Ocean Sci. Discuss.,
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Ocean Science Discussions

Interactive comment on "Testing the validity of regional detail in global analyses of Sea surface temperature – the case of Chinese coastal waters" *by* Yan Li et al.

Anonymous Referee #2

Received and published: 15 February 2019

General comments:

This paper compares a long, homogenized timeseries of in situ observations of coastal sea surface temperature (SST) with several SST analysis datasets. The basic idea is scientifically sound, the assessment is detailed and the paper is well organised. None of the results are particularly surprising, but it is still useful to have performed the comparison. There are some grammatical errors throughout, so it is recommended that the authors arrange for the language to be reviewed by a native English speaker prior to publication.

The paper requires more information to be provided in the introduction on the SST

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analyses used, in order to put the results into proper context in the discussion:

* What are the differences between the analysis products, including input data, expected feature resolution capability etc? What is the depth of each analysis compared to depth of the in situ observations?

* What data do each of the analyses include in this location from the time period prior to the satellite era? Do some of the analyses include data from the same sources? Are the in situ observations used for the assessment definitely independent of the analyses?

* Are there uncertainties included with any of the SST analysis products? What do they look like around the coast?

* Coastal satellite observations of SST are not as reliable as for the open ocean - this should be covered in the discussion.

Additional general comments:

* How is the LH homogenisation applied? Need more detail on how the correction is obtained.

* Using annual means results in removal of a lot of temporal variability. There could be variation of the results in different seasons. Have you looked into this at all?

* If you want to include a comparison to the NOAA OI-SST analysis, this needs a separate results section, rather than presenting it in the conclusions. Similarly, the OI-SST analysis is introduced in the abstract alongside the other analyses, but the same method was not applied to this analysis (similarly in section 2 etc). This needs rewording.

Specific comments:

Table 1: Replace "commonly used" with "used in this study" as there are other datasets available which are also well-used. Include the download date of the datasets too.

Figure 1: Are you able to reproduce this plot if it's already been published? Otherwise need to replot in a different form.

Line 124-125: Need evidence to back up this statement. Also, what are your criteria for "consistent"? Suggest moving some of the information in the Appendix to here.

Line 132: The LH dataset is not an analysis.

Line 134: How are the matchups performed? Is there an interpolation to the observation location?

Line 157: 9 cases is more than "a few", suggest reword.

Figure 2c: Looks like a strong correlation but offset by a bias - elaborate on this.

Line 201: The effect of satellites on the SST analyses is important - this information should be included in the introduction (as mentioned above in general comments as part of the differences we might expect between analyses and in situ dataset).

Lines 202 - 204: Check these values.

Line 208: Elaborate on what is meant by "degenerate" and the implications of this on the results.

Figure 6: What are the anomalies to?

Line 323: Do the SST analyses already attempt to include quality-controlled, homogenized data? (This information should be included in the introduction, see general comments above)

Line 326: There are already several projects dedicated to quality control and homogenization of in situ data - suggest including some information from a literature review here. However, it's also worth including the comment that it is useful to keep some high-quality data separate from that available for analyses, for validation activities such as this one.

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