

Propagation by Colors

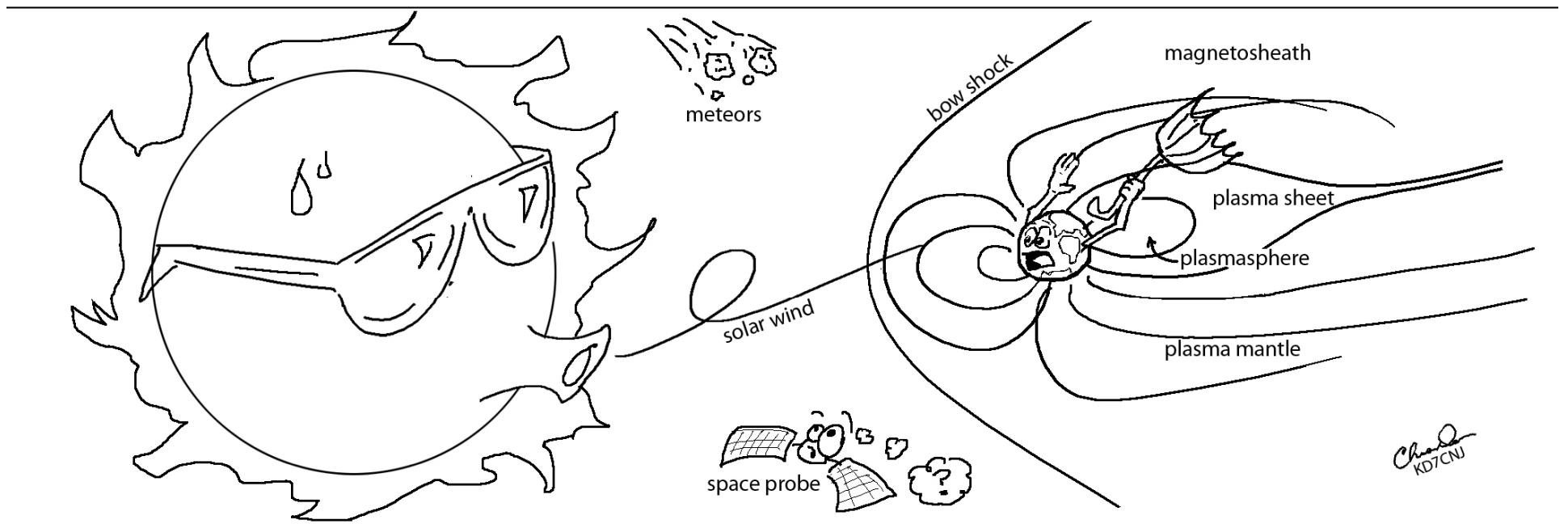
Use *HamCAP* to compare the range of various modes

Kai Siwiak, KE4PT
The SFDXA, 8 Jan 2020

See also: Kai Siwiak, KE4PT, "Choosing the Best Mode for Your HF Operation", QST, Apr., 2020, pp. 32-33.

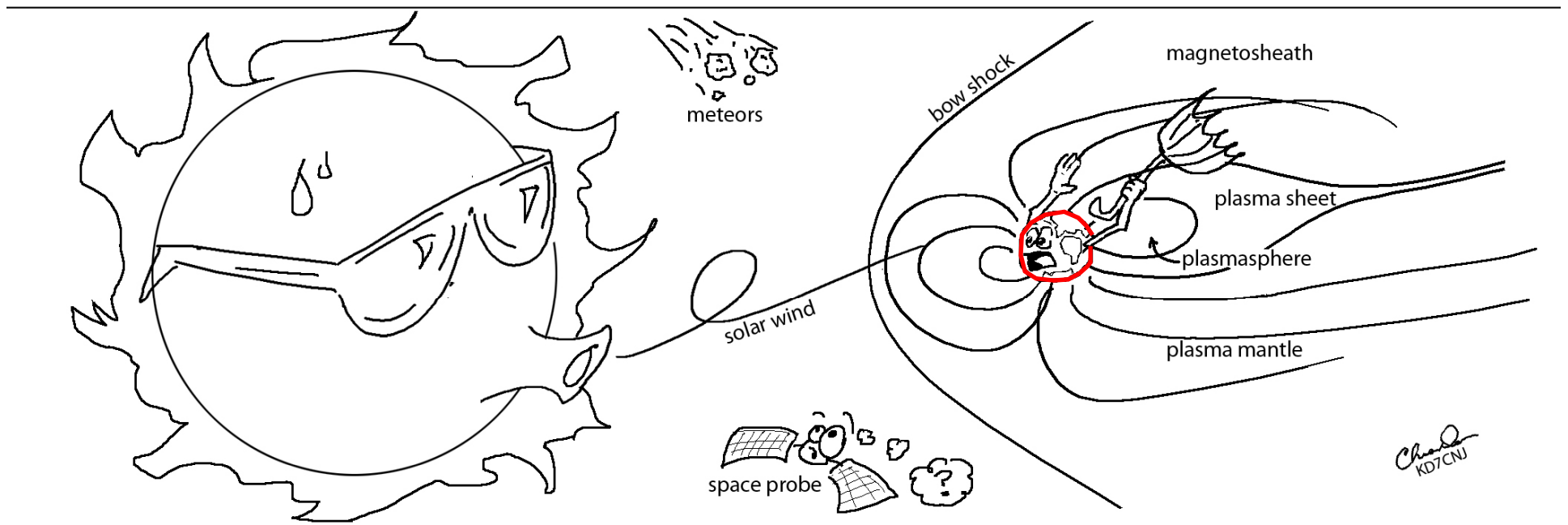
The Big Picture

It's all blowing in the Solar Wind



The Detail

It all happens within 1000 km of Earth



1000 km is 620 miles

Modest Stations

Need to Crank up the Range Knob



What range knob???

Range Knob Tool Kit

- **Tool #1: Afreet Software *HamCAP***
 - Uses *VOACAP* propagation engine
 - You input parameters
 - Select 'MAP' to compute propagation
 - Hover mouse over Map to read *SNR/Hz*
- **Tool #2: Apply the KE4PT Color and Mode Correspondence Chart**



Afreet Software, Inc.

Software created by Alex Shovkopyas, VE3NEA

Products

new!



[GRITTY](#)



[RTTY Skimmer
Server](#)



[HamVNA](#)



[DX Atlas](#)

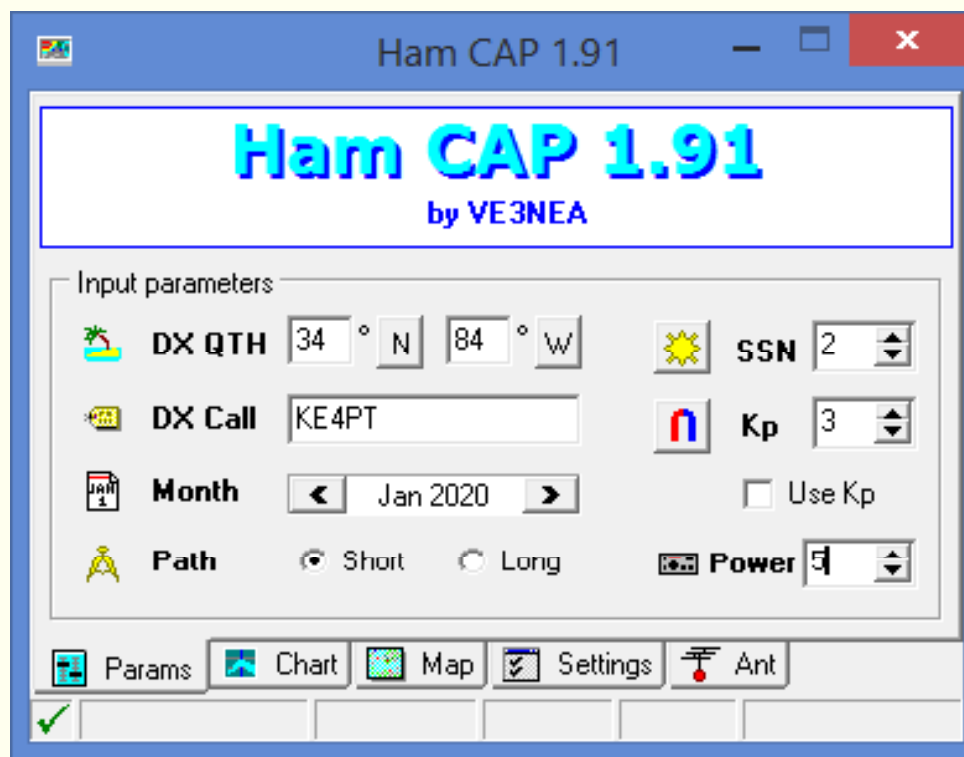


<http://www.dxatlas.com>

Ham CAP 1.91

HF propagation prediction tool for Amateur Radio

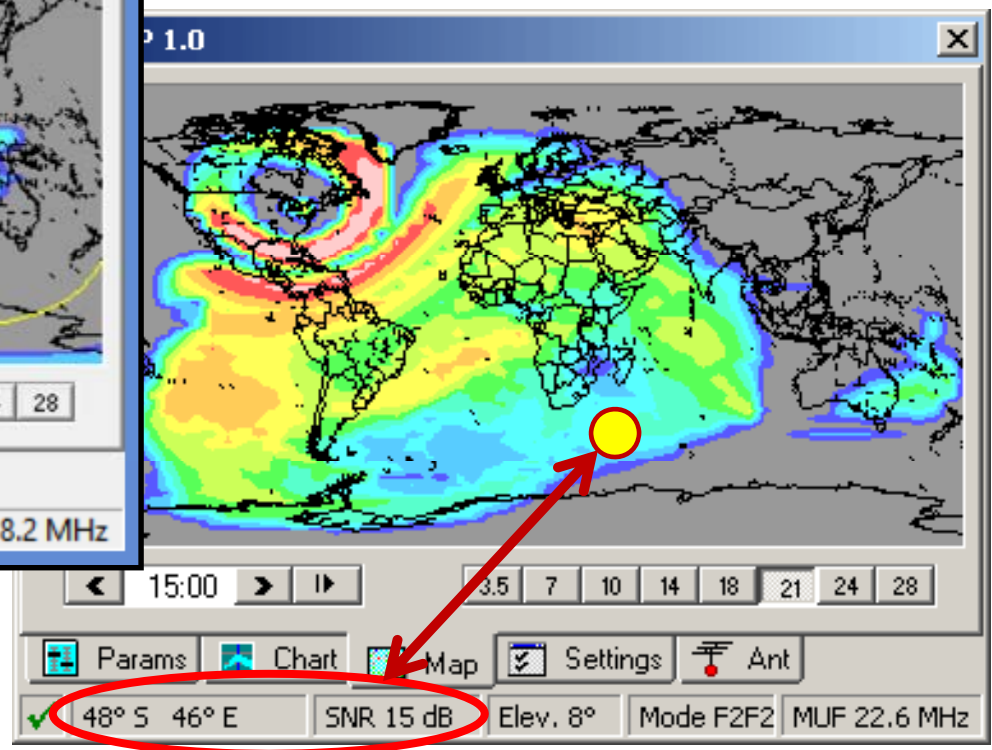
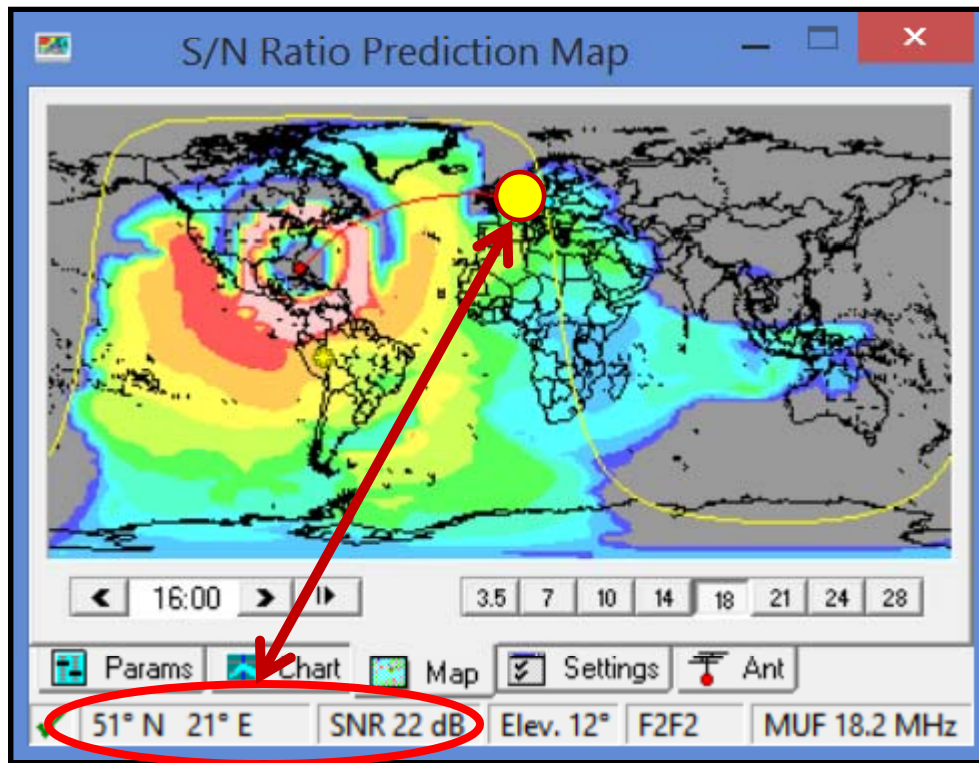
FREEWARE



HamCAP

- Uses *VOACAP* propagation engine
- You input the SSN, power, date
- Choose your antennas
- Select frequency band
- Select 'MAP' to compute propagation
- **Hover mouse over Map to read *SNR/Hz***

Mouse-over HamCAP Map to see SNR in 1 Hz Bandwidth












Now You Need the “Big Box” of Crayons



The KE4PT Color and Mode Correspondence Chart

You just add 34 dB to the WSJT-X SNR/2500 Hz to get SNR/Hz!

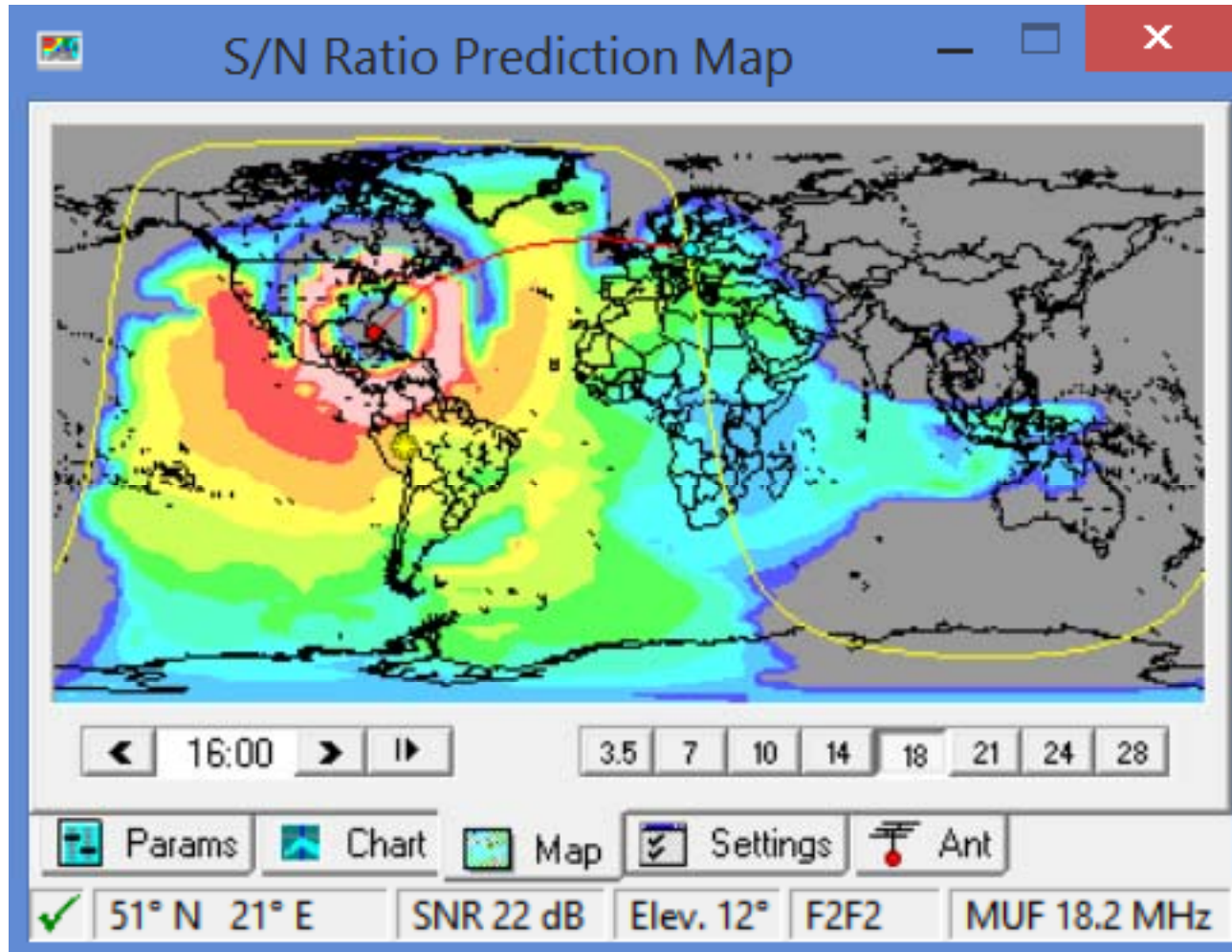
<i>SNR/Hz</i>	<i>Color Code</i>
47+	 AM [56 dB/Hz]
42-47	 SSB
36-42	 FM
32-36	 RTTY
27-32	 CW
21-27	 FT4/PSK31
14-21	 FT8
7-14	 JT9/JT65
1-7	 WSPR










Each mode includes all the colors above its limit color in the chart

Note: the SNR to Color correspondence is approximate

The 'range knob' extends over more than 55 dB!!

Range Limits of Various Modes



Color Code	
	AM [56 dB/Hz]
	SSB
	FM
	RTTY
	CW
	FT4/PSK31
	FT8
	JT9/JT65
	WSPR

Each mode includes all the colors above its limit color in the Color Code Chart

Sum Up: Range Knob Tool Kit

- [HamCAP Freeware](#) is the propagation tool for predicting range
- [The KE4PT Color Correspondence Chart](#) is your key tool for selecting the mode you need for the range you want
- You can pick your maximum range by selecting an appropriate mode

“When it rains it pours”



- Take all this with a grain of salt
- This is all VERY approximate
- it is for your amusement only
- Maybe even:
take it all with a pound of salt!

See also: Kai Siwiak, KE4PT, "Choosing the Best Mode for Your HF Operation", QST, Apr., 2020, pp. 32-33.

Thanks for your Attention

?? questions ??