

**STUDENT CRUISE: SIO 277 Deep-sea Biology**  
**October 31, 2009 - R/V New Horizon**

**Goals:** The goals of this cruise are to (1) demonstrate the different types of instrumentation used to study the biology of deep-sea organisms, (2) generate hydrographic data illustrating features of the deep CA margin (e.g., thermocline, oxygen minimum zone, nepheloid or benthic boundary layers), (3) recover deep-sea animals characteristic of midwater and benthic environments, and (4) provide at-sea experience to students along with detailed explanations of ship operations and facilities. Work will be conducted in the San Diego Trough, offshore of Point Loma. An extra long day is required because the sampling depths of 1200 m require extended deployment times. The following activities are planned.

Cruise participants **Arrive at Nimitz Marine Facilities : 5 AM**  
*We request permission to sleep on the ship the night before*

**Depart Nimitz no later than 6 AM**

**Transit** to San Diego Trough – Jumars SD Trough Station N 32 35.75', W 117 29.00'  
~2.0 to 2.5hours [ Safety, ship operations and facilities discussions]

**CTD** – 1.5 h to 5mab, water depth 1220 m [ Demonstrate T, S, Oxygen, Light and Transmission changes with depth]

**Multicore Drop** – 1.5 h 1220 m [Collect intact sediments illustrating chemical and biological properties. Target organism – *Tharyx laticastellus* [ mudball building polychaetes] Sediment will be sieved on deck with running seawater. Retained animals will be examined with microscopes in the lab.

Transit to Isaacs Kid Midwater Trawl deployment location N 32 35.9', W 117 27.8'

**Isaacs Kid Midwater Trawl 4 h** along a line from N 32 35.9', W 117 27.8' towards N 32 37.0', W 117 39.7' Tow depth 500-800 m. [Sample midwater fish, jellies, crustaceans and observe adaptations]

**Otter Trawl** - 3 h along a line from N 32 37.0', W 117 39.7'towards N 32 35.9', W 117 27.8' [ Collect benthic megafaunal invertebrates and fishes from 1200 m; discuss lifestyles, feeding modes and community structure]

**Plankton Tow** – 1 h 1 m net. [Tow at depths of 400-700 m if possible. Collect and observe deep-water plankton.]

Depart San Diego Trough: 1900 **Transit** to Marine Facilities - 2 hours  
[ examine sampled material and pack up during transit]

**Arrive Nimitz:** 2100