

Interactive comment on “Surface Ocean CO₂ Atlas (SOCAT) gridded data products” by C. L. Sabine et al.

Anonymous Referee #1

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General Remarks

The present manuscript is about a set of gridded data products released as part of the Surface Ocean CO₂ Atlas (SOCAT) effort. This data set is very important to the community since it provides gridded fields of surface ocean CO₂ in terms of decadal, annual, and monthly averages on a global 1°×1° grid (finer grid size in coastal regions). The observations were mapped by combining the existing data into grid boxes without further interpolating them. Depending on personal needs the user is free to apply different methods to interpolate the data in time and space, if necessary. The chosen grid size allows to compare the data set with other data products having the same resolution. It further facilitates the use of surface CO₂ data when comparing observations to model output.

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The present manuscript is very well written and certainly deserves publication in ESSD. All major steps undertaken to map the data and to assess the data quality are provided. There are, however, a few minor things that puzzle me a bit, and I would like to ask for clarification, before publishing the manuscript.

Detailed comments

Abstract: About the first third of the abstract is identical to the abstract of a companion paper submitted by Pfeil et al. (2012, ESSDD). Though I understand that both manuscripts deal with the SOCAT data set (Pfeil et al. describe the core SOCAT data set, while Sabine et al. deal with the gridded data products) both manuscripts should be considered unique. For this reason, I would like to suggest to rephrase that part of the abstract and make it as well unique.

Page 787, line 25: the heading of section 2 is entitled “Data set construction”. This should be extended or clarified, since what immediately follows is a summary of the construction of the core SOCAT data set, while one would probably expect a description of the gridded products, which is given in section 3.

Page 787, line 11: The data set of gridded products starts in February 1970 and ends in December 2007, but observations used in the core SOCAT data set are already available for 1968. I could not find any information why observations for 1968 and possibly 1969 were not included in the gridded data set.

Page 788, line 27: please check the publication date of the article published by Dickson et al., since different years are listed in the text and in the references section.

Page 793, line 2: I would like to suggest to provide examples of the “similar products available to the community”.

Page 794, section 7: Please, also add that the gridded data set is available as a set of netCDF files. It should be noted that Pfeil et al. (2012, ESSDD) directly point to the CDIAAC web address that provides the gridded data set as netCDF files, while Sabine

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et al. (2012, ESSDD) refer to the project web page www.socat.info as the source of data.

Figure 1: The quality of Figure 1 is quite low, the figure appears to be pixelated. Though the considered data period is given in the figure as part of the Ferret output, I would suggest to add this to the figure caption.

Figure 2: Units should be added to the x-axis.

Figure 5: The title of the figure should probably be removed since the content is almost identical to the figure caption. In contrast, a text label like 'months' should be added to the color bar.

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