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September 23, 2025

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To: EDGES group

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Subject: Solar emissions at 65 MHz from 2022 day 60 to 2025 day 250

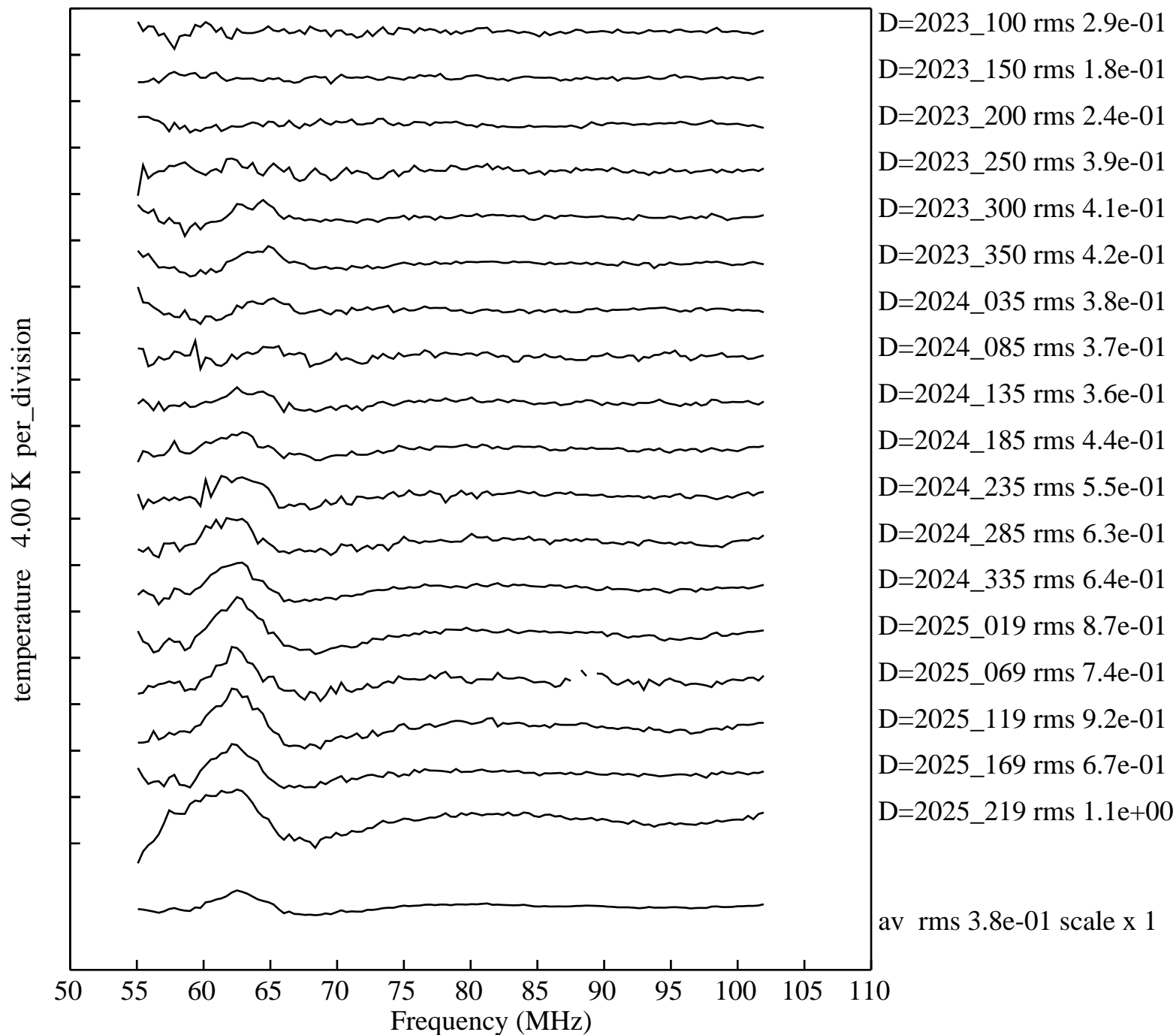
In order to avoid the effect of solar emissions on the EDGES 21-cm data, which is discussed in memos 439,450,451,452,453,454,455,456,467,472,474,477 and 478, the data is limited to the sun elevation of -20 or -30 degrees. The correlation of this emission with the sun's rotation period of about 25 days is shown in figure 5 of memo 456 and figure 3 of memo 474. Bear in mind that the variation with the sun's rotation is complex because if there is more than one active region on the sun more than one peak can occur in the solar rotation period.

Figure 1 of memo 467 shows the increased in the emission in compared with what was seen on the same days a year earlier in figure 2. The signal at 65 MHz is fairly consistent from day to day when averaged over the sun elevation of -20 to 0 degrees. When the sun is well above the horizon there are emissions like the those shown in figures 1 and 2 of memo 451 and in figures 1,2 and 3 of memo 455 which are very much stronger presumably because these are coming directly from the sun rather than via refraction as discussed in memo 449. There are also occasional cases like those discussed in memos 472 and 474 when strong signals at 65 MHz are detected by EDGES when the sun is more than 30 degrees below the horizon. These signals are probably the result of yet another propagation mode like added distance around the earth by sporadic reflections from E or F layers or ducting via lower layers in the ionosphere.

While the EDGES beam is very broad the claim, at least in cases of the strong emissions seen by EDGES, are coming from the sun can be strengthened by checking the times of the emissions seen in the EDGES data is also seen in the data from e-callisto whose beam is pointed at the sun. A statistical comparisons of the EDGES data with the solar emissions detected by the e-callisto ASSA site near Adelaide Australia is discussed in memo 467.

A more detailed check is needed on the comparison of the data seen by EDGES, the data reported by Grigg et al. in "The growing impact of unintended Starlink broadband emission on radio astronomy in the SKA-Low frequency range" A&A, 699, A307 (2025) and the data from the e-callisto ASSA site in Australia.

Another view of the time dependence of the emissions thought to be from the sun in the EDGES-3 data from the WA at 65 MHz is plotted in Figure 1 for every 50th day from 2023 day 100 to 2025 day 219 averaged over the sun's elevation from the horizon to -20 degrees with 5-terms removed shows the trend consistent with the increase expected the rise in the activity in solar cycle 25.



avrms 0.5325

Figure 1. EDGES-3 data from the WA averaged over the sun's elevation from the horizon to -20 degrees