

# Supporting Information for “Random Error in Space-Time Bin Averages of Sea Surface Temperature Observations from Ships”

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## Introduction

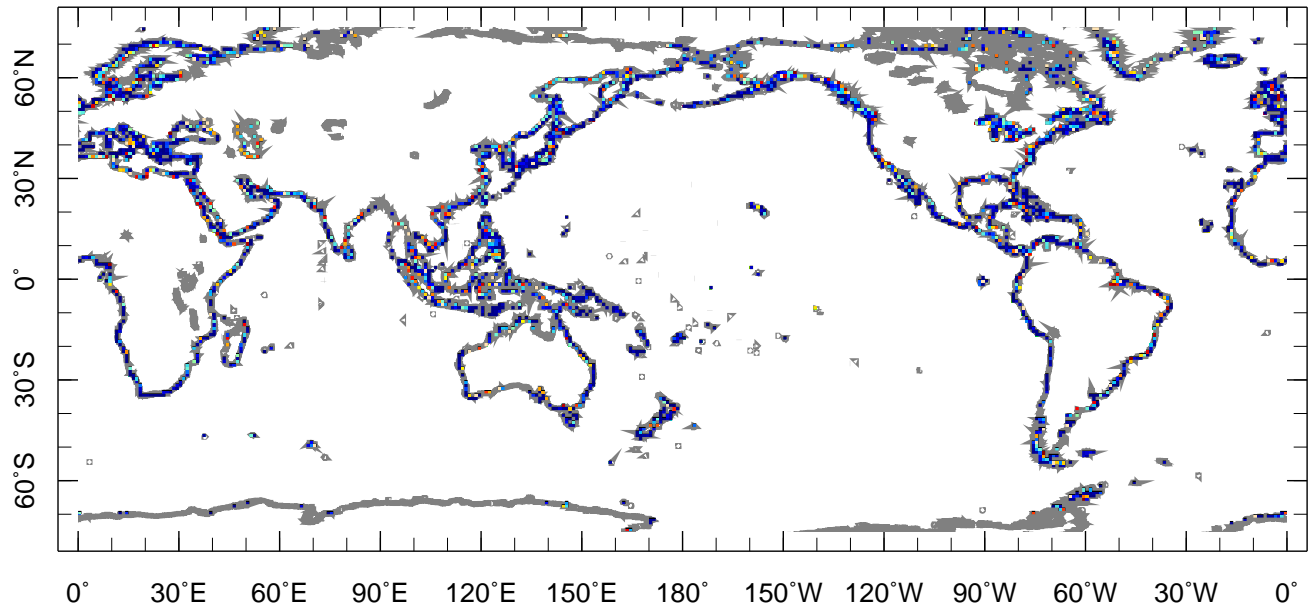
Figure S1(a) shows  $1^\circ \times 1^\circ$  areas, where some ICOADS R3.0 ship SST observations in the 1992-2010 period do not have their CCI SST Analysis matchups, and percentages of such observations in those areas. This can only happen, when ocean area where these observations were taken are not included in the CCI Analysis domain. Figure S1(b) shows the percentage of  $1^\circ \times 1^\circ$  areas, not included into the CCI analysis domain: these values are much larger than those in panel (a), as these include land (or ice) areas within  $1^\circ \times 1^\circ$  grid boxes as well. For both panels, the results are shown only for the  $1^\circ \times 1^\circ$  grid boxes, where the denominator is greater than 0, i.e., for panel (a), if some ICOADS observations

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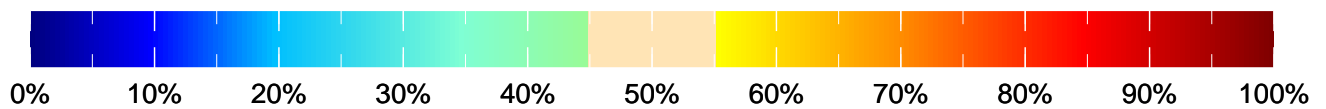
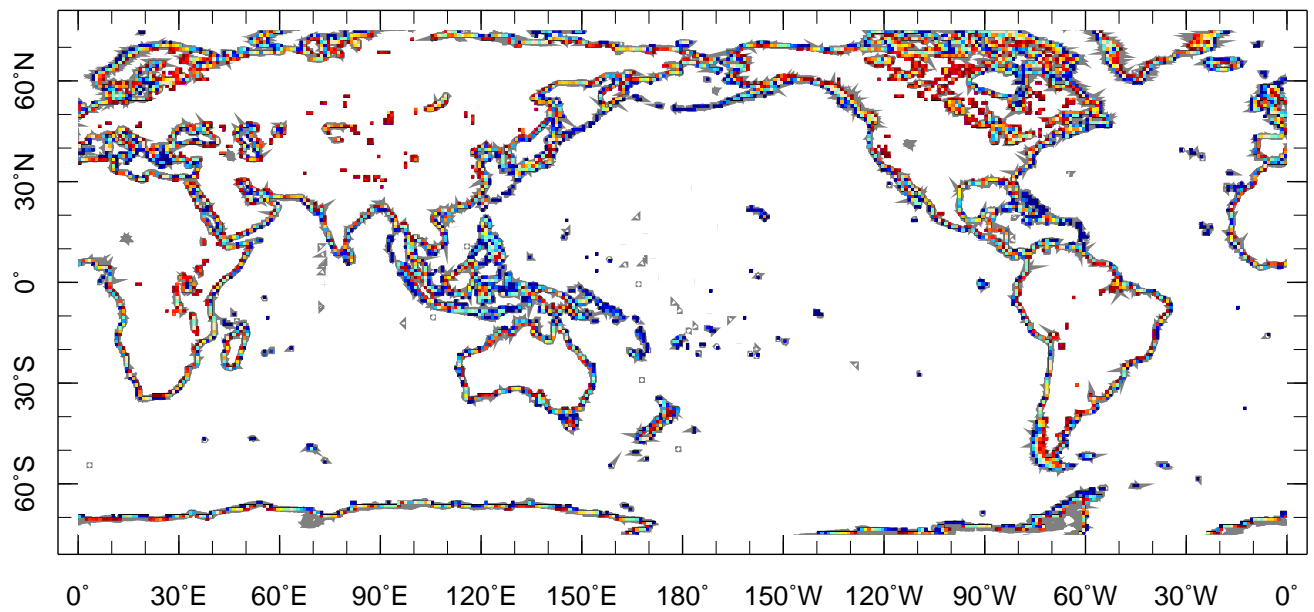
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in 1992-2010 are present, or, for panel (b), if there are some  $0.05^\circ \times 0.05^\circ$  grid boxes that belong to the CCI SST analysis domain within the given  $1^\circ \times 1^\circ$  grid box.

(a) Percentage of the ICOADS ship SST observations without a CCI SST Analysis match-up



(b) Percentage of 0.05°×0.05° grid points not included in the CCI SST Analysis domain



**Figure S1.** Mismatches between available ship SST observations from ICOADS R3.0 and the CCI SST Analysis domain: (a) percentage of ICOADS SST observations that are outside of the CCI SST Analysis domain; (b) percentage of  $0.05^\circ \times 0.05^\circ$  grid points that are not included in the CCI SST Analysis domain. In both panels, the percentages are shown for the 1992-2010 totals in  $1^\circ \times 1^\circ$  grid boxes. Percentages are considered missing and thus not shown for the  $1^\circ \times 1^\circ$  grid boxes, where the denominator is 0, i.e., in panel (a), if there are no ICOADS observations in 1992-2010, or, in panel (b), if there are no  $0.05^\circ \times 0.05^\circ$  grid boxes from the CCI SST analysis domain within a given  $1^\circ \times 1^\circ$  grid box.