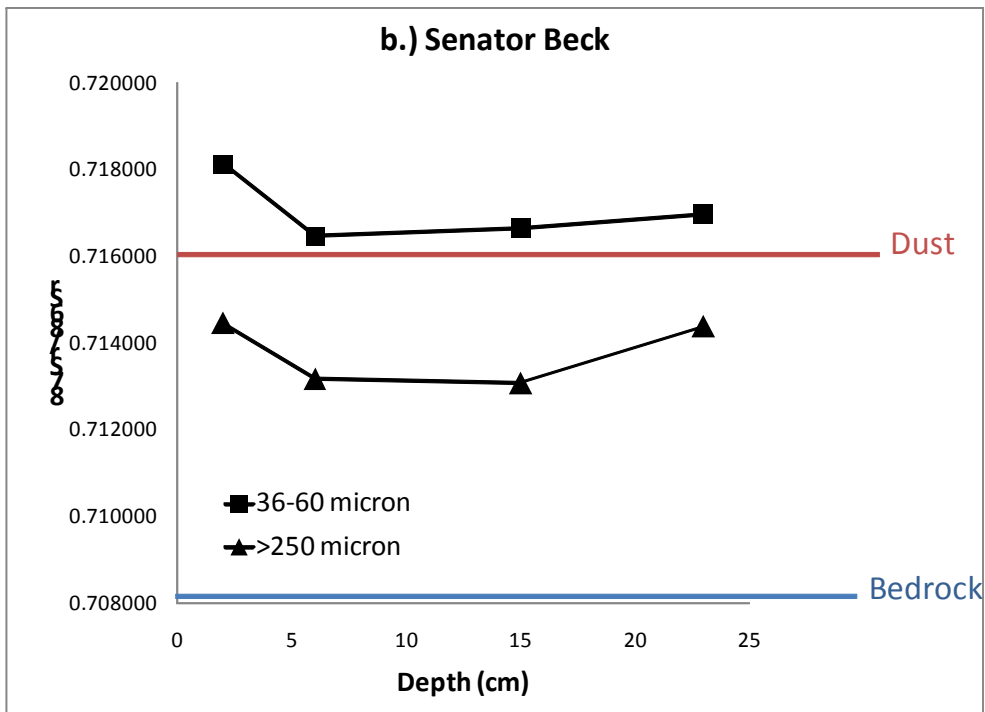
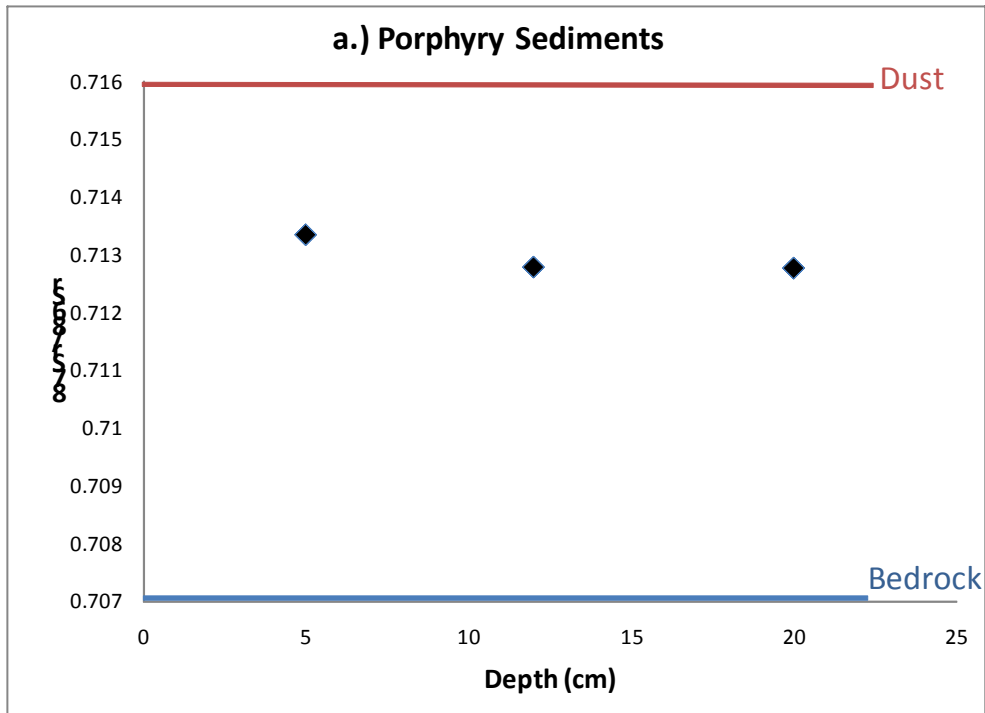
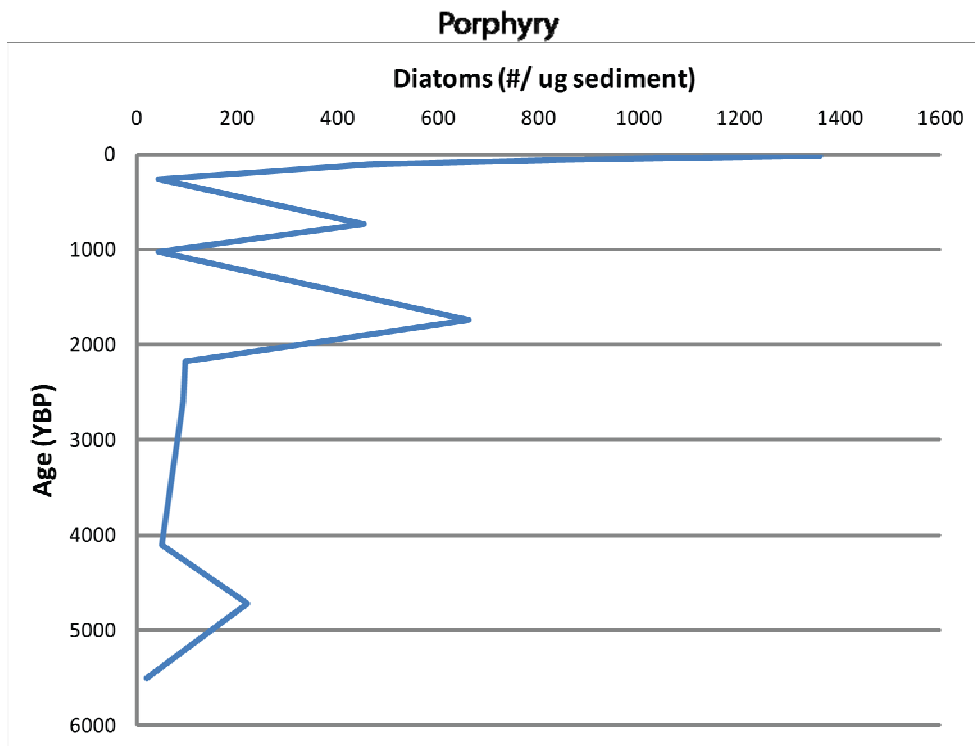


Supplemental Figure 1. Image of discrete dust layers in the snowpack of the San Juan Mountains. Dust layers that were sampled for geochemical analysis in this study are indicated by red arrows. Dust samples were collected in the Senator Beck Basin during winter months between 2003 and 2007 (Photo by Corey Lawrence).



Supplemental Figure 2. Changes in Sr isotopes ($^{87}\text{Sr}/^{86}\text{Sr}$) with depth in the sediments of both Porphyry (a.) and Senator Beck (b.). Mean values of Dust and Bedrock end-members are also shown for the two catchments. For Senator Beck measurements made on the 37-63 μm size fraction and the >250 μm size fractions are plotted.



Supplemental Figure 3. Change in absolute diatom abundance over time in Porphyry Lake. This profile shows an increase in diatom abundance (number of valves per μg of sediment) in recent sediments.