

Correction of daytime marine air temperatures for climate studies

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Marine air temperatures measured on ships can be several degrees too warm if there is strong sunshine and the ship's instruments are poorly exposed. Since the ship heats up as the day progresses, these errors are larger in the afternoon than in the morning. However previous attempts to correct the error did not allow for this heat storage. A new correction based on the analytical solution of the heat budget for an idealised ship will be presented. A method is proposed for estimating the heating errors and the correction fitted to observations. The correction will then be applied to merchant ship air temperature observations from the North Atlantic. The impact of the correction on climatological temperature time series and surface flux fields will be demonstrated.