

## ***Interactive comment on “Nine years of SMOS Sea Surface Salinity global maps at the Barcelona Expert Center” by Estrella Olmedo et al.***

### **Anonymous Referee #1**

Received and published: 30 October 2020

This paper describes a global sea surface salinity product produced by the Barcelona Center. It discusses the algorithms by which the SSS values are produced from raw brightness temperature. It then goes on to do a number of comparisons to Argo data and other SSS products, compute singularity exponents, display power spectra, etc.

The paper is thorough and appears complete. Thus it is very much worth publishing, largely as is. I have made a few comments of an editorial nature below. My only substantive argument with their methods is noted on line 169. It is not clear how they used the assumption of constant global average SSS, or whether it is even a very good assumption.

The authors need to go through all of the references to make sure they are correct and complete, including links. Many of them provide both a DOI link and one directly to

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the publisher (e.g. Nieves et al). I would recommend deleting the direct links to the publisher, but that is a decision for the editors of ESSD. All references should include a DOI if available, or a URL for technical reports available online. Again, this should be according to the editorial policies of ESSD.

Line 62. The link given here may not lead to the correct place. It gets cut off at the line break. Ditto lines 79-80, 267-269, 772-773, etc. The authors need to check all links in this paper.

Lines 84-85. Is this the same SST as described above?

Lines 82-87. The references given here are not accessible, so I cannot check on the source of the ancillary data to see if it is properly described.

Lines 117-118. "...by subtracting each individual  $s_n^{\text{raw}}$  from the corresponding...?"

Line 138. Practical salinity is only defined in the range of [2 42]. See

Unesco (1981). The Practical Salinity Scale 1978 and the International Equation of State of Seawater 1980. Tech. Pap. Mar. Sci., 36.

Lines 144-145. These skewness and kurtosis criteria are not discussed. What is their purpose? Why the values given (1 and 2)?

Line 148. Where does the 25 come from?

Line 169. This is problematic. it is an assumption the authors are making, but it is not clear it is true. Can they please provide a reference or some other justification.

Figure A1. It's interesting that the difference decreases over time. Can the authors interpret this?

Line 232. "spatial radio"?

Lines 291-292. Repeats from lines 205-210.

Line 329. Missing ")"

Line 358. "power-law" behaviour?

Line 434. Repeats from line 415. Delete.

Lines 456-459. "Figure A8..." This information is in the caption and does not need to be repeated.

Line 497. Not remembering the earlier section where this is described...  $H_0$  is the black curve in Fig. A12 and  $H$ -bar is the white one? Put this in the caption.

Line 690. This reference is undecipherable. Provide a URL. Ditto the Sabater and de Rosnay reference.

Section 5. It was not obvious how to access the data from the emodnet or cmems sites. Visualizations were available, but not the data themselves.

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