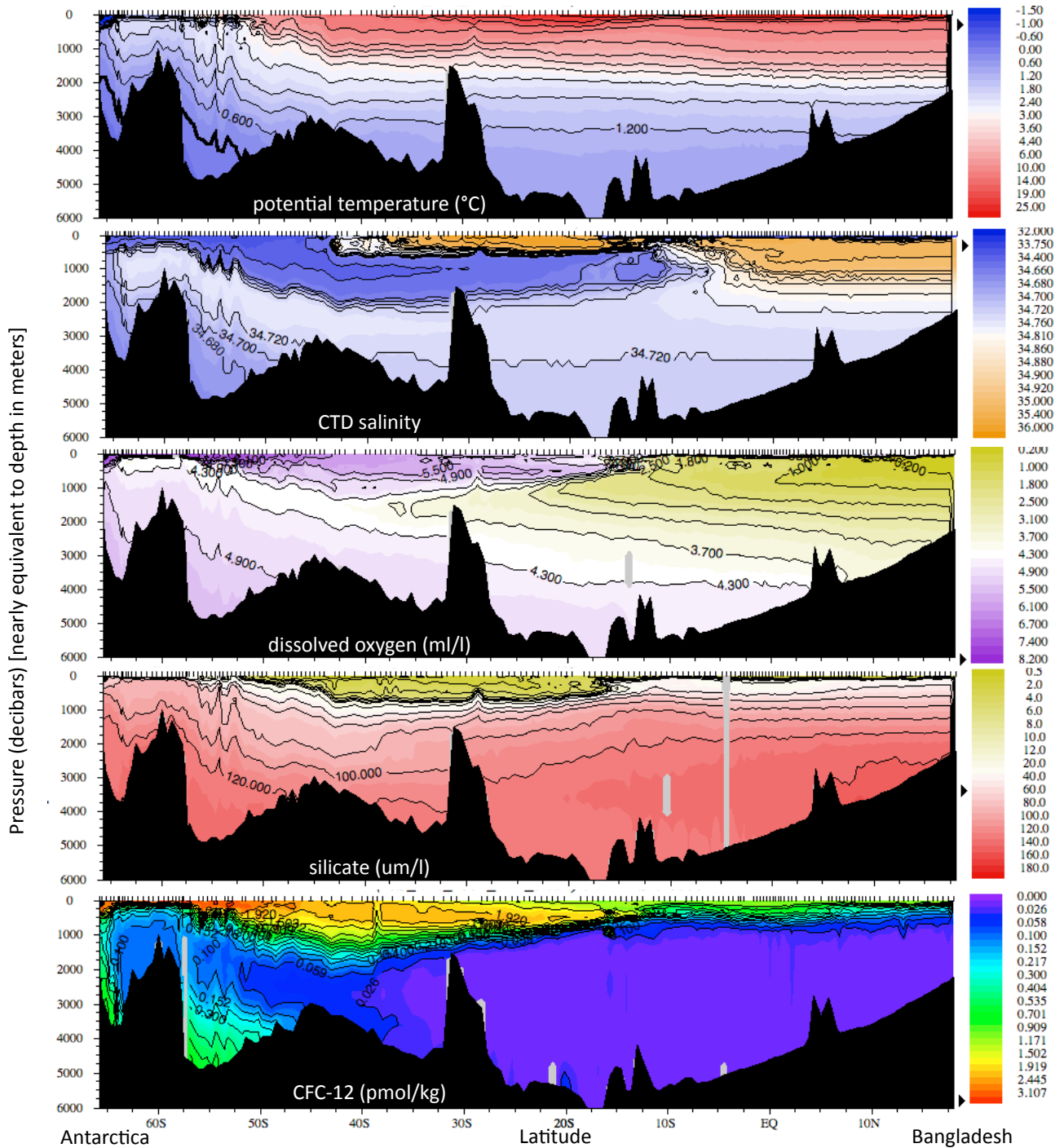


Seawater properties measured along the I8S & I9N 2007 sections from R/V Roger Revelle



This plot shows temperature (compensated for pressure effects), salinity, dissolved oxygen, silicate, and CFC-12 along the tracks of R/V Roger Revelle’s “I8S” and “I9N” sections. (I9N followed I8S.) The vertical axis is pressure, which in units of decibars is close, numerically, to depth in meters. The vertical axis is greatly exaggerated with respect to the horizontal axis – the oceans are much thinner than wide!

Waters are cold at all levels in the far south. In some Antarctic regions, where the saltier layer near 1000 db at 60°S comes closer to the surface, water cooled in winter becomes dense enough to sink from the upper layers to the bottom, where it spreads north. It contains CFCs and higher oxygen levels from its recent contact with the atmosphere. Deep waters away from the Antarctic have virtually no CFCs in them – they last were at the sea surface many years ago. The saltier pale blue deep layer is derived partly from North Atlantic deep waters that spread through the global ocean. Relatively fresh, high oxygen intermediate-depth water from the Antarctic regions also spreads northward. Warm, salty surface waters mark the subtropical gyres, freshened near the equator partly by rain and partly by the Indonesian Throughflow. Note how silicate is dissolved into the deep waters at both ends of the section, from remains of siliceous plankton.