This data set contains the GenBank accession numbers for 18S sequences of water column phytoplankton and ice algae collected during BEST cruise PSEA1001. Full length 18S sequences were generated using universal 18S primers and clone libraries. Clone library sequences were separated into Operational Taxonomic Units (OTUs) based on a <0.5% identity. These sequences will be available after 1 Sept 2013 to anyone who accesses GenBank. The accession number is on the right and our internal identifiers on the left. I = ice algal sample, WC = water column. The number following this is the sample identifier, followed by sequence identifier, and the OUT number.