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# *Interactive comment on* "Empirical reconstruction of salinity from temperature profiles with phenomenological constraints" *by* F. Reseghetti

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Many thanks for the comments underlining the inadequacies of the manuscript in describing both the new computational method and the validity of results of its application to temperature profiles from Tyrrhenian and Ligurian Seas. In addition, plots and figures do not clearly show the main results and the advantage in using the proposed technique.

I do not have adequately enhanced the peculiarity of temperature profiles in the Mediterranean Sea, showing values within an interval ranging from 13° to 14° C below the near surface layers down to the bottom. In addition, S(z) profiles are not monotonic. As a consequence, the S(T) based methods cannot be used. In general, the TS relationship (and its temporal evolution) strongly depends on the selected basin.

Otherwise, it is required a more accurate analysis of recent temperature and salinity measurements in Tyrrhenian Sea (2004-2006), showing an evident discrepancy with respect to the climatological values (trend or transient phenomenon?). I remark that, if the dataset allowing the calculation of the correction factor, which describes the difference between climatology and measurements, is not sufficiently robust (i.e. it does not well cover the range of spatial and temporal variability), the quality of synthetic salinity values is bad.

In general, a hard revision and further improvements to the general structure of this paper are required. Therefore, I withdraw the manuscript.

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