

Interactive comment on “Empirical reconstruction of salinity from temperature profiles with phenomenological constraints” by F. Reseghetti

Anonymous Referee #2

Received and published: 17 January 2007

This paper is hard to follow and consequently needs to be thoroughly rewritten before it should be published. The work is quite technical, so precision in describing the techniques is important.

It appears that the author’s method is trying to fix a previous attempt to estimate salinity from local climatological mean temperature and salinity profiles. How and why the climatology is modified is not clear. How do the modifications vary spatially and temporally? The same question should be asked of the climatology before modification. Do the modifications correspond to easily recognizable spatial and/or temporal shifts in water masses? TS diagrams showing the climatological curve together with the profiles used to infer the corrections and the revised climatological curve would be helpful. Such figures could also document the seasonality of the TS relationship. Colour could

be used to provide information about depth and contours to indicate density. Perhaps such figures could be used to explain the changes in the temperature and salinity fields that warrant the modifications in the climatological profiles.

Troccoli and Haines argue that a recent local observed CTD or ARGO profile provides a better basis for estimating salinity than does climatology. Can the proposed method be regarded as a compromise between climatology and the recent local observations? Do models track the TS changes, so that the model's TS relationship might be compared with the modified climatological relationship?

The paper indicates the author's familiarity with a broad range of available techniques for estimating salinity, but fails to point out why none of these are adequate for Ligurian and Tyrrhenian Seas. Before introducing a new method, motivating its need is essential. Are the motivating factors present in other oceanic areas so that this approach should be regarded to be of general applicability? How should one recognize where this method should be used? The paper would certainly benefit from a comparison of how well salinity from CTD and ARGO profiles can be reconstructed using both this proposed method and the existing methods.

Interactive comment on Ocean Sci. Discuss., 4, 1, 2007.

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