

The manuscript presents an assessment of the radio-frequency interference (RFI) environment across a wide range of microwave frequencies. To this end, the authors introduce a new tool for the identification of RFI contamination, evaluate its performance through comparison with a reference model, and assess the current status of the RFI environment in different frequency bands using approximately one year of observations from four different instruments operating between 6 and 200 GHz.

The manuscript is generally well written, and the topic is timely and relevant. In addition, the authors report previously unidentified sources of RFI contamination, which makes the study valuable for the community. Therefore, I believe the work deserves publication.

Unfortunately, I was not one of the previous reviewers of the manuscript. However, I have read both the previous comments and the authors' responses, and I consider that the authors have addressed most of the reviewers' concerns, at least to a reasonable extent.

During my review, I identified some additional comments that the authors may wish to consider if they believe these suggestions could help improve the final version of the manuscript.

Apart from these comments, I believe the manuscript is suitable for publication.

Minor comments:

Line 9 (L9): "for validation".

L132: Include a space between "if" and "TB".

L133: I suggest replacing "Applied to all instruments." with "We apply this detection algorithm to all assessed instruments." A similar revision could be applied to the descriptions of the other filters in order to improve the semantic consistency of the text.

General comment on "RFI Detection techniques" section: I feel that some methodological details are missing in the description of the algorithms, probably because these methods already exist in the literature. Nevertheless, it would be useful either to provide references where these methods are described in more detail or to include a brief explanation of some aspects of the methodology. For example:

- 1) Why is there a need to introduce a latitudinal dependence in the definition of some thresholds?
- 2) In the image-enhancement method, why were these specific values selected for the convolution matrix instead of other possible choices?

L162: Define "Pfa" immediately after "False Alarm Probability".

L203: Please define "erfc".

Figure 2: Please indicate the corresponding color bar. The same comment applies to Figures 3a and 4.

L215: I believe that, with the equation: “ $g(y_1) = \max_x f_X(x_1, y_1)$ ” the authors actually mean something closer to: “ $\bar{g}(y_1) = \{x : f_X(x, y_1) \text{ is maximum}\}$ ”. In other words, my interpretation is that the difference between Figures 2 and 3a is that Figure 3a removes the brightness temperature corresponding to the maximum probability for each fixed latitude, rather than removing the maximum probability itself.

L216: “x1” should probably be written as a subscript.

Figure 3a: Should the x-axis label correspond to latitude?

Figure 3b: This figure is somewhat confusing to me. If the integration is performed along the x-axis of Figure 3a, the result should be a 1-D histogram rather than a probability distribution function. The probability distribution would be obtained after accumulating the histogram values. As currently presented, my interpretation is that Figure 3b shows a normalized version of the integrated occurrences of the 2-D histogram in Figure 3a as a function of latitude. I would suggest rotating the plot and placing (ΔTB) on the x-axis. Then, above Figure 3b, the actual cumulative probability function derived from the 1-D histogram could also be included.

Figure 4: The different green lines are difficult to distinguish. Please consider using different colors or line styles.

Figure 5: The figure is difficult to interpret clearly. I understand that the authors likely attempted to find the best way to illustrate the results. One possible alternative could be to merge all panels into a single larger map using different monochromatic color scales for each frequency band. For example, in Python, one could use red shades for 6.9 GHz, green for 7.3 GHz, blue for 10.7 GHz, purple and grey for the remaining bands, while masking regions with no detected RFI in white. In regions where overlaps occur, zoomed-in panels at different frequencies could be added (similar to what is already shown in Figure 7).

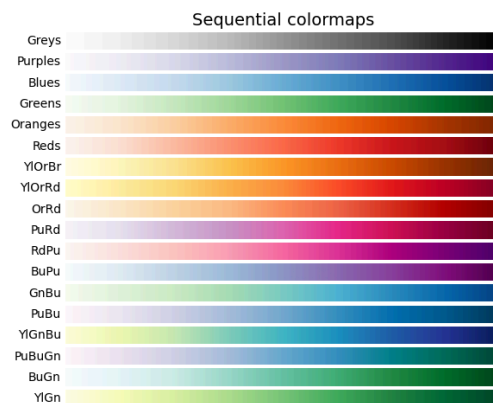


Figure 6: Similar comment as for Figure 5. Additionally, what happens in Figure 6a? Does it correspond to a different spatial coverage?

L307: The publication year is missing in the citation "(Wentz et al.)".

I believe that separating Figure 8, Table 3, and the discussion in lines 302–320 into a dedicated subsection (e.g., "4.1 Case Study at 23.8 GHz") could strengthen the manuscript by highlighting the importance of this result, particularly since this appears to be the first report of RFI contamination at frequencies that will become increasingly relevant for 5G telecommunications.

Figure 9: Please place the first color bar before the second panel of the figure.

L406: Include a space in "coastlines.Regardless".

My final comment concerns the overall structure of the manuscript. In my opinion, it might make more sense to place the validation section (currently Section 5) before the main results sections (Sections 3 and 4). In fact, Sections 3 and 4 could potentially be merged into a single "Results" section with two subsections, for example:

- 4.1 General assessment of the RFI environment
- 4.2 Specific case study of the 5G-related band