

Interactive comment on “A long-term record of blended satellite and in situ sea surface temperature for climate monitoring, modeling and environmental studies” by V. Banzon et al.

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The paper describes a new higher resolution of the historical Reynolds Sea Surface Temperature Data Set. Additionally, it is a much needed summary of the historical processing of the Reynolds Optimally Interpolated Sea Surface Temperature Data Sets. The paper is well written and organized with a introduction of the Reynolds OI and the methodology used. The summary of how the in-situ data is used in the analysis and the impact is extremely valuable.

Strengths: Very well written paper. Having the summary of the Reynolds OI documented in one paper is extremely valuable. The discussion of the impacts of the advancement of the in-situ data used and the impact on the analysis is extremely helpful.

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Weaknesses: The authors make some strong statements which should be clarified. For example biases are not only caused by the volcanic eruptions but also by other sources of aerosol, such as the Saharan Dust Storms. These references should be added to the document. Towards the end the authors also mention: "While some analyses are available at higher resolution spatial grids, Reynolds and Chelton (2010) showed they do not necessarily provide good feature resolution and small scale artifacts may also be present.

Obviously, the higher resolution products are also limited by the availability of data at that resolution." This statement needs to be clarified before publishing. The higher resolution does provide good feature resolution within the constraints of the availability of infrared data. For example the Multi-Scale Ultra-High Resolution Sea Surface Temperature Data (MUR) set incorporates a methodology which preserves the high resolution when infrared data is available, but a smoother product when only the lower resolution microwave data is available. The advantage of higher resolution has been clearly seen. Some references to add:

J. Vazquez-Cuervo and E. Armstrong, The Effect of Aerosols and Clouds on the Retrieval of Infrared Sea Surface Temperatures, *Journal of Climate*, 2004, (11), 3921-3933.

Vazquez-Cuervo, J., B. Dewitte, T. M. Chin, E. M. Armstrong, S. Purca, E. Alburqueque, 2013: An Analysis of SST Gradients off the Peruvian Coast: The impact of going to higher resolution. *Remote Sensing of the Environment*, vol (131). 76-84.

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