 Ma) Nama Group of southern Namibia, from core and adjacent correlative outcrop exposures. Our results demonstrate that geochemical records from this succession have variably been altered at the surface, with implications for the interpretation of Nama Group geochemical records and beyond.