



## Getting the best out of space-based sea surface temperature for climate

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Oceans are a key component of the climate system, and sea surface temperature (SST) is a basic parameter in characterising climate variability and change. Analyses of global SST have been made at research centres such as the UK Met Office Hadley Centre for Climate Prediction and Research, based on ship and buoy records. Such analyses would benefit from an independent SST record of suitable duration and quality: the challenge for space-based SST in fulfilling that need is the long-term stability of observations (target stability: 0.05 K per decade) whilst maintaining sufficient independence.

In this presentation, we describe work aimed at obtaining climate-quality SSTs from the series of Along Track Scanning Radiometers (ATSRs). We describe the approach of obtaining accurate SST from space without regression to in situ observations, and its advantages. We show recent progress in understanding the errors in ATSR-series SSTs, such that it looks feasible to reduce biases to within +/-0.1 K for all regions and algorithms without any empirical tuning. Lastly, we describe our approach to making a new record of SST from the three ATSR missions that is sufficiently accurate, homogeneous and well-characterised to be assimilated into the Hadley Centre's climate analysis and to be used to improve knowledge of the errors in some in situ data sources.