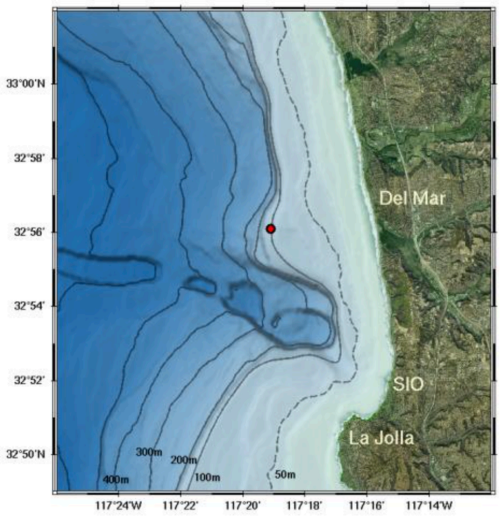
# Homework 3: Del Mar Coastal Currents  Due November 17, 2020


*The new buoy being loaded on the R/V Robert Gordon Sproul for deployment (Nov. 2009).*




http://mooring.ucsd.edu/index.html?/projects/delmar/delmar_intro.html

The file DelMar_data.mat contains moored current and bottom temperature data from a mooring deployed at the 100m isobath just north of Scripps Canyon by the Ocean Time Series Group.  In this assignment, we'll use Empirical Orthogonal Function (EOF) analysis to examine the dominant time-depth variability of the current field

1) Plot time series of u (positive east) and v (positive north) current components for all depths.

2) Plot current time series as vector plots using *quiver*.

3) Compute EOFs of the combined u and v currents (scalar, not vector).

4) Plot the percent total variance accounted for by each mode versus mode number.

5) Plot the EOFs (depth patterns) of the first 3 modes.

6) Plot the PCs (temporal expansions) of the first 3 modes.

7) For each current time series, compute the percent variance accounted for by each of the first 3 modes.  Plot these percentages as a function of depth.

8) Discuss the results of the EOF analysis.  What aspects of the current variability are captured in the first 3 modes?