



## Inferring salinity and density from temperature and CTD profiles

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We discuss methods for inferring salinity and density from temperature profiles guided by CTD data, motivated by acquisition of many XBT profiles simultaneously with "seismic" imaging of the water column. Käse et al. (1996) use a density ratio (linear temperature-salinity relation) depth-by-depth derived from CTD data; they emphasise horizontal variations of density to infer geostrophic velocities (for example). We have found that this can give spurious density inversions (static instability) where the vertical gradient of temperature is atypically reversed. The problem is diagnosed; we propose a modified approach to infer appropriate salinity with locally-stable density, in contexts where vertical profiles are the main concern.