

Deep Submergence Requirements

1. Accurate location and relocation of seep patches and gear elevator on the seabed for experiment deployment and recovery (colonization trays, flux meters)

2. Precise coring of small-scale seep features (microbial mats, clambeds, pogonophoran patches).

3. Collection of undisturbed core samples that maintain the vertical integrity of porewaters, bacteria and animals (in tough sediments)

4. Collection of individual specimens from known settings

5. Photographic documentation of sampling, expt. gear, surroundings

6. Versatile support ship:

multicore, gravity core, CTD deployment

accomodation of ROV and Isotope van

sufficient space for scientific party/laboratory work

Research Questions

1. Do seep macrofaunal communities exhibit distinct taxonomic composition, standing stock and diversity relative to other continental margin assemblages?
2. How important is chemosynthesis as a nutritional pathway for seep macrofauna? Do they contain chemosynthetic symbionts? Do seep faunas provide energy for adjacent, non-seep assemblages?
3. To what extent does the seep geochemical environment structure macrofaunal communities?
Do porewater geochemistry and fluid flow rates determine the composition, abundance or vertical distribution of macrofauna?
Do sulfides provide settlement cues for macrofauna?
Are sulfides required for successful growth or are they toxic to some infauna?
4. Do foraminifera tests at seeps record methane release isotopically?
Can they be used as paleoclimate indicators?