

EGU21-10348

<https://doi.org/10.5194/egusphere-egu21-10348>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



GOES High cadence Operational Total Irradiance: planned data products

Martin Snow^{1,2}, Stephane Beland¹, Odele Coddington¹, Steven Penton¹, and Don Woodraska¹

¹University of Colorado, LASP, Boulder, CO, United States of America (snowm@colorado.edu)

²South African National Space Agency, Hermanus, South Africa

The GOES-R series of satellites includes a redesigned instrument for solar spectral irradiance: the Extreme ultraviolet and X-ray Irradiance Sensor (EXIS). Our team will be using a high-cadence broadband visible light diode to construct a proxy for Total Solar Irradiance (TSI). This will have two advantages over the existing TSI measurements: measurements are taken at 4 Hz, so the cadence of our TSI proxy is likely faster than any existing applications, and the observations are taken from geostationary orbit, so the time series of measurements is virtually uninterrupted. Calibration of the diode measurements will still rely on the standard TSI composites.

The other measurement from EXIS that will be used is the Magnesium II core-to-wing ratio. The MgII index is a proxy for chromospheric activity, and is measured by EXIS every 3 seconds. The combination of the two proxies can be used to generate a model of the full solar spectrum similar to the NRLSSI2 empirical model.

We are in the first year of a three-year grant to develop the TSI proxy and the SSI model, so only very preliminary findings will be discussed in this presentation.