

Antab Editor

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1 Introduction

Antab editor is a program to help identify and fix problems with ANTAB files generated by stations. This document will walk you through the basic uses of antab editor.

2 How to start

Antab editor is installed in a conda environment for user pipe on the archive machine, jop83. To activate this environment in a bash shell use these commands:

```
/home/pipe> bash  
pipe@jop83:~> source /jop83_0/pipe/in/miniconda3/bin/activate antab
```

Antab editor will look for its input files in the current directory. So go to the directory with the stations' ANTAB files and start the program from there. For example:

```
(antab) pipe@jop83:~> cd $IN/marcote/n20c2  
(antab) pipe@jop83:/jop83_0/pipe/in/marcote/n20c2> antab_editor.py
```

3 Input and output files

By default, antab editor will get the experiment name from the current directory, but it can also be given as a command line argument. See `antab_editor.py -h` for all command line arguments. The first input file read will be the VEX file, antab editor will look in the current directory for the file named `<experiment>.vix`.

On the first start-up of antab editor for an experiment, it will read in all FITS files for that experiment and save the relevant data in the file `fits_cache.editor`. This might take a few minutes, but the next time you start antab editor, the cache file will be used, which is much faster.

The final files read are the ANTAB files, for each station in the VEX file, antab editor will look for the ANTAB file in the current directory with the file name `<experiment><station>.antabfs`. However, any intermediate progress made on editing the ANTAB files will be saved in the file `<experiment><station>.editor`. If this file exists, it will be read instead of the `.antabfs` file. So if you want to reset any editing on the ANTAB file for a particular station, just remove the corresponding `.editor` file.

The final result of antab editor will be the ANTAB file with all stations in it, this will be saved to `<experiment>.antab`.

4 The GUI

Figure 1 shows the initial window. Note the tabs at the top of the window: Overview, Polys and one tab for each station. These tabs will be discussed in reversed order below.

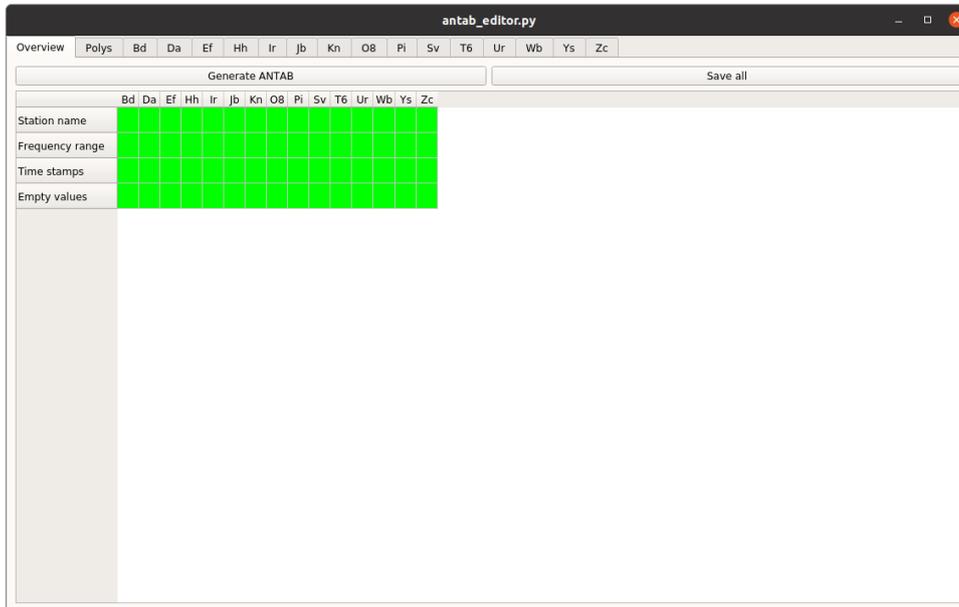


Figure 1: Initial window

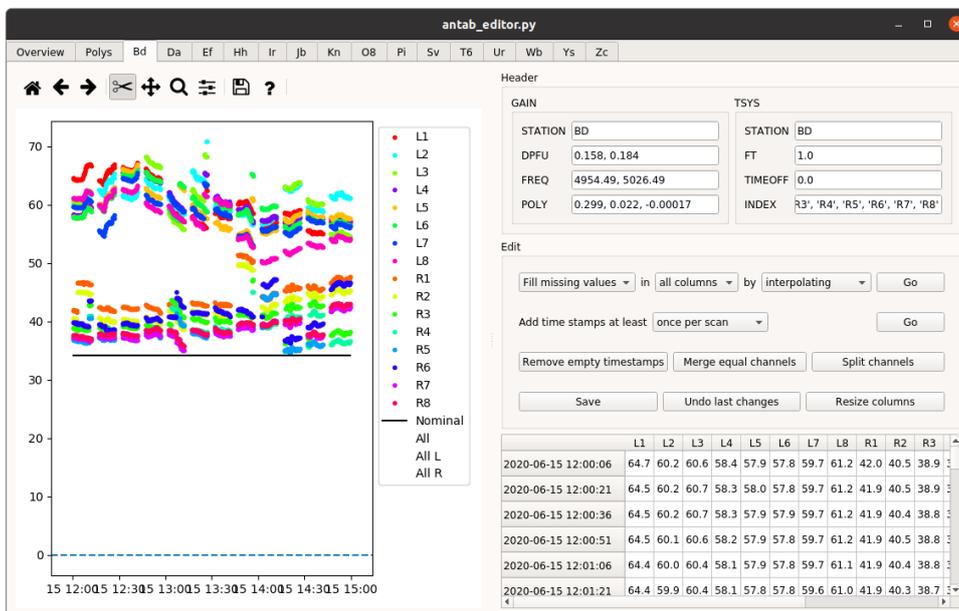


Figure 2: Station tab

4.1 Station

The station tab has a plot of the ANTAB values on the left and on the right three section, see Figure 2. The top section shows the ANTAB header and makes it available for editing. The bottom shows the ANTAB values in a table. The middle section gives generic options to edit the ANTAB values.

The plot has all the default toolbar buttons of a matplotlib plot to allow zooming, panning, etc. It has one extra button, represented by the scissors, which is selected by default. When this tool is selected, you can drag an area in the plot using the left mouse button to mark the values to be deleted, see Figure 3. Pressing the delete key, when you are satisfied with the selection, will blank all values in the selected area. This will be reflected in the table, see Figure 4.

Note the legend immediately right of the plot, clicking a channel in this legend will hide/show the selected subband in the plot. This selection will also affect which values are blanked when the scissors tool is used.

After blanking points, you generally want to insert new values. This is where the “Edit” section on the middle right of the window comes into play. The top row of that section allows you to fill in missing values (or just replace all values) for certain columns. The methods available to do so are interpolation, using the nominal values or copying from another column. The next row allows you to create new timestamps for ANTAB values (which will be blank initially). For example, in Figure 5, a timestamp was added every 15 seconds, with the

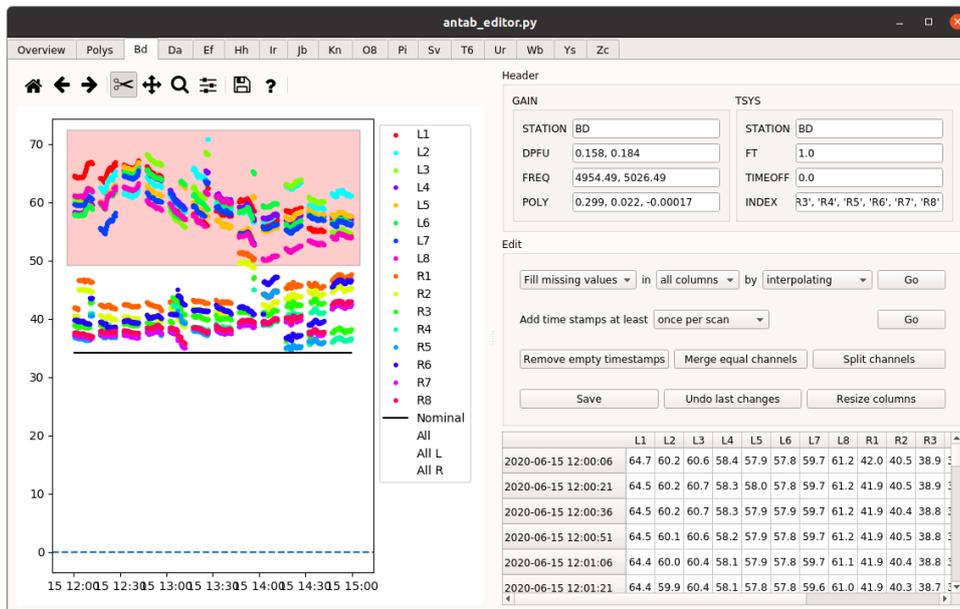


Figure 3: Marking points to blank

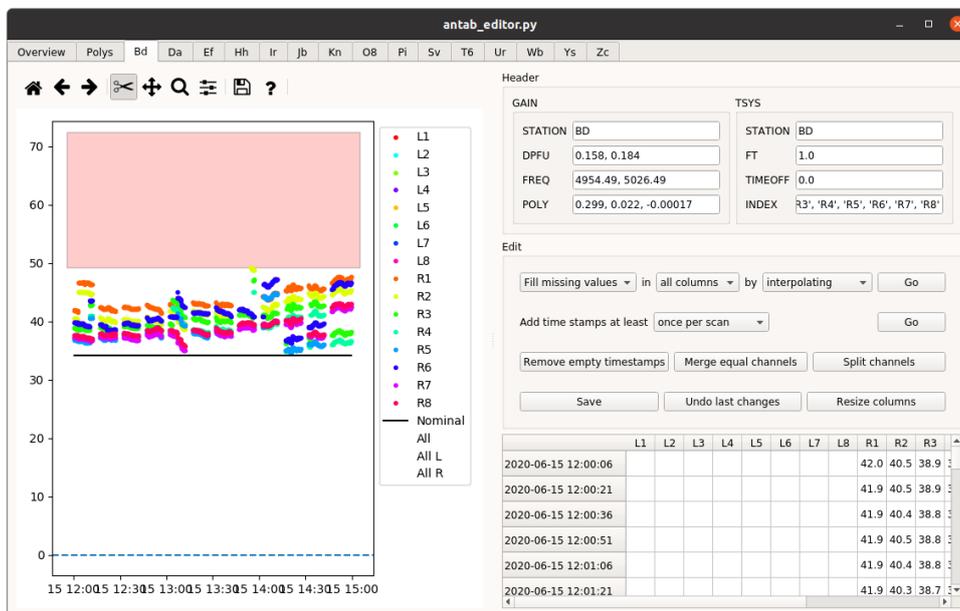


Figure 4: After pressing delete

new values filled using interpolation.

It is also possible to do editing directly in the table. For example you can select multiple time rows (see Figure 6) and press the delete key to blank these values. To permanently delete these timestamps, click the “Remove empty timestamps” button in the “Edit” section.

The subbands as shown in the plot and the columns of the table are the subbands of the correlator data. The subbands given in the station’s ANTAB file are translated to correlator subbands using the VEX and FITS files. The original subbands as given by the station are still available in the “Header” section, in the “Index” field. It is possible to edit the “Index” field to have antab editor re-map station subbands to correlator subband. However, if you want to do this, it is usually best to do so at the start of the editing process. After editing, re-mapping the subbands might not be possible anymore.

The “Save” button in the “Edit” section will save the current values to the <experiment><station>.editor file, for just this station.

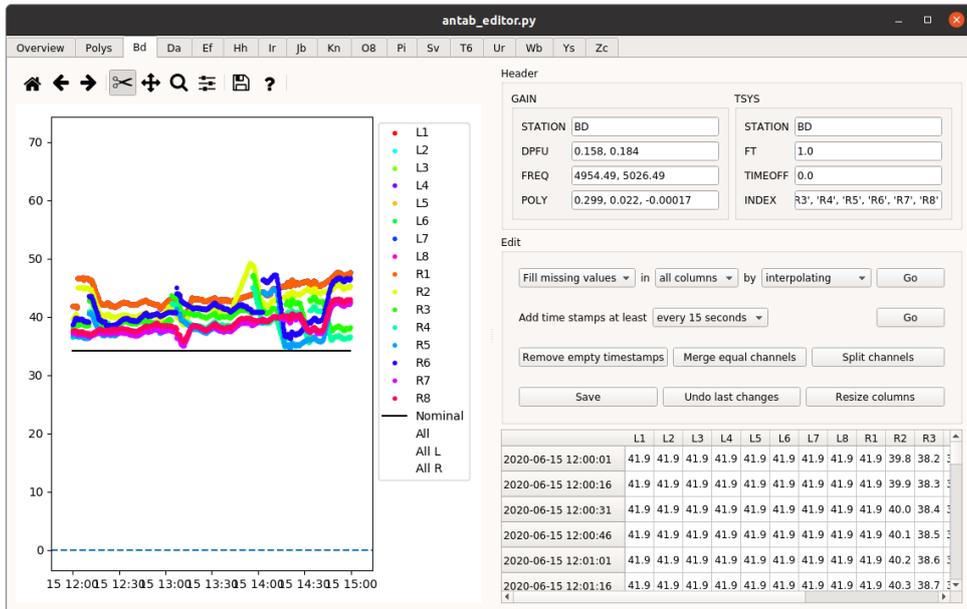


Figure 5: Interpolating every 15 seconds

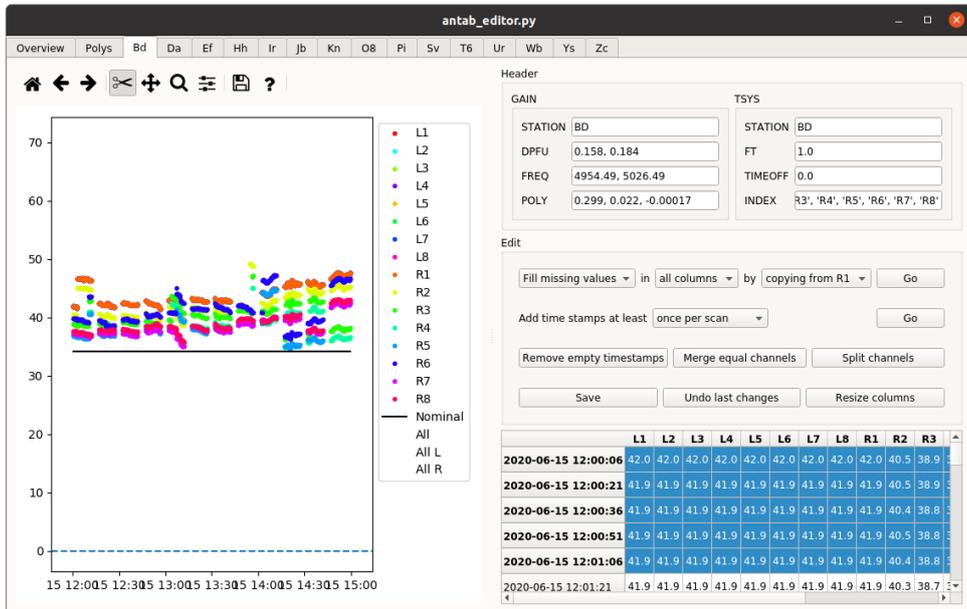


Figure 6: Selecting multiple time rows

5 Polys

The “Polys” tab will display each station’s gain polynomial in plots, see Figure 7.

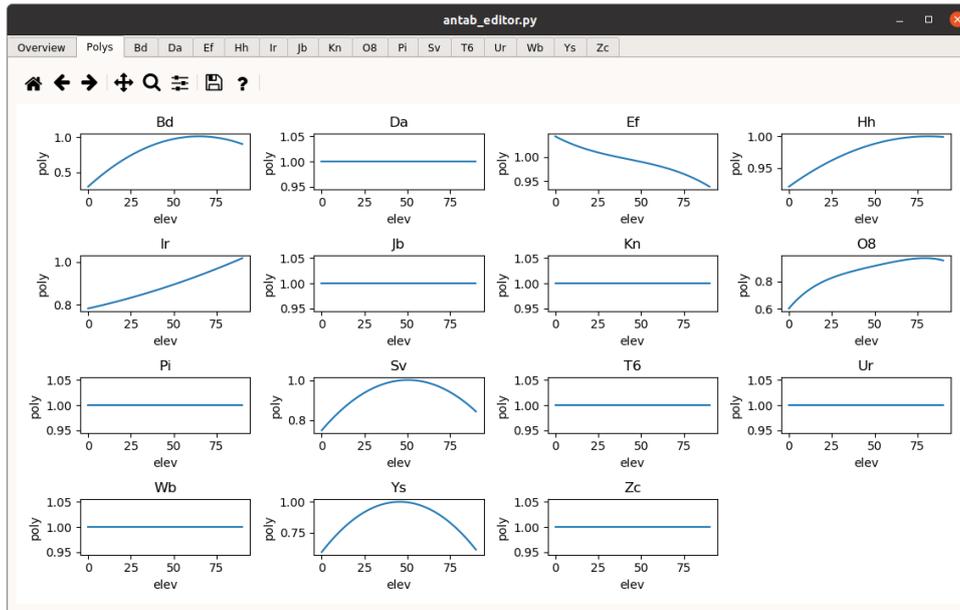


Figure 7: The polys tab

These plots reflect the “Poly” as displayed in the station tab under the “Header” section, evaluated for an elevation from 0 to 90 degrees. Editing the “Poly” values in the station tab will update the plot in the “Polys” tab.

6 Overview

With the last tab to discuss, we return to the “Overview” tab, see Figure 1. At the top of this tab are two buttons. The “Generate ANTAB” button will generate the `<experiment>.antab` file from the current values in all the station tabs. The “Save all” button will act like pushing the “Save” button in all station tabs, saving all the `<experiment><station>.editor` files.

The table below those buttons is used to warn for potential problems with a station: a red box signals such a problem, a green box signals no problem. The categories are:

- Station name: check whether the station name in the ANTAB header is equal to the station name in the ANTAB file name.
- Frequency range: check whether the frequency range in the ANTAB header includes all correlated frequencies for that station.
- Time stamps: check whether all scan which include the station have at least one time stamp with ANTAB values in it.
- Empty values: check whether there are any blank ANTAB values left.