

Summary of Recent Changes in the Land-Ocean Temperature Analyses

We have made improvements to NOAA's Historical Merged Land-Ocean Surface Temperature Analysis. This version is version 3 and is documented in Smith, T.M., R. W. Reynolds, T. C. Peterson, and J. Lawrimore, 2008: Improvements to NOAA's historical merged land-ocean surface temperature analysis (1880-2006). *J. Climate*, **21**, 2283-2296. A reprint is available at: <http://www.ncdc.noaa.gov/oa/climate/research/sst/papers/SEA.temps08.pdf>. The analysis is derived from two independent analyses, a sea surface temperature (SST) analysis (the Extended Reconstruction of SST version 3) and a land surface temperature analysis using the global historical climatology network temperature database.

As explained in the preprint, there are 3 major changes of version 3 over version 2. First, we improved the tuning procedures using simulated data. The result of the change is that data have a stronger influence on the analysis prior to 1930. This can be seen in figure 6 of the reprint. In this figure the global surface temperature is shown for the merged version 2 and 3 as well as for the UK HadCRUTv analysis. The second change is that we now process the sea ice directly using our own sea-ice bias correction in ERSST. This change allows the analysis to be made in a more timely fashion. Analyses for the previous month are now available on the third day of the current month. The third change was the addition of satellite data to the SST analysis beginning in 1985.

In the ERSST version 3 on this web page **we have removed satellite data** from ERSST and the merged product. The addition of satellite data caused problems for many of our users. Although, the satellite data were corrected with respect to the in situ data as described in reprint, there was a residual cold bias that remained as shown in Figure 4 there. The bias was strongest in the middle and high latitude Southern Hemisphere where in situ data are sparse. The residual bias led to a modest decrease in the global warming trend and modified global annual temperature rankings.

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