LoCo Lab EDGES Memo 175
Preliminary Analysis of Mid-Band Data from Feb to Apr 2020

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1 Description

Here we show residuals for Mid-Band data from February to April 2020; specifically days 057 to 097, except days 075 to 078.

We used the receiver calibration parameters from January 2018. For antenna S11, whenever possible we used the measurement taken on the same day as the sky spectra. If the S11 from the same day was not available, we used the closest measurement.

After calibration and RFI cleanning, we averaged the data across days. We did not include in the averages data for which the ambient humidity was above 40%. We did not apply cuts based on Sun/Moon elevation.

We first binned the data into GHA bins of 0.5 hrs. We then binned into GHA bins of 2 hrs and 4hrs.

We modeled the spectra using the LinLog model with 4 or 5 terms.

2 Figures

Two main types of figures are presented: figures that show data from GHA=0 to 24 hrs, and figures that show data from GHA=6 to 18 hrs. The second set of figures (with numbers between parenthesis below) show in more detail the features of the data from low-foreground regions.

- Figure 1 (6): residuals in the range 60-120 MHz to 5-term LinLog model for data 'without' beam correction averaged every 0.5 hr.
- Figure 2 (7): residuals in the range 60-120 MHz to 5-term LinLog model for data 'with' beam correction averaged every 0.5 hr.
- Figure 3 (8): residuals in the range 63-117 MHz to 5-term LinLog model for data with beam correction averaged every 0.5 hr.
- Figure 4 (9): residuals in the range 63-87 MHz to 4-term LinLog model for data with beam correction averaged every 0.5 hr.
- Figure 5 (10): residuals in the range 75-117 MHz to 4-term LinLog model for data with beam correction averaged every 0.5 hr.
- Figure 11: residuals in the range 63-117 MHz to 5-term LinLog model for data with beam correction averaged every 2 hr.
- Figure 12: residuals in the range 63-117 MHz to 5-term LinLog model for data with beam correction averaged every 4 hr.

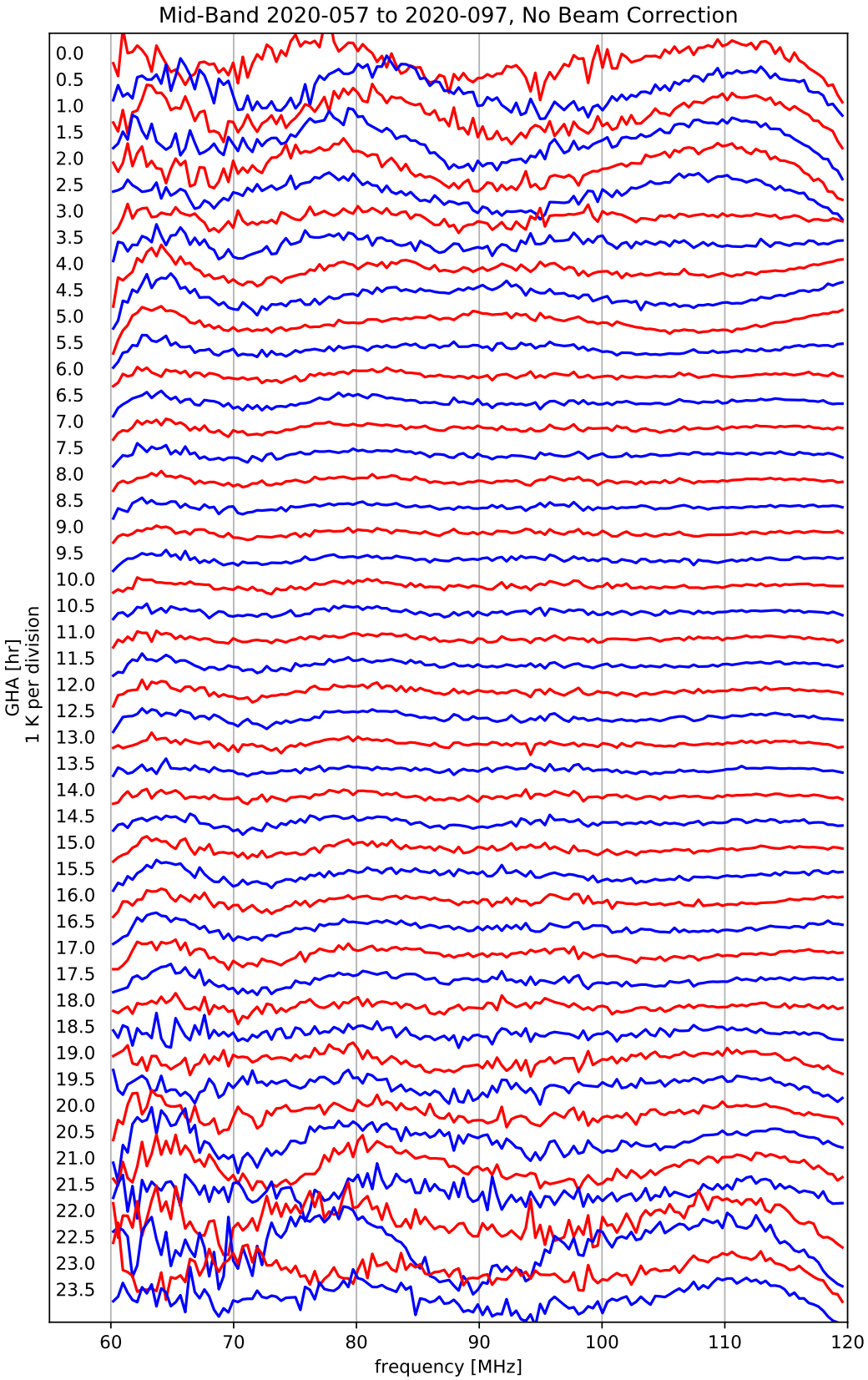

Figure 1: GHA=0-24 hr. Residuals in the range 60-120 MHz to 5-term LinLog model for data 'without' beam correction averaged every 0.5 hr.

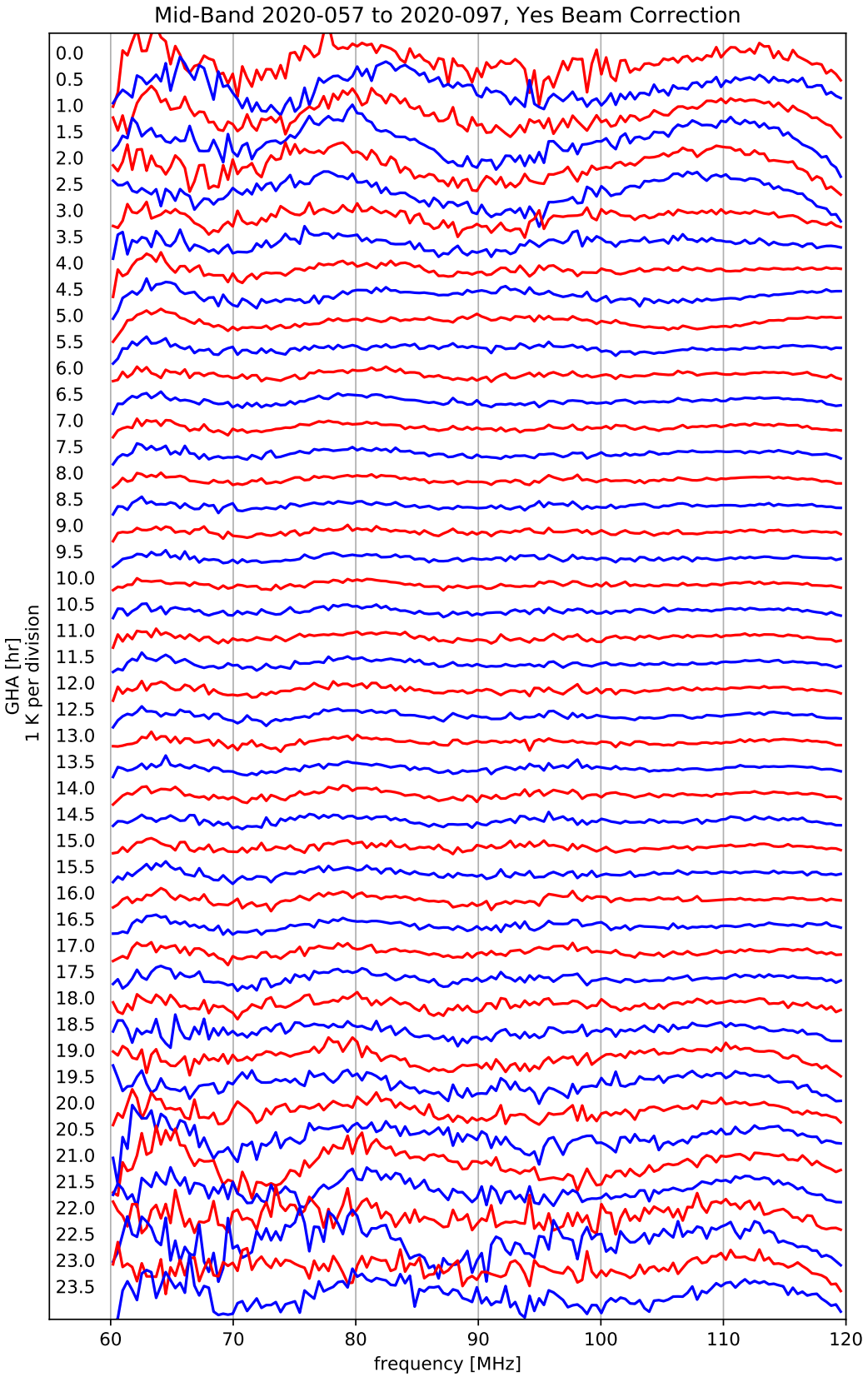

Figure 2: GHA=0-24 hr. Residuals in the range 60-120 MHz to 5-term LinLog model for data 'with' beam correction averaged every 0.5 hr.

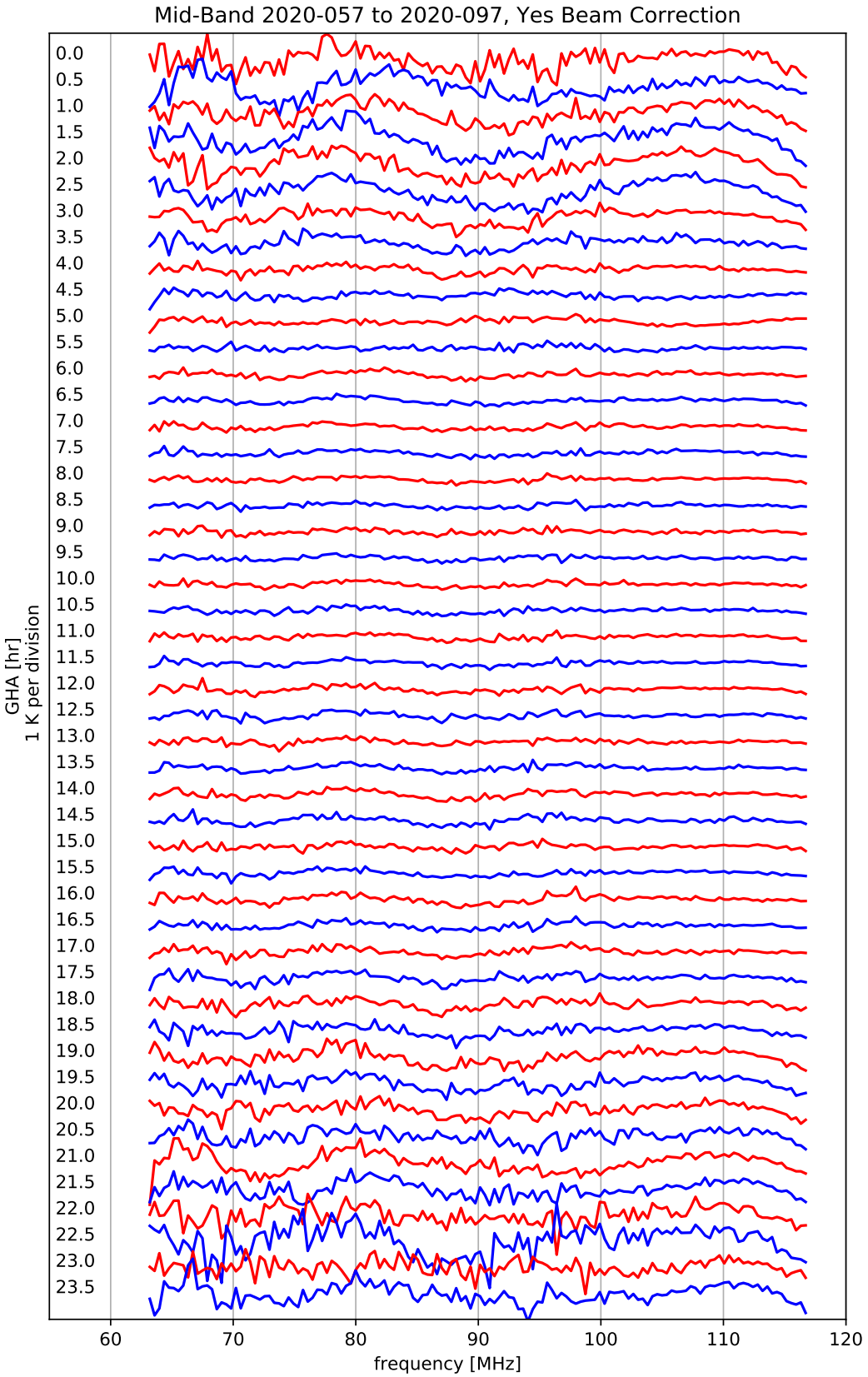

Figure 3: GHA=0-24 hr. Residuals in the range 63-117 MHz to 5-term LinLog model for data with beam correction averaged every 0.5 hr.

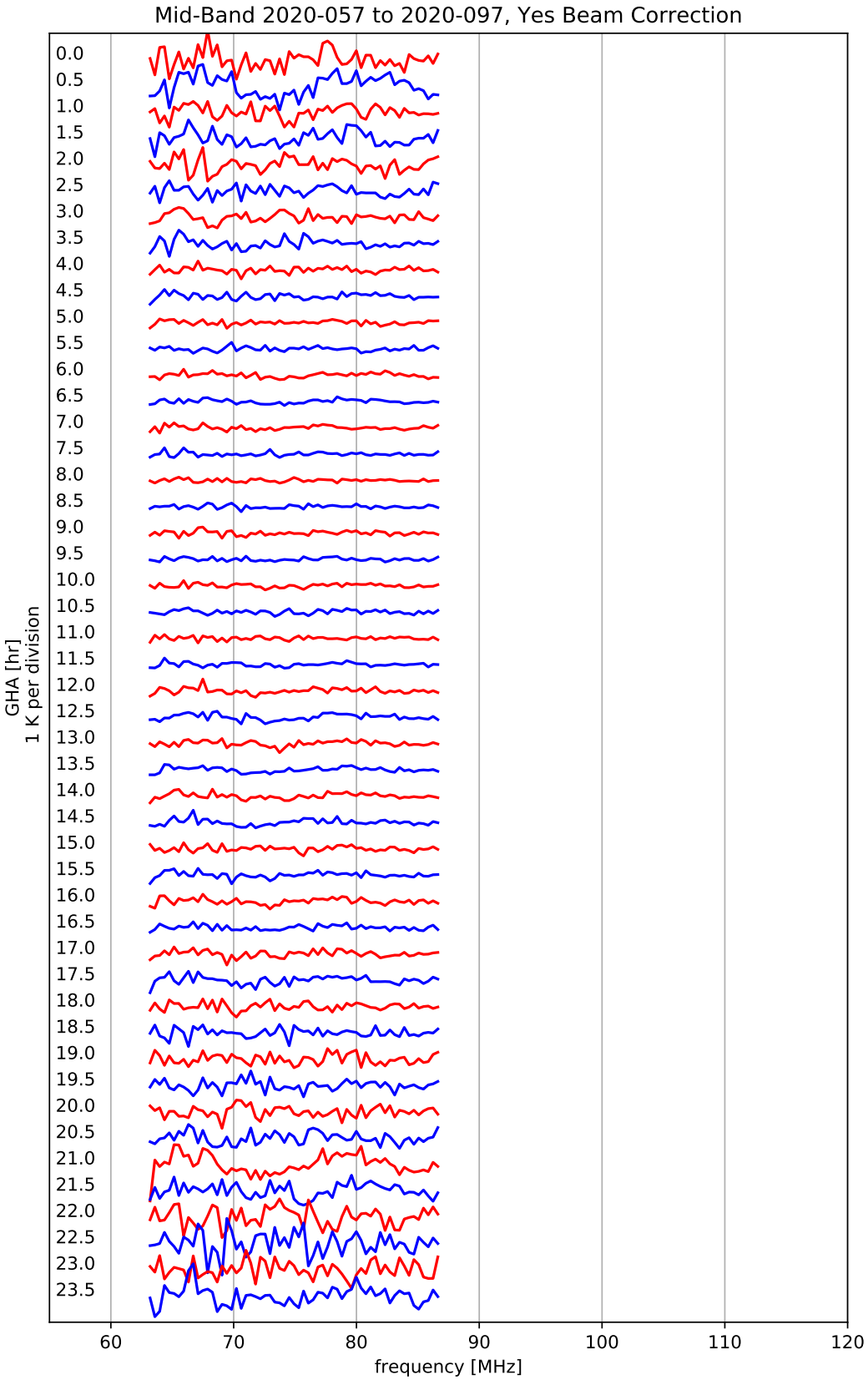

Figure 4: GHA=0-24 hr. Residuals in the range 63-87 MHz to 4-term LinLog model for data with beam correction averaged every 0.5 hr.

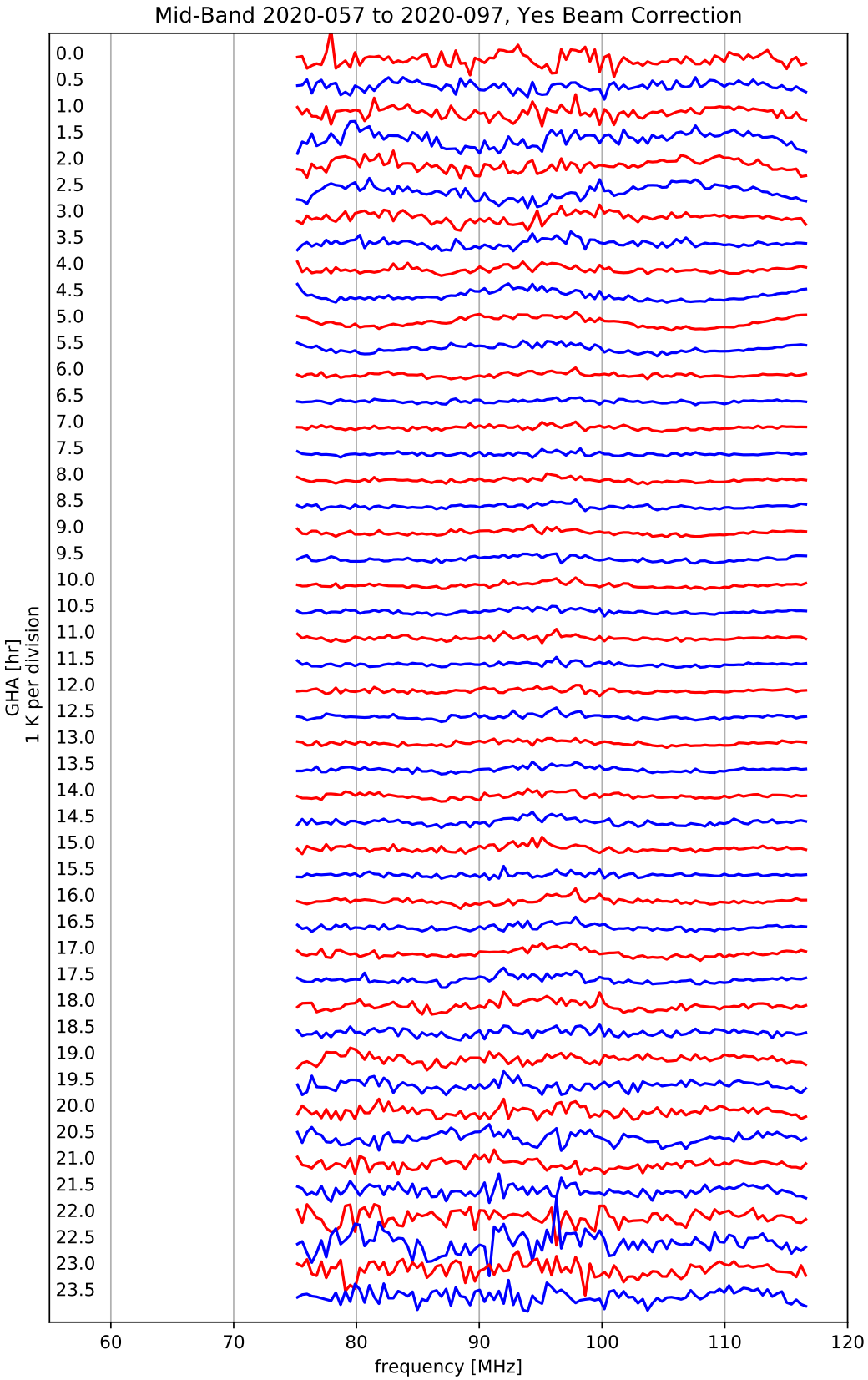

Figure 5: GHA=0-24 hr. Residuals in the range 75-117 MHz to 4-term LinLog model for data with beam correction averaged every 0.5 hr.

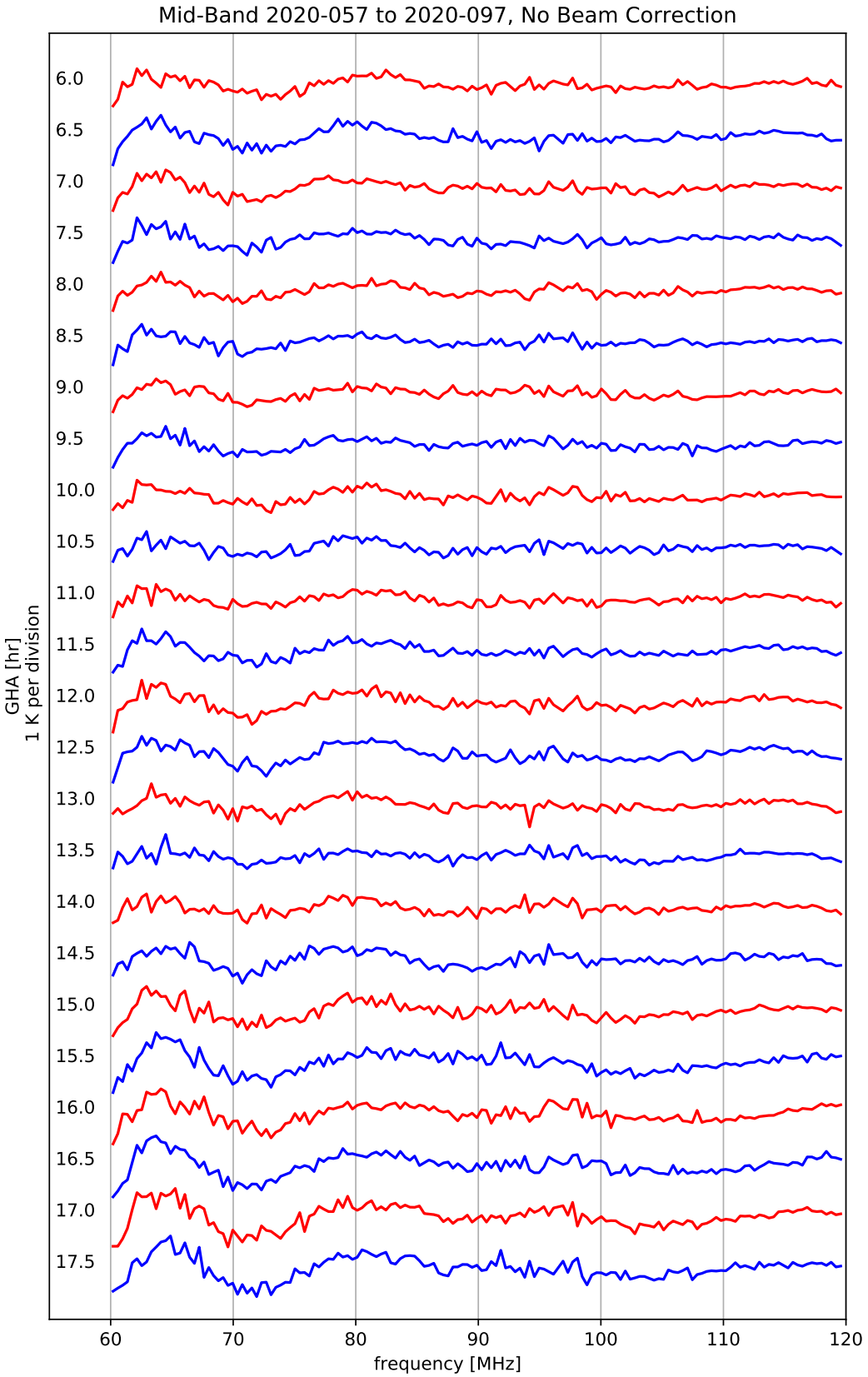

Figure 6: GHA=6-18 hr. Residuals in the range 60-120 MHz to 5-term LinLog model for data 'without' beam correction averaged every 0.5 hr.

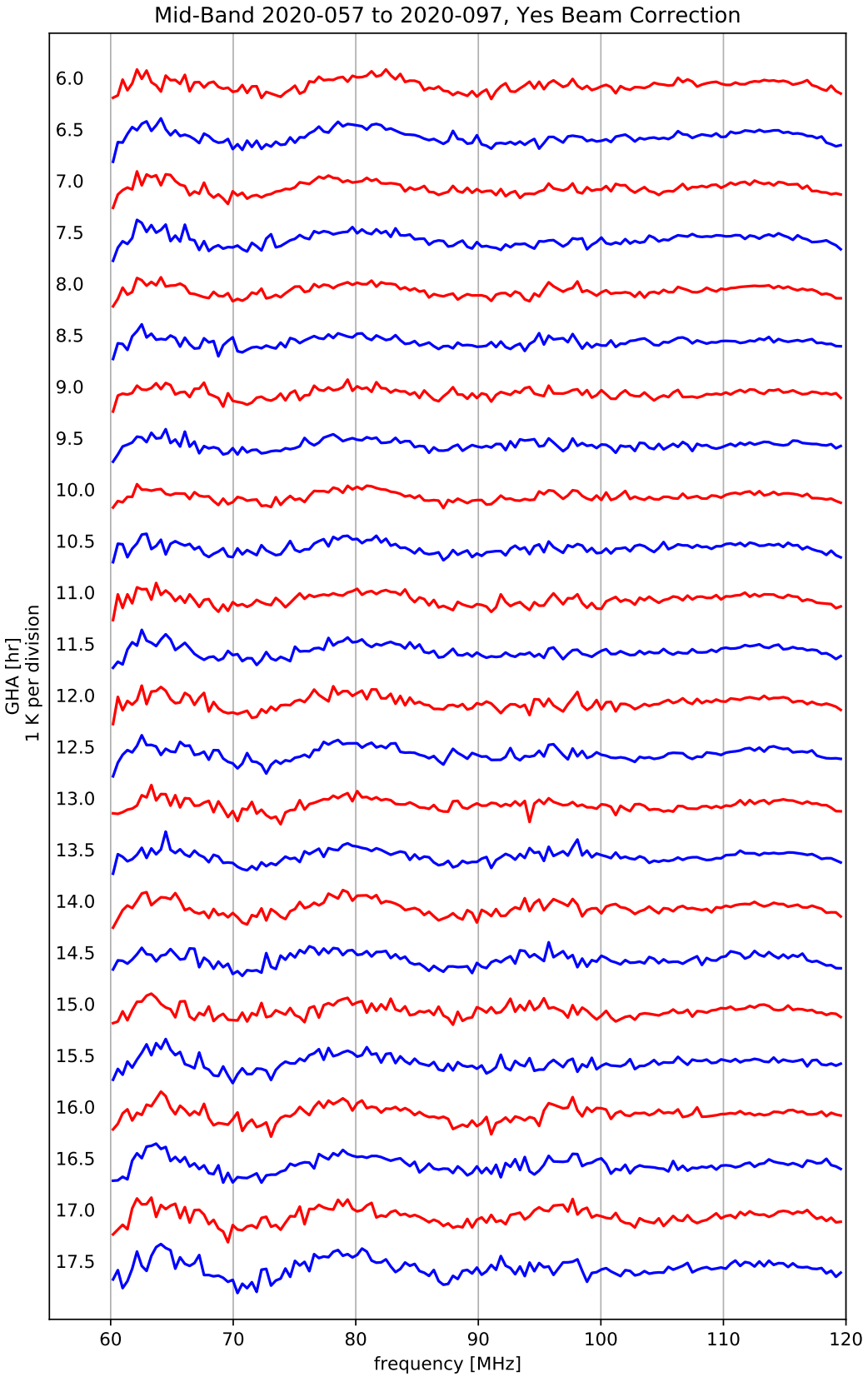

Figure 7: GHA=6-18 hr. Residuals in the range 60-120 MHz to 5-term LinLog model for data 'with' beam correction averaged every 0.5 hr.

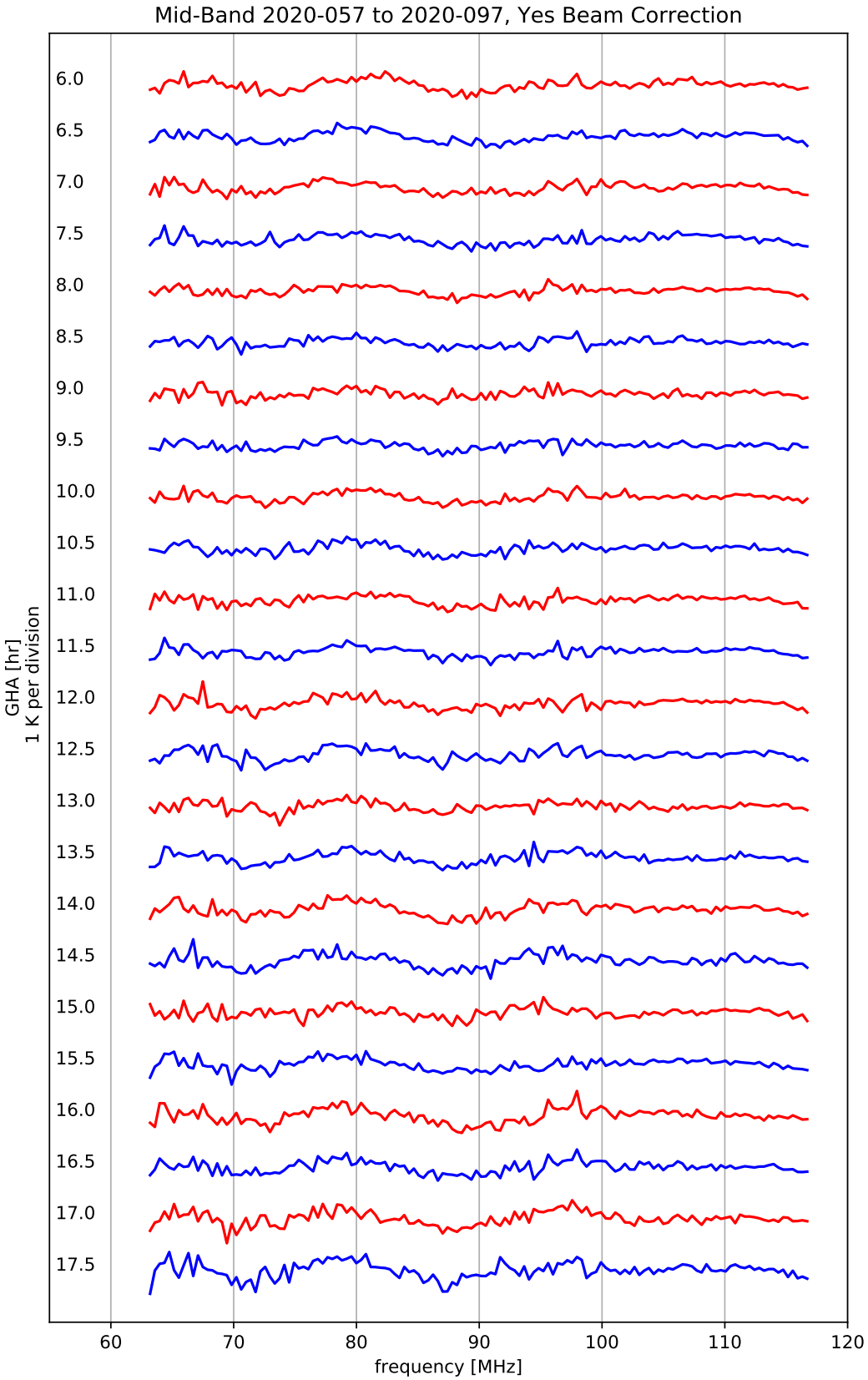

Figure 8: GHA=6-18 hr. Residuals in the range 63-117 MHz to 5-term LinLog model for data with beam correction averaged every 0.5 hr.

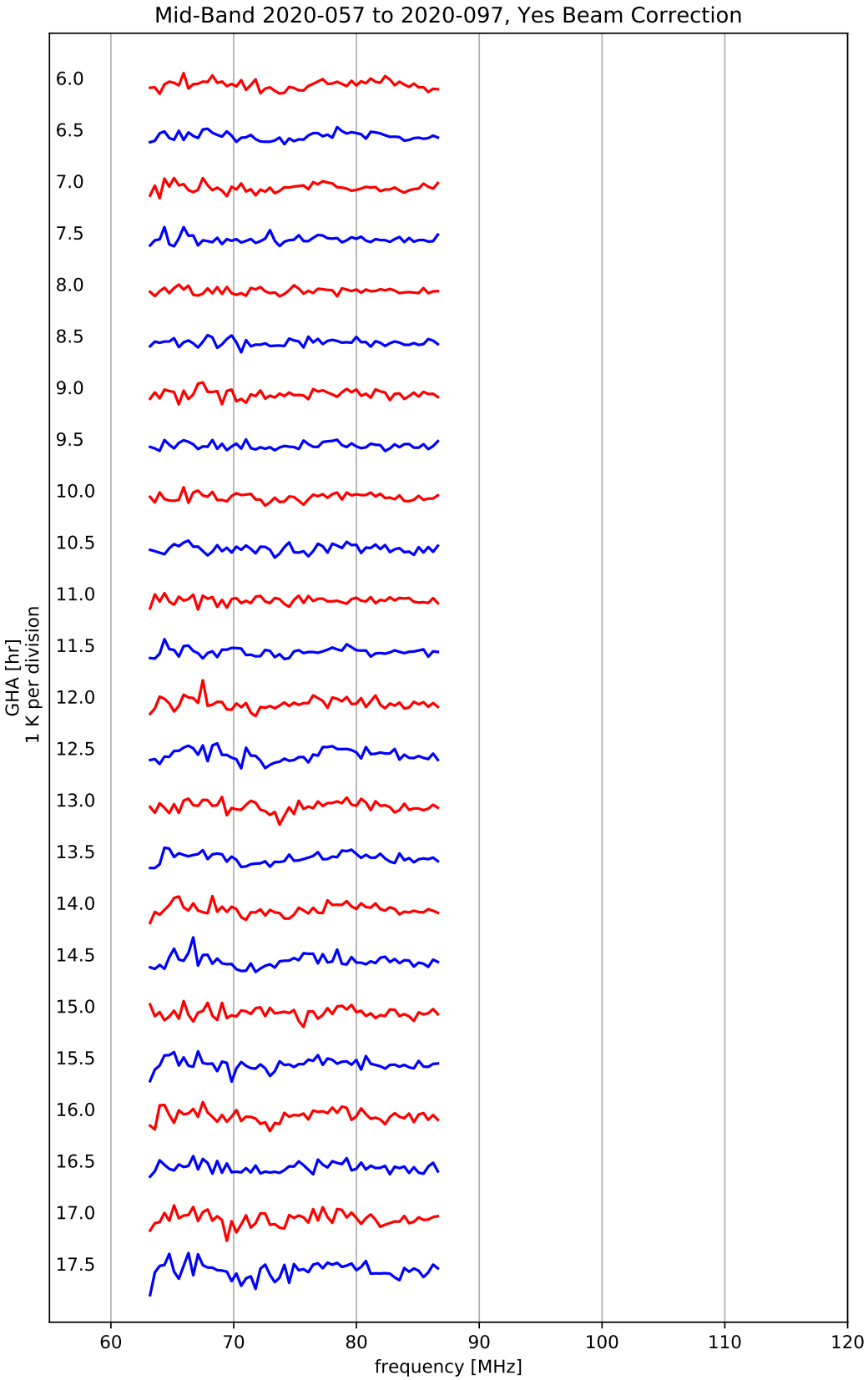

Figure 9: GHA=6-18 hr. Residuals in the range 63-87 MHz to 4-term LinLog model for data with beam correction averaged every 0.5 hr.

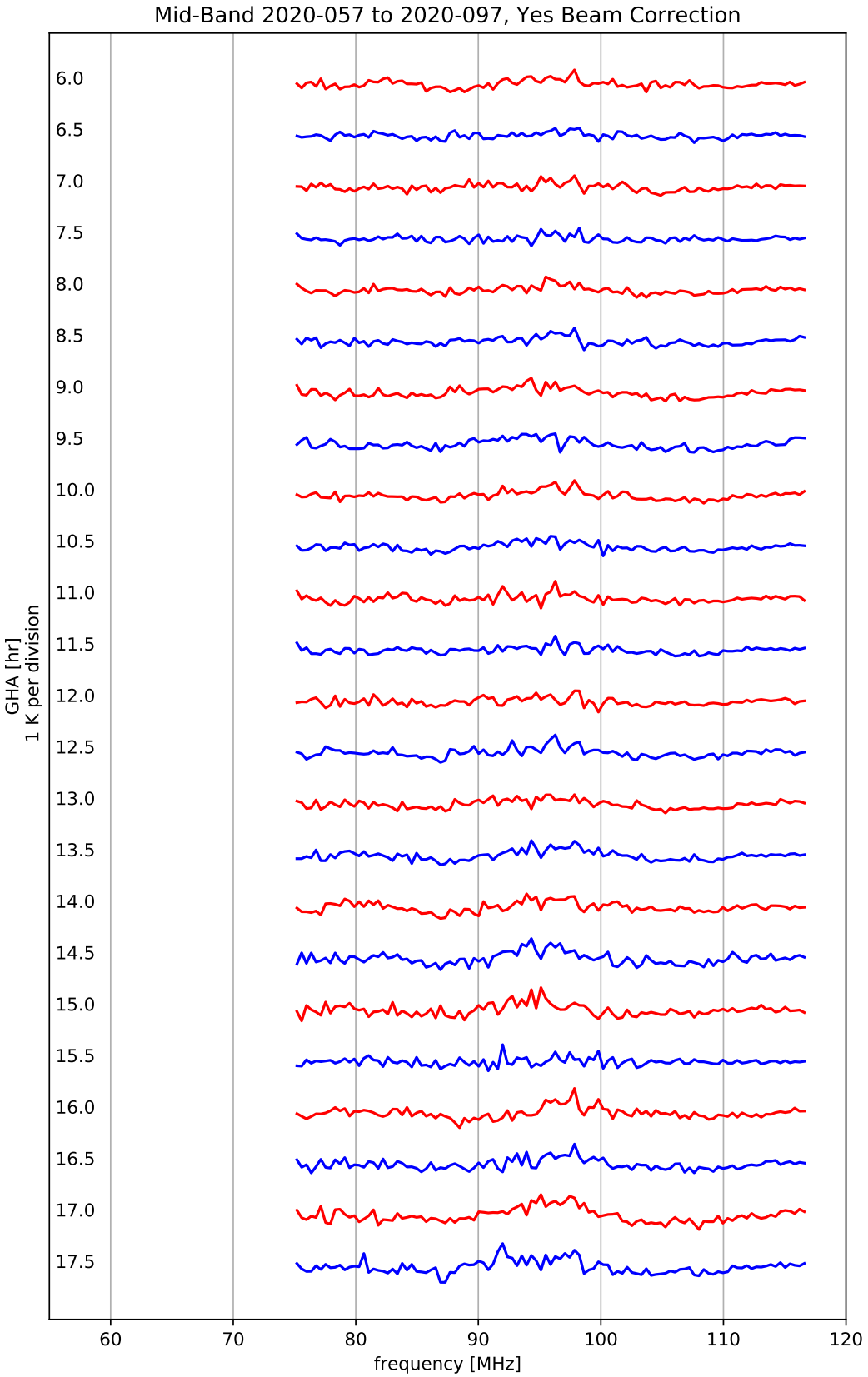

Figure 10: GHA=6-18 hr. Residuals in the range 75-117 MHz to 4-term LinLog model for data with beam correction averaged every 0.5 hr.

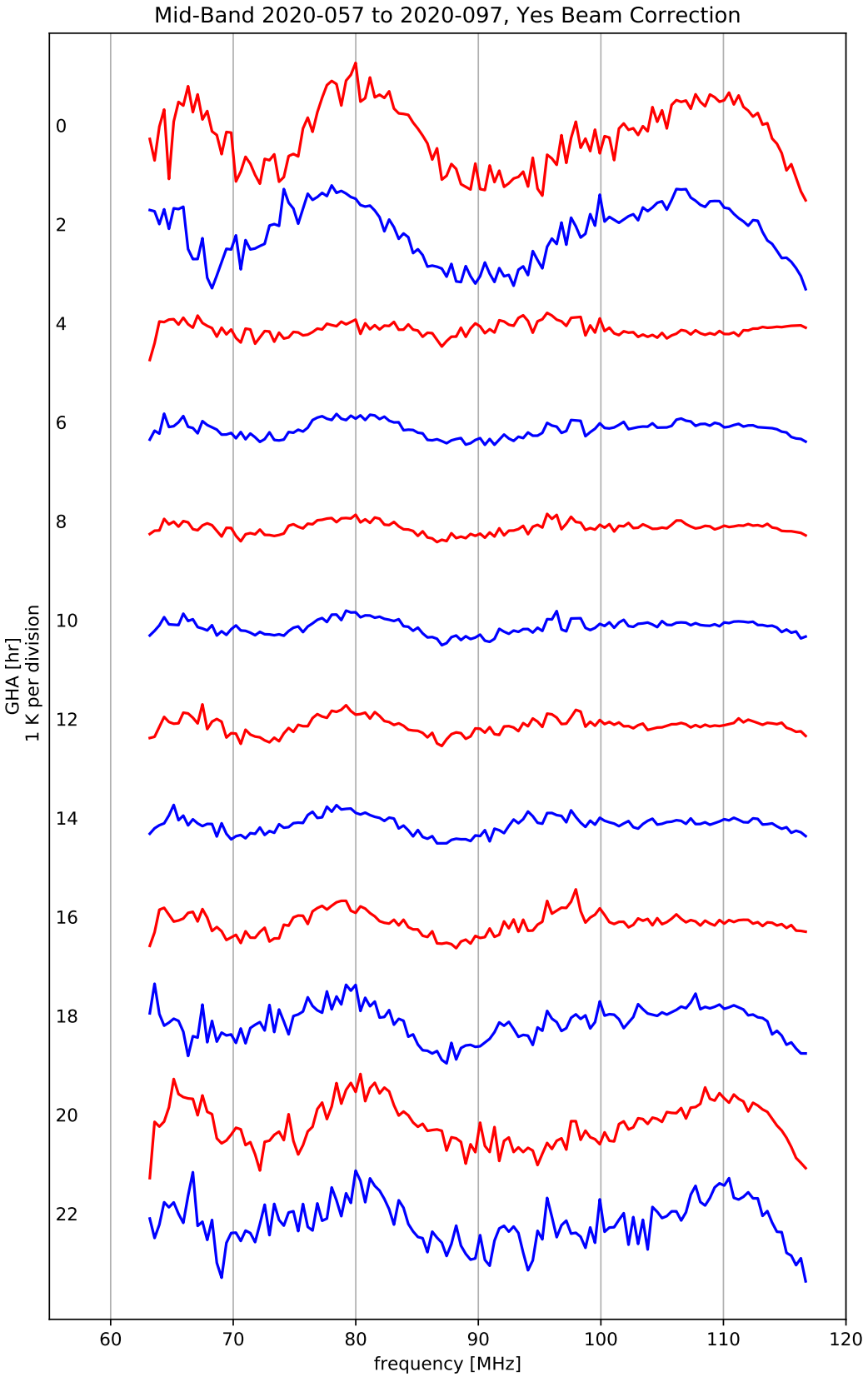

Figure 11: GHA=0-24 hr. Residuals in the range 63-117 MHz to 5-term LinLog model for data with beam correction averaged every 2 hr.

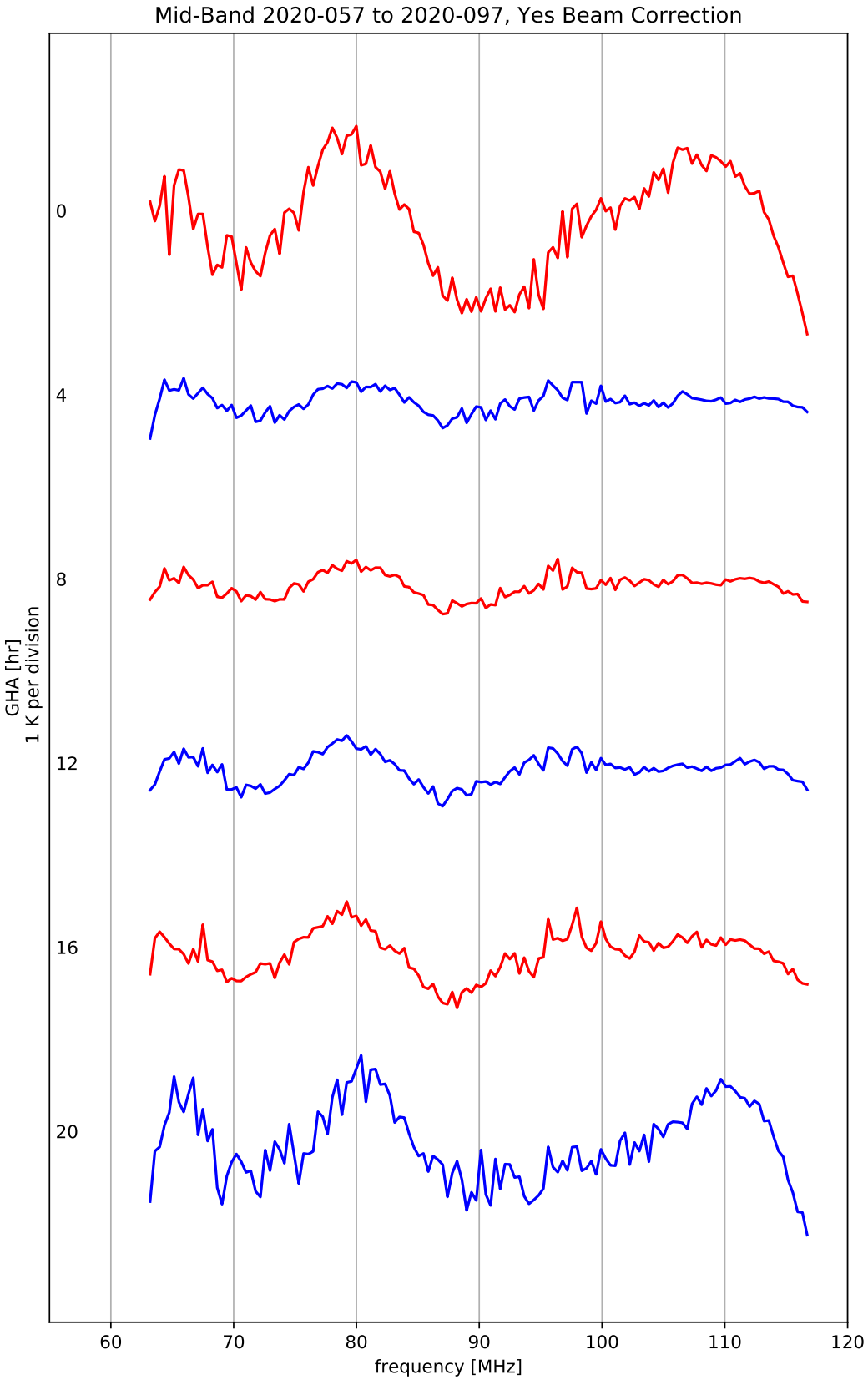

Figure 12: GHA=0-24 hr. Residuals in the range 63-117 MHz to 5-term LinLog model for data with beam correction averaged every 4 hr.