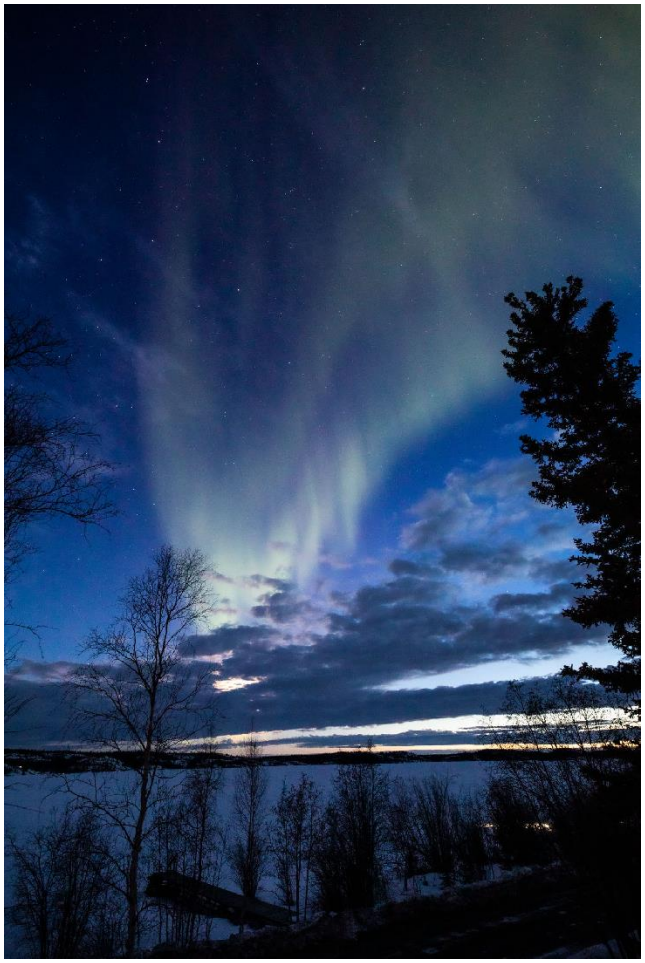
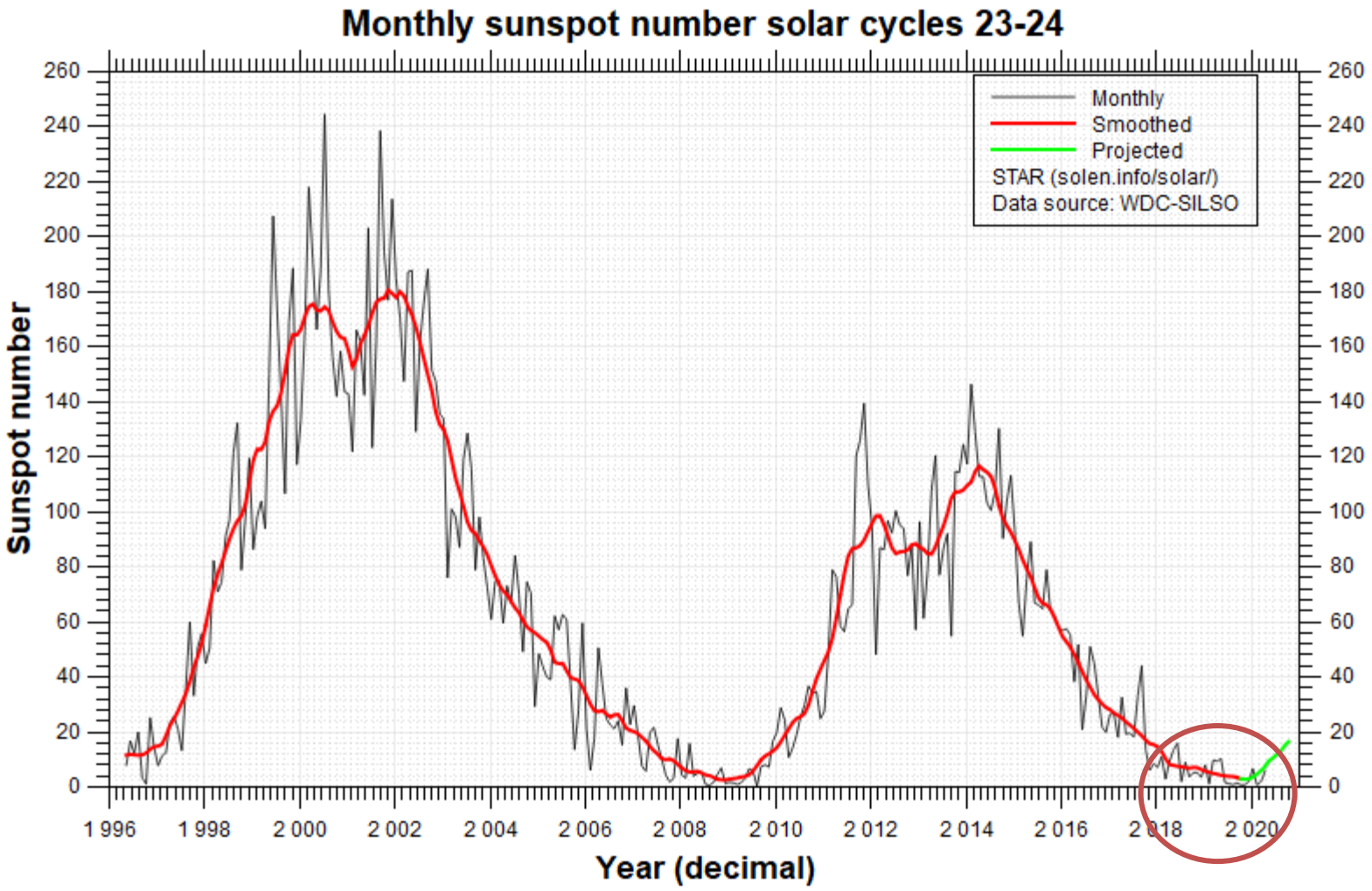
SOLAR WEATHER
5 MAY 2020



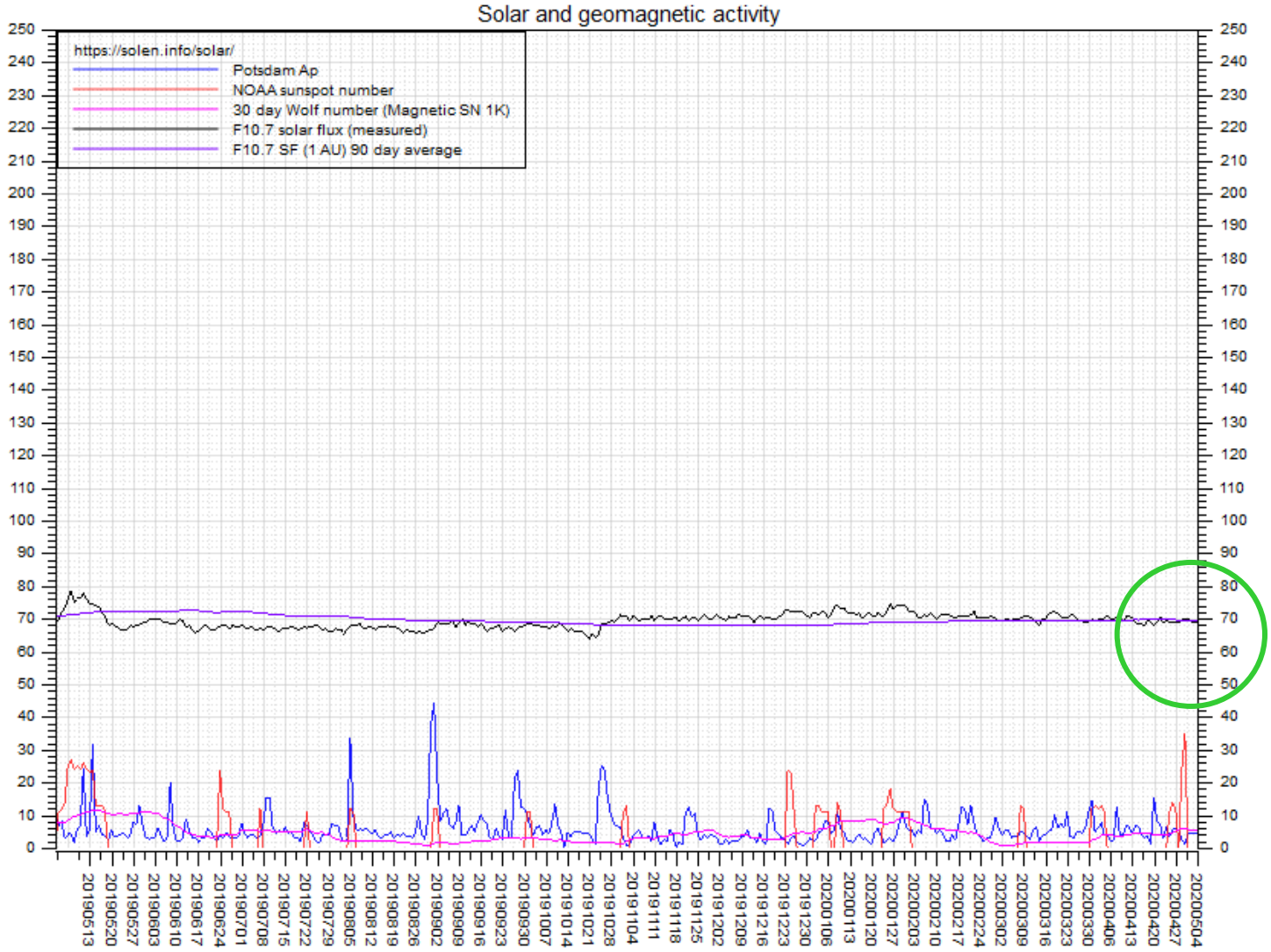
Lewis Thompson
W5IFQ

Yellowknife NWT, Canada – 30 APR 2020

SOLAR CYCLE COMPARISON

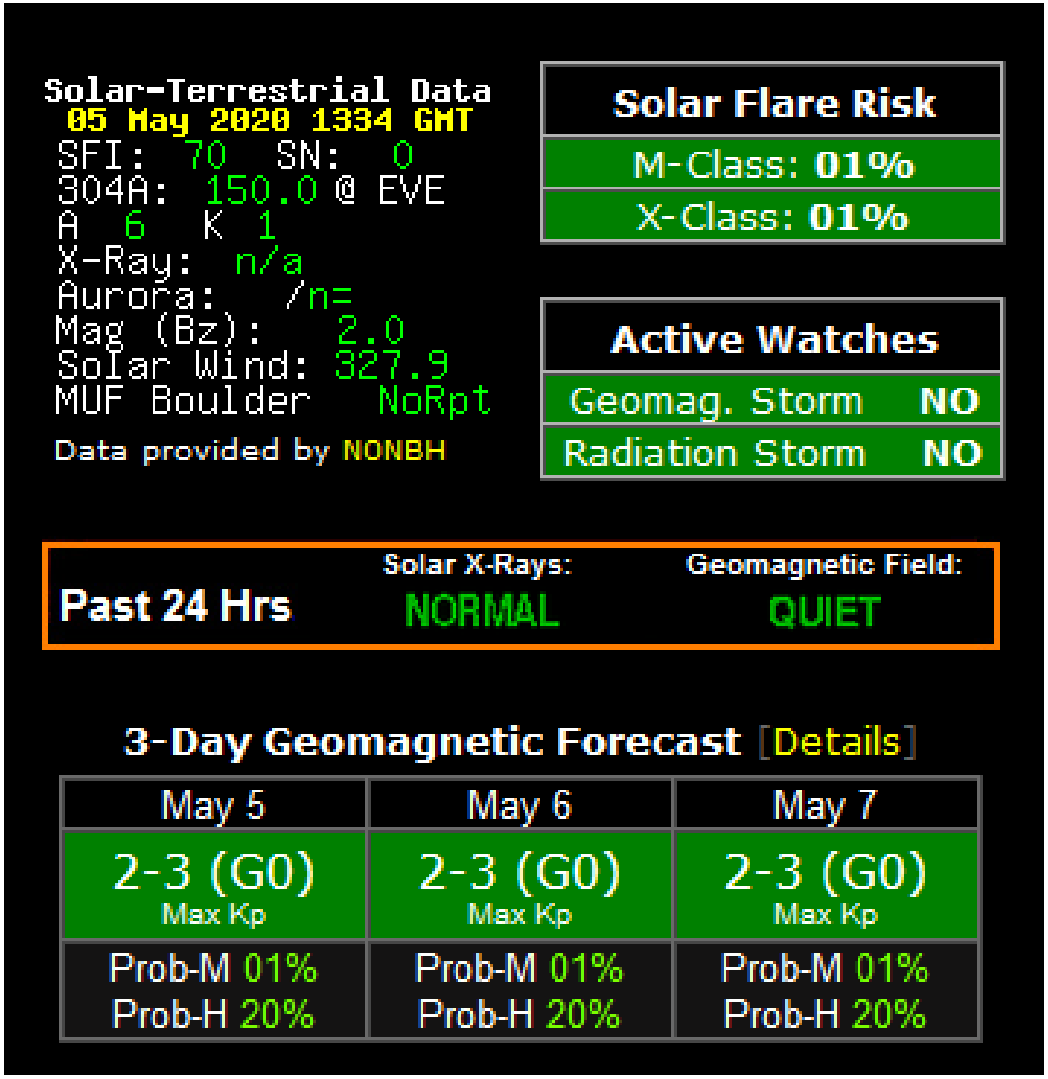


SOLAR FLUX INDEX – 2020

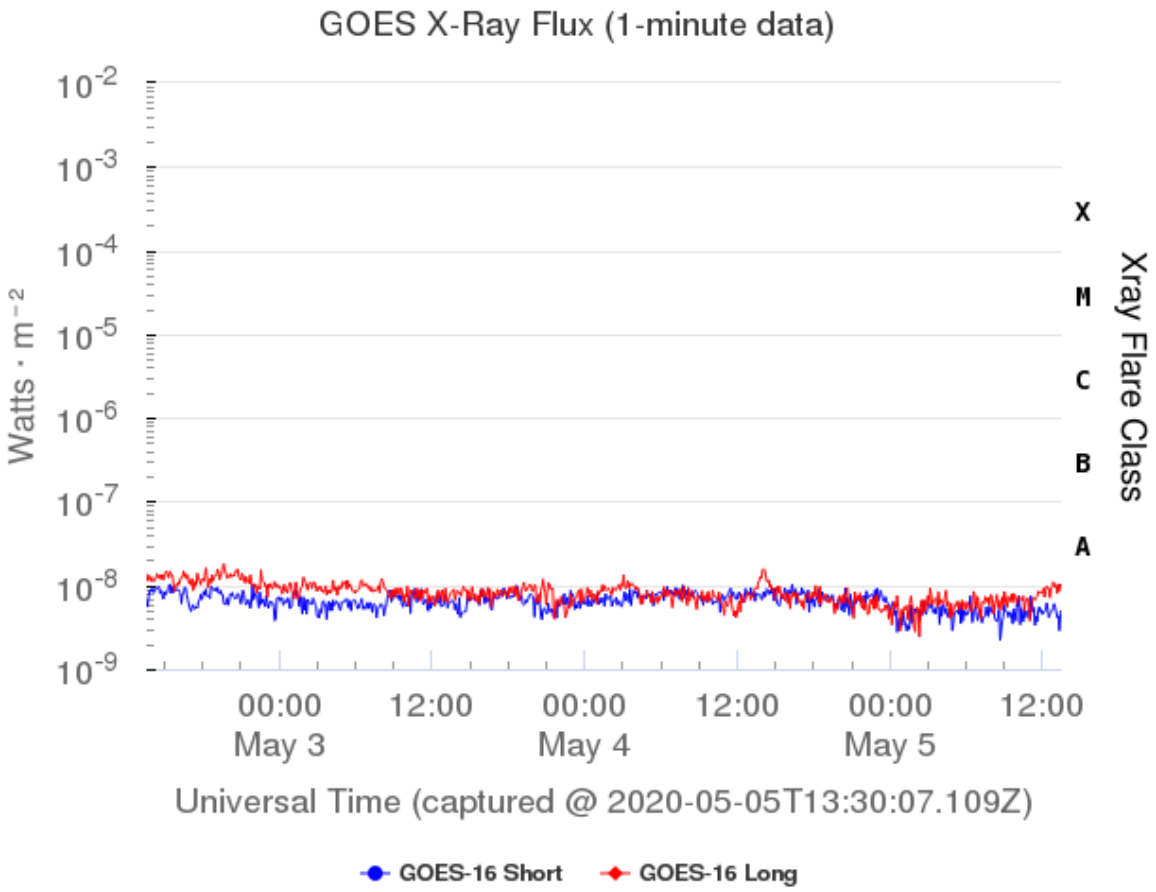


SF 69.3 (0.6 decrease from one previous 27 day solar rotation)

SolarHam.net Forecast



Solar X-Ray Flux: 3 – 5 MAY 2020

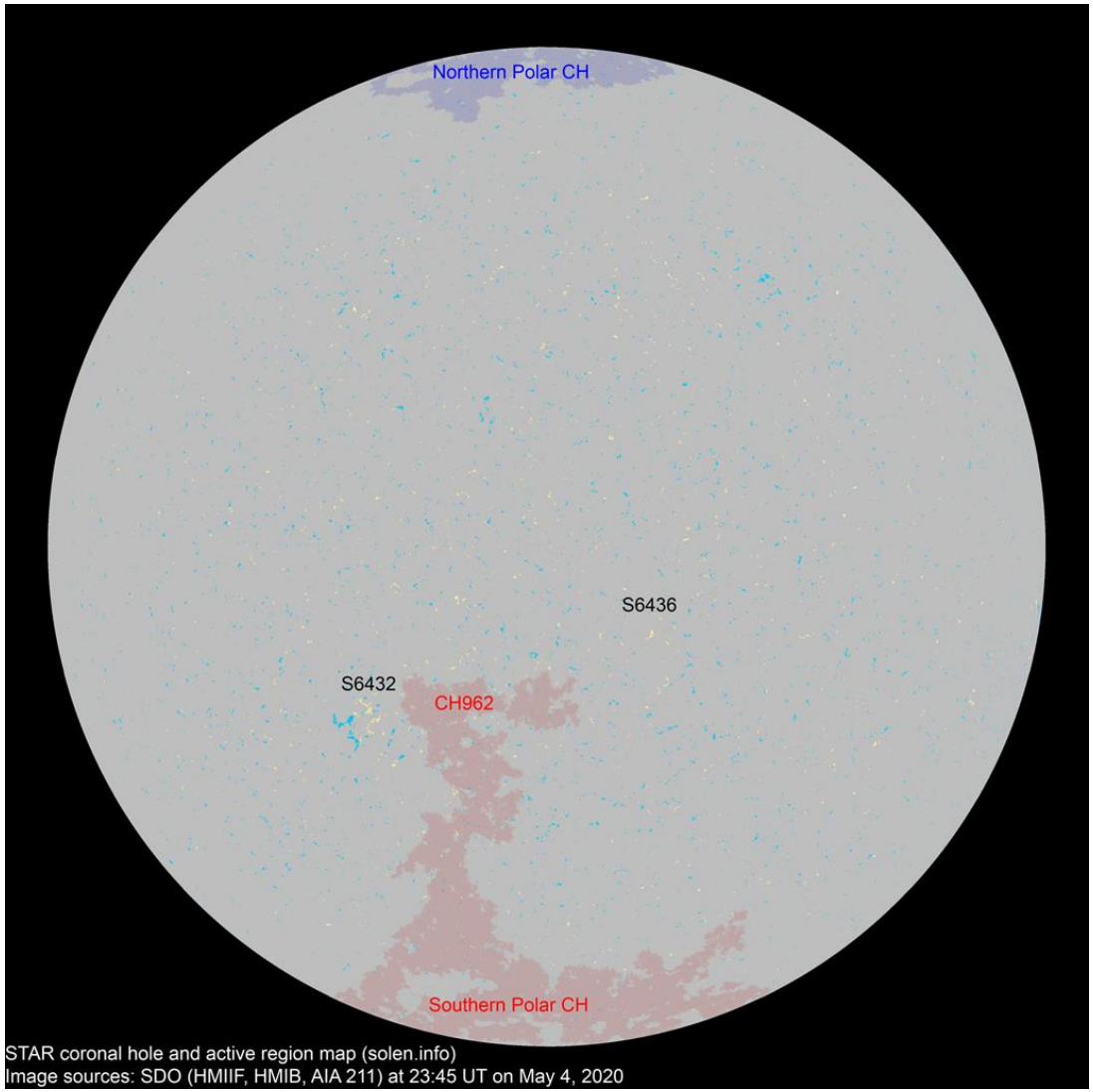


The X-ray radiation that ionizes the D-layer is the 1.0 - 8.0 A (red) plot. These measurements currently taken from the GOES 16 satelite.

Flare Category	Effect
A1-B9	No or minor impact on HF
C1	Low absorption of HF signals
M1	Occaisional loss of radio contact on sun-lit side
M5	Limited HF blackout for several minutes
X1	Wide area HF blackout for approx. 1 hr
X10	HF blackout over most of sun-lit side for 1-2 hrs
X20	Complete HF blackout of all sun-lit areas lasting hours

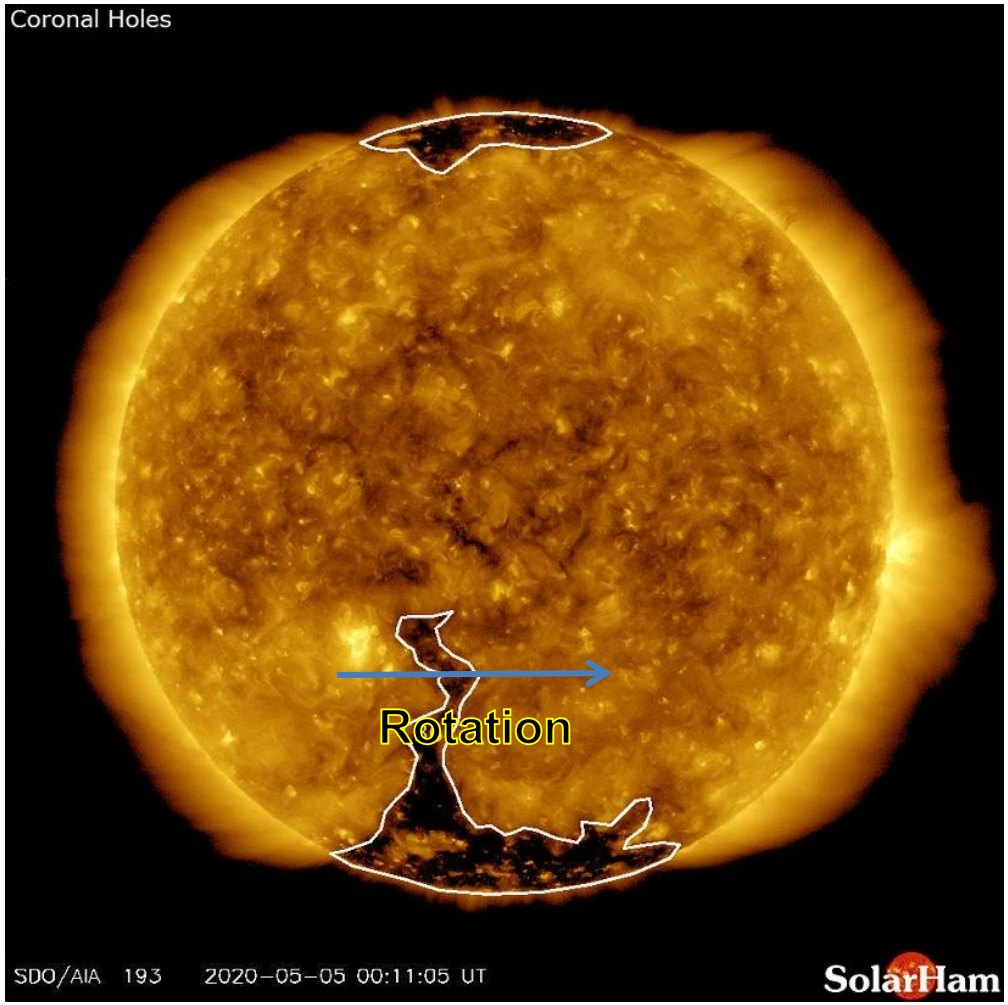
Note: GOES 14 & 15 have been turned off and placed in storage orbit

Sunspots – 4 MAY 2020



No Sunspots

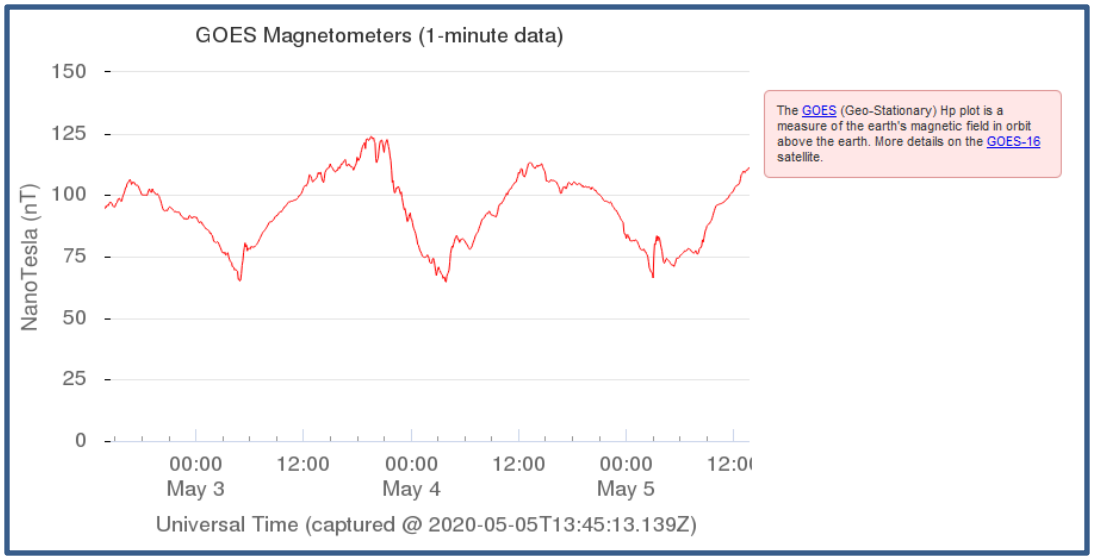
Coronal Holes – 5 MAY 2020



Geomagnetic Conditions: 5 MAY 2020

Solar wind
Bz = -5 nT South
speed = 317 km/sec
density = 2.5 protons/cm^3

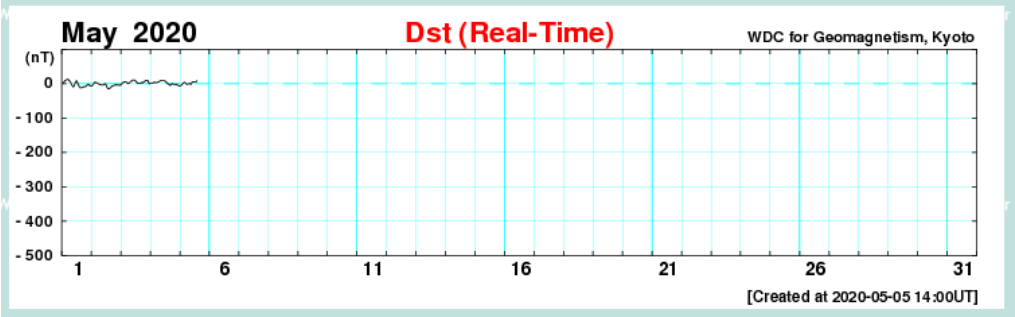
(From – NOAA DSCOVR In L1, Lagrange Point)



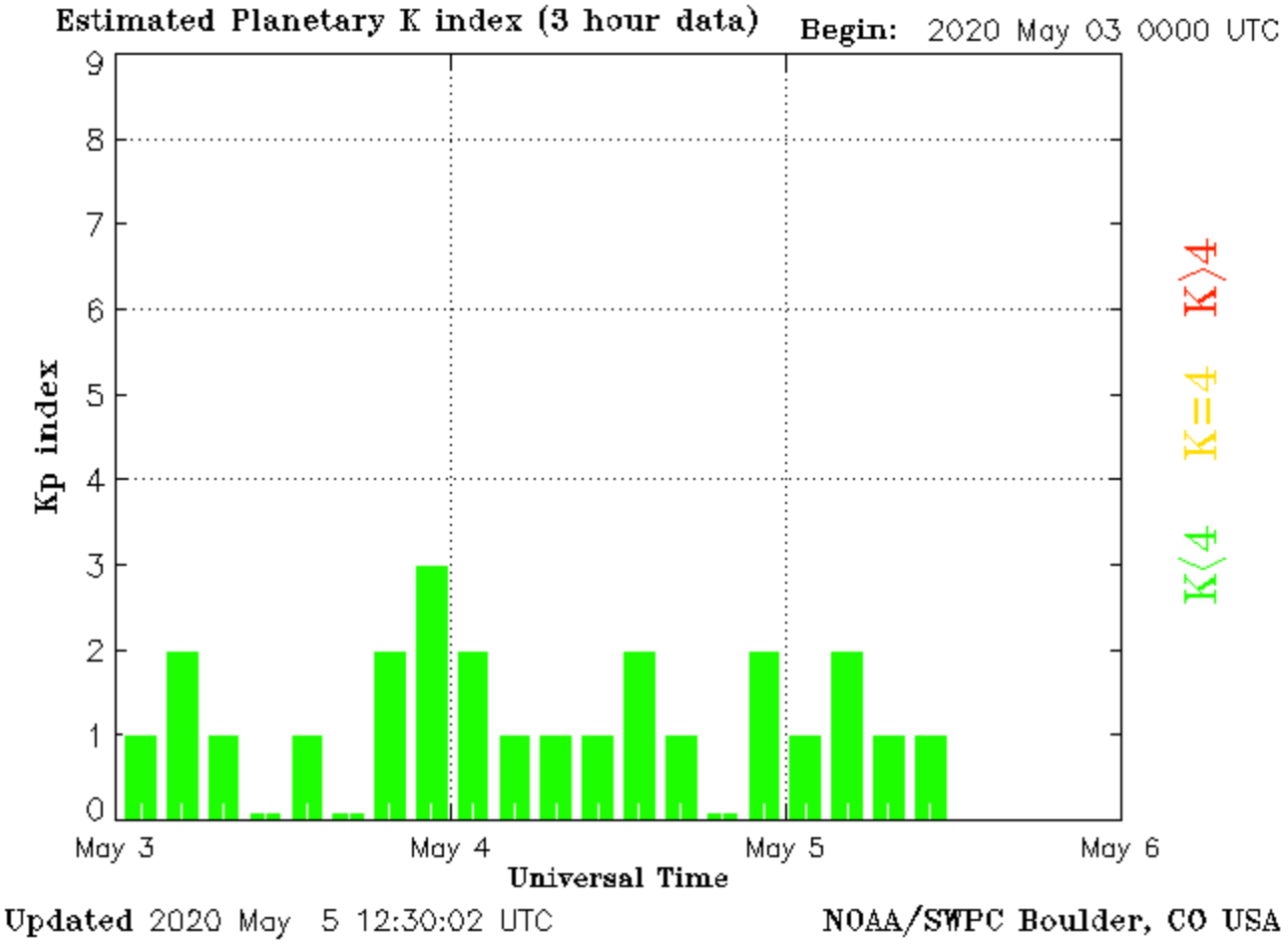
From – GOES 16
In geostationary orbit

Dst = 5 nT (Ring Field)

(From – Data Analysis Center For Geomagnetics and Space Magnetism – Kyoto University)



Planetary K index – 2-5 MAY 2020

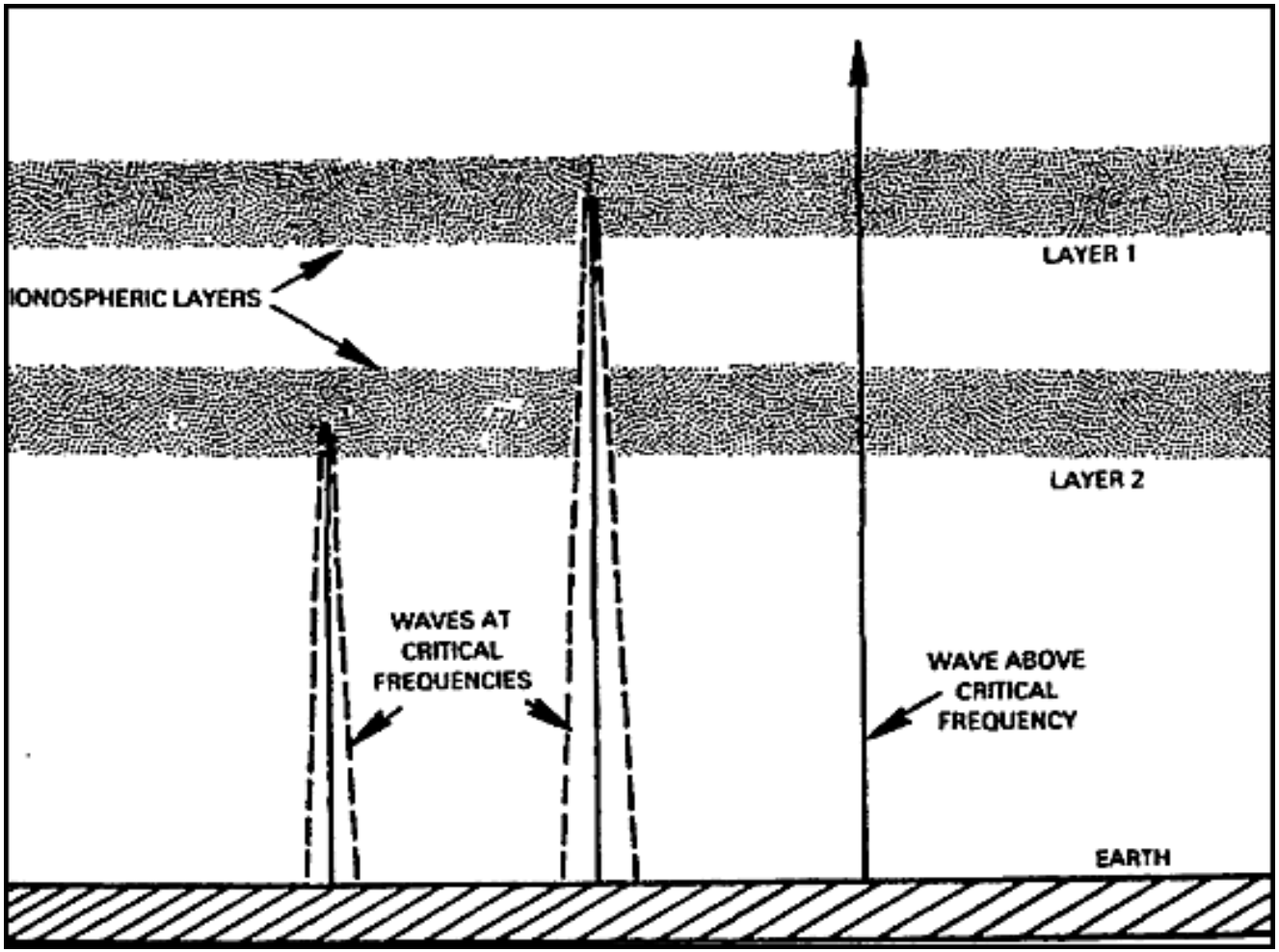


Generally, as planetary K-Index rises, critical frequency is suppressed.

K-Index	Effect
0-2	Inactive/Quiet, no impact on HF
3-4	Unsettled/Active, minor HF fade in higher latitudes
5-6	HF fade at higher latitudes
7-8	HF sporadic
9	HF impossible above 40M

Critical or foF2 Frequency Definition

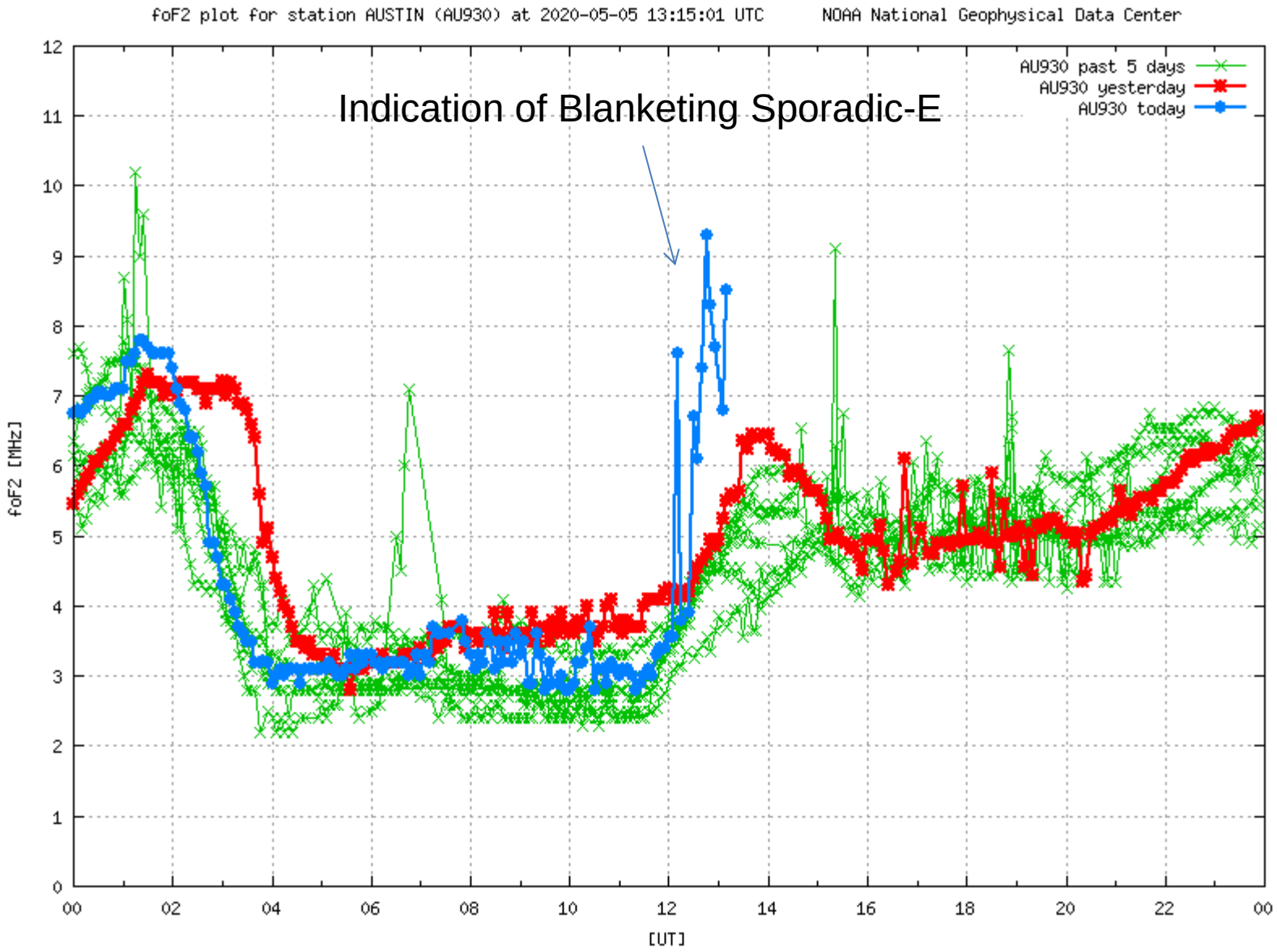
- For State-Wide HF communications (NVIS), but operate at or below CF



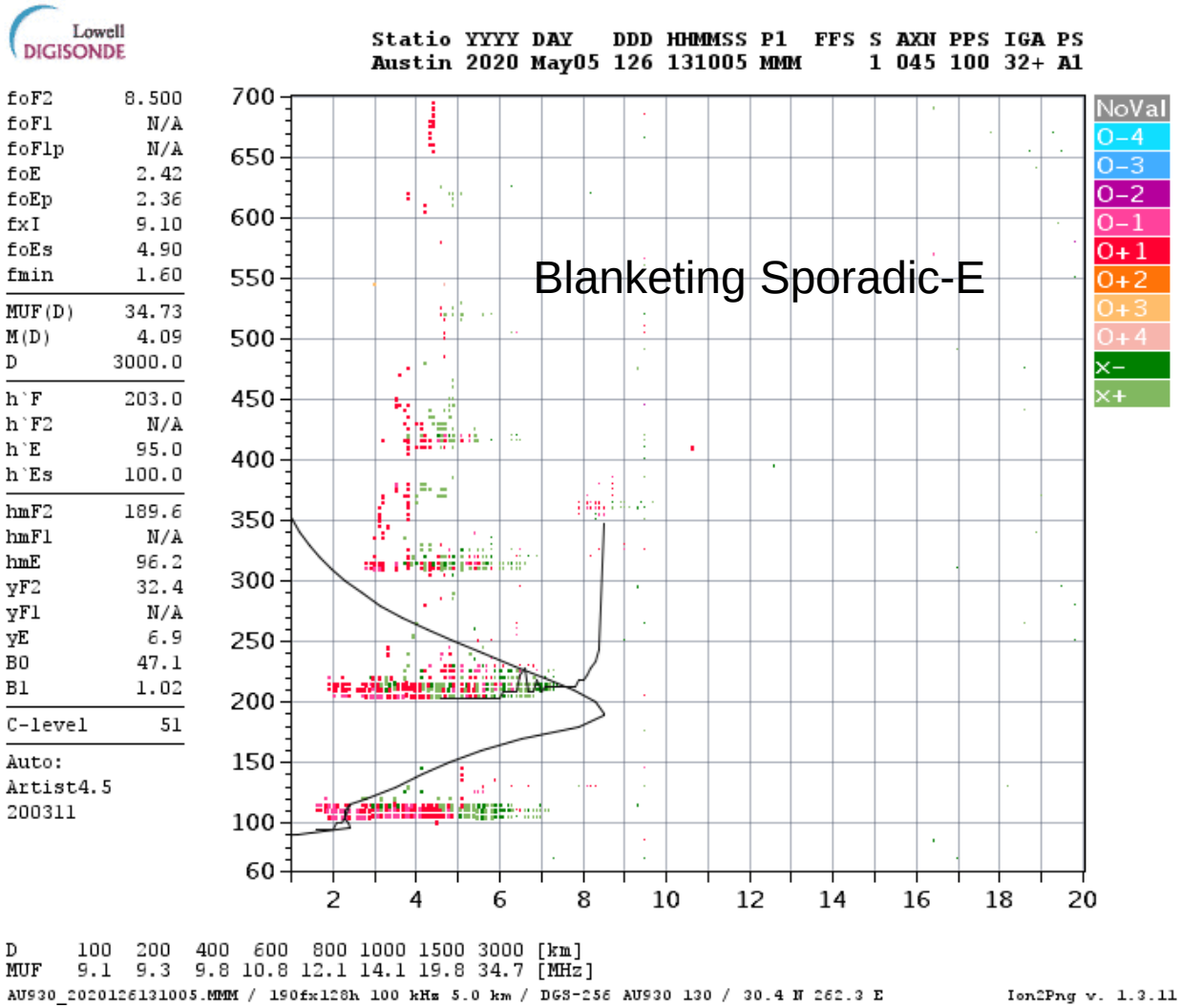
F2 layer

E layer

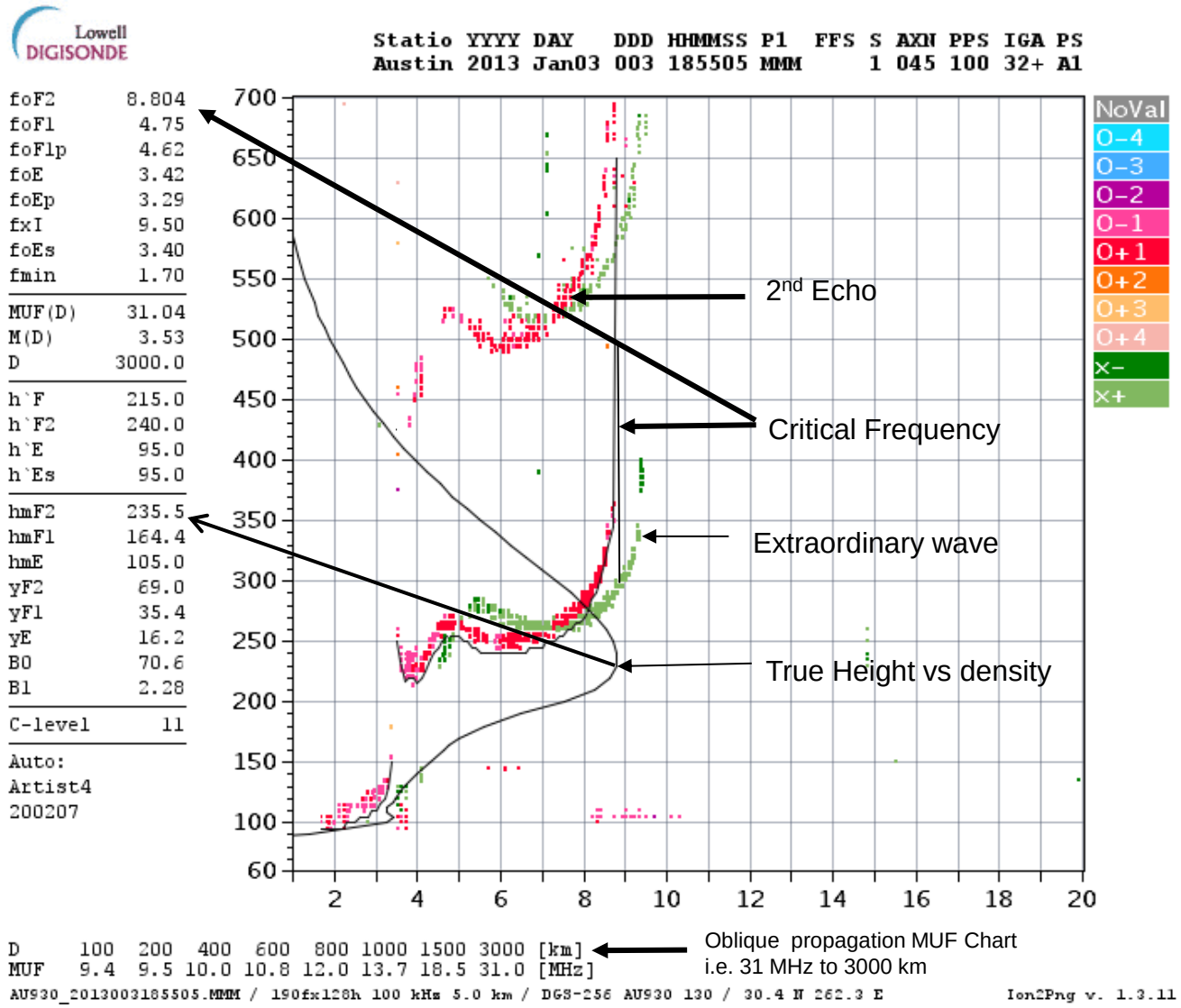
foF2 Trend – Austin Ionosonode



Austin Ionosonde – 0810 CDT, 5 MAY

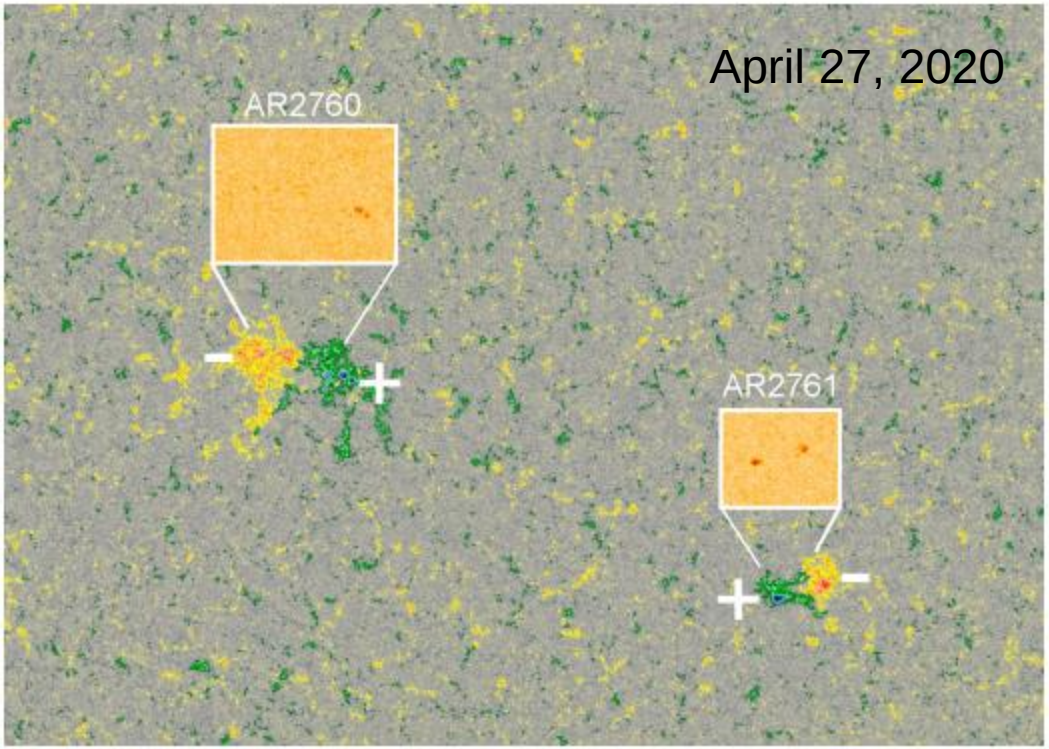


Ionogram Interpretation



Sunspot Magnetic Polarity

Cycle 24 Cycle 25



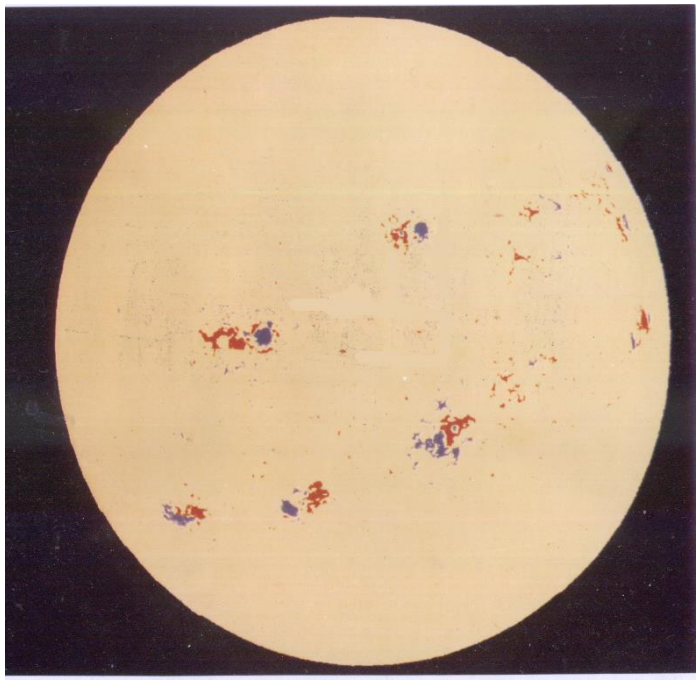
One sunspot (AR2760) belongs to old Solar Cycle 24, while the other (AR2761) belongs to new Solar Cycle 25. We know this because of Hale's polarity law. AR2760 is +/- while AR2761 is -/+, reversed signs that mark them as belonging to different cycles.

Zeeman Effect

The Zeeman effect, named after the Dutch physicist Pieter Zeeman, is the effect of splitting of a spectral line into several components in the presence of a static magnetic field.

George Hale, in 1908, was the first to notice the Zeeman effect in the solar spectra, Indicating the existence of strong magnetic fields in Sunspots.

Solar cycle 20 Magnetogram



Excellent HF Propagation Web Site

https://www.hfunderground.com/propagation/

HFUnderground.com Propagation Data and Tools

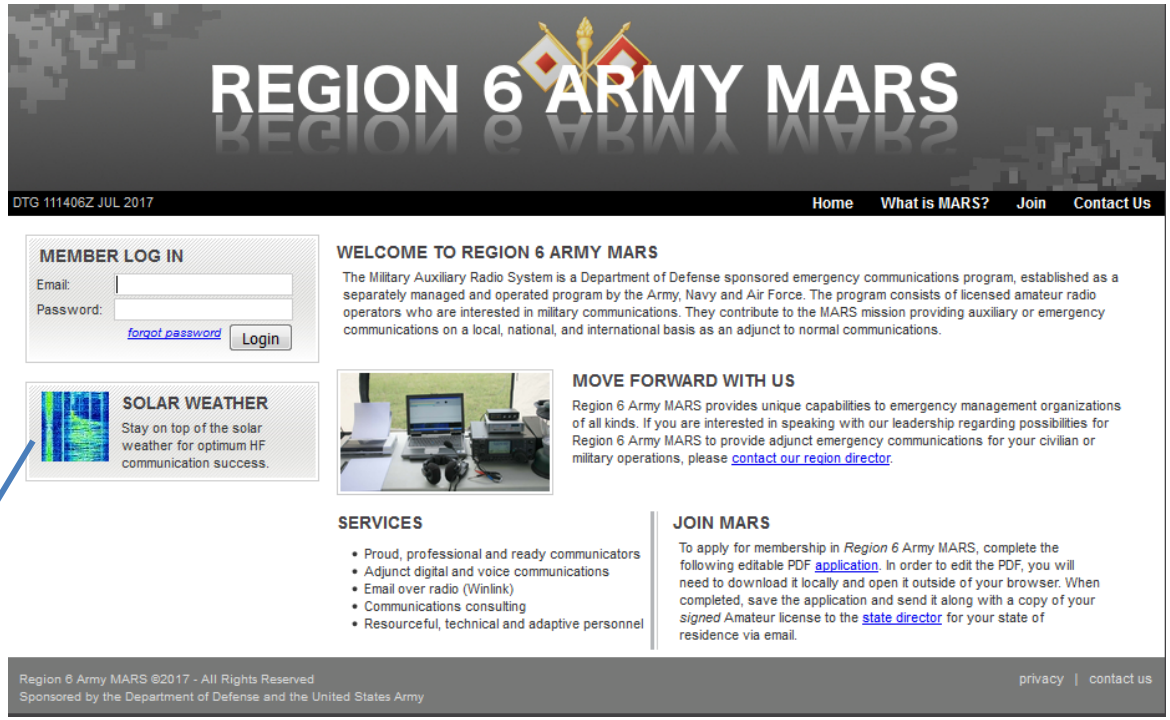
RadioHobbyist.org Blog

AtmosFEAR Regular (non space) Weather discussions

Current UTC time and date: 1226 02-07-2019

- X-Ray Flux
- A Index
- K Index
- Ionosphere
- Aurora
- Longwave
- foF2 and T Index → foF2 Trending charts for all US Ionosondes
- Skip Zone
- Solar Cycle
- Solar Map
- Geospace

Solar Weather Sites



Solar Weather

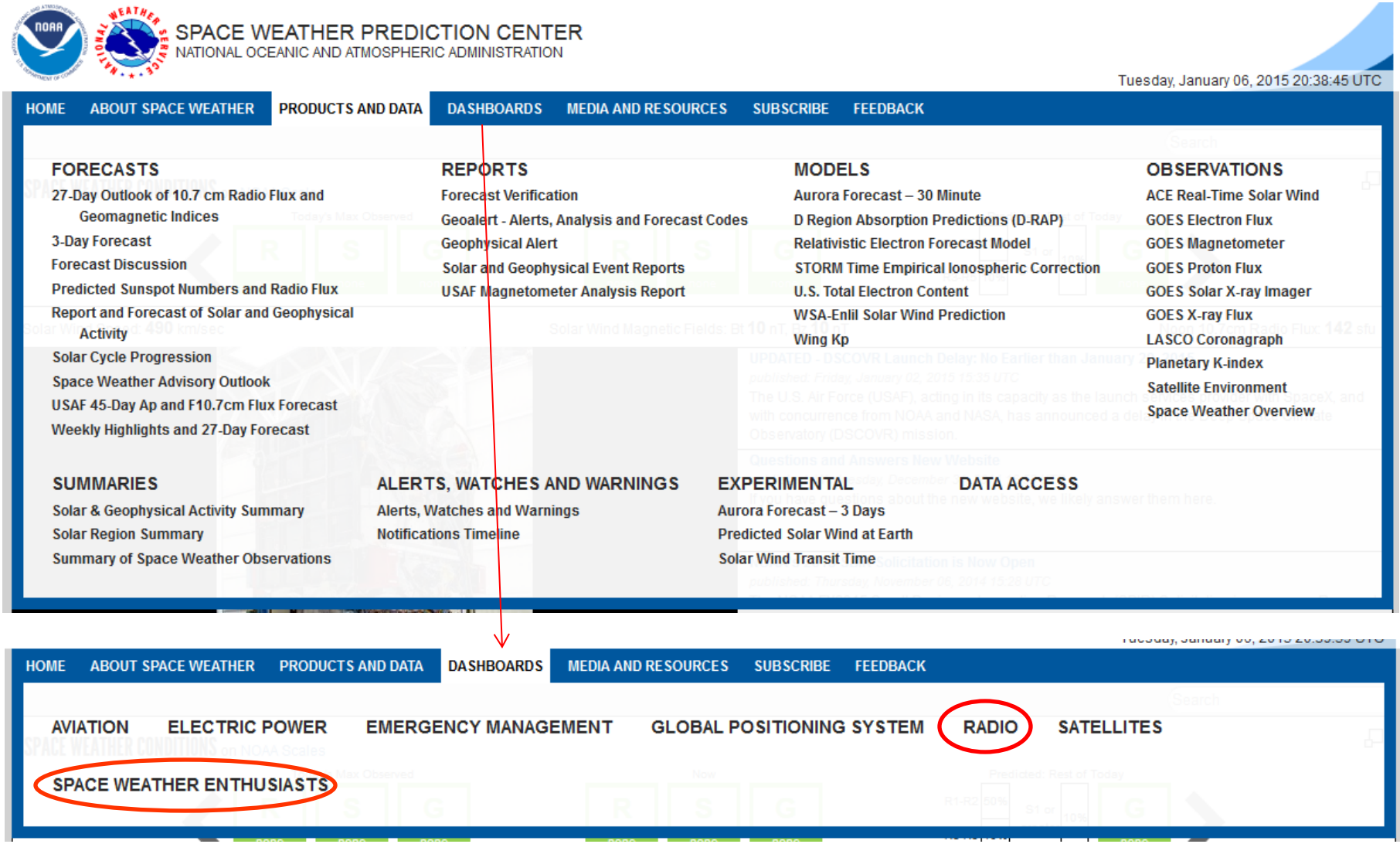
Texas Army MARS would like to thank the scientists and research teams at The University of Massachusetts Lowell Center for Atmospheric Research for providing this valuable resource allowing us to determine the critical frequency (foF2) and maximum usable frequency (MUF).

Other Solar Weather Links of Interest

- DIDBase - Select Station List then EGLIN then year/month/day/time for Ionosonde plot.
- NOAA Solar Weather - Solar Weather plots of Kp and X-Ray and other solar emissions.
- Solen Solar Weather - Good general solar forecast from an individual.
- Solar Ham - SolarHam provides real time solar news, as well as consolidated data from various sources.

NEW NOAA SPACE WEATHER SITE

http://www.swpc.noaa.gov/



DASHBOARD - RADIO