

UC SANTA BARBARA
Department of Earth Science

Speakers Club

WEBB 1100 • THURSDAY FEB 1st. • 2:00 PM

A Sedimentary Record of Earth's Oxygenation

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The oxygenation of surface environments was one of the most fundamental transformations in Earth's history, dramatically altering the chemical composition of the oceans and providing a compelling example of how life has shaped the composition of a planetary atmosphere. I will review records that constrain marine and atmospheric oxygen levels during the middle chapter of Earth's history—the Proterozoic. Through exploration of the current tools available for Proterozoic redox reconstructions, I will highlight several advances in our understanding of Earth's oxygenation. Foremost, I will make the case that the Earth has not undergone a unidirectional rise in surface oxygen levels, and argue that the ocean-atmosphere system in the mid-Proterozoic was more reducing than traditionally envisioned. New proxy records will provide a framework to evaluate the history of atmospheric biosignatures through Earth's history and revisit the role that oxygenation played in driving the diversification of complex life.