

## **NURP funded study yields insight into Cold Seep Habitats**

In a recent issue of **Marine Ecology Progress Series (vol. 265: 123-139, 2003)**, a peer-reviewed scientific journal, L.A. Levin et al. published findings from a study conducted in 2000 using the ROV Jason. This research was funded by NOAA's Undersea Research Program Center for the West Coast and Polar Regions at the University of Alaska, Fairbanks.

This study looked at methane seeps on the Northern California margin, near the mouth of the Eel River. Methane seeps are a seafloor ecosystem subsisting on naturally seeping methane hydrates.

### **The significant findings from this research were:**

- (1) Most organisms avoid sulfide concentrations greater than 1mM. Even in habitats known to contain significant concentrations of sulfide, most infauna occupy that portion of the sediment column that is sulfide-free. Sulfide concentration is correlated with significant changes in community structure. Microbial mats were found to be present in areas with high magnitudes of vertical upward flux of hydrates.
- (2) Sulfide concentration is correlated with significant changes in community structure. Microbial mats were found to be present in areas with high magnitudes of vertical upward flux of hydrates.
- (3) The vertical distribution of sulfide is largely controlled by fluid flow and when clams are present, by their active pumping.

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### **Why are hydrates important to NOAA?**

- (1) Gas Hydrates are currently under-recognized as a major phenomenon in the oceans. As much as 60% of the global carbon reserves on the Earth are located in hydrates.
- (2) Gas Hydrates are inhabited by unique marine ecosystems that include newly discovered species. These extreme ecosystems contribute to the basic understanding of life on earth and may provide a glimpse into life on other planets. Additionally, these ecosystems may provide a future source of marine bioproducts.
- (3) Most importantly for NOAA, gas hydrates may also have a large effect on climate and the global carbon cycle, a connection, which is only now being recognized.

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This study fulfills the following NOAA Strategic Plan Performance Measure under the Ecosystem Goal:  
... Increased ocean, coastal, and Great Lakes areas explored, mapped, characterized, and inventoried.  
More information: <http://www.int-res.com/articles/meps2003/265/m265p123.pdf>

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