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Open Access Earth System Science Data Discussions

Interactive comment on "Over 10 million seawater temperature records for the United Kingdom Continental Shelf between 1880 and 2014 from 17 Cefas (United Kingdom Government) marine data systems" *by* David Morris et al.

Anonymous Referee #3

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The authors are to be congratulated for their efforts to make these previously-inaccessible observations available to the public. For the type of long-term record considered the quality of individual observations is not the key issue: what is important is that the observations are made accessible, and as much information as possible is made available to enable users to interpret the observations. The temperature observations in this collection should find wide application. As noted by Reviewer 1 the data can be compared with existing compilations such as ICOADS and the data products derived from it, and some of the data sources could provide valuable quasi-

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Discussion paper

homogeneous reference for evaluation of bias adjustments applied to historical SST (http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-15-00251.1)

I have reservations about the approach the authors have taken in 2 regards.

Firstly, the decision to consider only temperature observations. Those working with observations over land are now trying to integrate observations of different parameters that have been historically separated (http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-16-0165.1) The observations in this collection come from a wide range of sources, and will have many different associated parameters recorded and it is clearly a major task to have extracted any information from the sources. However, much of the effort has gone into gathering information, like locations, times, and platform metadata, that is common across all observations. Co-located observations of additional parameters (e.g. salinity) can unlock new applications (and are often sparser than temperature observations so could be considered even more valuable), and information on ambient environmental conditions, whilst useful in its own right, can help to interpret the temperature observations and improve uncertainty estimation. The temperature collection is valuable already, and whilst not a barrier to issue and publication, the authors should consider whether future releases should include a wider range of the parameters recorded.

Secondly, the approach to suspect observations is problematic. The default position is that data should be retained and flagged, rather than removed. This enables other researchers to apply their own quality assurance procedures, to understand the uncertainty they might expect to see in the data, and perhaps to apply corrections and adjustments. Any quality assurance process has some subjective element, and the removal of observations is a barrier to improved quality assessments in the future. The authors should re-instate, and flag, observations regarded as erroneous or suspect. This could be done by releasing a second dataset version aimed at the expert user (as ICOADS does with total and final versions).

More minor concerns

Introduction, line 3. It seems unlikely that “most, if not all” marine researchers have been measuring sea temperatures

Page 5, line 13. A better reference for GCOS and ECVs would be: http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-13-00047.1

Page 6, paragraph starting on line 10: ICOADS, HadSST3, ERSST and COBE all require appropriate citation in the reference list.

Page 6, line 10. assimilate is probably not a good word to use here as none of these products use the technique “data assimilation”. Also ICOADS is a data archive (unless the authors are referring to the gridded products) and the others are analyses of various types.

Page 7, line 16. it would be better practice to include the data and flag it as likely erroneous.

Page 7, line 34. what is a modelled depth?

Pate 9, line 16. link broken

Page 10, line 25. unclear what a “conservative approach” means

Page 10, line 30. have the data been excluded or flagged? the latter would be better.

Page 12, line1. improving rather than falling?

Page 13, line 36. were the manual adjustments flagged?

Page 18, line 11. HadSST3 is a gridded data product, derived from observations in ICOADS.

Page 19, line 13. Other sources such as the World Ocean Database and the Met Office EN4 contain subsurface observations.

Figure 15. add information on meaning of red and black to caption

Page 30, line 8. Figure 16 does not go back to 1962/3. also 1989 and 2003 don't look very different to adjacent years.

Some comments on the supplemental material

I use R so was pleased to see that the authors had provided R code as a supplement to the main paper. I tried (albeit briefly) to use this to check out the data (which I downloaded successfully as per the instructions). I failed to do this, but make some comments on my progress that may help the authors streamline this aspect of their documentation.

The filename in the command to read the csv file was not the same as the file I downloaded.

The conversion of time does not require the lubridate package

I downloaded marmap_0.9.6 but was unable to use it. Following the instructions (from both home and at work several days apart):

> map.ukcs <-getNOAA.bathy(-15, 10, 48, 63, res = 1, keep=TRUE)

Querying NOAA database ...

This may take seconds to minutes, depending on grid size

Error in getNOAA.bathy(-15, 10, 48, 63, res = 1, keep = TRUE) :

The NOAA server cannot be reached

Many of the pages in the supplement seemed to give information required to plot the different maps and regions, which I couldn't get to work. It would have been much more helpful to me if simple R scripts to read in the data, save to .Rda, then do some simple diagnostic plots were provided. The marmap package does give high resolution coastlines and provides bathymetry (which I couldn't actually see on the printouts,

perhaps because of the blue background), but the visualisations in Figures 3 and 4 could have been done without this package, and perhaps provided clearer information about the density of observations (in Figure 3) and without unhelpful contouring (in Figure 4).

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