New operational SSS products: version 2.00

 L4 SSS product. To product it, the new OA debiased SSS product is fused with OSTIA SST daily. The animation corresponds to a period from February to July 2015.

In a continuous effort to bring the higher quality products to our users, BEC is happy to announce that a new version of BEC SSS products (v2.00) has been put into operations.

In the new operational version, Land Sea Contamination has been mitigated by means of the empirical salinity debiasing method proposed in [Olmedo et al., 2016]. This leads to higher quality products that can be used for many different purposes. This new dataset is available at BEC products – Available variables – Sea Surface Salinity – Operational V2.0 section or by clicking here.

To address the different needs from our users, in version 2.00 we have developed several new products, which will be generated in a regular, operational basis:

- **Daily gridded L2 map**: This product is devoted to those users interested in working with L2 SMOS SSS data, but who are not familiar with the ESA standard format. All the L2 SSS satellite overpasses with the same orbit direction (i.e., ascending or descending, separately) and acquired on the same day are put together in a regular cylindrical 0.25º grid and distributed in NetCDF files.
- **Monthly binned L3 map:** This product aims to final users who are interested in global, calibrated SMOS SSS maps mainly for climate applications. The previous versions of the BEC L3 maps were served on a 0.25º grid for an averaged period of 9 days. It was found that at those

spatial and temporal resolutions, noise dominates over the geophysical structures. In this new release, the binned products are served at a 1º grid for an averaged period of one month.

- **Objectively analyzed L3 map:** This product is thought for ocean modelers and, in particular, those interested in mesoscale activity. Version 1.00 optimally interpolated (OI) BEC SSS maps have been replaced in version 2.00 by objectively analyzed (OA) SSS maps, using the same parameters as described in [Zeng et al., 2013]. OA L3 maps are generated as 9-day averages of L2 data on a 0.25º grid; they are served daily.
- **Data fused L4 maps:** This product is addressed to those users requiring high spatial and temporal resolution. Operational Sea Surface Temperature and Sea Ice Analysis (OSTIA) daily SST maps at a 0.05º (see [Donlon et al., 2012]) are used to increase the spatial and temporal resolution of the daily 9-day OA maps. The OSTIA system is part of the Group for High Resolution Sea Surface Temperature (GHRSST), and is currently distributed through the Copernicus web portal (http://marine.copernicus.eu/). Several fusion parameters have been tuned to improve the fused product, as described in [Olmedo et al., 2016].

In the following table, a summary of the quality of version 2.00, using Argo data as reference, is presented (more detailed information can be found in this Quality Report):

Product	Bias	Std. Dev.	RMS
Bin L2 ASC (1-day, 0.25º)	-0.01	0.59	0.62
Bin L2 DES (1-day, 0.25º)	-0.01	0.60	0.63
Binned L3 (1-month, 1º)	-0.02	0.22	0.23
OA L3 (9-day, 0.25º)	-0.01	0.26	0.27
L4 (1-day, 0.05º)	-0.02	0.24	0.25

Please, do not hesitate to contact us in case you have any

question or comment at smos-bec@icm.csic.es. Your feedback is most welcome!

[Donlon et al., 2012] Donlon, C. J., Martin, M., Stark, J., Roberts-Jones, J., Fiedler, E., & Wimmer, W. (2012). The operational sea surface temperature and sea ice analysis (ostia) system. *Remote Sensing and Enviroment* **116**, 140–158.

[Olmedo et al., 2016] Olmedo, E., Martínez, J., Umbert, M., Hoareau, N., Portabella, M., Ballabrera-Poy, J., and Turiel, A. (2016). Improving time and space resolution of smos salinity maps using multifractal fusion. *Remote Sensing of Environment* **180**, 246-263.

[Zweng et al., 2013] Zweng, M. M., Reagan, J. R., Antonov, J. I., Locarnini, R. A., Mishonov, A. V., Boyer, T. P., Garcia, H. E., Baranova, O. K., Johnson, D. R., Seidov, D., and Biddle, M. M. (2013). *World Ocean Atlas 2013*, Volume 2: Salinity. Levitus, Ed., A. Mishonov Technical Ed.; NOAA Atlas NESDIS 74, 39 pp.