

## **The in-flight performance of the ATSR-1 and 2 instruments and their long-term stability**

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### **Abstract**

**The paper describes the care taken in all aspects of the ATSR programme to ensure that it met its scientific objectives, and will cover aspects of the instruments in-flight performance relevant to all users of ATSR data. The along track scanning radiometers (ATSR-1 and 2) are infrared radiometers designed to make very accurate and precise measurements of sea surface temperature from space. ATSR-1 is currently flying on the ERS-1 satellite and includes four infrared channels, ATSR-2 on ERS-2 has the same infrared channels and also includes three additional visible channels for monitoring vegetation. The detection of climate change is the major scientific objective of the ATSR instruments. This scientific goal is difficult to achieve, as it requires the detection of small trends against a highly variable background signal. Therefore, if a reliable attribution to climate change/global warming is to be made the instrumentation used has to be well calibrated and extremely stable over time. The following will be briefly discussed; the design of the instruments and their in-flight calibration systems (including a visible calibration source), pre-launch characterisation and calibration of the instruments, cross-calibration of the instruments using the same pre-flight calibration facility, post-launch validation of the data using high-quality ground- and aircraft-based instrumentation and through in-flight comparisons of the instruments, and in-flight consistency checks of the on-board calibrators.**

*Keywords: SST, ATSR, vegetation monitoring, sensor calibration, infrared, visible*