



## **Satellite on-board temperatures: detection without detectors**

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Changes in Earth's outgoing radiance are expected to affect the thermal equilibrium of spaceborne instruments, and to produce detectable variations of satellite on-board temperatures (OBT). In this study, temperatures of the Global Ozone Monitoring Experiment during the period July 1995–August 2005 have been analysed. Results show that GOME thermal state is influenced by solar flux variations and strongly driven by radiation fluxes from the Earth. The long-term behaviour of the GOME OBT and its time derivate (which is proportional to the outgoing Earth's radiation flux) is discussed in detail. The proposed approach could be applied to all previous, current and future satellite instruments with thermal characteristics similar to GOME, providing a long time series of a proxy indicator of Earth climate change, with essentially no additional cost for the community.