

# HF Propagation Reports

## SFI index: (Solar Flux Index)

- < 70: propagation potentially bad.
  - 80-90: propagation potentially are somewhat low
  - 90-100: propagation tend to be average
  - 100-150: propagation will tend to be good
  - >150: propagation will tend to be ideal
- High SFI values has almost no influence on 30m,40m,80m and 160m bands

## SN: (Sunspot Numbers)

- < 50: propagation conditions potentially very bad
- 50-75: propagation conditions attenuated
- 75-100: propagation conditions might be good
- 100-150: propagation conditions should be ideal
- >150: propagation conditions possibly exceptional

## A Index: (Geomagnetic activity)

- Between 1 and 5: Best conditions on 10,12,15,17,20 meter bands.
- Between 6 and 9: Average conditions on 10,12,15,17,20 meter bands.
- From 10 and above: Very Bad conditions on 10,12,15,17,20 meter bands.

## Ap index:

- Between 1 and 5: Best conditions expected on 30,40,80,160 meter bands.
- Between 6 and 9: Average conditions expected on 30,40,80,160 meter bands.
- From 10 and above: Bad conditions expected on 30,40,80,160 meter bands.

## K Index: (or Boulder K) (Gauge of geomagnetic activity relative to an assumed quiet-day)

- From 0 to 1: Best conditions for 10,12,15,17,20 meter bands.
- From 2 to 3: Good conditions for 10,12,15,17,20 meter bands.
- From 4 to 5: average conditions for 10,12,15,17,20 meter bands.
- From 5 to 9: Very bad conditions for 10,12,15,17,20 meter bands.

## Kp index:

- Between 0 and 1: Best conditions expected on 30,40,80,160 meter bands.
- Between 2 and 4: Good conditions expected on 30,40,80,160 meter bands.
- Between 5 and 9: Bad conditions expected on 30,40,80,160 meter bands.

## X-Ray: (NOAA A0.0 to X9.9)

D-layer condition (HF absorption)

## 304A: (Solar radiation at a wavelength of 304 angstroms)

Impact F layer in the ionosphere.

## Ptn Flx: (Density of charged protons in the solar wind)

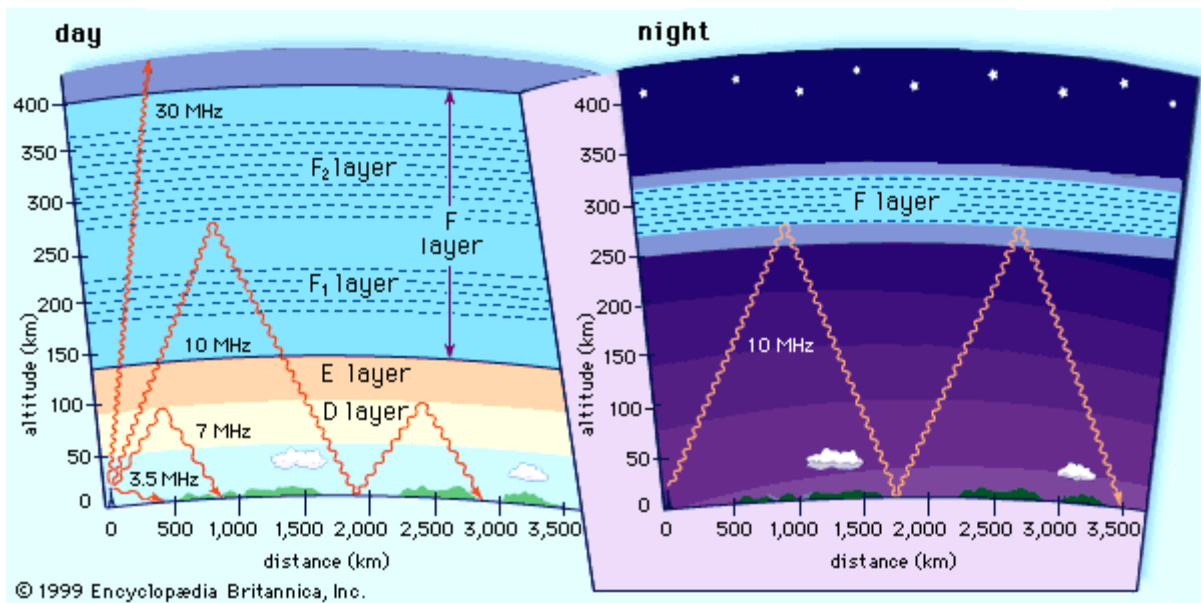
Impact E-Layer of the ionosphere.

## Elc Flx: (Density of charged electrons in the solar wind)

Impact E-Layer of the ionosphere.



Flare Class	Type of Flare	HF Radio Effects (30M to 10M)	Geomagnetic storm (<20M)
A	Very small	None	None
B	Small	None	None
C	Moderate	† Low absorption	† Active to Minor
M	Large	† High absorption	† Minor to Major
X	Extreme	† Poss. blackout	† Major to Severe



## Atmospheric layers

### Aurora: (0 to 10++)

Impact F layer in the polar regions.

Higher values cause auroral events to move to lower latitude.

### N: (Aurora measurement)

<2. high confidence

>2 low confidence

### Bz: (+50 to -50)

Strength and direction of the interplanetary magnetic field.

Positive is same direction as the earth's magnetic field, and negative is the opposite magnetic polarity.

### SW: (Solar Wind) (0 to 1000. Speed kilometers per second)

The higher the speed, the greater the pressure is exerted on the ionosphere.

Values greater than 500 km/sec have impact on HF communications.

### EME Deg: (Earth-Moon-Earth Degradation)

Reports EME path attenuation.

Very Poor (>5.5dB)

Poor (4dB)

Moderate (2.5dB)

Good (1.5dB)

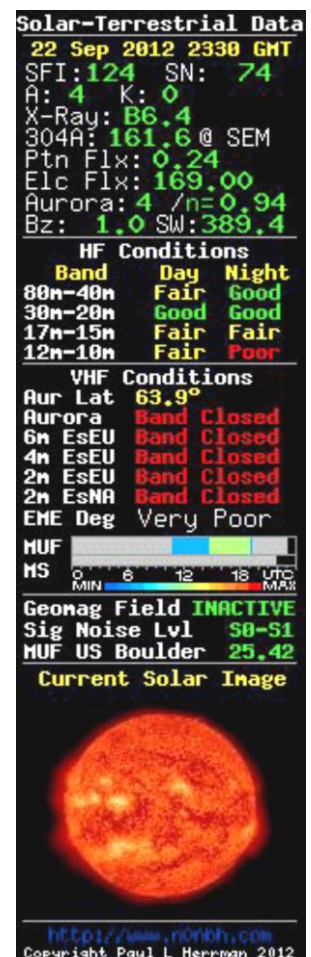
Very Good (1dB)

Excellent (<1dB)

### MUF: (Maximum Usable Frequency)

Provides the Maximum Usable Frequency in a colored bar.

Gray indicates No Sporadic E (ES) activity, blue indicates ES reported @ 6M, green indicates ES reported @ 4M, yellow indicates conditions support 2M ES, and red indicates reported @ 2M.



**MS: (Meteor Scatter Activity Bar)**

Provides the Meteor Scatter activity in a colored bar. Gray indicates no activity. See the color coded graph at the bottom of the bar for activity level. (min-max)

**GeoMag Fld: (Geomagnetic Field)**

Indicates how quiet or active the earth's magnetic field is based on the K-Index value.

Reports:

- Inactive
- Very Quiet
- Quiet
- Unsettled
- Active
- Minor Storm
- Major Storm
- Severe Storm
- Extreme Storm

Higher indications can cause HF blackouts and auroral events.

	K Index	Ap Index	Geomagnetic Conditions	HF Noise	Aurora
NORMAL	0	0-2	Very Quiet	S1-S2	None
	1	3-5	Quiet	S1-S2	None
	2	6-9	Quiet	S1-S2	Very low
	3	12-19	Unsettled	S2-S3	Very low
STORM	4	22-32	Active	S2-S3	Low
	5	39-56	MINOR storm	S4-S6	High
	6	67-94	MAJOR storm	S6-S9	Very high
	7	111-154	SEVERE storm	S9+	Very high
	8	179-236	SEVERE STORM	Blackout	Extreme
	9	300-400	EXTREME storm	Blackout	Extreme

**Sig Noise Lvl: (Signal Noise Level) (S1-S9+)**

Indicates how much noise (in S-units) is being generated by interaction between the solar wind and the geomagnetic activity. A more active and disturbed solar wind, the greater the noise.

**MUF "US Boulder": (0 to 100MHz)**

"US Boulder" as in "Boulder, Colorado USA" where that MUF was taken.

Provides the maximum usable frequency in MHz at one of 11 locations worldwide.

