Title: Operational Generation of the HIRS Outgoing Longwave Radiation Climate Data Record

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The outgoing longwave radiation (OLR) at the top of the atmosphere is a necessary component for the Earth radiation budget studies and one of the key parameters used in diagnosing and monitoring climate changes. The longest available global OLR time series were derived from the operational polar-orbiting satellite observations. Nevertheless, the quality of these OLR time series were impaired by discontinuity and inconsistencies as being processed in an operational environment that was not designed to produce data in climate quality.

Past research at CICS has developed methodologies to generate climate quality OLR time series product from the operational High-resolution Infrared Radiation Sounder (HIRS) radiance observations. We propose to develop a system that will allow operational generation of the HIRS OLR Climate Data Record (CDR); with consistent radiance calibration and retrieval algorithms, with continuity ensured by inter-satellite calibration, and with diurnal models to minimize temporal integral errors. Most importantly, we propose end-to-end solutions that include product validation and monitoring, science maintenance, algorithm improvement and address issues of future instruments that ultimately will ensure the validity, availability and longevity of this product for the foreseeable future.