

**SMBO OUTREACH
TEACHER'S WORKSHOP, NOVEMBER 5, 2005**

**TASK B: MARINE MAMMAL STRANDINGS, TOXIC BLOOMS, AND
UPWELLING**

In late March 2002, several marine mammal rescue stations (such as the Marine Mammal Care Center (<http://www.mar3ine.org/whatsnew.htm>)) reported a strong increase in the frequency of strandings of marine mammals. Many of these strandings could be traced back to a bloom of a marine diatom, *Pseudo-nitzschia spp.* This harmful algae produces domoic acid, a neurotoxin, which leads to neurological dysfunctions in marine mammals and sometimes to their deaths.

- a.) Produce a time-series plot of windspeed between March 10 and 30 of 2002. (Meteorology data set). Discuss the major features of this plot. Produce also a time-series plot of wind-direction. Which direction are the winds coming from in relationship to the shoreline (Note also why this is relevant)?
- b.) Produce a time-series plot of sea-surface temperature (SST) (CTD data set) for the same period. Discuss the main features of the SST plot in light of what you've seen in the wind time-series.
- c.) Produce a time-series plot of fluorescence (CTD data set) for the same period. Note that fluorescence can be taken as a direct proxy for chlorophyll, i.e. it is a measure of phytoplankton abundance. Discuss this time-series in comparison to those of wind and SST. In particular, discuss the sequence of events, i.e. what comes first, what second, etc, and what are the response times.
- d.) Finally, connect your results to the domoic acid poisoning observed in mammals in late March.