Grab-bag SETI w/ ATA Updates

AOFLAGGER, auto-generated observing log, gridding3 plots

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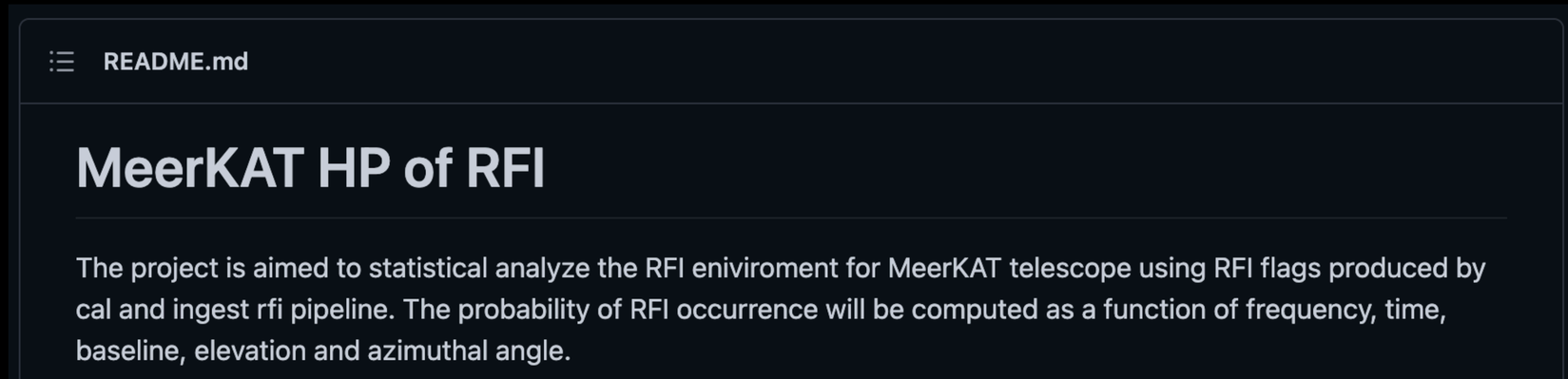
AOFLAGGER - RFI Survey Status

- To identify frequency channels with interference, want to use AOFLAGGER software
- Successfully installed binary distribution on ATA machines *but*…
- Debian/Ubuntu packages don’t contain Python bindings
- In email conversation with developer, he is looking into fixing this for us
- After AOFLAGGER, can plug into existing graphics/statistics tools developed by Nadeem Oozeer and Isaac Sihlangu for a MeerKAT RFI survey!

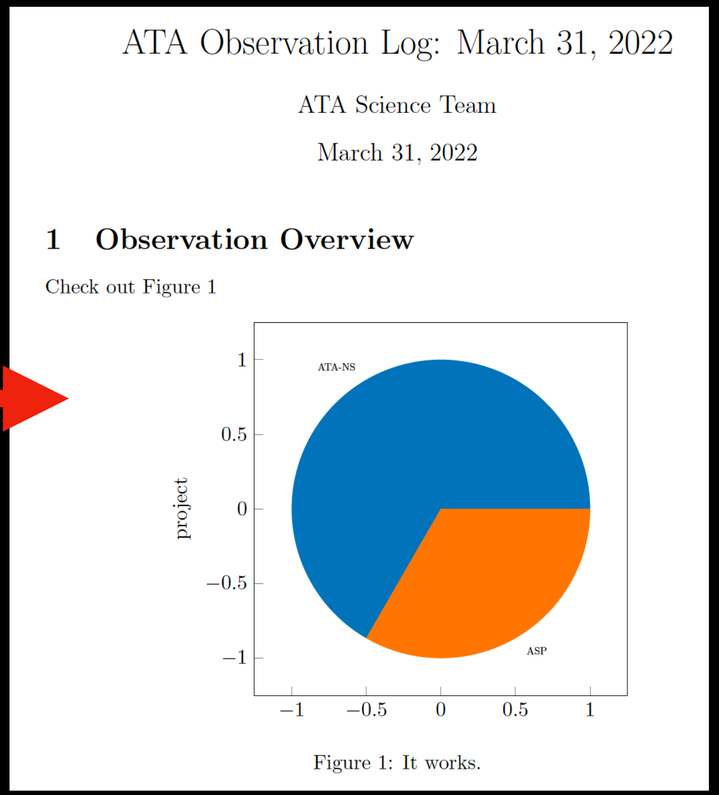


Auto-generating Observing Log

LaTeX + Python

- I learned pythontex!
- Can read in .csv files, autogenerate figures and text, etc.
- Discussion: What information do we want to include in the weekly auto-generated observing log?
- Related: What outputs/ conventions do we need to make this work?
  - e.g., consistent directory naming, metadata exported to .csv, etc.

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{color}
\usepackage{pythontex}
\usepackage{pgfplots}
\pgfplotsset{compat=1.17}

\title{ATA Observation Log: \today}
\author{ATA Science Team}

\begin{document}

\maketitle

\section{Observation Overview}

Check out Figure \ref{fig:test_pie}

%\input{!python -c 'print(1+2)'}
%input{!python mypy.py}

\begin{figure}[h]
\centering

\begin{pycode}
import pandas as pd
import matplotlib.pyplot as plt
import tikzplotlib

data = pd.read_csv('test.csv')
data['project'].value_counts().plot(kind='pie')
print(tikzplotlib.get_tikz_code(axis_height="8cm", axis_width="8cm"))

\end{pycode}
\caption{It works.}
\label{fig:test_pie}
\end{figure}



\end{document}
```



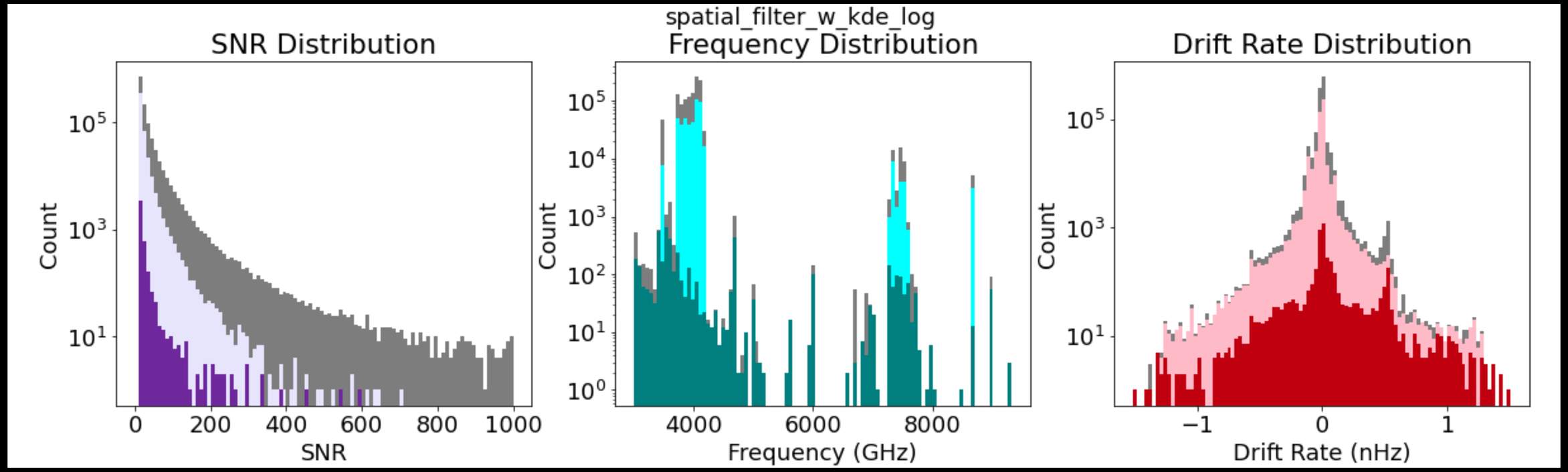
Update on gridding3: signals-of-interest

- Doing a turboSETI search of an ATA galactic center observing campaign from summer 2021
  - 3 incoherently summed beams of 3 antennas each
  - 3-9 GHz

= all hits flagged by turboSETI

= Spatially Filtered hits (only in 1 beam)

= Spatially Filtered + additional Anomaly Filtering on RFI-heavy regions

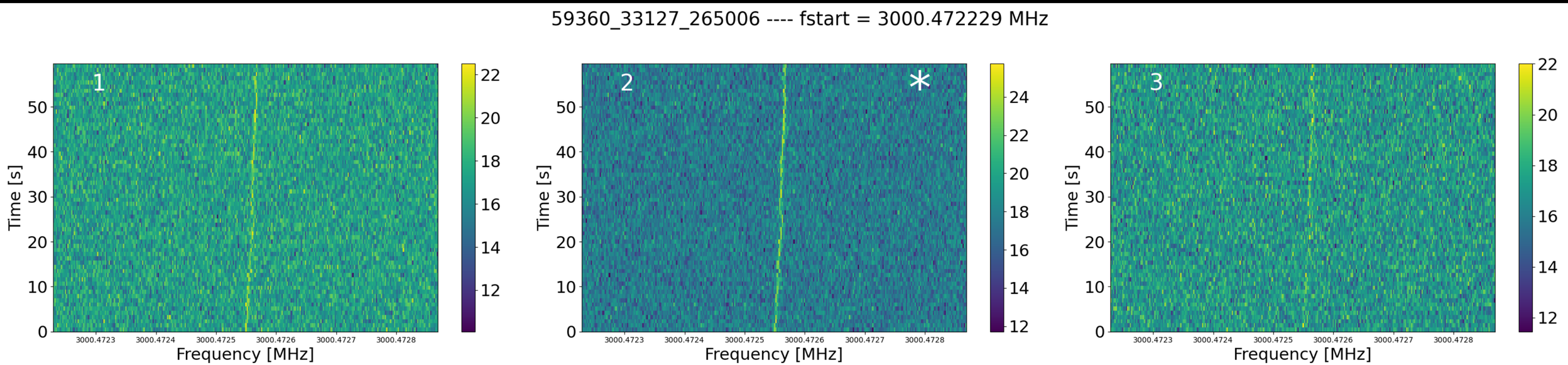


Update on gridding3: signals-of-interest

- After spatial filtering + anomaly detection on crowded regions, ended up with 4539 signals-of-interest
- Plotted dynamic spectra of all but 50
  - 28 were duplicates in the plotting-input table (maybe hits with the same freq. different drift rates? need to investigate)
  - 22 are missing a beam, and broke the plotter - will replot individually
- Currently going through the dynamic spectra, should be complete by next week

Update on gridding3: signals-of-interest

- A lot of them show signals in all three subarrays, just with different SNRs (can remove, not actually signals-of-interest)



Update on gridding3: signals-of-interest

- Some appear to only be present in a single beam - flagging them for follow-up analysis