

## Definitions of Solar Indices

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| <b>Solar Flux Index [SFI]</b>  | Range 62.5 to 300. Intensity of solar radiation measured at 2800MHz (10.7cm). Good indication of the F layer ionization. The higher the number, the greater the ionization. Measured 3x/day.  |
| <b>Sunspot Number [SN]</b>   | Range 0 to 250. Computed value from the sunspot number and number of sunspot groups. SN loosely correlates to SFI. Updated once/day.  |
| <b>K-Index [K]</b>   | Range 0 to 9. Measures disturbances (logarithmic) in the horizontal component of earth's magnetic field. Value in nT is measured using a magnetometer over a three-hour interval, and then converted to a factor. Updated 8x/day.   |
| <b>A-Index [A]</b>   | <p>Range 0 to 400. A daily linear average of geomagnetic activity. Uses the average of eight 3 hour K-Index values to provide the level of instability in the earth's geomagnetic field. Updated once/day. Comparing with K Index:</p> <p>High-K + high-A: Indicates geomagnetic field is unstable. Some signal paths may suddenly fade or close, while others open up abruptly with no warning.</p> <p>High-K, Low-A: Indicates a sudden, abrupt disturbance in the geomagnetic field, which may cause a brief intense disruption in HF propagation. May cause an auroral event.</p> |
| <b>Aurora [Aur]</b>  | Range 0 to 10++. Indicates strength of the polar F-Layer ionization. Higher values cause auroral events (including northern lights) to move to lower latitude. Updated hourly.  |
| <b>Solar Wind Speed [SW]</b>   | Range 0 to 1000. Speed (km/s) of the charged particles as they pass earth. The higher the speed, the greater the pressure is exerted on the ionosphere. Values greater than 500 km/sec effect HF comms. Updated hourly.   |
| <b>Mag Field Vector [Bz]</b>   | Range +50 to -50. Strength and direction of the interplanetary magnetic field as impacted by solar activity. Positive is same direction as the earth's magnetic field, and negative opposes. Negative numbers cancels the earth's magnetic field, which increases the impact on the ionosphere. Updated hourly.   |
| <b>Proton Flux [Pf]</b>  | Range 0 to unknown. Density of charged protons in the solar wind. The higher the numbers, the greater the impact on the ionosphere (primarily the E-Layer). Updated hourly.   |
| <b>Electron Flux [Ef]</b>  | Range 0 to unknown. Density of charged electrons in the solar wind. The higher the numbers (>1000), the more the impact the ionosphere (primarily the E-Layer). Updated hourly. Considered minor compared to the Proton Flux.   |
| <b>X-ray Solar Flares [X-Ray]</b>  | Range A0.0 to X9.9. Intensity of hard x-rays hitting the earth's ionosphere. Impacts primarily the D-layer (HF absorption). The letter indicates the order of magnitude of the X-rays (A, B, C, M and X), where A is the lowest. The number further defines the level of radiation. Updated 8x/day.   |
| <b>304 Angstroms [304A]<br/>(Not used, as it largely duplicates SFI)</b> | Range 0 to unknown. Strength of total solar radiation at a wavelength of 304 angstroms (30.4 nm), emitted primarily by ionized helium in the sun's photosphere. Responsible for about half of the F layer ionization. 304A loosely correlates to SFI. Updated hourly.   |