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blank!

Solar-Terrestrial Data Available on the k4msu.com Website

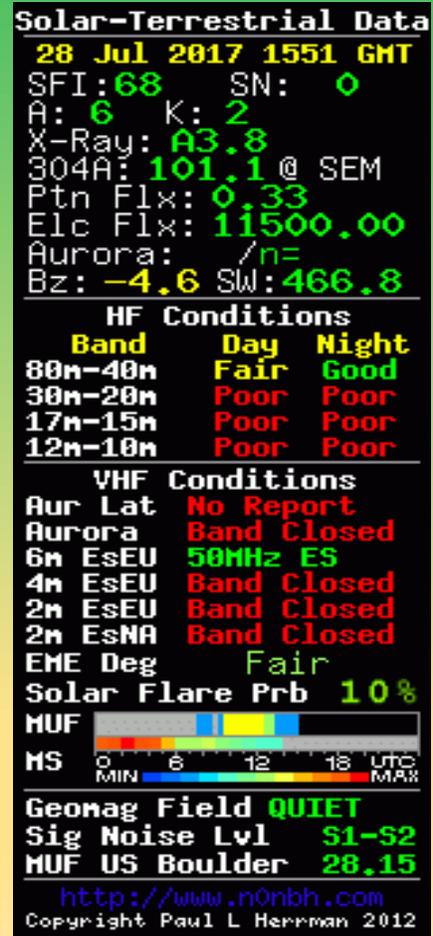
The original title was going to be . . .

Is KK4BKD a Spy Using
k4msu.com to Send Secret
Messages?

Or, what else could that black box with
the assortment of words, letters, and
numbers be for?

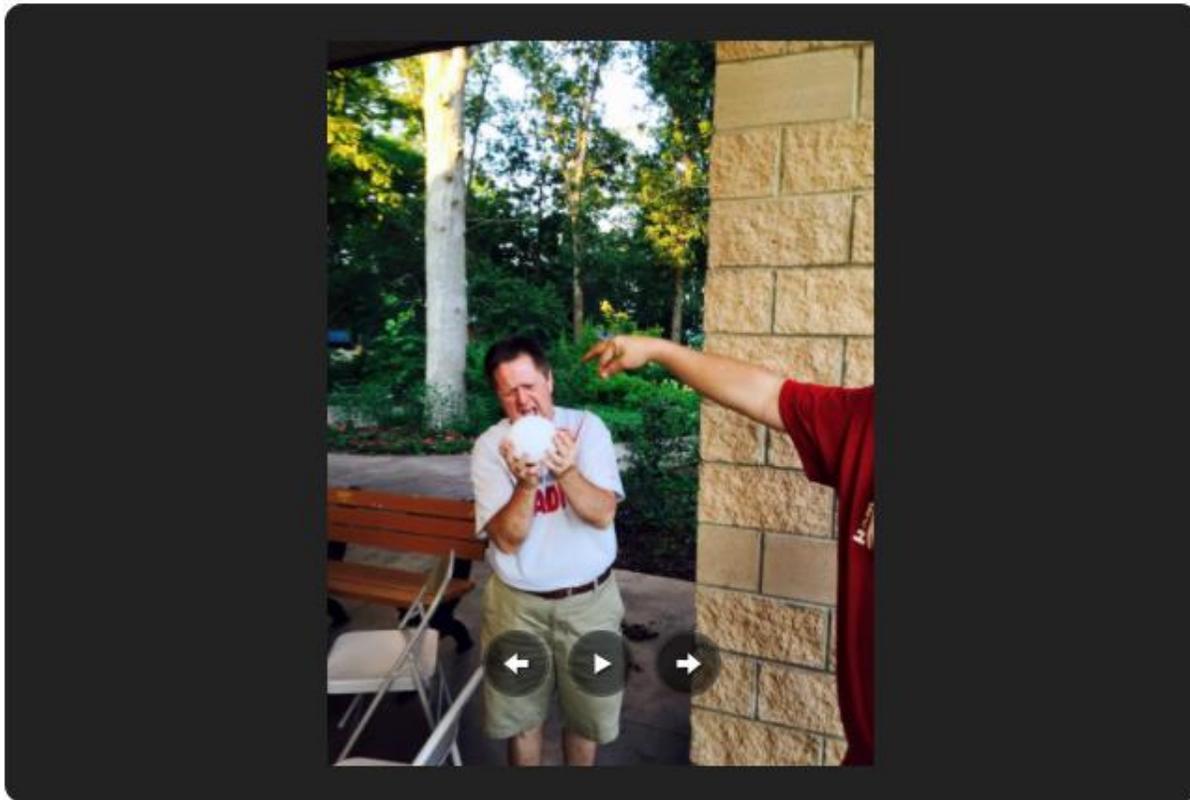
Some of you folks (“summa youze guys”
in Michigan Upper Peninsula speak) are
possibly thinking, “What black box?”

This one!



multiple opportunities for members to volunteer their time and resources in emergency and public service activities.

We would love to meet you at one of our monthly meetings, or hear you on our weekly 2 meter net held on Monday's at 9:00 pm. Meetings and activities are always open to the public, and we invite hams and non-hams alike to join us!



Solar-Terrestrial Data
 26 Jul 2017 1249 GMT
 SFI: 70 SN: 12
 A: 9 K: 4
 X-Ray: A7.4
 304A: 101.0 @ SEM
 Ptn Flx: 0.18
 Elc Flx: 3610.00
 Aurora: /n=
 Bz: -0.7 SW: 581.9

HF Conditions

Band	Day	Night
80n-40n	Poor	Fair
30n-20n	Fair	Fair
17n-15n	Poor	Poor
12n-10n	Poor	Poor

VHF Conditions

Aur Lat No Report
 Aurora Band Closed
 6n EsEU 50MHz ES
 4n EsEU Band Closed
 2n EsEU Band Closed
 2n EsNA Band Closed
 EME Deg Good
 Solar Flare Prb 10%

MUF
 MS

Geomag Field ACTIVE
 Sig Noise Lvl S3-S4
 MUF US Boulder 9.02

<http://www.nonbh.com>
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- ARRL News**
- Canada C3 Expedition WSPR Beacon Reports Continue at High Rate; QSL Available
 - Homelessness Not a Bar to Enjoying Amateur Radio, Hawaii Ham Demonstrates
 - Seattle Radio Amateurs to Take Part in "Hubs and Spokes" Earthquake Scenario Drill
 - A New QST QuickStats Poll Has

I am going to . . .

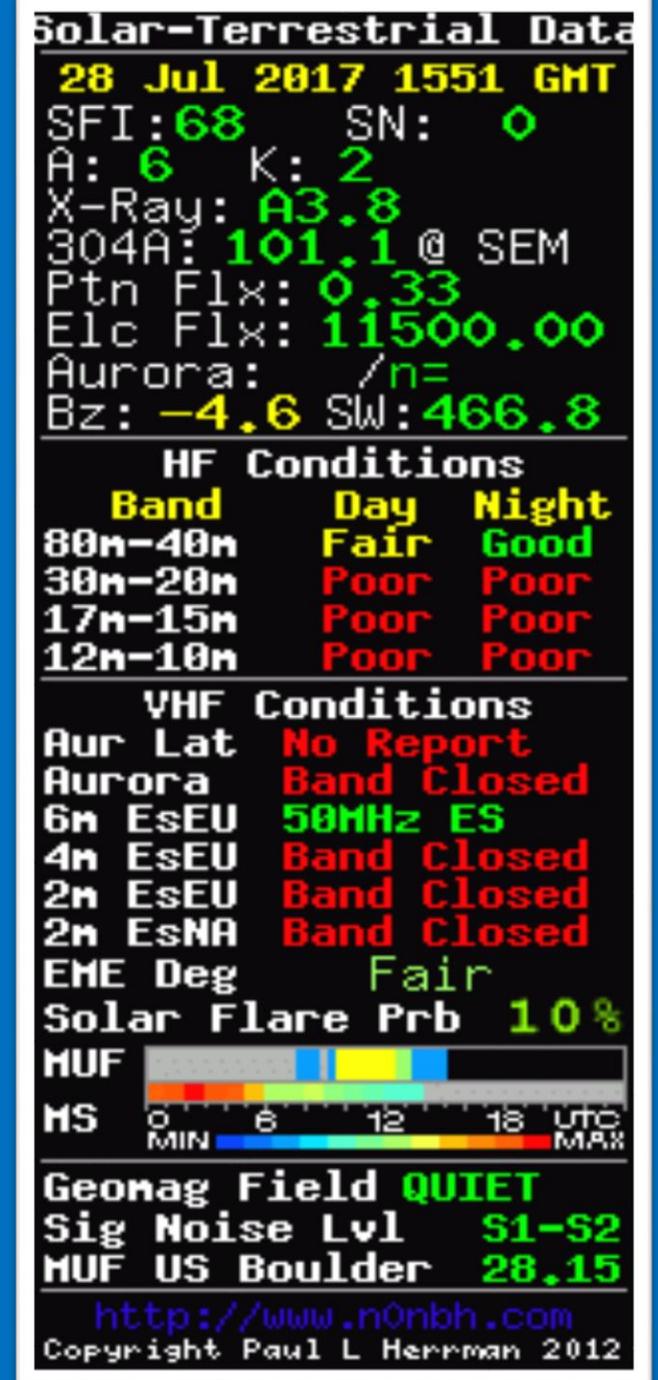
1. Describe the information in the box, line by line, in the most simple terms that I can.
2. Explain a bit about how these parameters relate to propagation.
3. Tell you how to find additional information.

Let's start at the top.

Solar-Terrestrial Data – Okay, we've got that.
Even if we are not sure what it means.

Date and time when the data was compiled.

Now for the juicy bits.

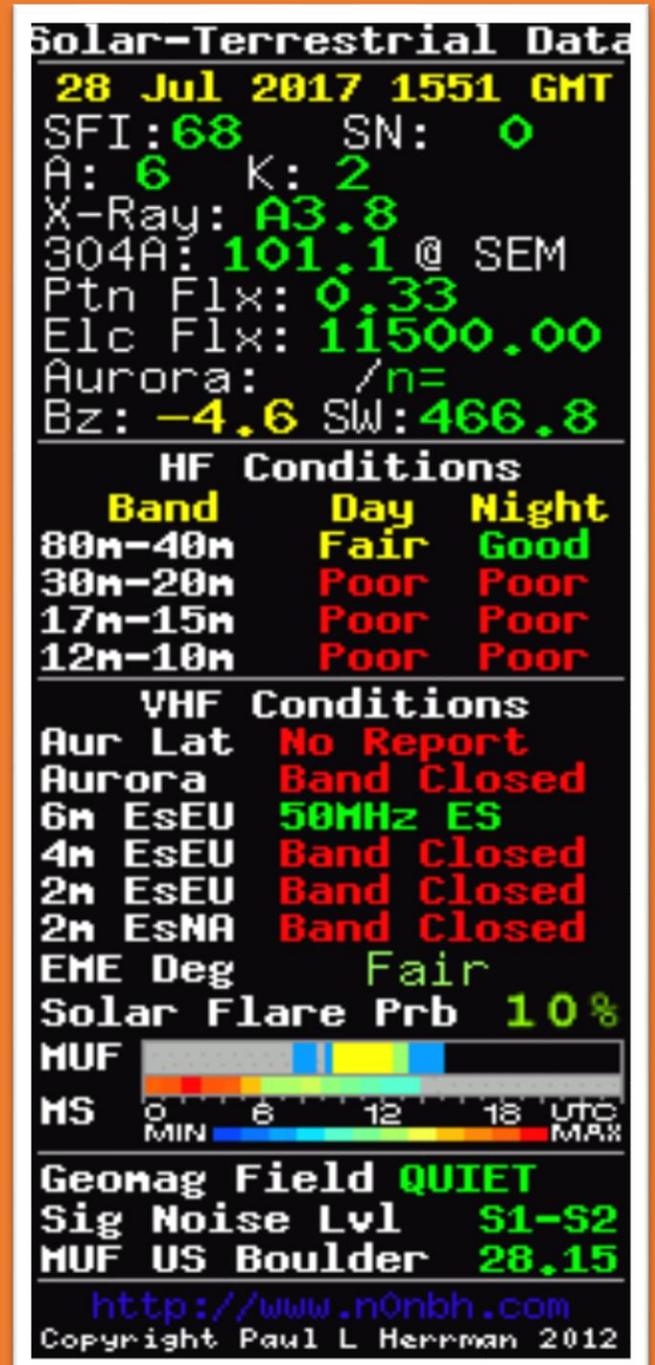


SFI = Solar Flux Index

The 2800 MHz (10.7 cm flux) radiation (noise) coming from the sun.

Value ranges from 62.5 to 200.

Less than 100 indicates a quiet sun; greater than 100, indicates more active.



2800 MHz radiation doesn't affect propagation, but correlates with the levels of X-ray and ultraviolet radiation.

They affect propagation, but are much more difficult to measure than the 2800 MHz radiation.

The SFI information used in most propagation forecasts comes from this little shed in the Canadian Rockies!

Canada's Dominion Radio Astrophysical Observatory near Penticton, British Columbia.



SN = Sunspot Number

Calculated based on number, size, and grouping of sunspots.

Value ranges from 0 to 250. The higher the number, the greater the ionization of the ionosphere.

Solar-Terrestrial Data

28 Jul 2017 1551 GHT

SFI: 68 SN: 0
A: 6 K: 2
X-Ray: A3.8
304A: 101.1 @ SEM
Ptn Flx: 0.33
Elc Flx: 11500.00
Aurora: /n=
Bz: -4.6 SW: 466.8

HF Conditions

Band	Day	Night
80n-40n	Fair	Good
30n-20n	Poor	Poor
17n-15n	Poor	Poor
12n-10n	Poor	Poor

VHF Conditions

Aur Lat No Report
Aurora Band Closed
6n EsEU 50MHz ES
4n EsEU Band Closed
2n EsEU Band Closed
2n EsNA Band Closed
EME Deg Fair
Solar Flare Prb 10%

MUF



Geomag Field QUIET
Sig Noise Lvl S1-S2
MUF US Boulder 28.15

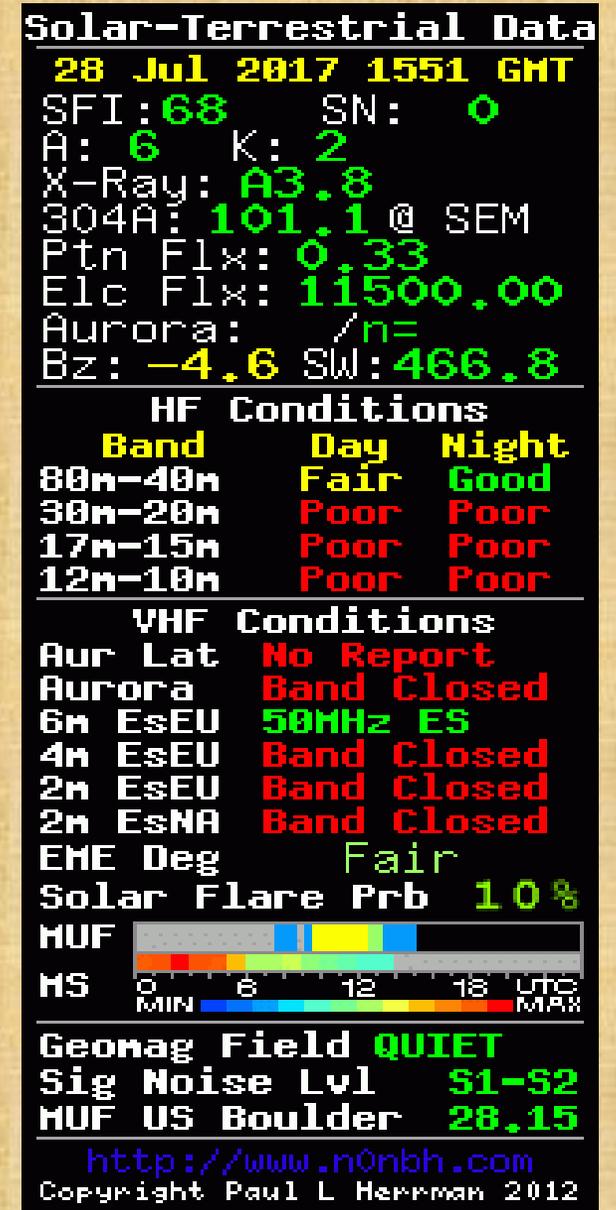
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Higher SFI and SN values mean a higher Maximum Usable Frequency (MUF).

Good news for hams!

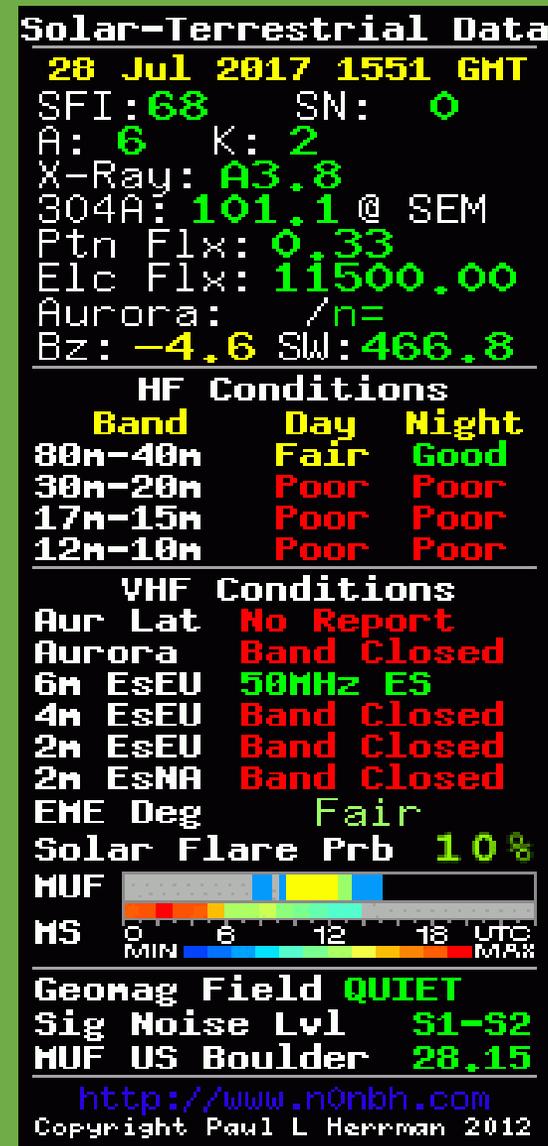
Note the values shown for last Friday.



The A index and K index values.

Information about the magnetic field surrounding Earth.

The mathematics behind them is way too much for most mortals. Luckily, there are nerds that do all that for us!



The K index is calculated using readings taken every 3 hours at 13 magnetic observatories around the world.

These values represent the average level of disturbance in the Earth's magnetic field.

The K index will be a whole number between 0 and 9.

A rising K index means more instability in the Earth's magnetic field.

If the K index is above 4, it means there is a geomagnetic storm in progress.

As readings are taken every 3 hours, the K index can be thought of as what is happening now.

The A index is constructed mathematically from the values collected during each 3 hour period used to calculate the K index of the previous UTC day.

It has a value between 0 and 400, but is generally less than 200 unless a major solar event is taking place.

Because they are based on values taken at various locations around the world, they are technically called the Planetary A index and the Planetary K index.

Increased K index and A index values reflect an increase in geomagnetic activity.

Increased geomagnetic activity has the adverse effect of driving down the Maximum Usable Frequency.

How low the MUF goes depends on the severity of the geomagnetic disturbance and its duration.

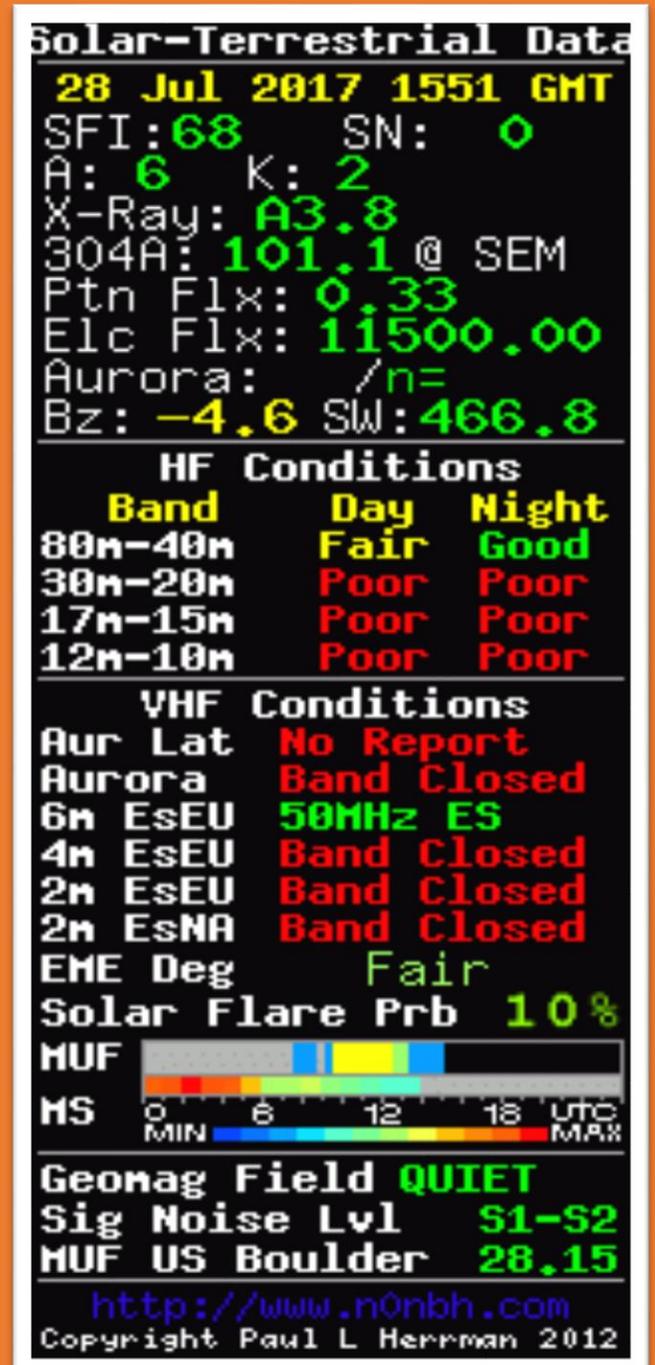
If you don't have a propagation prediction program to enter all this information into, remember this basic bit:

Check the Solar Flux index and the K index. If the SFI stays above 150 for a few days and the K index remains below 2, go DX hunting on the HF bands!

The X-Ray level on the banner is noted as A3.8. Say what?

'A' denotes the lowest level of intensity, with the other levels denoted as B, C, M, and X. Each ranges from 0 to 9.9.

Low levels of X-rays can enhance propagation. However, M and X levels can cause complete radio blackouts.

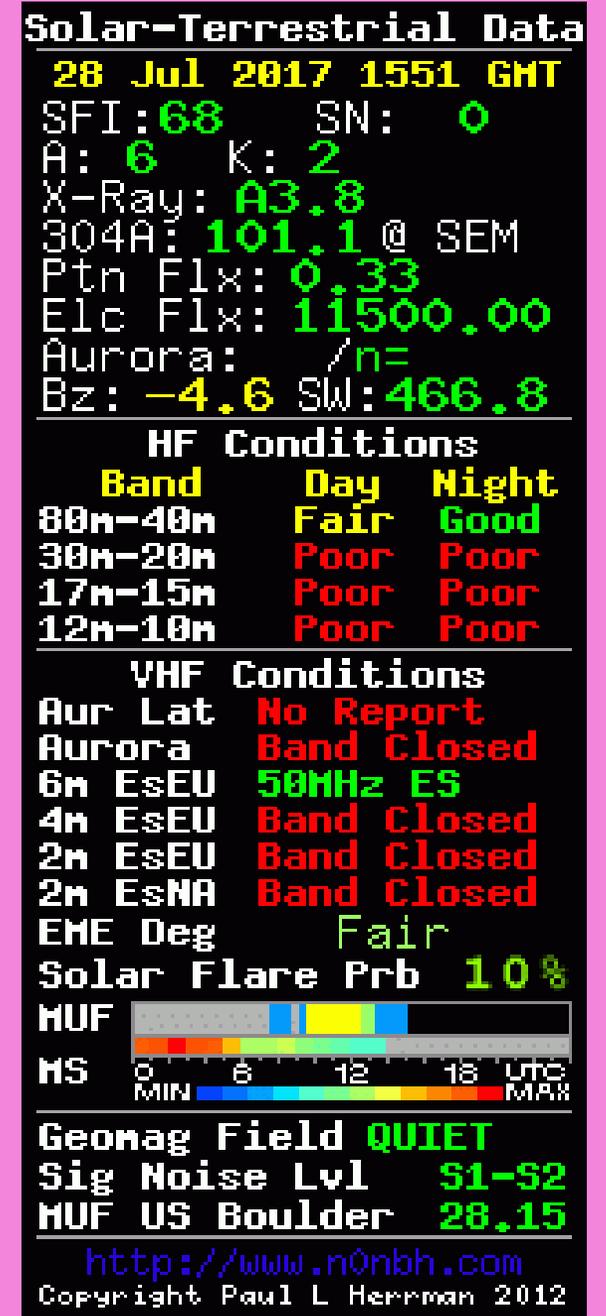


304A – For real propagation freaks.

304A stands for 304 Angstroms, the wavelength of ionized helium radiated by the sun.

1 Angstrom = one ten-billionth of a meter

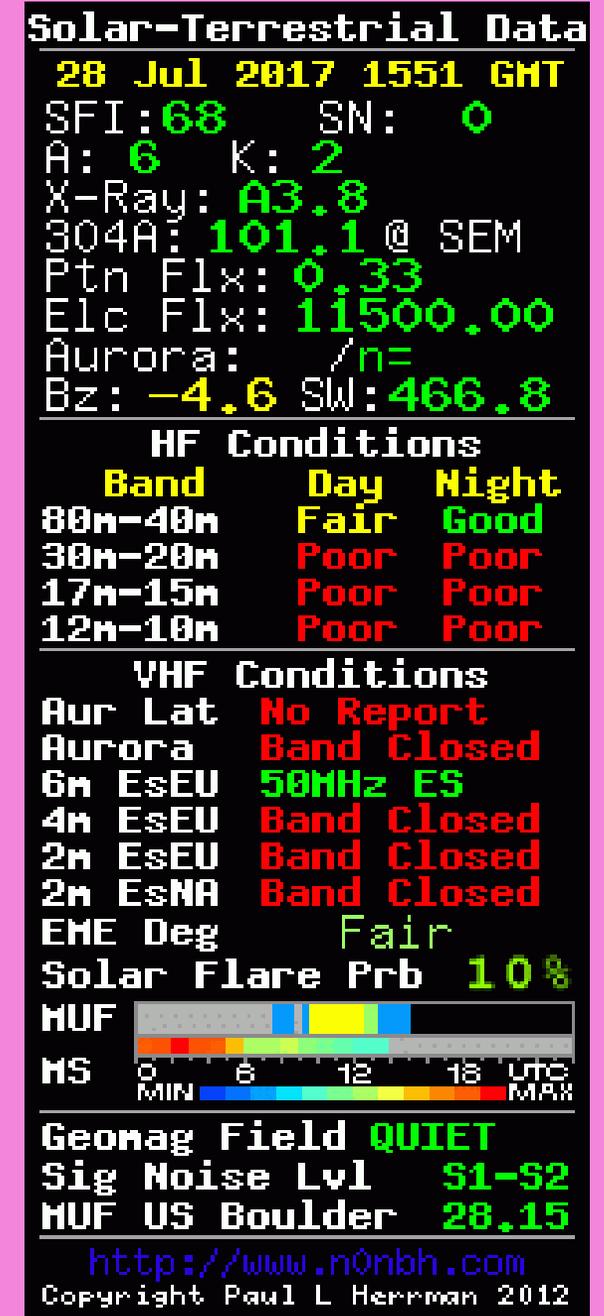
Value ranges from 0 to unknown.



The value of the line reads (as translated into English) –

304 Angstrom energy index of 101.1 as measured by the Solar Extreme UV Monitor aboard the SOHO satellite.

SOHO was mostly built by a European group, launched late 1995, and expected to last 2 years. Still going . . .



The number associated with 304A is an indication of relative strength.

It is strongly correlated with the Solar Flux Index.

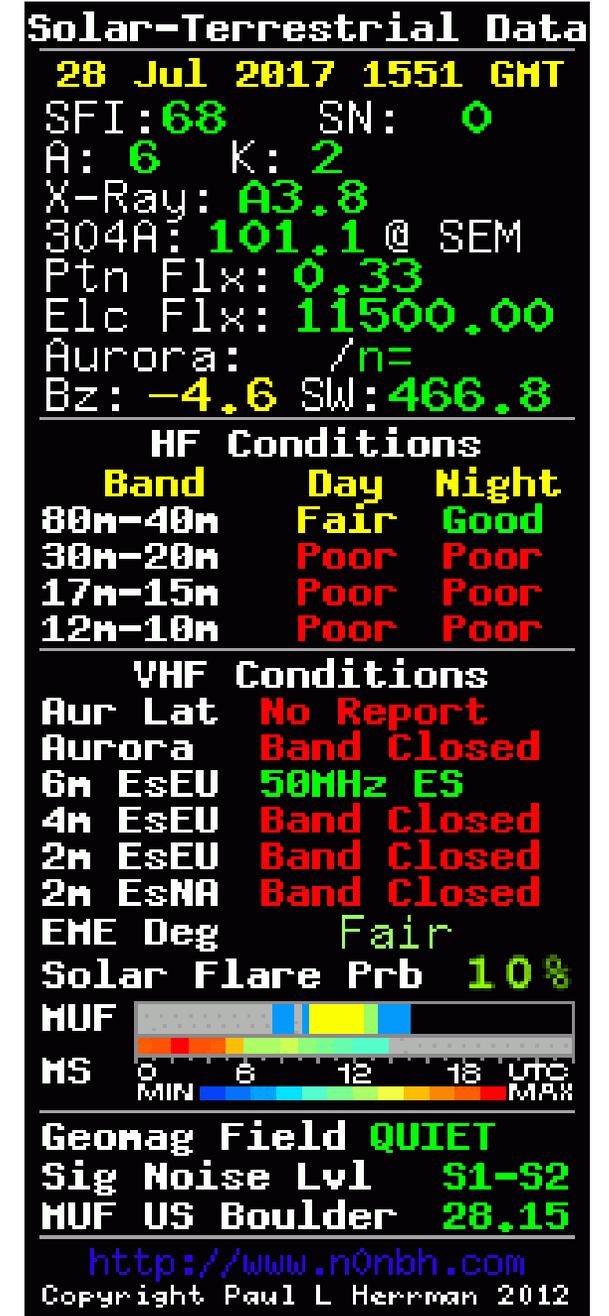
The 304A radiation is responsible for about half of all ionization of the F layer of the ionosphere.

Ptn Flx = Proton Flux

Measured in Proton Flux Units that I won't even try to explain.

Density of charged protons in the solar wind.

Value of 0 to unknown.



The higher the Proton Flux value, the more impact it has on the ionosphere.

Normally a value less than 10, but can exceed 100,000!

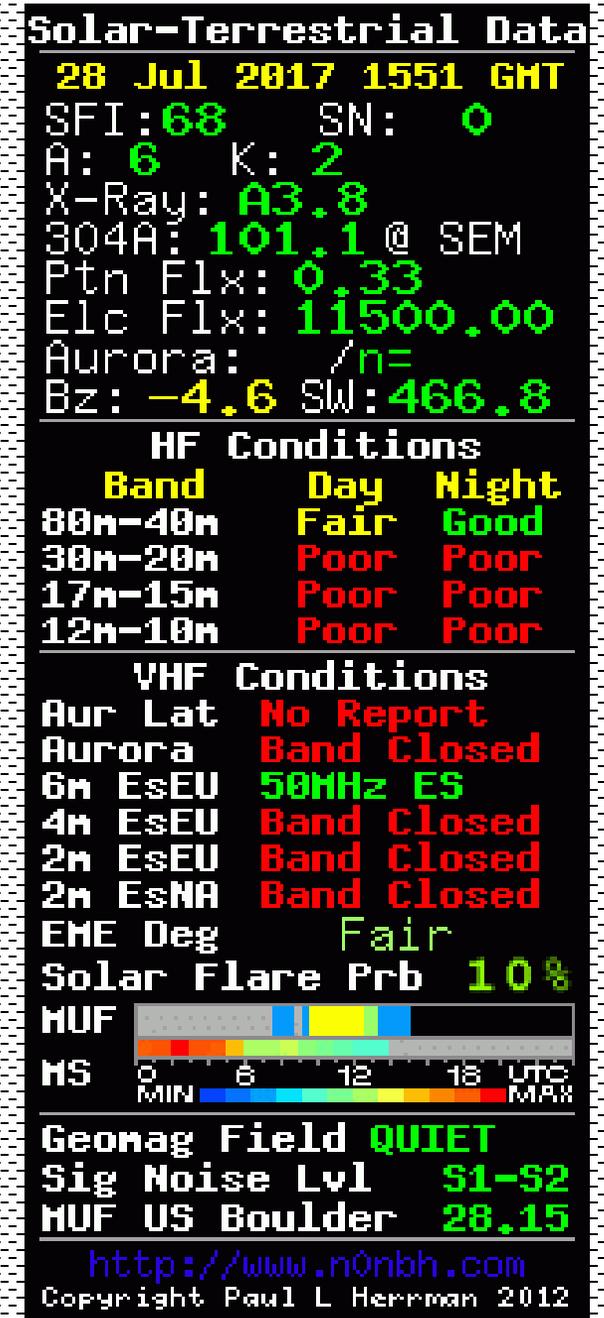
Can lead to an HF blackout during a heavy bombardment, such as during a solar storm or from a coronal mass ejection.

Elc Flx = Electron Flux

Also measured in units I won't try to explain.

Values range from 0 to unknown.

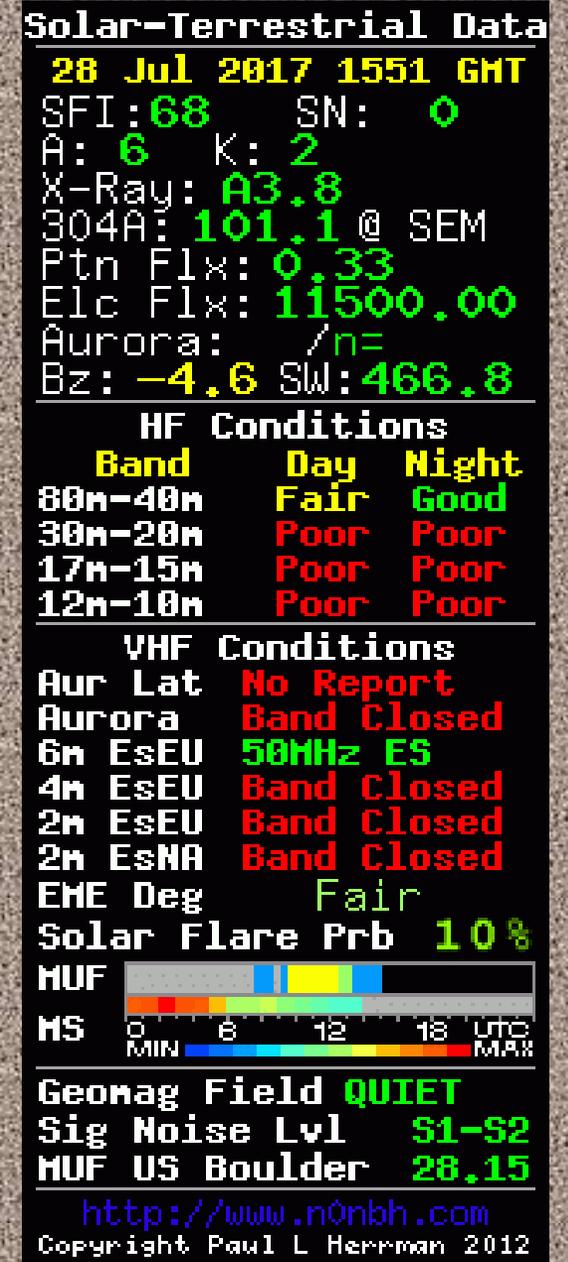
Values greater than 1000 affect ionospheric propagation in a negative way for HF users.



NONBH (Paul Herrman) may be doing an overhaul of the Aurora line in the banner.

This line should indicate a number, 1-10. As this number rises, ionization increases at the poles and the aurora extends farther south.

Bad for HF, but, really great for VHF/UHF.



Bz = Interplanetary Magnetic Field

Value of -50 to +50.

Indicates strength and orientation of the interplanetary magnetic field.

Solar-Terrestrial Data
28 Jul 2017 1551 GMT
SFI: **68** SN: **0**
A: **6** K: **2**
X-Ray: **A3.8**
304A: **101.1** @ SEM
Ptn Flx: **0.33**
Elc Flx: **11500.00**
Aurora: /n=
Bz: **-4.6** SW: **466.8**

HF Conditions

Band	Day	Night
80n-40n	Fair	Good
30n-20n	Poor	Poor
17n-15n	Poor	Poor
12n-10n	Poor	Poor

VHF Conditions

Aur Lat	No Report
Aurora	Band Closed
6n EsEU	50MHz ES
4n EsEU	Band Closed
2n EsEU	Band Closed
2n EsNA	Band Closed
EHE Deg	Fair
Solar Flare Prb	10%

HUF 
MS 
0 MIN 6 12 18 UTC MAX

Geomag Field QUIET
Sig Noise Lvl **S1-S2**
MUF US Boulder **28.15**

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It is the part of the sun's magnetic field that is carried out into the solar system by the sun's solar wind.

A '+' value indicates that the field is oriented in the same direction as the Earth's magnetic field.

A '-' value means opposite orientation. This will weaken the strength of Earth's magnetic field and reduce its shielding effect.

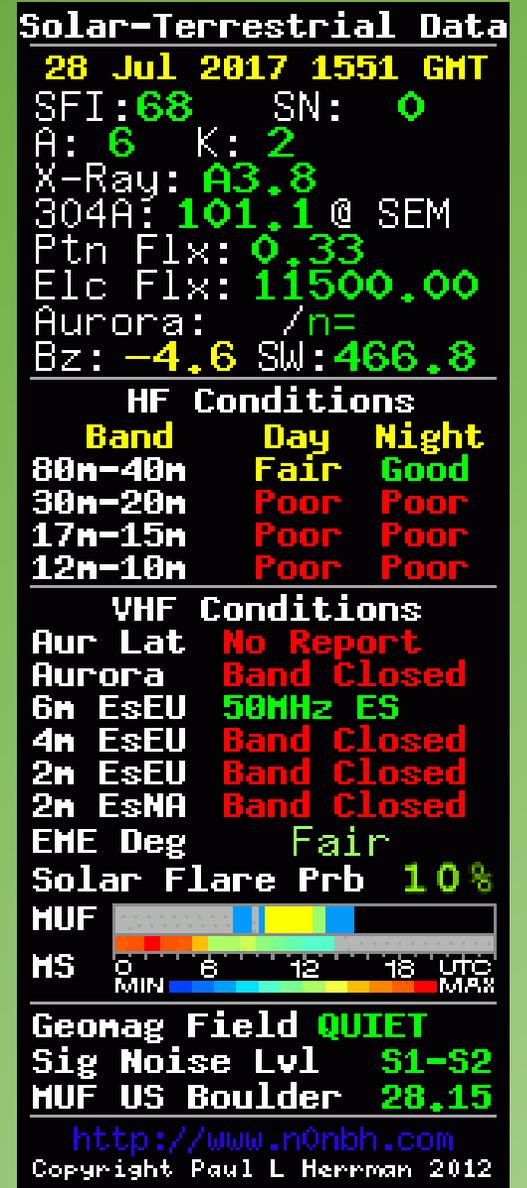
That will allow the solar particles coming at us in the solar wind (electrons and protons – remember Electron Flux and Proton Flux?) to have an increased effect on ionospheric and geomagnetic disturbances.

Again, not helpful for HF.

SW = Solar Wind

The value is kilometers per second and can vary from 0 to 2000. Typically around 375.

The 466.8 kilometers per second shown equates to 290 miles per second.



Higher solar wind speed means increased pressure on the ionosphere.

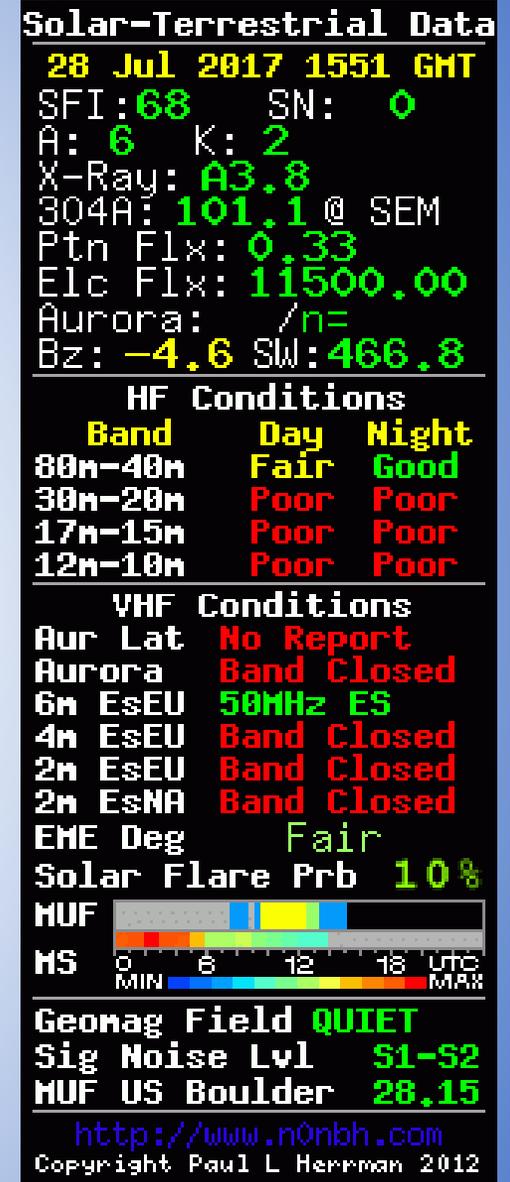
At speeds greater than 500 kilometers per second, the wind can disturb Earth's magnetic field.

That leads to a reduction of ionization in the ionosphere and poor band conditions.

HF Conditions = HF conditions. I figured this one out without peeking!

VHF Conditions

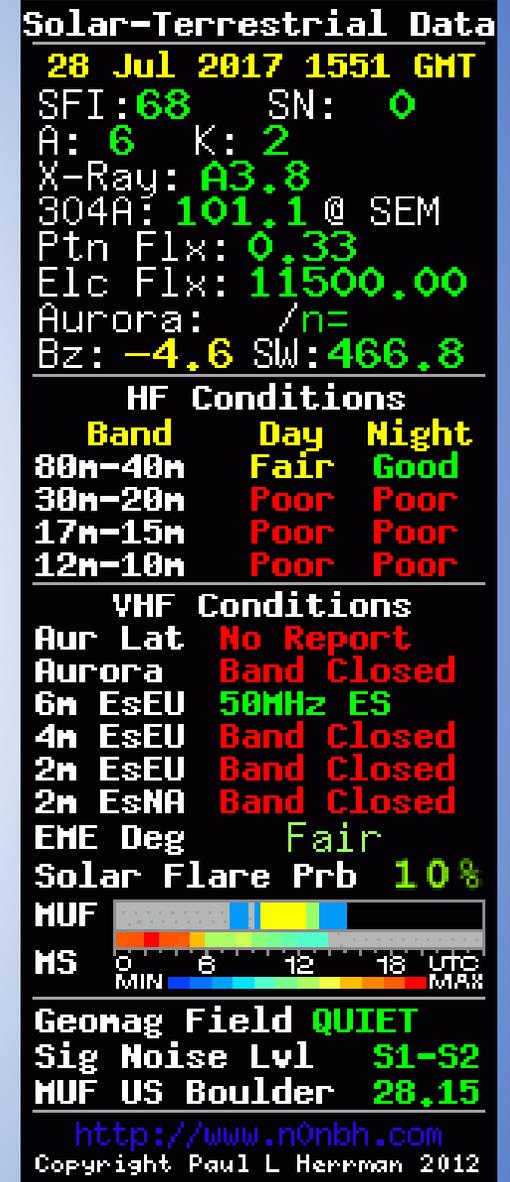
Aur Lat = Aurora Latitude, an estimate of the lowest latitude impacted by an auroral event.



Aurora – Reported as “Band Closed” when there is little or no auroral activity.

Reported as HIGH LAT AUR for auroral activity above 60 degrees N latitude.

Reported as MID LAT AUR for auroral activity from 60 degrees to 30 degrees N latitude.



For 6, 4, and 2 meters, EsEU stands for Sporadic E conditions in Europe.

2 meters EsNA represents Sporadic E conditions in North America.

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28 Jul 2017 1551 GMT
SFI:68 SN: 0
A: 6 K: 2
X-Ray: A3.8
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Bz: -4.6 SW:466.8

HF Conditions

Band	Day	Night
80m-40m	Fair	Good
30m-20m	Poor	Poor
17m-15m	Poor	Poor
12m-10m	Poor	Poor

VHF Conditions

Aur Lat	No Report
Aurora	Band Closed
6m EsEU	50MHz ES
4m EsEU	Band Closed
2m EsEU	Band Closed
2m EsNA	Band Closed
EHE Deg	Fair
Solar Flare Prb	10%

MUF 
MS 
MIN MAX

Geomag Field QUIET
Sig Noise Lvl 51-52
MUF US Boulder 28.15

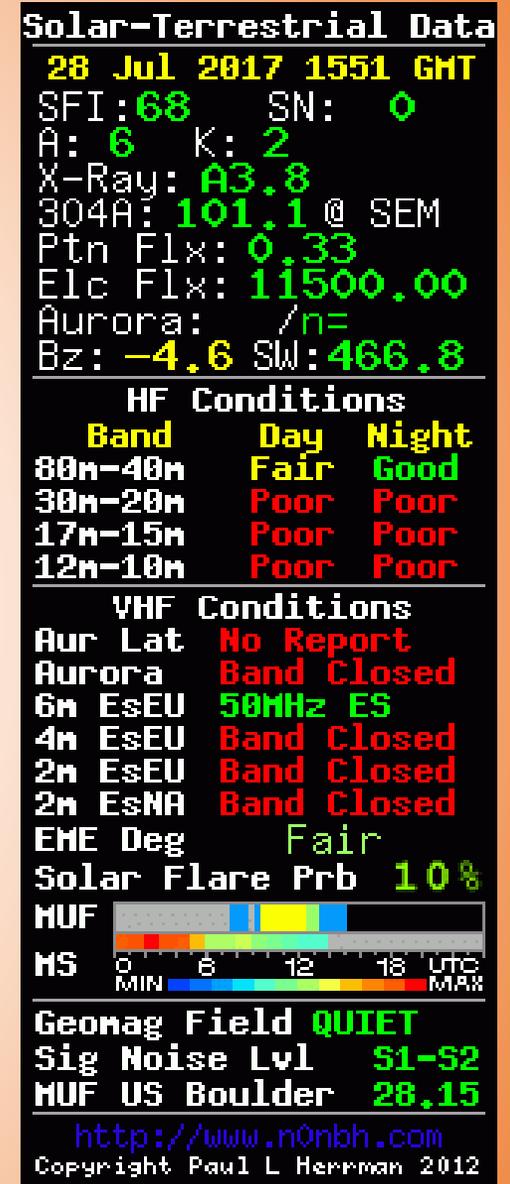
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EME Deg = Earth-Moon-Earth Degradation

Attenuation, in decibels, along the EME radio path.

Values are Very Poor, Poor, Fair, Good, and Excellent.

Some banners use Moderate instead of Fair, and add Very Good.



Solar Flare Prb = Probability of a solar flare in the next 24 hours.

MUF = Maximum Usable Frequency

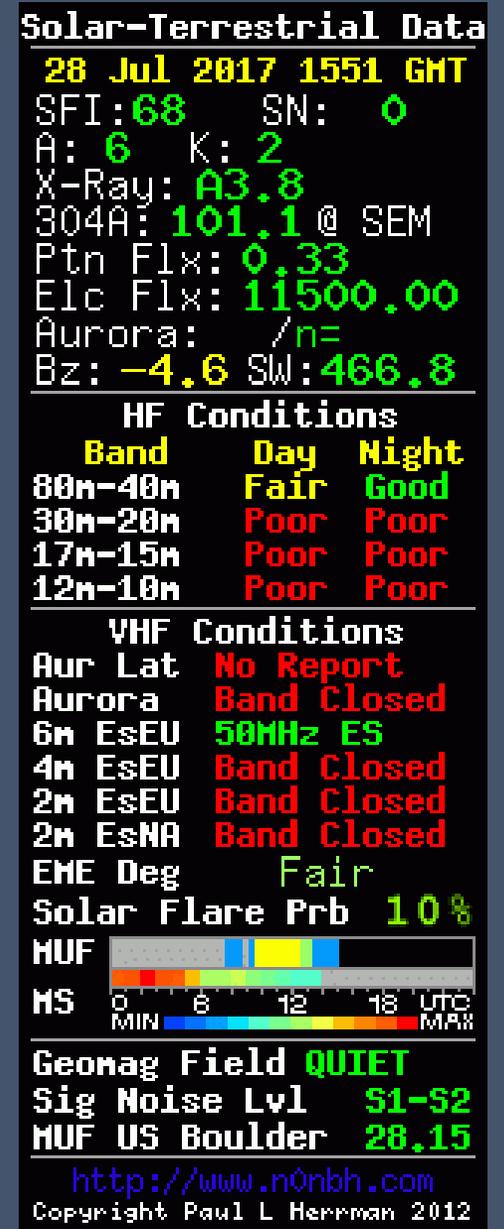
Gray = No Sporadic E activity

Blue = Sporadic E reported at 6 meters

Green = Sporadic E reported at 4 meters

Yellow = 2 meter Sporadic E should be supported by conditions

Red = Sporadic E reported at 2 meters

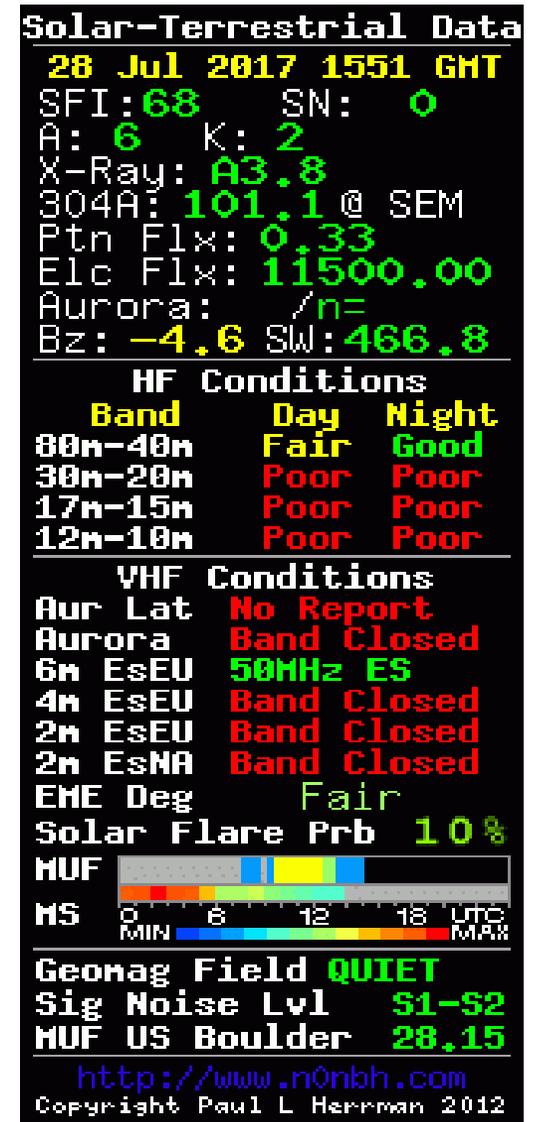


MS = Meteor Scatter Activity Bar

Gray indicates no activity. Level of activity in color coded bar beneath it.

Geomag Field = Geomagnetic Field

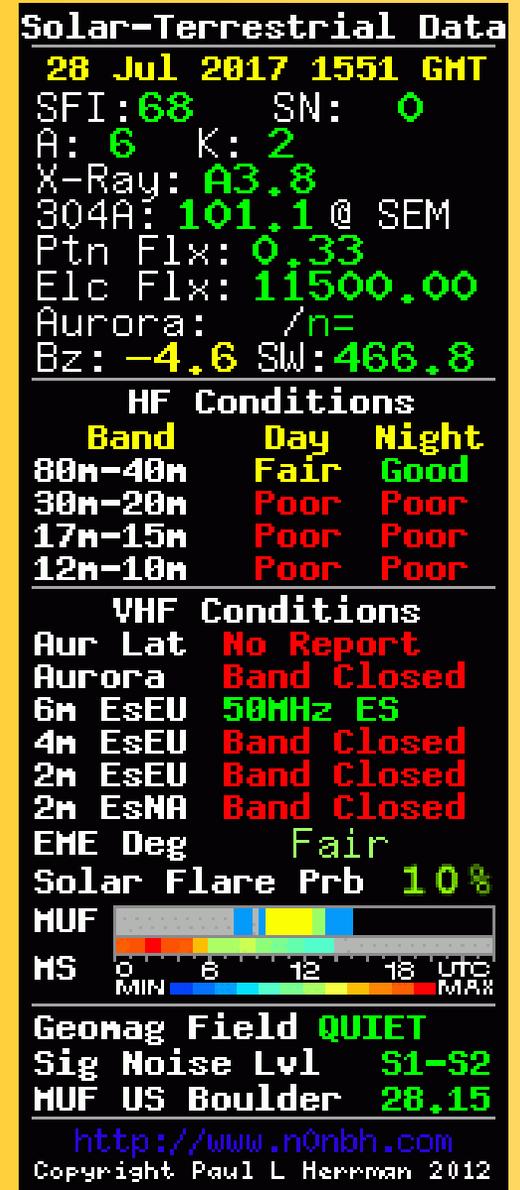
Indicates how quiet or active Earth's magnetic field is. High values can cause auroral events and blackouts.



Sig Noise Lvl = Signal Noise Level

Noise level, in S-units, of the noise being generated by the solar wind interacting with Earth's magnetic field.

MUF US Boulder = Maximum Usable Frequency at Boulder, Colorado. 28.15 MHz in this case.



At k4msu.com, click anywhere on the black box and it will take you to the Website of N4NBH, creator of the banner.

Over 20 other banner designs, lots of add-ons (including a ton of photos of the Sun in various wavelengths), and lots of links to like-minded folks.

Lots of good reading when the bands crap out!

DONE!

You may now awaken anyone
who may be sleeping around
you.