

## Figures and Captions

### Figure 1: Sol Breaking Bad

Composite image of the January 18<sup>th</sup>, 2026, X1.95 solar flare event in progress (left) followed by the CME (right). The bright specs are planets Venus, Mercury and Mars. Credits: NASA SWPC and NASA SDO.

### Figure 2: Geomagnetic Solar Storm Alert

Credit: NOAA SWPC.

### Figure 3: Solar Flare Induced HF/VLF SID January 18, 2026

Top: My newly built HamSCI Grape 1 receiver clone was up and running monitoring WWV's 15 MHz carrier when it detected the solar flare-induced SID. Bottom: Classic VLF shark fin SID. A unique shape created by two reflective processes: sudden D-region over-ionization then slow recombination of surplus ions and electrons. Credit: Stanford University SID Server.

### Figure 4: Solar Wind v. Earth and Parker spiral

Top: Solar wind interaction with Earth's magnetic field. Bottom: The Parker spiral (simplified). As the solar wind flows outward and Sol rotates, the IMF is wound into a three-dimensional spiral pattern. Credits: PMFIAS India and Wilcox Solar Observatory.

### Figure 5: Solar wind–magnetosphere–ionosphere coupling

Ionized plasmas are whispery and diffuse — invisible to our eyes but not electromagnetic energy. They drive a powerful system of electric currents that, during the peak of major geomagnetic storms, dissipates power equivalent to well over 100 billion joules-per-second (100 gigawatts)!

**Figure 6: Spectacular Aurora Borealis**

Beiji Village, China, January 20, 2026. Credit: Chi Shiyong/VCG via Getty Images.

**Figure 7: Kp Progression**

Kp progression from January 19 to January 21, 2026. Credit: Michael Theusner.

**Figure 8: CME Induced Doppler shifts (January 19 to 20, 2026)**

My heat map composite of CME-induced Doppler (frequency) shift and rate of change ( $df/dt$  in hertz per second) of WWV's 15 MHz carrier.

**Figure 9: Severe Solar Storm Radiation Alert**

Credit: NOAA SWPC.