

# Commensal radio transient searches using the TraP

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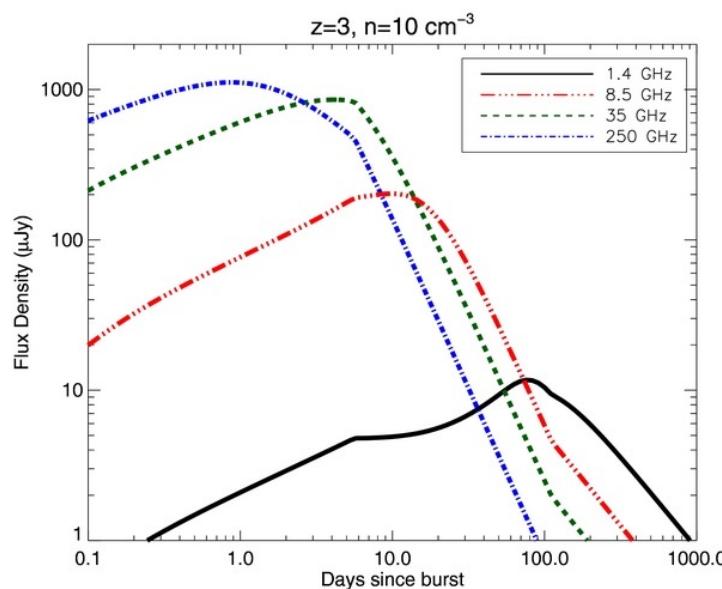
# What are we looking for?



# Two Categories of Emission

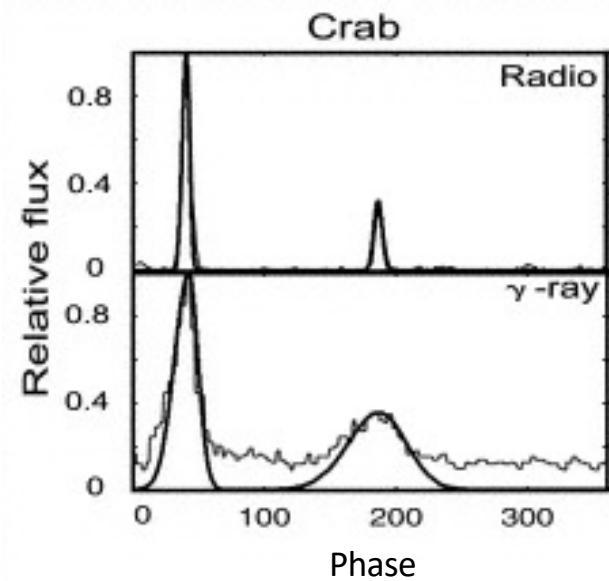
## Incoherent

- Synchrotron afterglow or thermal sources
  - Slow and faint
- E.g. GRBs

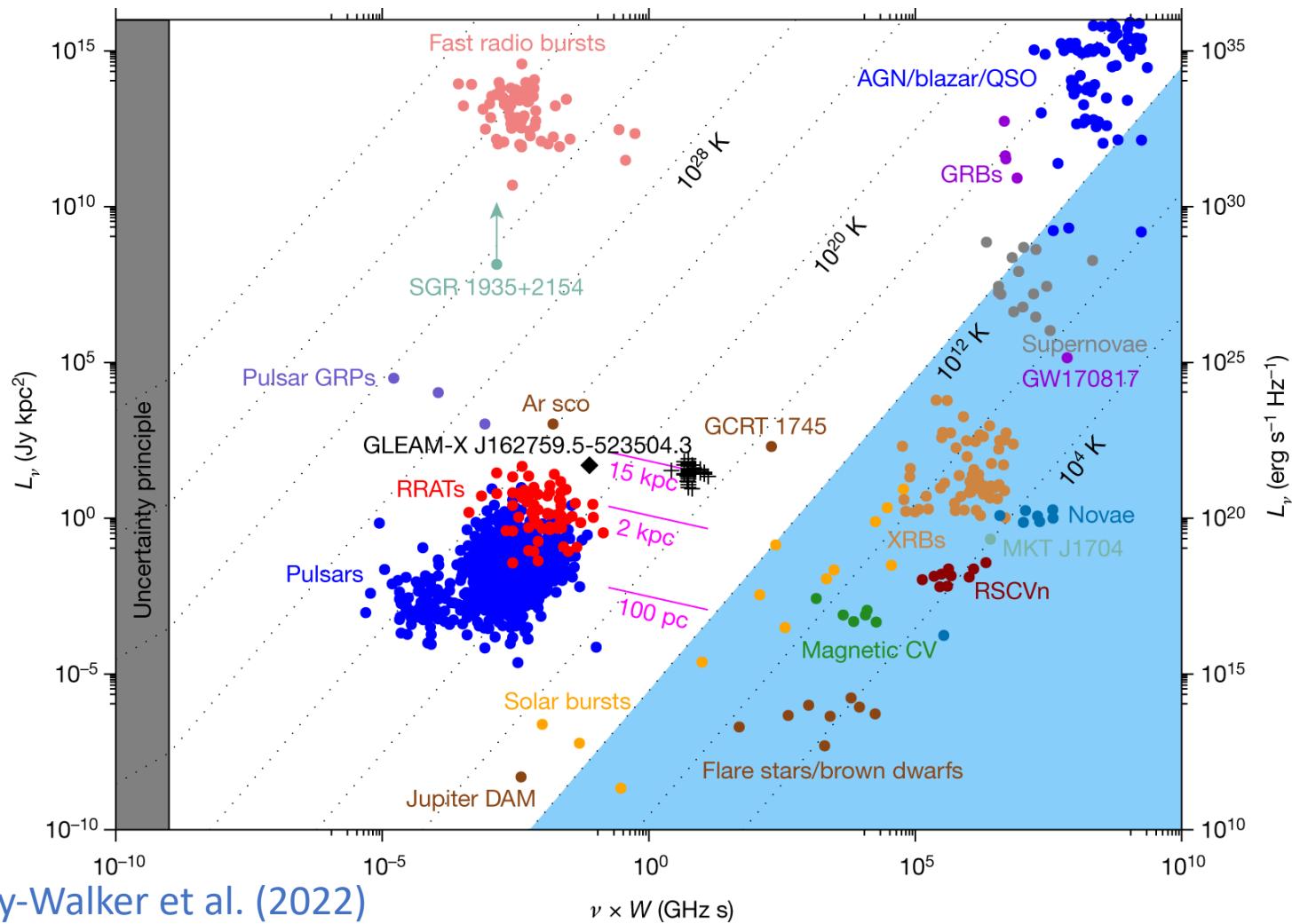


## Coherent

- Electrons in emitting region emit in phase, e.g. MASER
- Fast variability and bright
- E.g. Pulsars

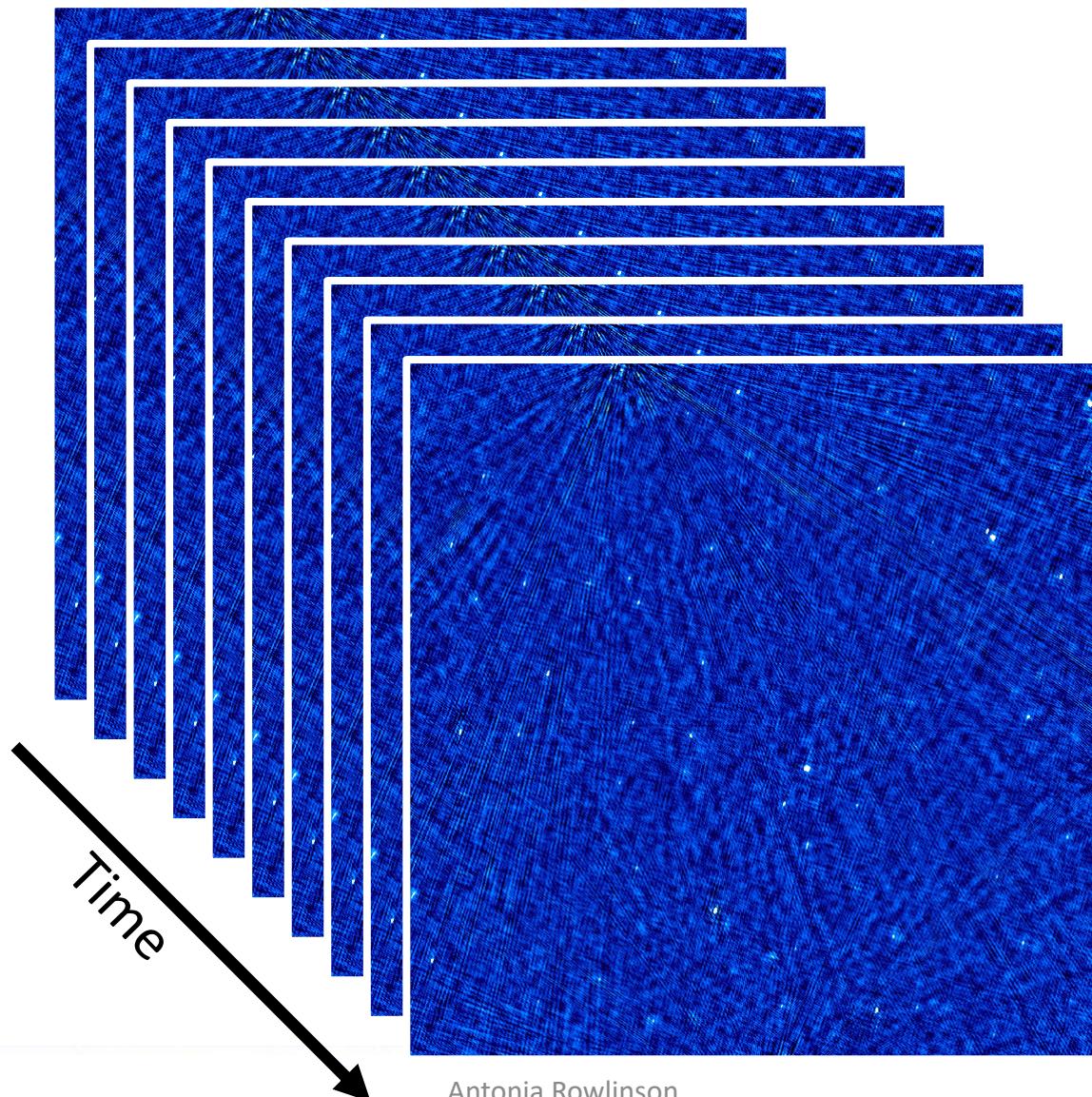


# Radio transient populations

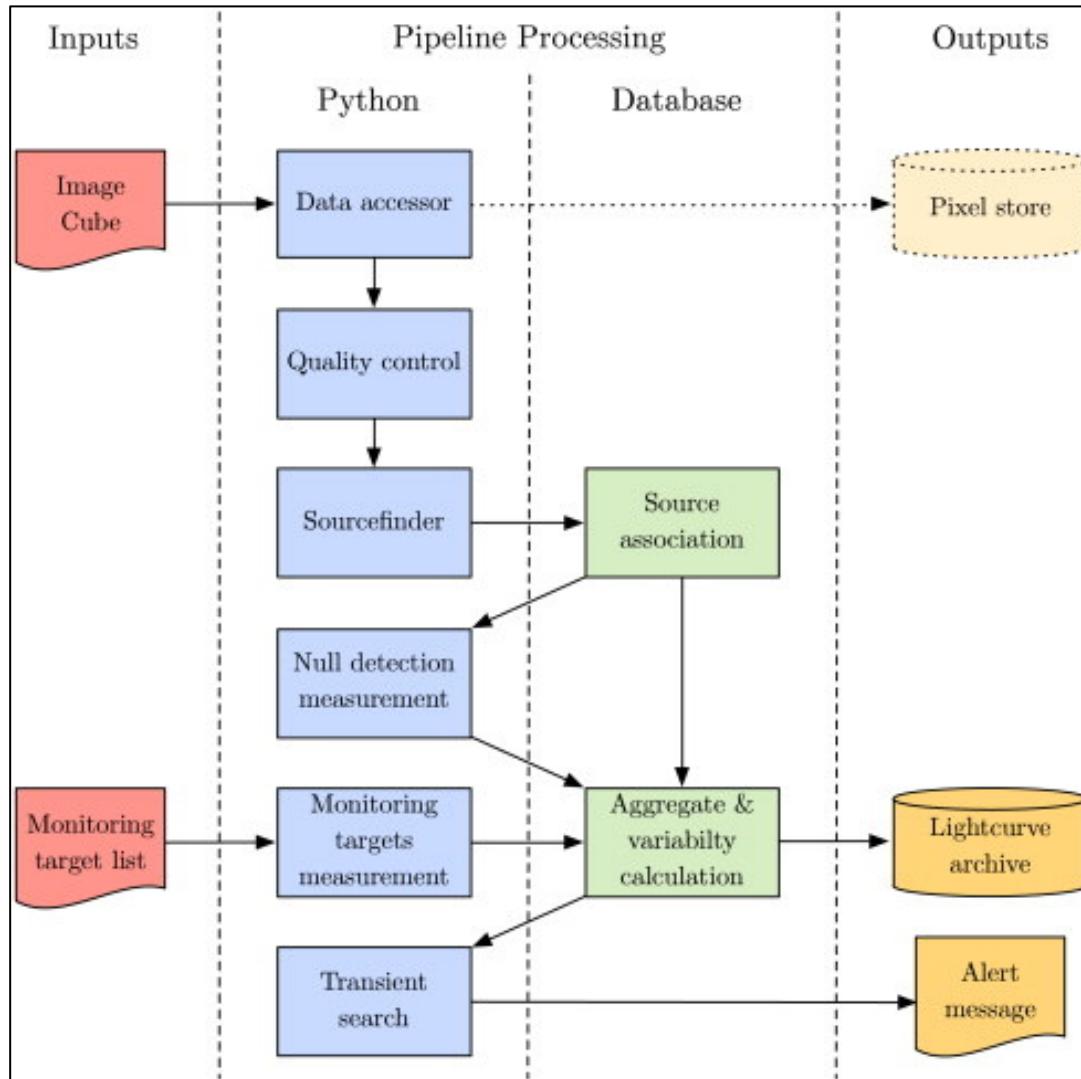


Hurley-Walker et al. (2022)

# Searching for transients & variables



# Transients Pipeline (TraP)



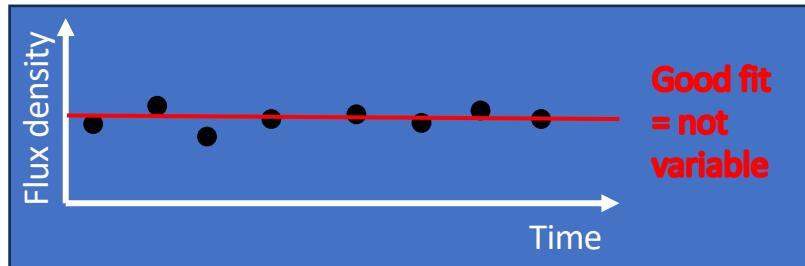
- Publicly available: <https://github.com/transientskp/tkp>
- Well documented: <https://docs.transientskp.org>
- Example tools for interacting with database and filtering strategies: [https://github.com/transientskp/TraP\\_tools](https://github.com/transientskp/TraP_tools)

Swinbank et al. (2015)

# Variability parameters

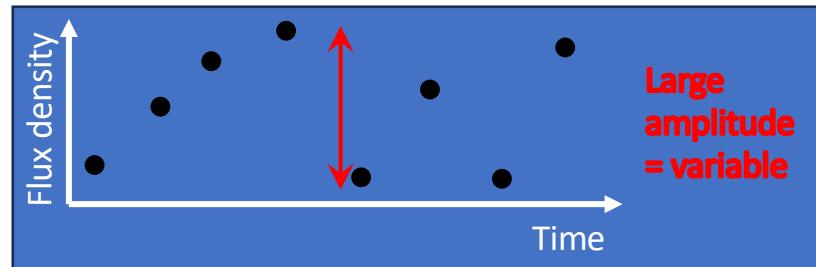
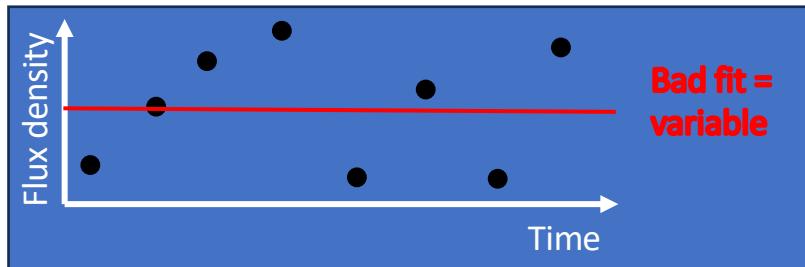
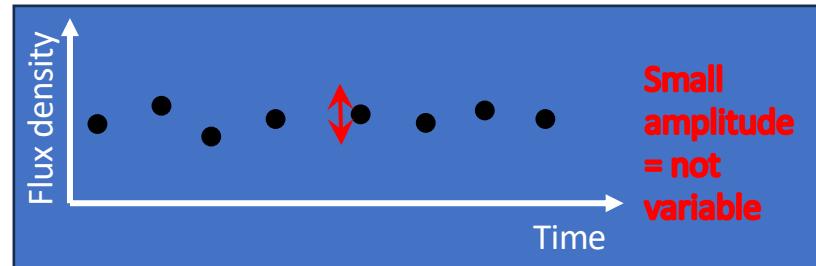
## Reduced weighted $\chi^2$

“How well the data fits to a horizontal line”



## Coefficient of variation

“The amplitude of the change in flux density”



# Demo

[https://github.com/AntoniaR/TraP\\_filter\\_demo](https://github.com/AntoniaR/TraP_filter_demo)