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Paleo-precipitation records from Lake Tahoe sediment cores

Two sediment cores from the deep floor of Lake Tahoe provide insight into the past 7000 years of precipitation in the Sierra Nevada and surrounding region. Measurements of the grain size of sediment in the cores indicate active deposition through turbidity currents, which may be triggered by earthquakes or by severe storms affecting runoff into the surrounding watershed. Analyses of the magnetic and geochemical properties of the sediment, constrained by radiocarbon dates, suggest that turbidity currents were likely derived from the rapid influx of sediment and organic debris from the watershed, perhaps triggered by high-intensity storms. We correlated broad patterns in the Tahoe cores with climate proxies from 1) elsewhere in the Tahoe basin, 2) closed lakes of the western Great Basin and 3) the San Francisco bay estuary. The reasonable degree of temporal overlap between climatic events in each region reveals apparent trends in severe storm frequency in the Sierra Nevada and a measure of long-term regional paleo-precipitation over the last 7000 years. Paleoclimate studies such as this one from Lake Tahoe provide a baseline of natural variability that can be used for comparative purposes to assess current and future changes in California's climate.

Biography

Dr. David Osleger received his PhD from Virginia Tech in 1990 and subsequently enjoyed stays at USC and UC Riverside before joining the faculty in the Geology department at UC Davis in 1998. His research interests include orbital stratigraphy, sea-level history, energy resources, lacustrine sedimentation and paleoclimatology. He teaches courses on the geology of national parks, California geology, natural hazards, environmental geology, the solar system, and 'big history.'