

New Historical TSI Reconstructions Based on the Revised 400-Year Sunspot Record

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The four-decade-long total solar irradiance (TSI) space-borne measurement record is extended to historical times for long-term solar-variability and Earth-climate studies via solar models incorporating the 400-year-long series of sunspot measurements. Those sunspot records were recently revised using updated multi-observer composite-creation methods and newly-recovered measurement records from various observers. These revisions, the Sunspot Indices and Long-term Solar Observations (SILSO) V2.0 sunspot-number and a new group-sunspot-number composite, were released in 2015. Since the solar-irradiance models rely on the sunspot records for their historical reconstructions, the sunspot-record revisions affect the TSI reconstructions. Preliminary estimates of these effects for the two most prominent TSI models, the Naval Research Laboratory TSI (NRLTSI) model and the Spectral And Total Irradiance REconstructions (SATIRE) model, were described by Kopp *et al.* (*Solar Physics*, Vol. **291**, 2016). Wu *et al.* refined the SATIRE historical reconstruction (*A&A* 2018) and similar efforts are underway for the NRLTSI model by a NASA Solar Irradiance Science Team (SIST). These TSI model refinements depend on new calculations of flux emergence and transport based on the updated sunspot-number records. The NRLTSI model improvements will incorporate results from the Advective Flux Transport (AFT) model (Upton and Hathaway, *Ap.J.* **780**, 2014). We present here this SIST team's efforts to continue updates to the spaceborne-era TSI composite and extend it backward in time via refined historical TSI reconstructions based on the revised sunspot records.