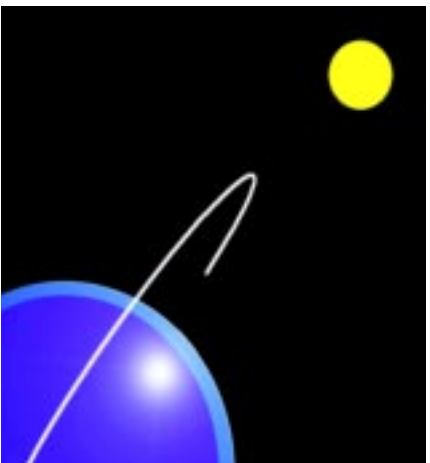


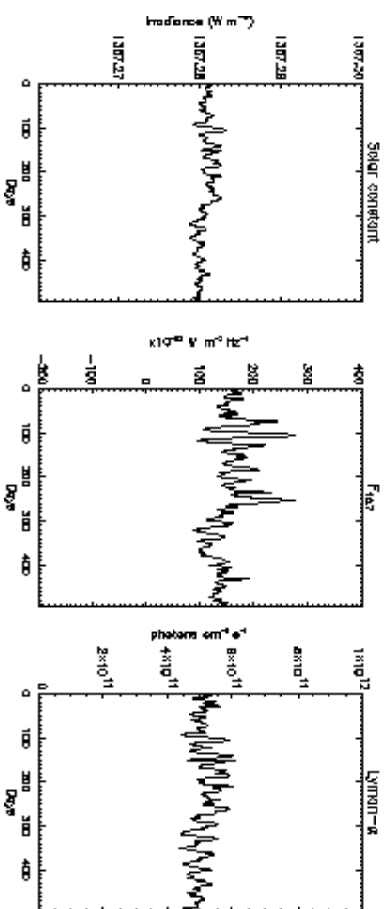
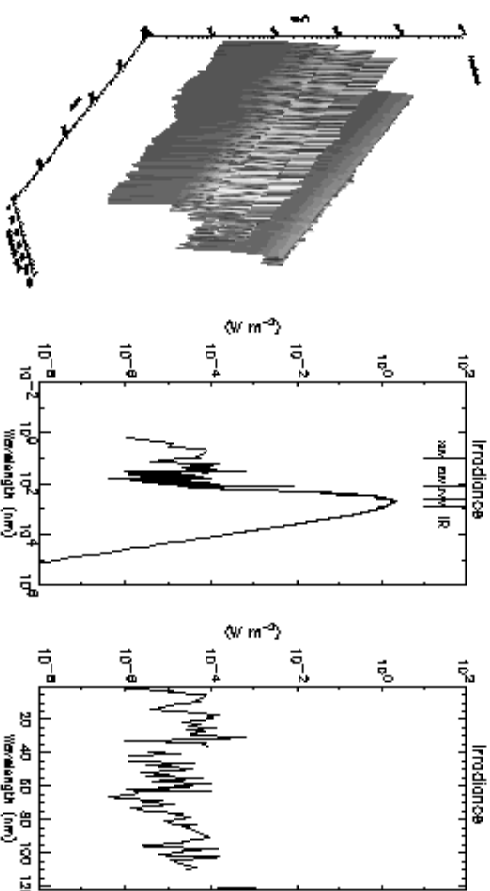
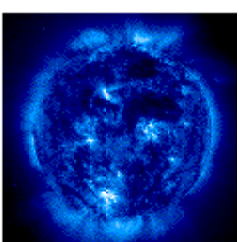
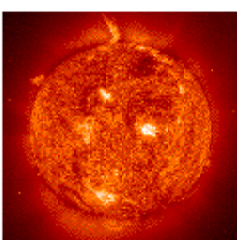
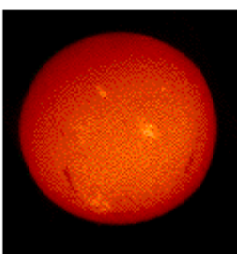
SOLAR2000

Solar irradiance model
ISO solar standard compliant

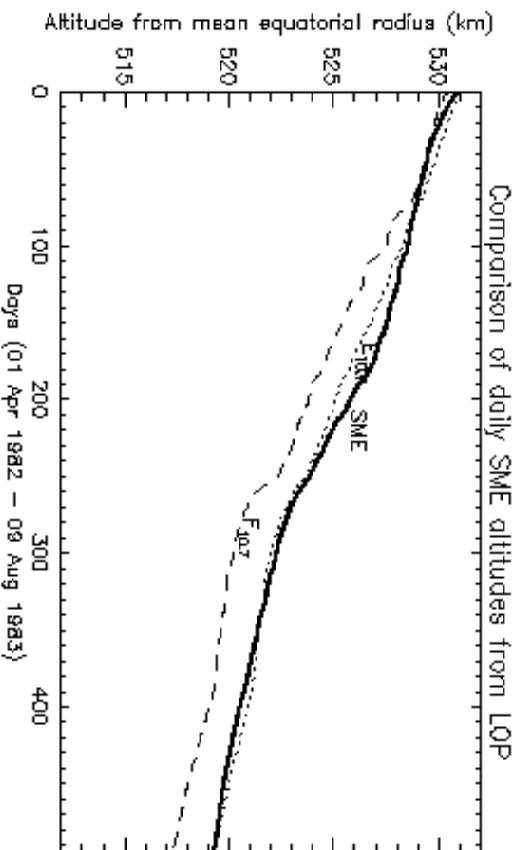
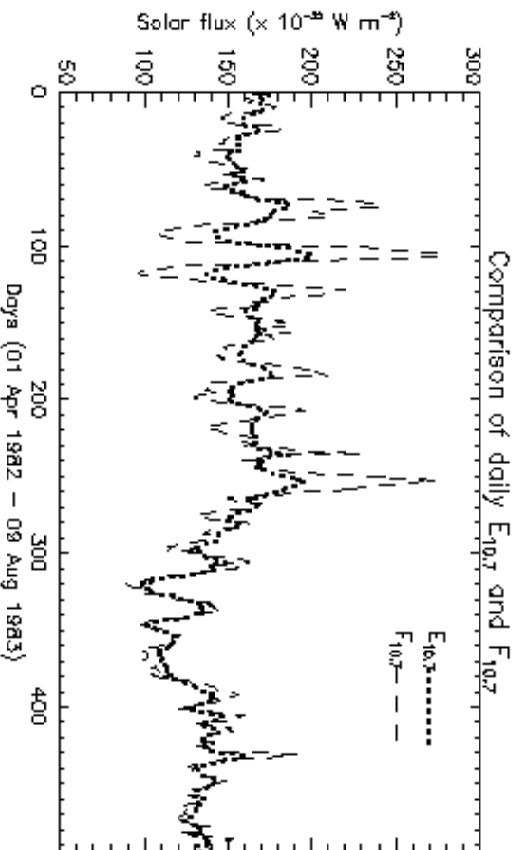


Creating operational models for
solar-terrestrial forecasts
and space weather products

<http://www.spaceenvironment.net>



SOLAR2000 APPLICATIONS. Ground-based solar images at 630 nm, and SOHO EIT images at 30.4, 17.1 nm are shown for the Sun's photo-sphere, chromosphere, and corona. The SOLAR2000 (RG v1.03a) model produces time series spectra at 1 nm resolution from each of these regions. The April 1, 1982 – August 9, 1983 EUV spectral time series, a full spectrum on April 1, the variable 1 Å EUV spectrum, variation in the solar constant due to EUV variation, and two solar proxy time series are shown. The E10.7 solar proxy (integrated EUV flux at 1 AU) is also gen-



erated by SOLAR2000. As an example application, these daily irradiances in the form of E10.7 are compared with the F10.7 solar proxy where both are used as inputs to an orbit propagator. Satellite altitudes are generated on daily time steps for the case of the Solar Mesosphere Explorer and are compared with actual orbit data. The dotted line is E10.7, the dashed line is F10.7, and the SME altitude in the bottom panel is the solid line. These results demonstrate an unambiguous improvement to current applications that use F10.7 when it is replaced with E10.7.

SOLAR2000 Research Grade model v1.03a

- Full solar spectrum at 1 nm resolution
- XUV-FUV spectrum at 1 Å resolution
- Multiple time scale variability from 1947 to present
- Daily historical irradiances at 1 AU
- Generates the E10.7 solar proxy for use in other models
- Empirical model is derived from 3 satellite data sets, 14 rocket observations, 1 theoretical spectrum, and 1 standard solar spectrum

Links to other space physics models

- Space physics, astronomy, and aerospace engineering applications
- E10.7 solar proxy can be used in any application requiring F10.7
- Modular computer code and standardized input/output files

Applications

- Irradiances for climatological and space weather studies
- Irradiances for thermospheric densities and ionospheric TEC
- High precision satellite drag, pointing, and location knowledge
- Improved RF link propagation path and GPS signal availability
- 3-D visualization capability when linked with additional models

ISO solar standard compliance

- SOLAR2000 is developed for compliance with the ISO solar irradiance standard that is currently in development

Availability

- Internet access at <http://www.spaceenvironment.net> running IDL©

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