

Interactive comment on “Distributions of the carbonate system properties, anthropogenic CO₂, and acidification during the 2008 BOUM cruise (Mediterranean Sea)” by F. Touratier et al.

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I would like to post a comment on this manuscript by appreciating the efforts of authors on evaluating the influence of anthropogenic CO₂ and acidification in the Mediterranean Sea since preindustrial era. They tested the impact of anthropogenic CO₂ influence in currently under sampled area (i.e., Med Sea). The authors have used quite accurate and valuable data set of CO₂ observations from the Med Sea to estimate anthropogenic CO₂ (Cant) and then evaluate its influence on pH variations in deep waters. Quantifying the influence of Cant on acidification in the marine system is one of the most challenging issues for marine biogeochemists. Earlier studies have

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been shown that Mediterranean Sea is the most acidified marine system among others, and several reports mentioned that deep waters were not yet acidified. This study shown that significant acidification in the deep waters of Med Sea due to contamination of deep waters with Cant and is quite interesting for the carbon community. In order to quantify Cant, the authors have used the TrOCA method which was developed by the same authors more than a decade ago and has been tested since then at different locations including Med Sea and Atlantic Ocean and made intercomparison exercise with other existing methods. These exercises have been proved that TrOCA method can able to estimate Cant accurately with reference to many other existing methods. Despite variability with reference to space in different methods, the integrated Cant by TrOCA for the entire Atlantic Ocean was quite comparable with other methods indicating that this method can able to estimate Cant accurately. Keeping the data limitation in mind, as no CFC data available, authors have suggested that only two methods, TrOCA and CIPSL method can be used to estimate Cant to this data. Though CIPSL method yielded high total inventory during inter-comparison exercise, however it would still useful to estimate using this method as well and show the range of acidification in the deep waters of Med Sea. I appreciate authors to bring new interesting issue on ocean acidification of deep waters due to anthropogenic CO₂ penetration in some parts of the world.

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