

UC **SANTA BARBARA**
Department of Earth Science

Earth Science Colloquium

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Tools for tracking the oxygenation of Earth's oceans and atmosphere

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Much work and debate has focused on the oxygenation of the ocean-atmosphere system over the course of Earth's history. For good reason; available surface oxygen has major implications for understanding the co-evolution of life and environment, causes and feedbacks associated with major extinctions, and the significance of oxygen as a biosignature on exoplanetary targets. Chromium and uranium isotopes have been used to track changes in atmospheric and marine oxygen levels here on Earth. In this talk I will explore the whereabouts and cycling of Cr in sedimentary systems, and provide new environmentally-derived constraints on the utility of U isotopes as a proxy for global marine redox structure. I will highlight the ties between advancing the utility of these geochemical tools and the necessity of sedimentological context as the community moves towards a more nuanced understanding of Earth's redox evolution.