



Frances Malamud-Roam, Ph.D

My graduate research has focused on environmental change, with my M.A. thesis focusing on the environmental changes that preceded the shift from human gathering societies to early agricultural societies. My dissertation research was closer to home, focusing on environmental change in the San Francisco estuary tidal marshes. Using a combination of stable carbon isotopes and fossil pollen, this research used records of vegetation change in the estuary tidal marshes to infer past climate variability.

After completing a dissertation on vegetation changes in San Francisco Bay estuary marshes, I received funding from CALFED Science and the United States Geological Survey to prepare a review paper of paleoclimate research in California in collaboration with Prof. Ingram, Prof. M. Hughes and Dr. Joan Florsheim. The goal of this paper is to provide CALFED Science with a summary of the linkages between the San Francisco Bay estuary and its larger watershed region as part of a larger report on the potential impacts of climate variability to the Bay – Delta.

Education

- | | |
|-----------|---|
| Ph.D 2002 | Geography. University of California , Berkeley.
<i>Dissertation:</i> Late Holocene Vegetation Change in the San Francisco Estuary using Stable Carbon Isotopes and Pollen Analysis
(Advisors: B. Lynn Ingram, A. Roger Byrne and R. Amundson) |
| M.A. 1993 | Geography. University of California, Berkeley
<i>Thesis:</i> A Case for Independent Origins of Agriculture in China
(Advisor: Roger Byrne) |
| B.A. 1986 | Geography. University of California, Berkeley. |

ProjectTitle: Sediment Supply and Marsh Development in the San Francisco Estuary

The primary goal for this research is to gain a better understanding of the sources of inorganic sediments in the San Francisco estuary that comprise and maintain the tidal marshes. Specifically, this project will evaluate the relative importance of local watersheds versus the larger Sacramento/San Joaquin watershed as sediment sources to the local marshes, and how that relative importance has changed over time. Climate variability continues to be an important research concern and we will identify the impacts of climate variability on interannual and decadal timescales to the supply of sediments of these tidal marshes.

This project is relevant to the CALFED mission because numerous marsh restoration projects (many of them funded by CALFED) are under construction or in planning stages, yet it remains unclear whether the sediment supply in the Estuary will support those marshes. Furthermore, sea level rise may place existing marshes around the Bay estuary at significant risk in coming decades if sediment supply is insufficient for marsh accretion, especially if anthropogenic climate change significantly accelerates sea level rise.