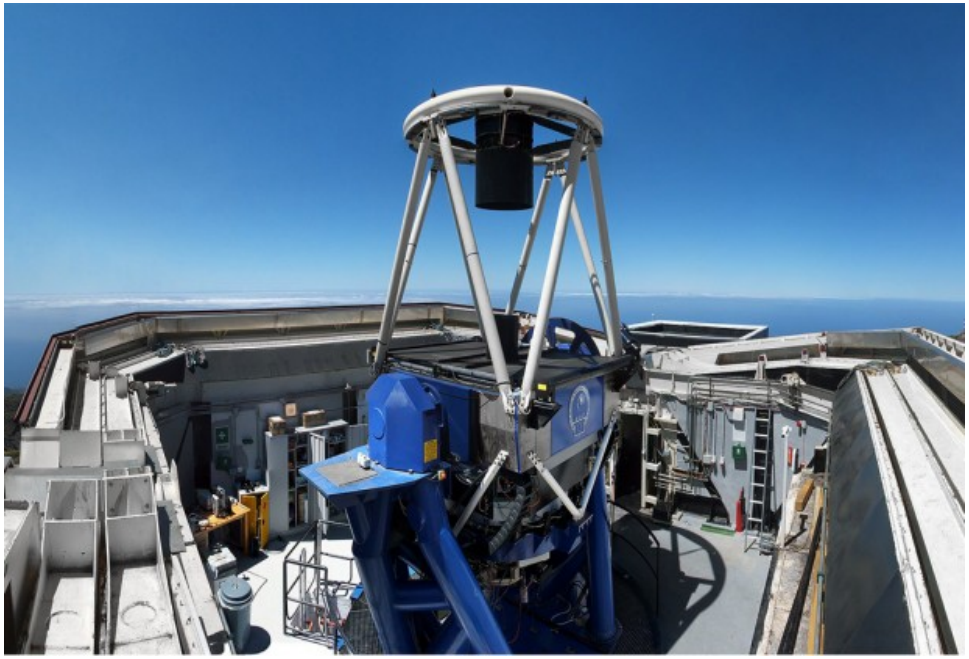
Patterns in Gaia Alerts

Target Selection on the Liverpool Telescope



Andrzej Piascik

A.S.Piascik@ljmu.ac.uk

Liverpool John Moores University

Observing Programmes

Several ARI programmes 2014 - 2017 using Gaia alerts on LT
- Transient Classification
- Early phase pre-maximum SNe observation

Two instruments primarily used:
- Spectroscopy using the SPRAT spectrograph
- Photometry using the IO:O imager

Automate target selection or at least pre-filter.

Main Alert Sources

Alerts Taken from Several Sources including ...

ASAS-SN

Pan-STARRS

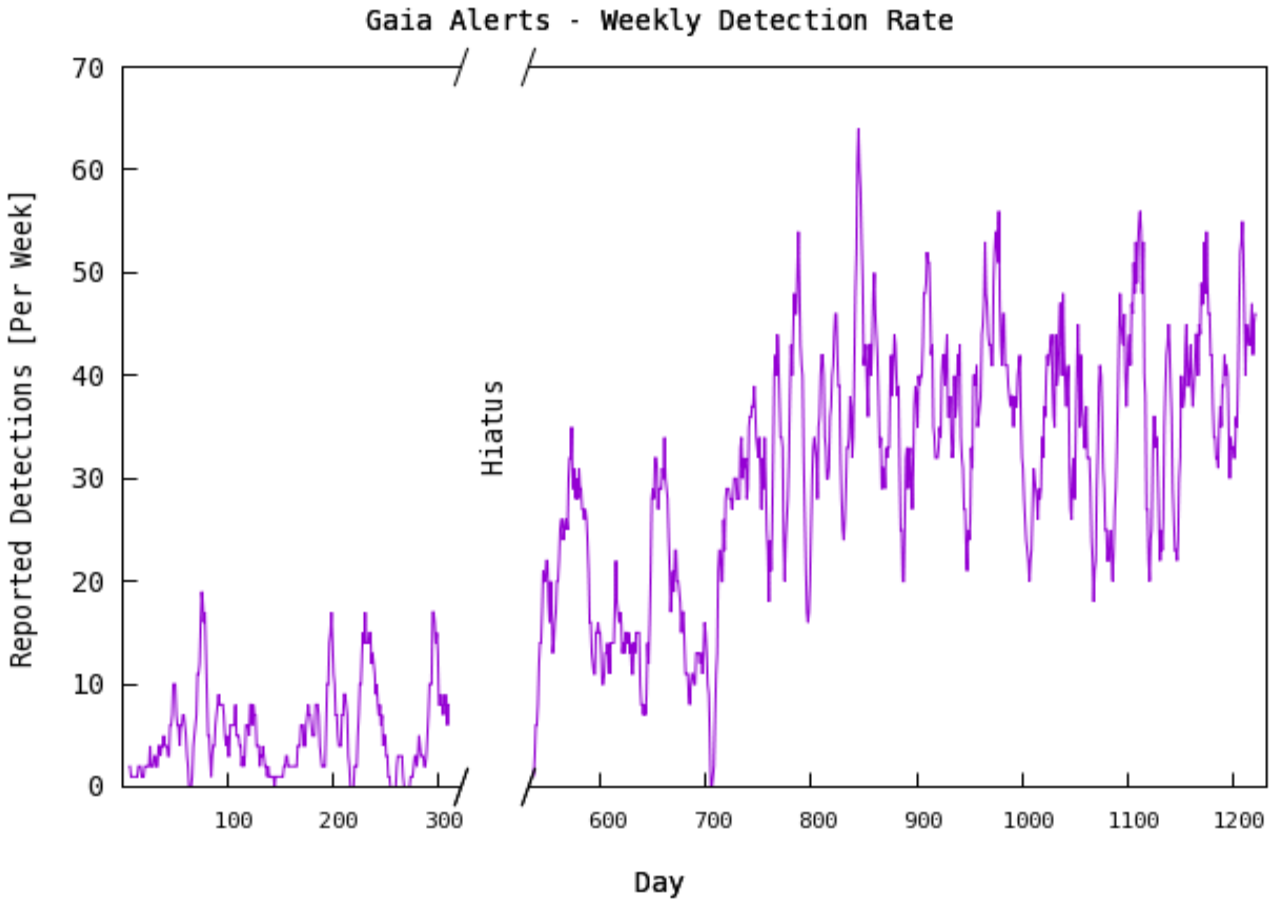
Transient Name Server

ATels

Gaia Alerts

- Data automatically extracted by parsing `alerts.csv`
- Contains an alert (detection) and publish date
- Earliest published detection, Gaia14aab 2014-07-27 = day 0
- This analysis up to 2017-11-30 = day 1228 (~ 3.4 years)
- Accurate publish date available only after day > ~100
- Historic analysis to show alert evolution

Report Rate per Week



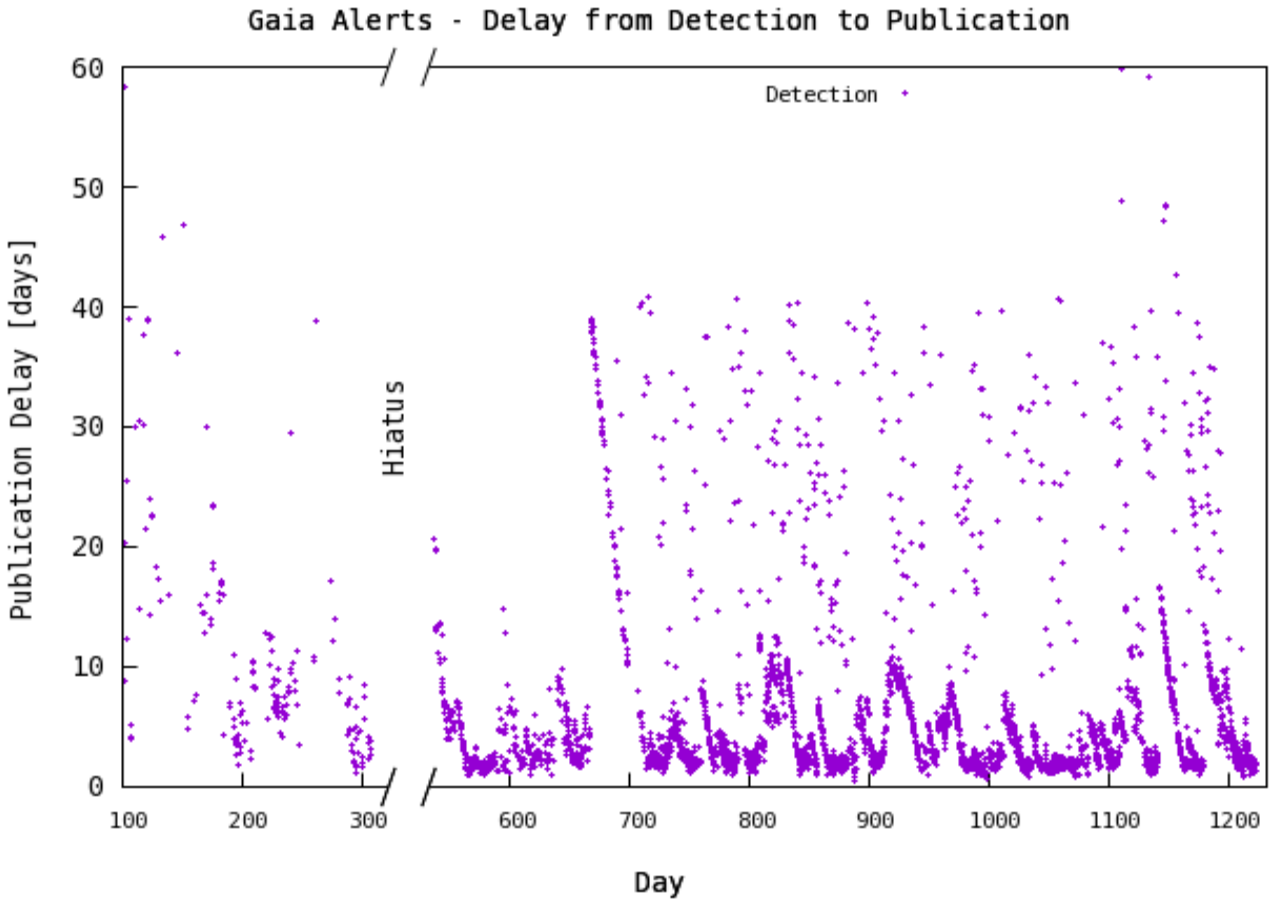
Evolution of alert rate

Pre-hiatus: ~5 / week

Post-hiatus: ~18 / week

Post day 700: ~ 38 / week

Publication Delay



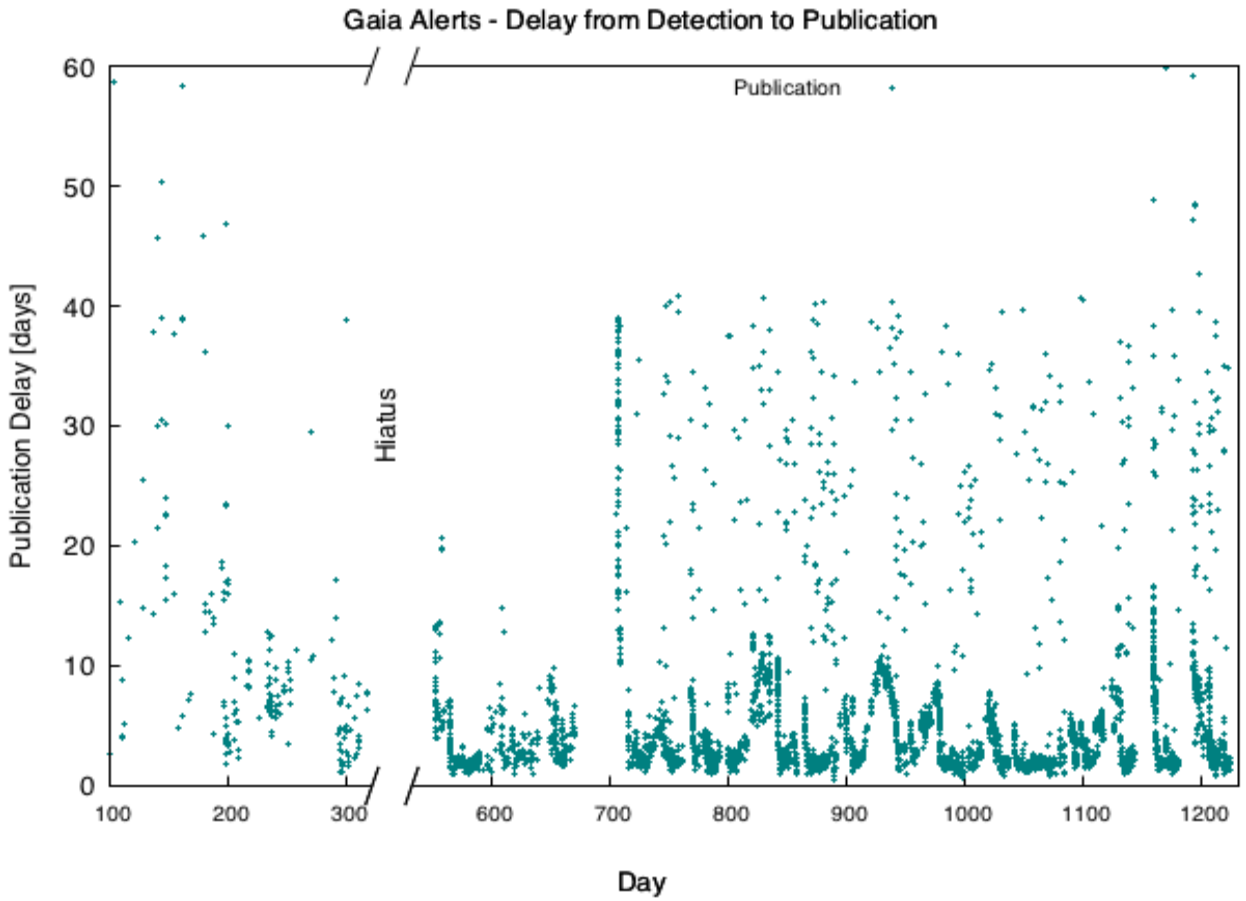
Detection

Delay = Pub. - Det. date

Detections accumulate

Episodic releases

Publication Delay



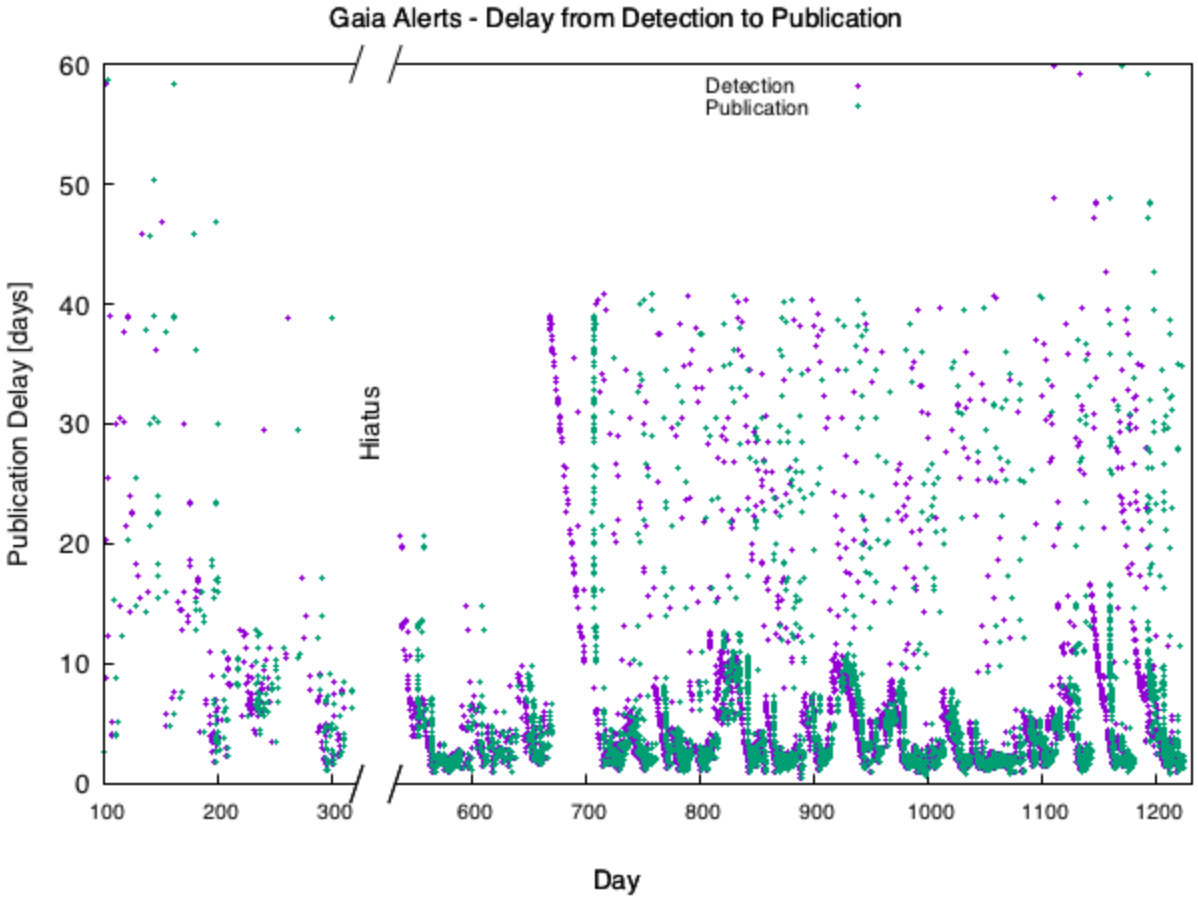
Publication

Delay = Pub. - Det. date

Detections accumulate

Episodic releases

Publication Delay



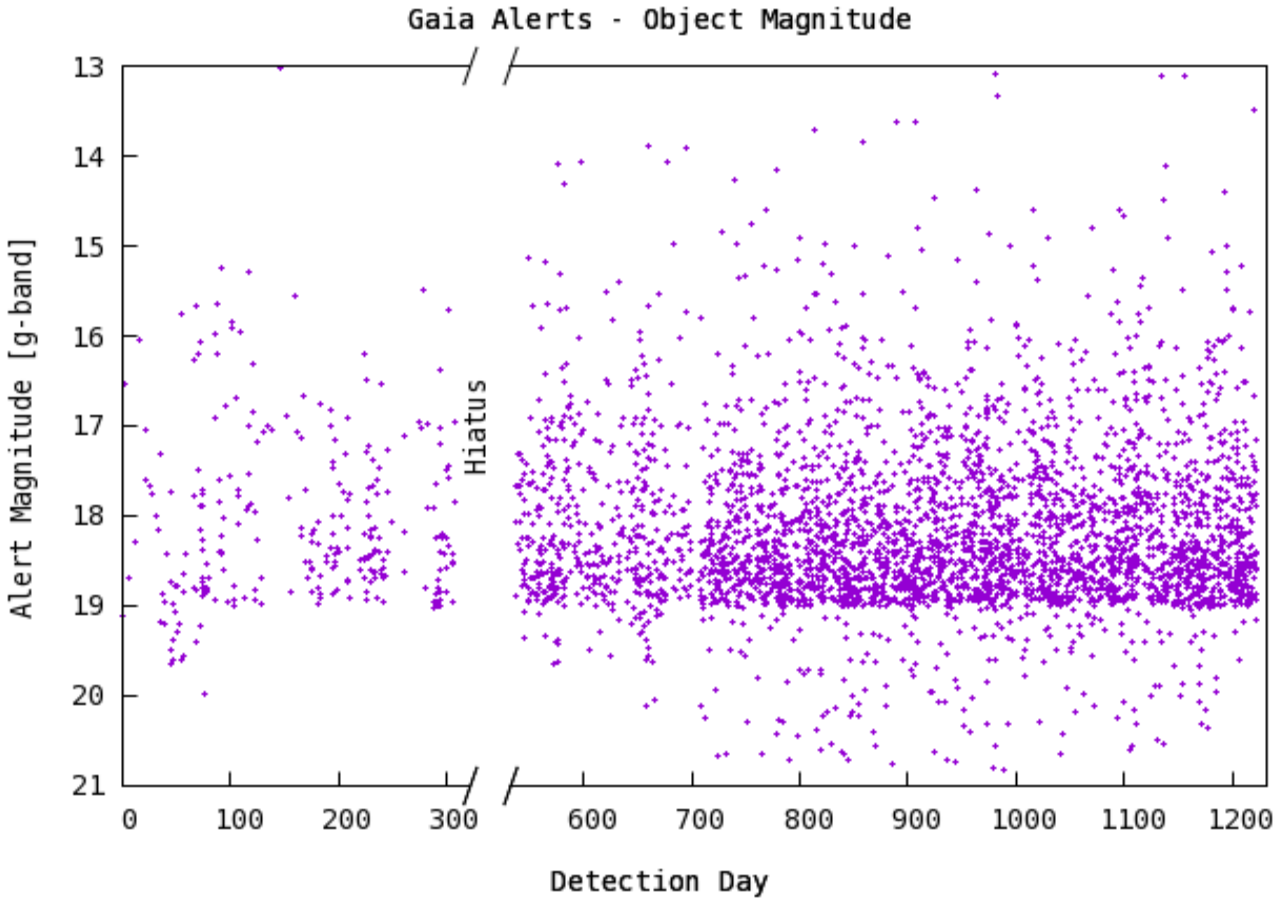
Publication

Delay = Pub. - Det. date

Detections accumulate

Episodic releases

Magnitude Limit

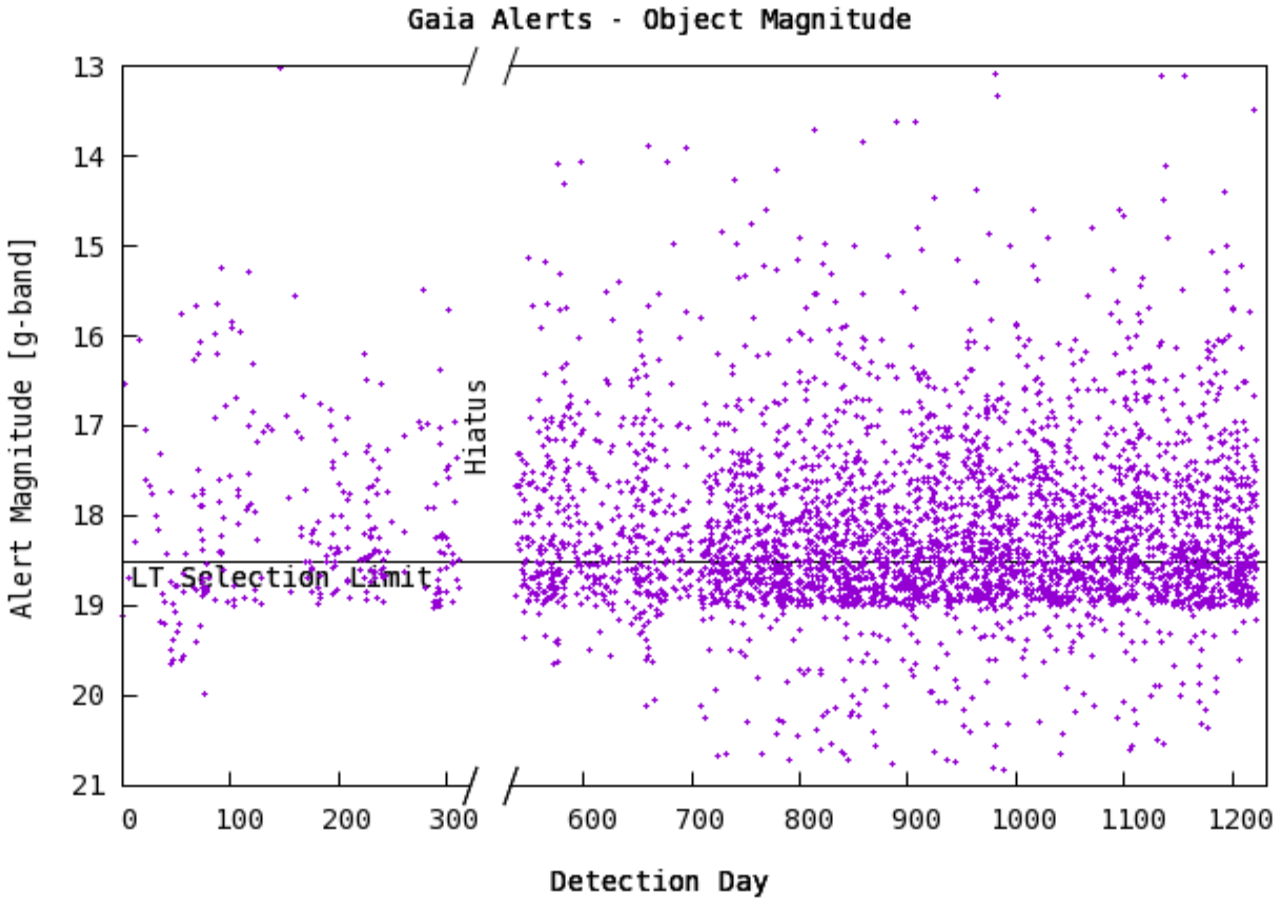


Alert Magnitude (g-band)

19th magnitude limit

Pre-hiatus 15th mag. limit?

Magnitude Limit



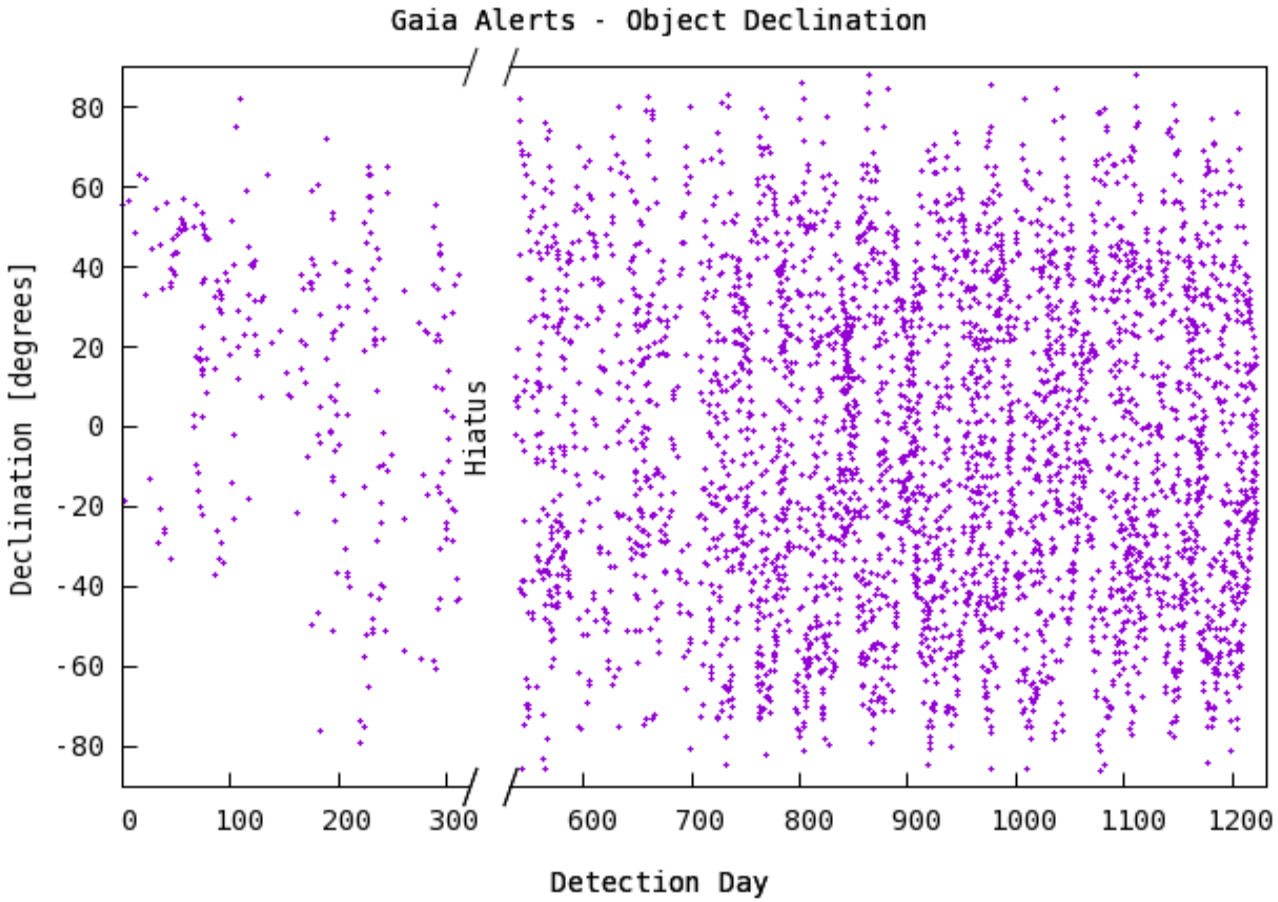
Alert Magnitude (g-band)

19th magnitude limit

Pre-hiatus 15th mag. limit?

LT selection limit 18.5 Mag
(extended 19.0 pre-hiatus)

Declination Distribution

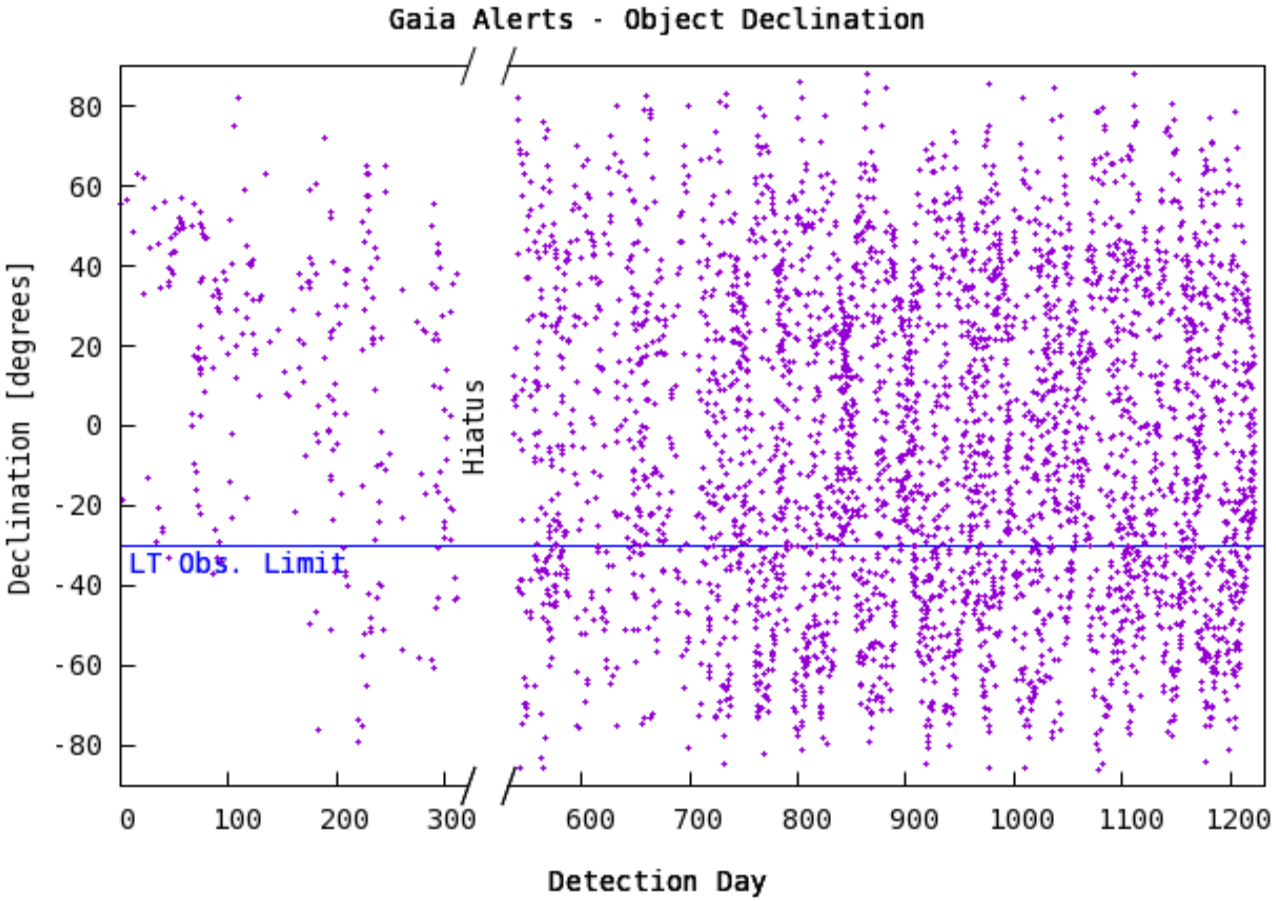


Declination of alerts

Pre-hiatus N hemisphere bias

GAIA scan evident

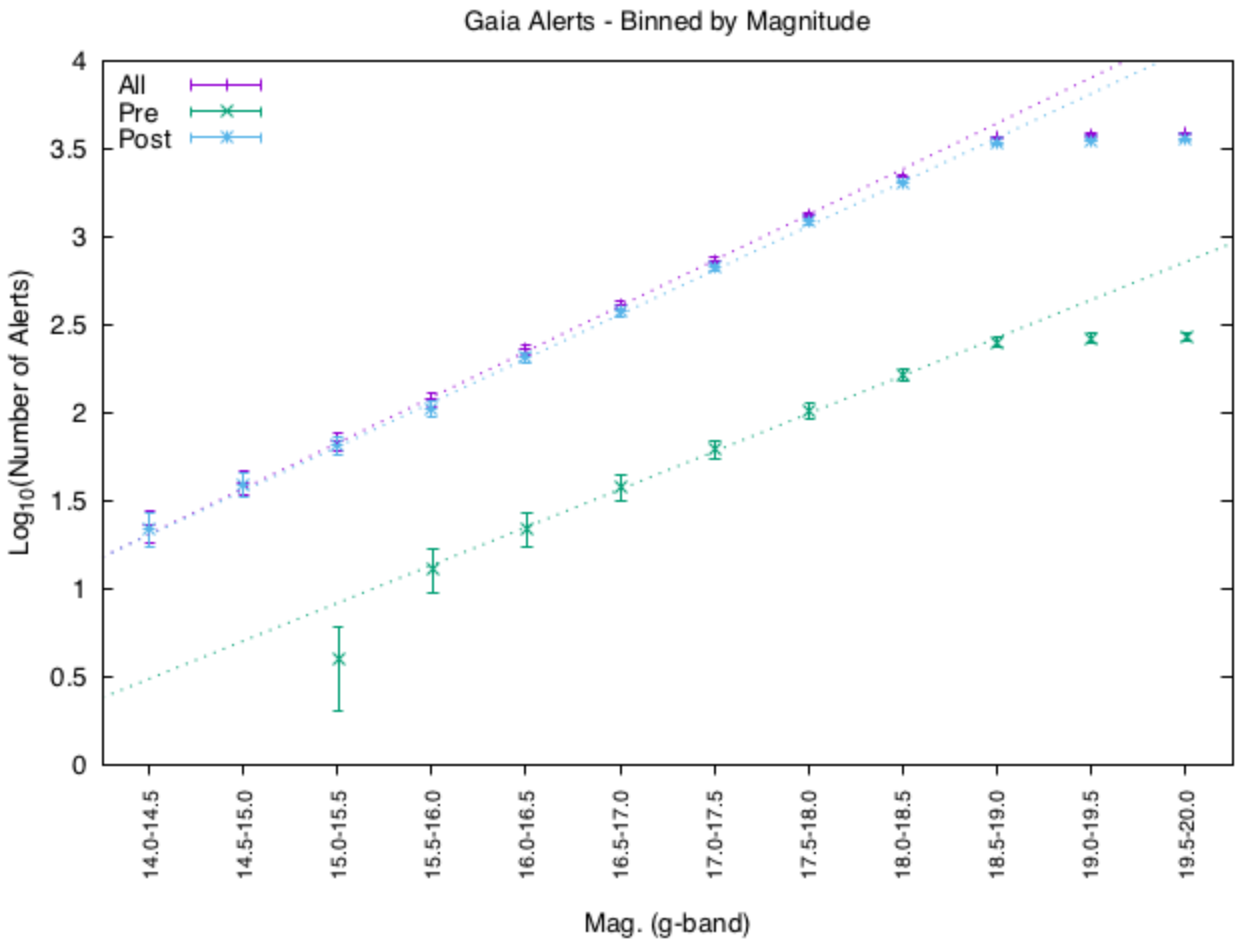
Declination Distribution



LT located on La Palma

Dec. limit ~ -30 degrees

Completeness



Detection is Log(N) Log(S) complete up to 19th Mag.

GAIA Notifications

Gaia notification methods have become more varied ...

iOS App

Receive alerts on your phone or tablet. Get the iOS app at the App Store.

Android App

Receive alerts on your phone or tablet. Soon at Google Play.

@gaia_alerts

Follow the latest news on our Twitter stream.

RSS feed

We publish the latest alerts events at this RSS feed.

CSV file

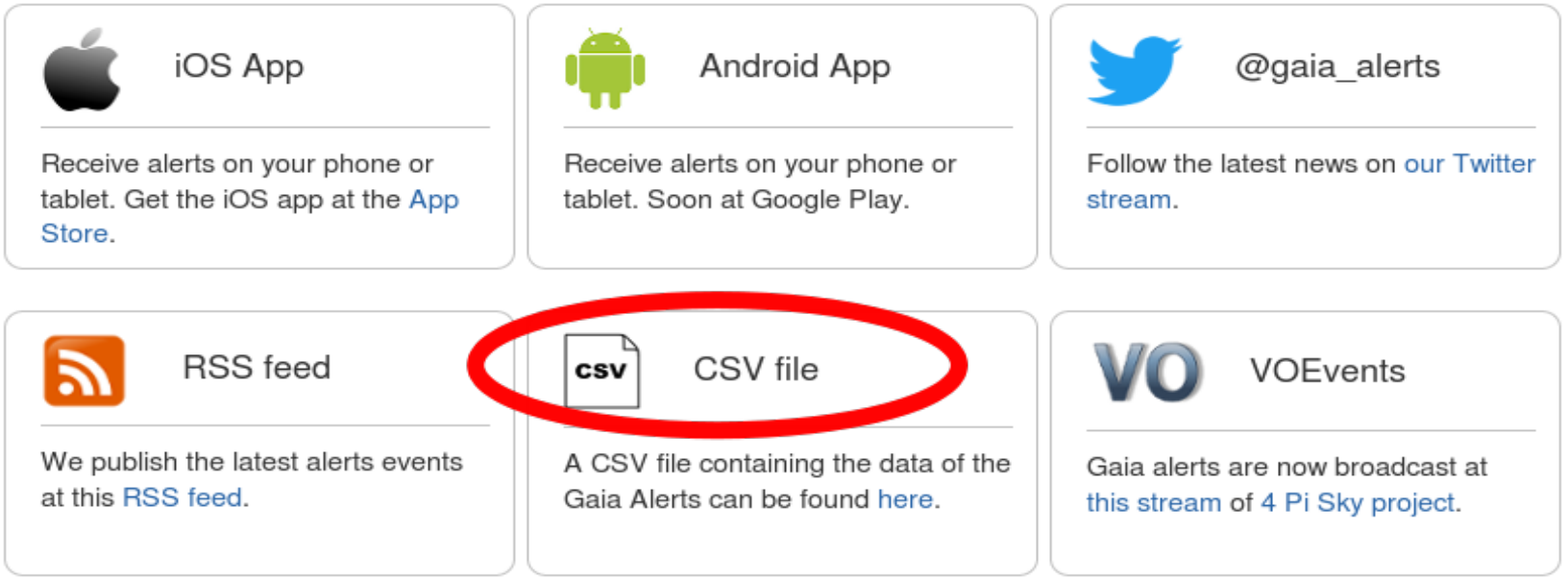
A CSV file containing the data of the Gaia Alerts can be found here.

VOEvents

Gaia alerts are now broadcast at this stream of 4 Pi Sky project.

GAIA Notifications

Gaia notification methods have become more varied ...



… csv remains easy to parse automatically

Question Time

Any Questions?