

# Transient characterization using the Virtual Observatory

E. Solano<sup>a</sup>, A. Velasco<sup>a</sup>, C. Rodrigo<sup>a</sup>, A. Ederoclite<sup>b</sup>, L.M. Peci<sup>c</sup>

a. Centro de Astrobiología (CAB), CSIC-INTA. Madrid, Spain

b. Centro de Estudios de Física del Cosmos de Aragón (CEFCA). Teruel, Spain

c. Real Instituto y Observatorio de la Armada. San Fernando, Spain

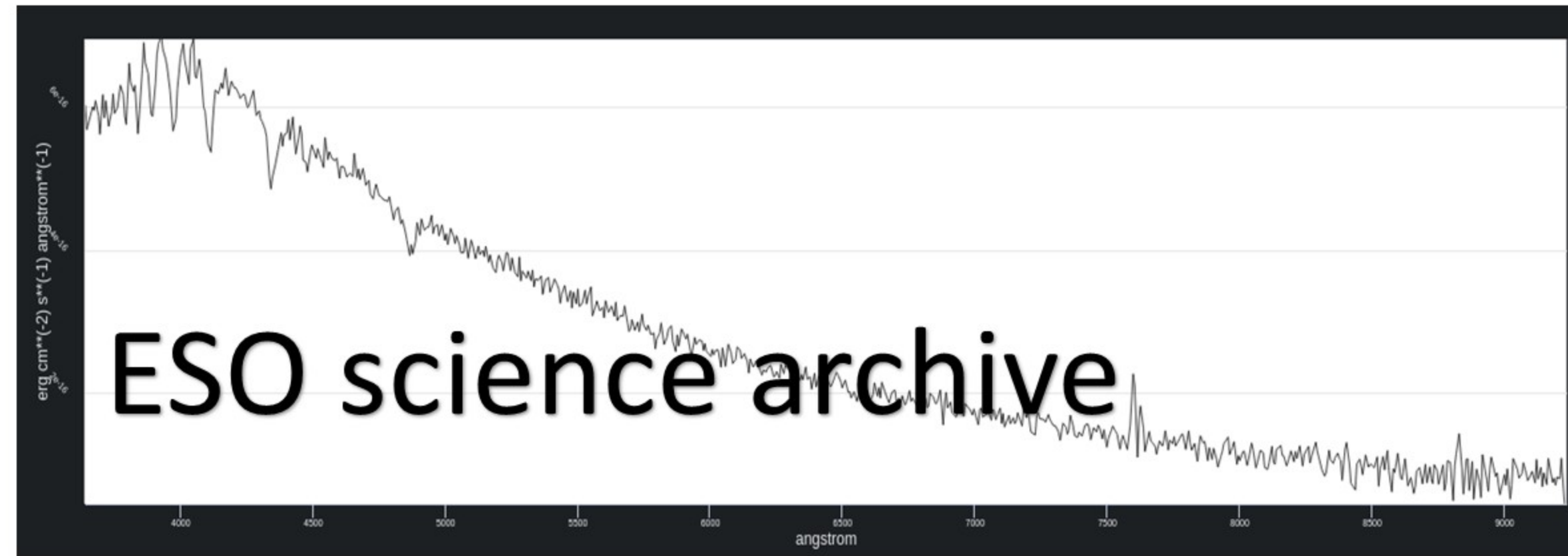


## Introduction

- **Transients** can be defined as astrophysical phenomena whose duration is significantly shorter than the typical timescale of the stellar and galactic evolution. Supernovae, novae, gamma-ray burst,..., are some examples of transient events.
- Fast, multiwavelength **follow-up** observations are often required to properly understand the true nature of the transient.
- Looking for information in **astronomical archives** can be a complementary approach but, sometimes, these **searches are not conducted in an optimal way.**



BUT



## Goal

- Use the opportunities the Virtual Observatory offers in terms of discovery, access and analysis of astronomical data to improve this approach.
- Build an automated workflow to validate and characterise candidate Cataclysmic Variables (CVs) identified among the Gaia Science Alerts.

Gaia Alerts Alerts Index All-Sky Alerts Search GaiaX GaiaX Test Surveys-ATels Tools Documentation About

### Index to Gaia Photometric Alerts

23045 sources

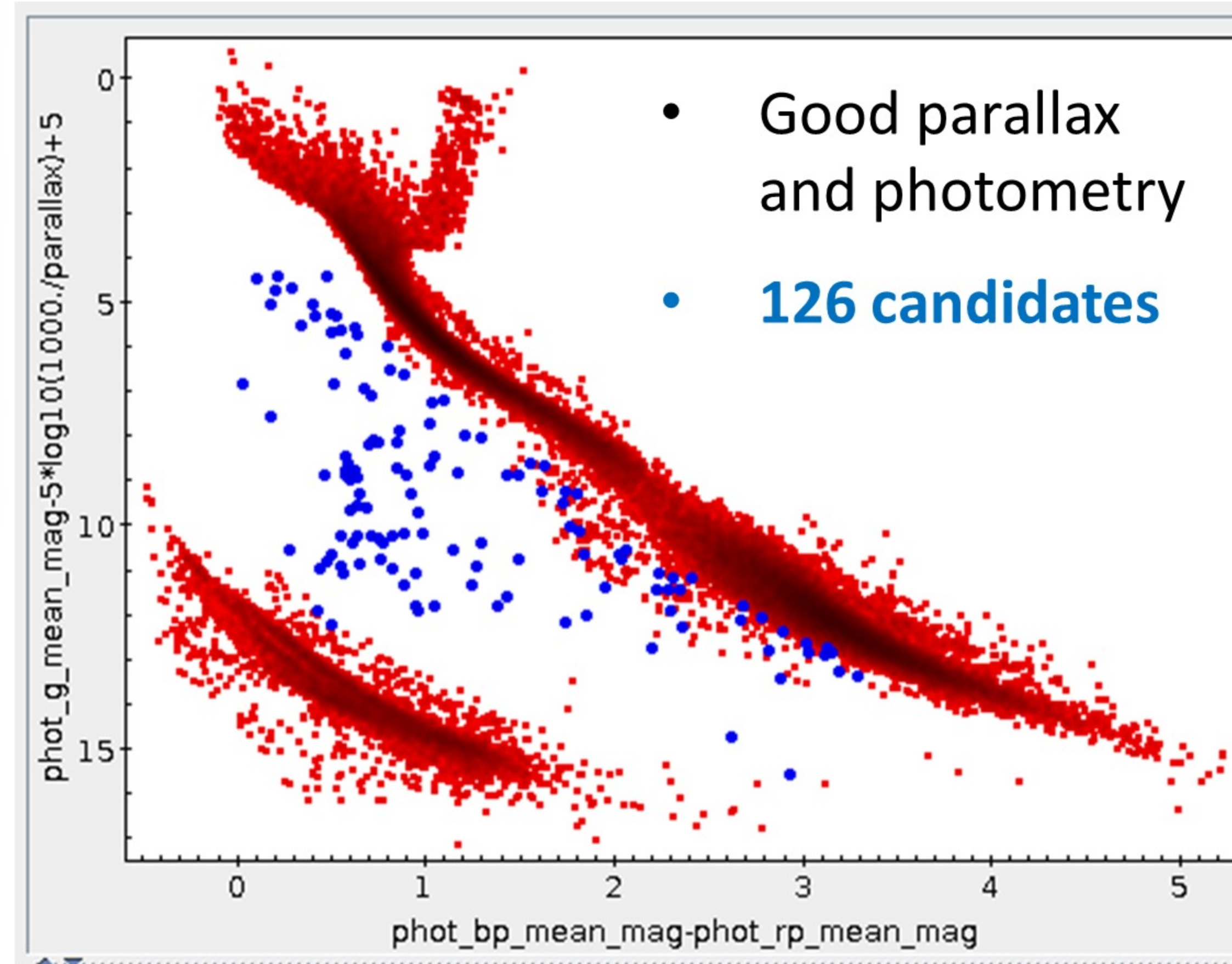
If you publish any results based on these Gaia discoveries, we would appreciate an acknowledgement along the lines of: "We acknowledge ESA Gaia, DPAC and the Team (<http://gsaweb.ast.cam.ac.uk/alerts/>)"

These are all the alerts raised to date. You might wish to view or download these as a table in CSV or pipe-delimited formats or using the tools described in this page. See here for an explanation of the columns.

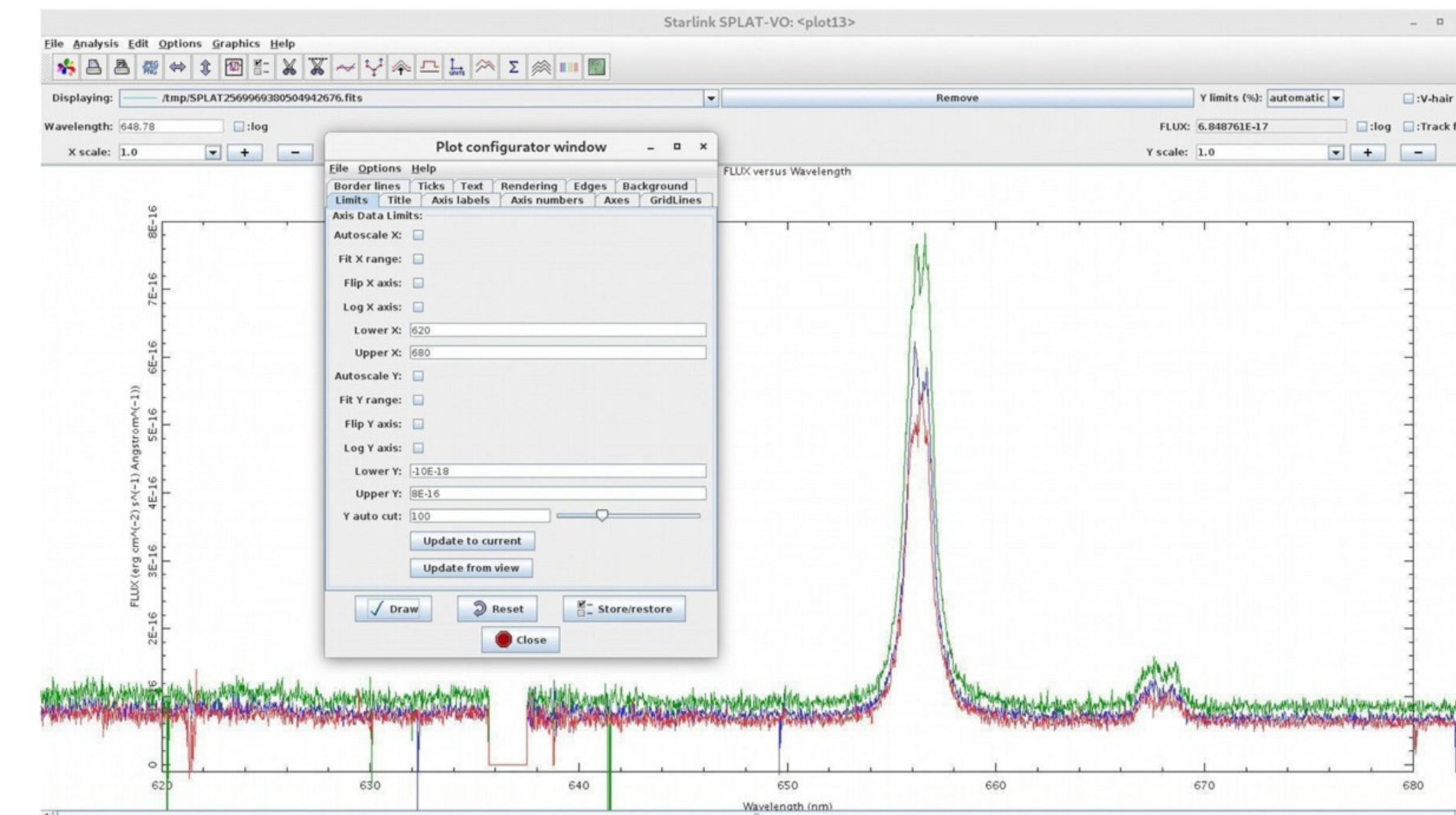
Show 10 entries

Name	TNS	Observed	RA (deg.)	Dec. (deg.)	Mag.	Historic mag.	Historic scatter	Class	Published	Comment
Gaia23bvh	AT2023iut	2023-05-02 03:14:14	48.82922	59.43751	19.46	18.01	0.23	unknown	2023-05-18 13:35:28	fading in candidate YSO
Gaia23bvj	AT2023iul	2023-04-28 12:24:15	225.92966	-60.24721	17.86	18.96	0.45	unknown	2023-05-18 13:30:02	brightening in erratic Gaia source

## Step #1: Selection by position in the HR diagram

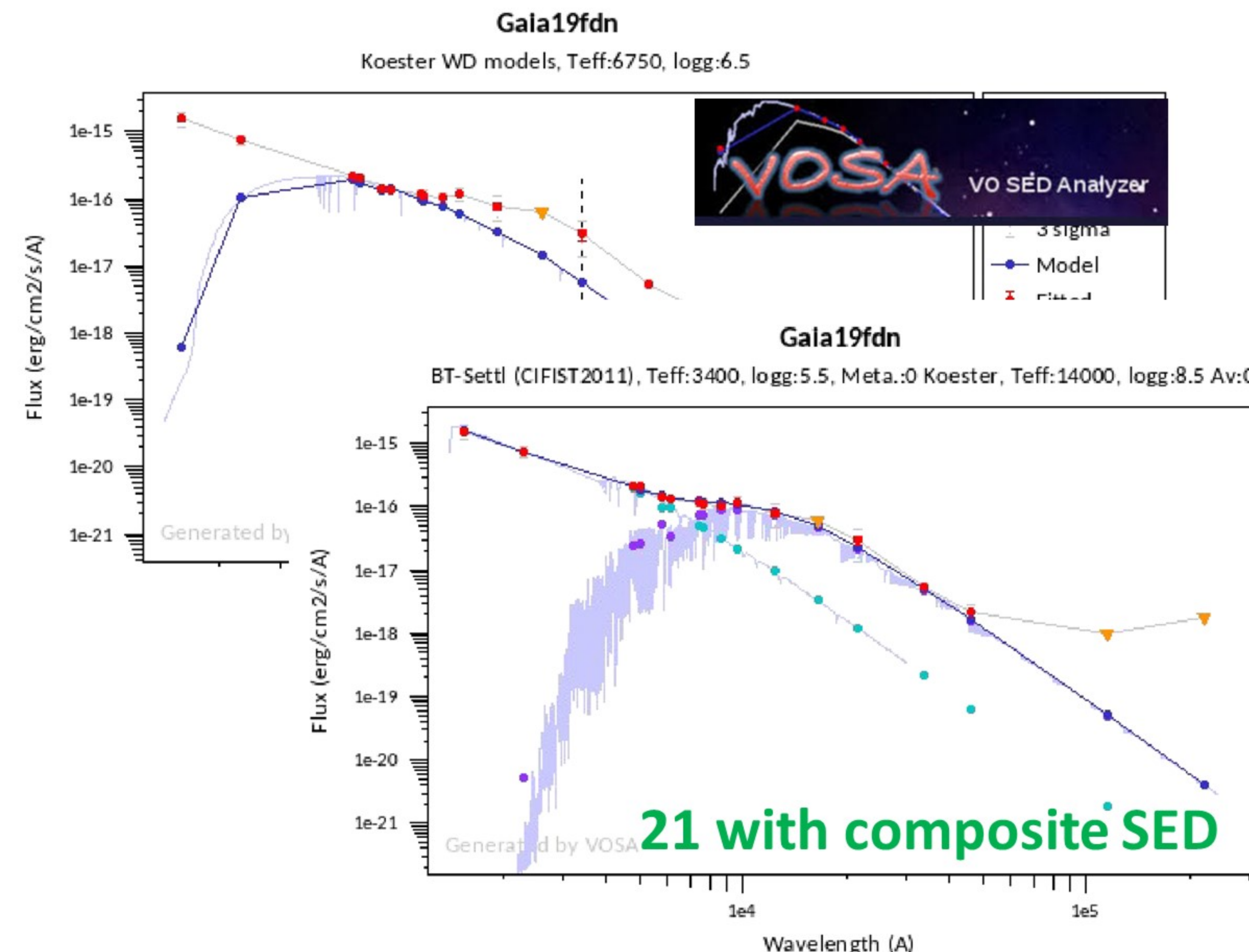


## Step #2: Emission in Halpha



- Look for spectra in VO archives.
- Identify Halpha emission.
- **53 with spectra (18 with Halpha emission)**

## Step #3: Composite SED



## What's next?

- Identification of new candidates in the daily searches.
- Spectroscopic follow-up of the most promising candidates.
- Exploration of other alert systems with many more candidates (e.g. ZTF).

