

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS 01886**

March 24, 2025

Telephone: 617-715-5533

To: EDGES group

From: Alan E.E. Rogers

Subject: Times of strong emissions when the sun is more than 30 degrees below the horizon

The occurrence of strong emissions from the sun on days 50 and 52 of 2025 are reported in memo 472 were found to continue on days 53 to 58.

Figure 1 shows the EDGES-3 spectra from the WA in one hour blocks with 5 loglog polynomial terms removed for days 50 to 58 from 13 – 19 UT when the sun is more than 30 degrees below the horizon.

It is noted that the strength of the peak at about 62.5 MHz is about 20 K on day 50 drops down to about a maximum of about 10 K and drops to lower levels of a few K on other days. The bump at about 62.5 MHz is gone on day 51 and is gone at 15 and 16 UT on day 57.

The spectra from EDGES-3 in the WA averaged over the time when the sun rises from -20 degrees to the horizon each day from day 40 to day 79 are shown in Figure 2. This shows the very strong emissions also exist at sun elevation from -20 degrees to the horizon along with much weaker peak at 62.5 MHz already studied in memos 451, 452, 453, 454 and 456.

Figure 3 extends the plot of the amplitude of the 65 MHz feature in figure 5 of memo 456 starting at day 140 of 2024 and ending at day 79 of 2025 in the day count of 2024 with time scale marked in steps of 25 days to help show a possible correlation with solar rotation. Bare in mind that the emissions are probably from several active regions so that there may be more than one peak a block of 25 days. The very strong “ducting” peaks in figure 2 are excluded from the plot in figure 3 since they are the result of a different propagation path from the sun as described in memo 472.

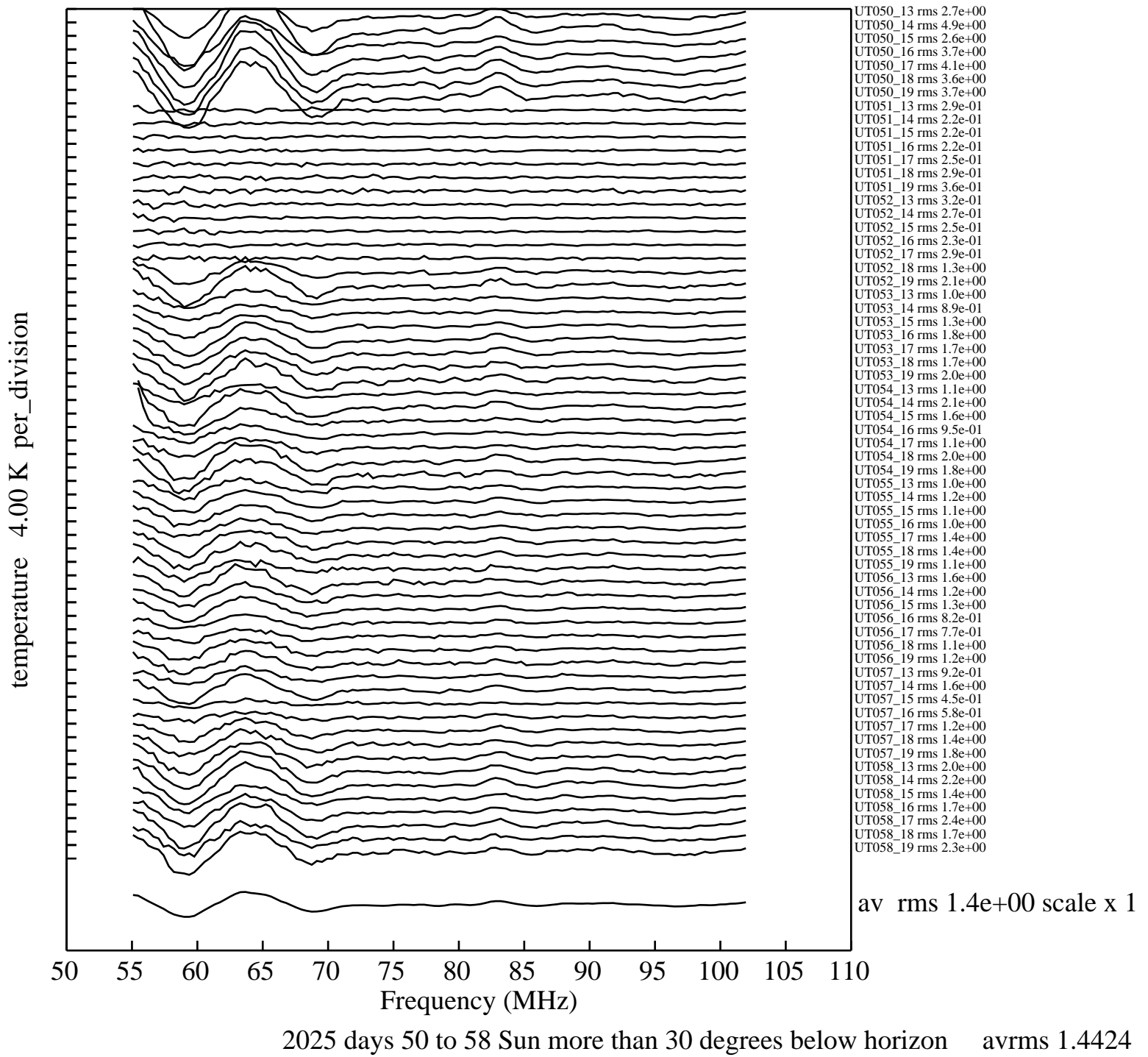
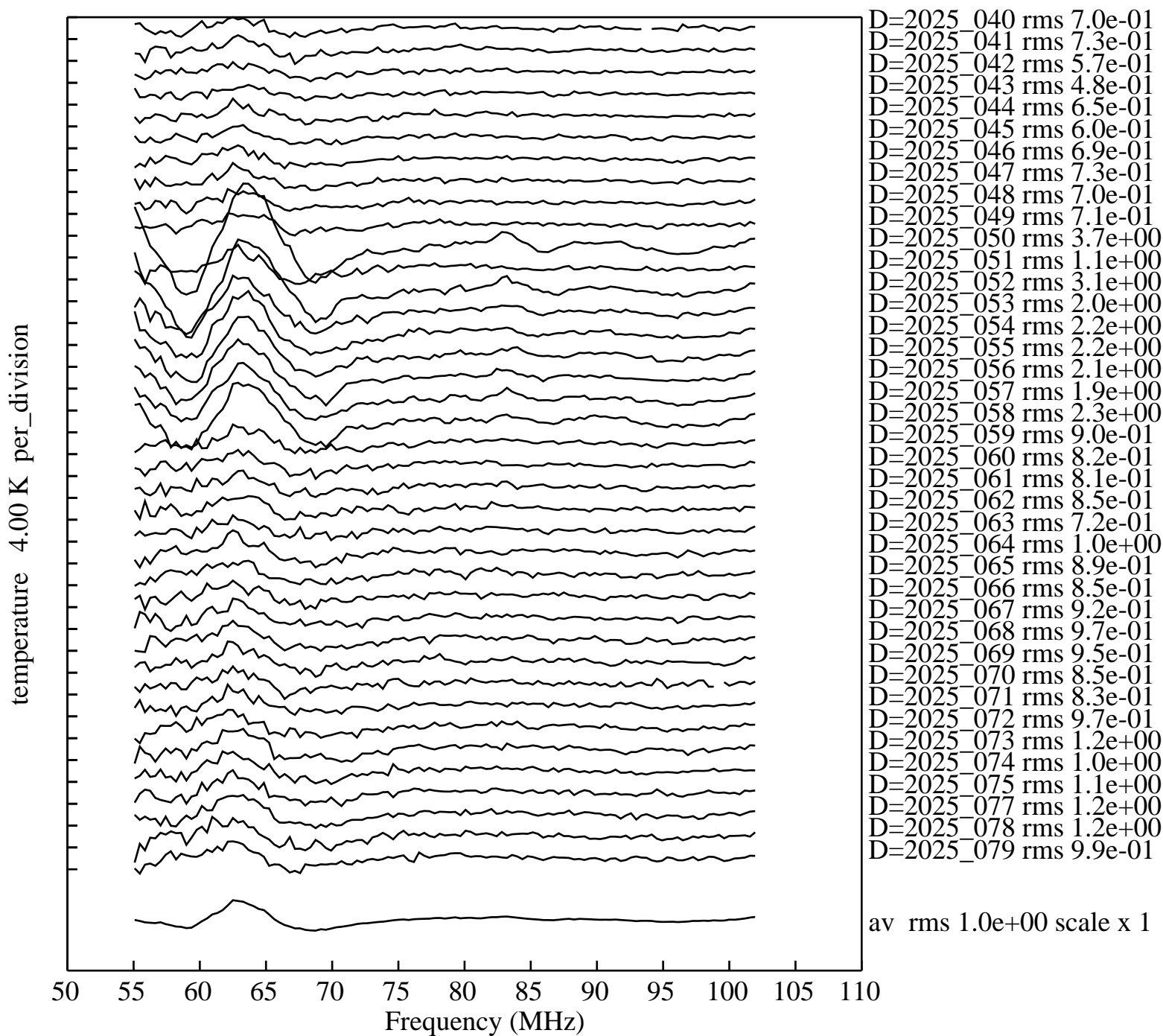


Figure 1. Spectra from EDGES-3 at the WA with 5-terms removed in one hour blocks



avrms 1.1838

Figure 2. Spectra averaged over each day as sun rises from -20 deg to horizon with 5-terms removed

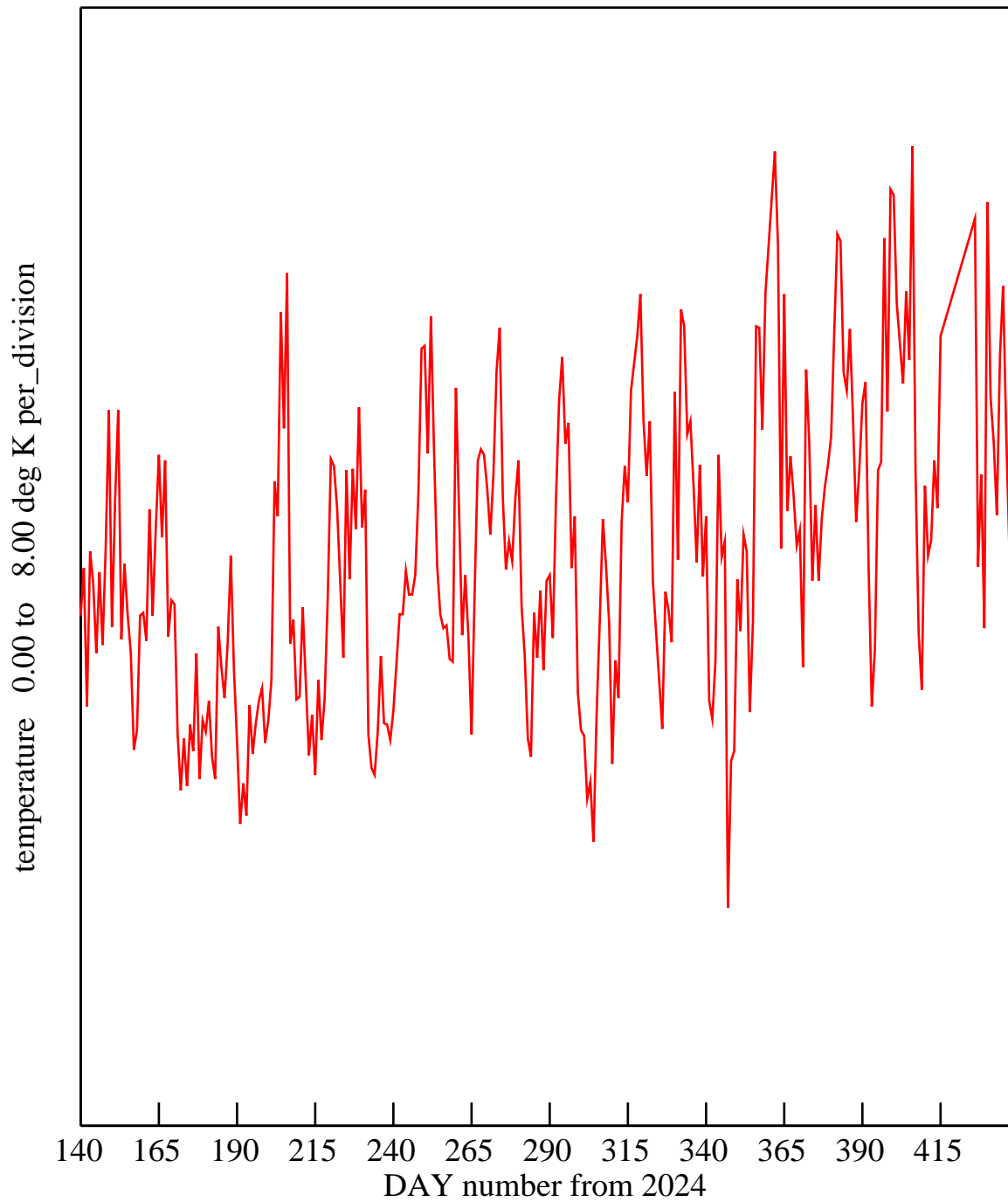


Figure 3. Plot of amplitude of 65 MHz feature averaged over the sun's elevation from -20 to 0 degrees each day from 2024 day 140 to 2025 day 79