

Figure 7. (a) Chlorophyll fluorescence, (b) beam attenuation coefficient at 660 nm (c660), (c) salinity, (d) temperature, and (e) density anomaly. Data are shown for cast 13 (thick line) and cast 15 (thin line). Sewage plume was present at cast 13 but not at cast 15; nonetheless, chlorophyll fluorescence signals were similar for both casts.

anomalies found in the plume, ranged between 1:170 and 1:260 for silicate and phosphate concentrations. This is in agreement with other dilution calculations [Petrenko et al., 1997a] and shows that the plume was much less dilute compared to surfacing plumes (dilution > 1:1000) [Roberts, 1995].

3.4.2. Pigments. Chlorophyll *b* (chl *b*) and 19'-hexanoyloxyfucoxanthin (hex) were the dominant carotenoids, followed either by fucoxanthin (fu) in the upper part of the water column (top 30 m) or by 19'-butanoyloxyfucoxanthin (bu) deeper than 35 m [Petrenko, 1997]. Offshore of the diffuser (station B), these carotenoids peaked in the deep

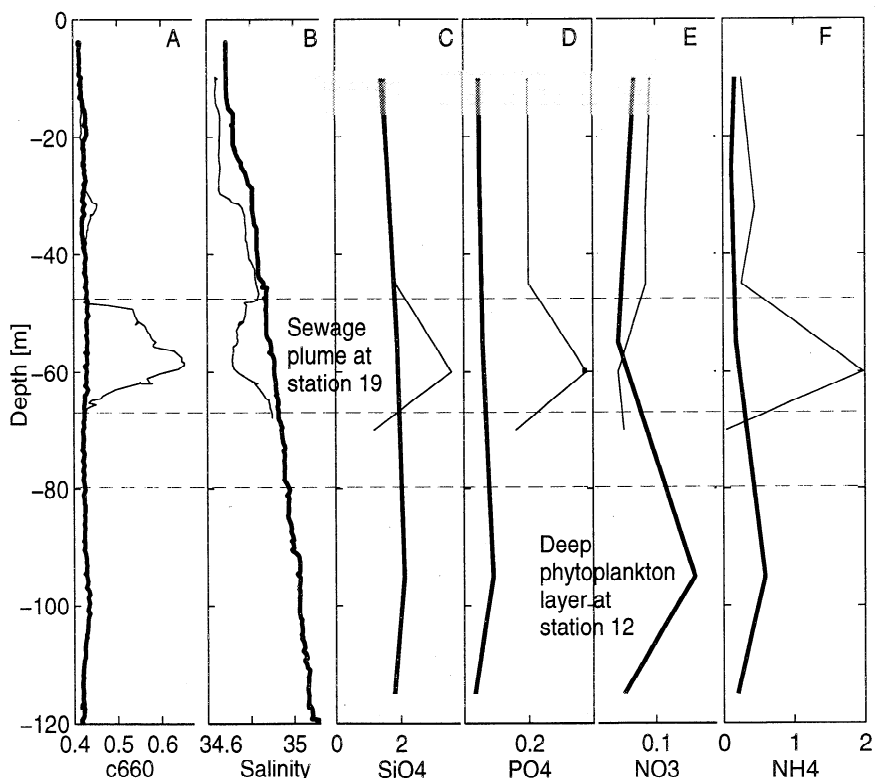


Figure 8. (a) Beam attenuation coefficient at 660 nm (c660) for cast 12 (thick line) and cast 19 (thin line). (b) Same as Figure 8a for salinity. (c-f) Same as Figure 8a for silicate, phosphate, nitrate, and ammonium concentrations in mM.