COMPREHENSIVE FLARE INDEX

The comprehensive flare index (CFI) was developed by Helen W. Dodson and E. Ruth Hedeman (McMath-Hulbert Observatory). The first description is printed in Upper Atmospheric Geophysics (UAG)report #14, "An Experimental, Comprehensive Flare Index and Its Derivation for 'Major' Flares, 1955-1969" Subsequent volumes of CFI indices for more recent years are given in UAG-52 (1970-1974) and UAG-80 (1975-1979). The full set of UAG reports are available online at the following website: <http://www.ngdc.noaa.gov/stp/solar/onlinepubl.html>.

Five measures of flare importance are added to obtain the CFI. They are:

1. Importance of ionizing radiation as indicated by time-associated Short Wave Fade or Sudden Ionospheric Disturbance -- Scale 0 - 3.
2. Importance of H-alpha flare -- Scale 0 - 3.
3. Magnitude of 10.7 cm solar radio flux -- characteristic of the log of flux in units of 10 exp(-22) W/m sq/Hz.
4. Dynamic spectrum -- Type II = 1, Continuum = 2, Type IV with duration > 10 minutes = 3.
5. Magnitude of ~200 MHz flux -- characteristic of log of flux in same units as 3).

“Major” solar flares are any which satisfy one or more of the following criteria:

* Short wave fade (or Sudden Ionospheric Disturbance) value >= 3.
* H-alpha flare of importance >= 3.
* 10.7 cm flux >= 500 units.
* Type II radio burst.
* Type IV radio emission of duration > 10 minutes.

CFI indices have been calculated for all major flares for years 1955 through 1980 and are in file “cfi\_major-flares\_1955-1980.txt” available in the documentation section.

Anyone having questions about the cfi or other aspects of solar activity and its consequences on Earth and in near-Earth space should contact staff of the National Geophysical Data Center, Solar-Terrestrial Physics Division, solar.ngdc@noaa.gov.