ASAS-SN Plug-in for VStar

*Description*: This plugin allows you to open text files in the [All-Sky Automated Survey for Supernovae (ASAS-SN)](http://www.astronomy.ohio-state.edu/asassn/index.shtml) formats.

Currently (on 18 Apr 2023), ASAS-SN data comes in three formats. The first and oldest one is provided by the [ASAS-SN Sky Patrol](https://asas-sn.osu.edu/). The second format comes from the [ASAS-SN Photometry Database](https://asas-sn.osu.edu/photometry) and [ASAS-SN Variable Stars Database](https://asas-sn.osu.edu/variables). Those databases contain pre-computed light curves The newest ASAS-SN service, [ASAS-SN Sky Patrol V2.0](https://asas-sn.osu.edu/), provides the data in the third form.

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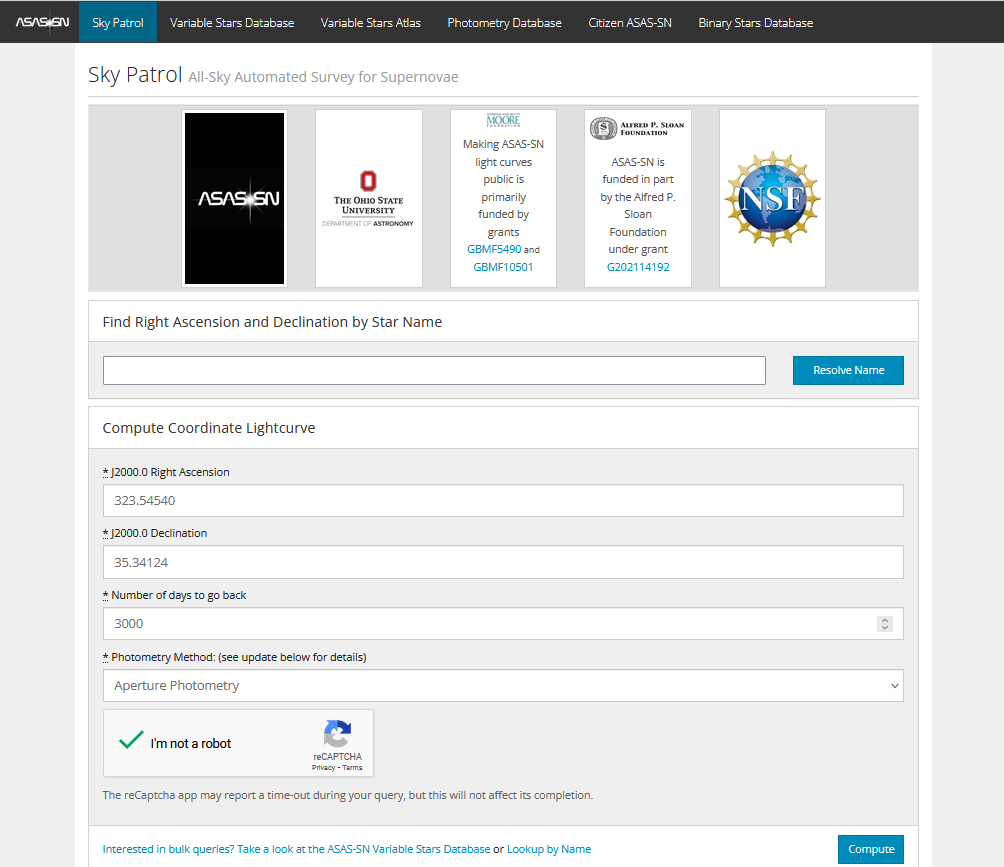
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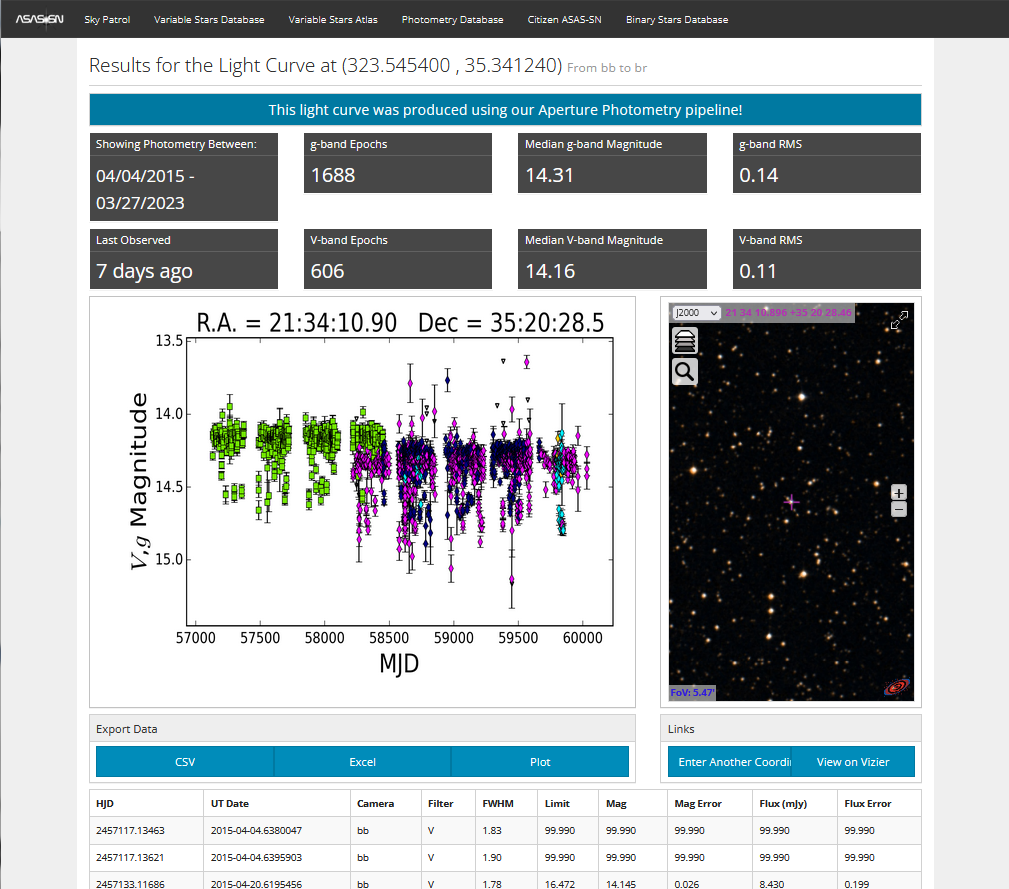
# ASAS-SN Sky Patrol V1.0

ASAS-SN Sky Patrol data are computed in real-time using aperture photometry for a point on the celestial sphere for which ASAS-SN images exist. Go to the Sky Patrol website

[ <https://asas-sn.osu.edu/> ], enter the coordinates of a target and the number of days to go back, then press [Compute]

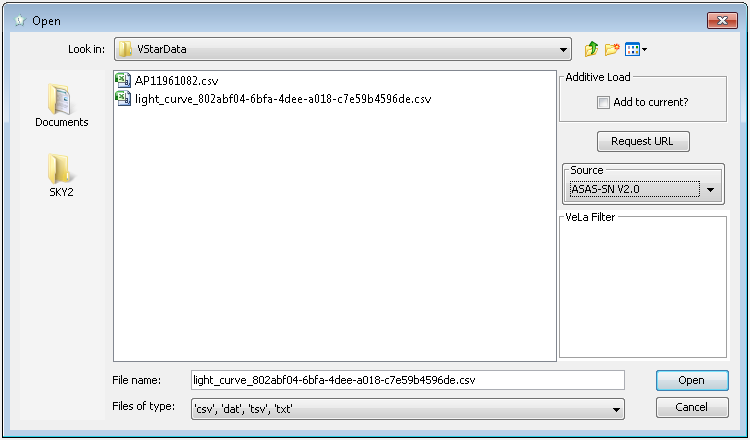


The calculations may take a while. When calculations succeed, you will be redirected to the result page.

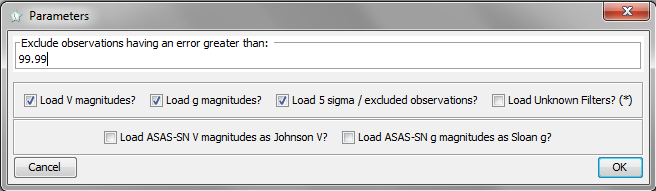


Press the [CSV] button under “Export Data” and save the CSV file to disk. The file contains V and g bands data, as seen from the preview plot.

From VStar, select [New Star from File...] from the [File] menu and then select “ASAS-SN” in the “Source” dropdown list. Go to the location of the saved file and open it.

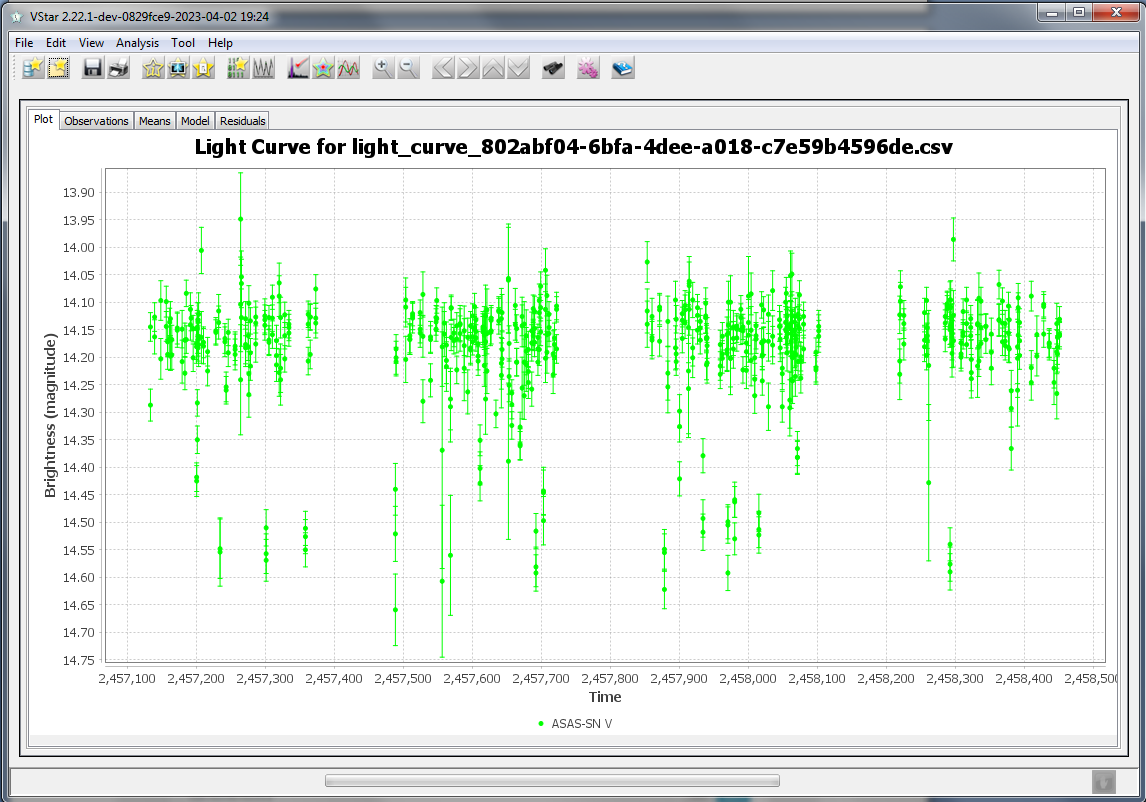


The following dialog will appear:



Currently, ASAS-SN light curves can contain data for V and g bands. Some observations in a file can be marked as unreliable (“5 sigma/excluded observations”); they can be excluded by unchecking the corresponding checkbox. A user can limit the maximum allowed uncertainty (“Exclude observations having an error greater than” field).

Select the data you need (let’s assume you have selected data for the V band only) and press OK. VStar will show you a light curve:

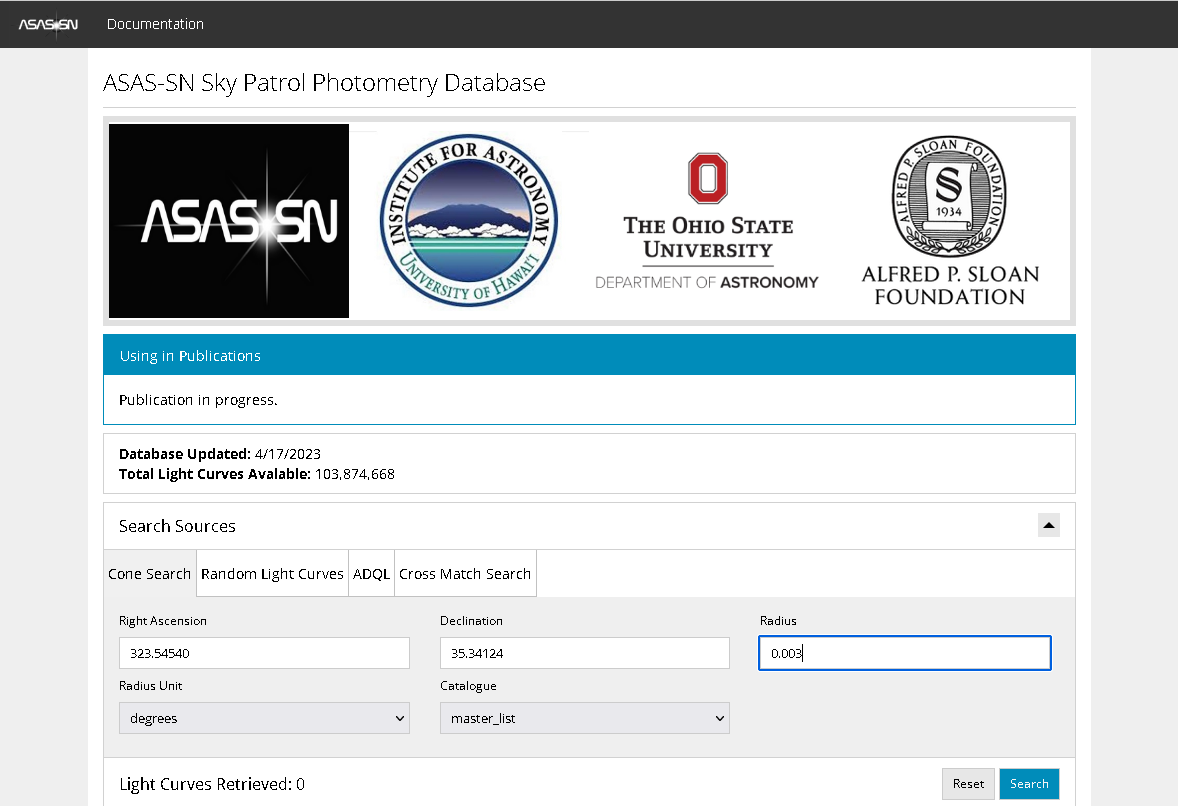


Here is the phase plot for the star (it is an eclipsing binary with a period of 1.095355 days:

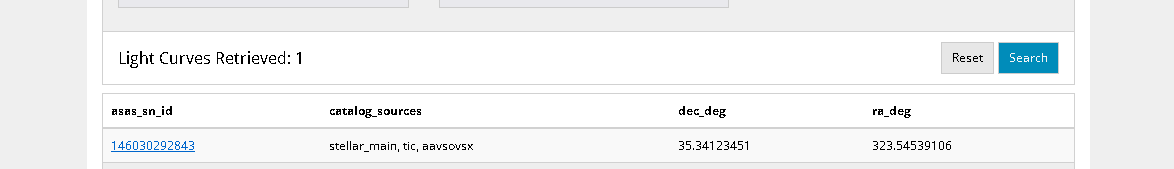
# ASAS-SN Sky Patrol V2.0

The new [ASAS-SN Sky Patrol V2.0](http://asas-sn.ifa.hawaii.edu/skypatrol/), as it is claimed in [ <https://arxiv.org/abs/2304.03791> ], “not only serves pre-computed lightcurves for a select list of ∼111 million targets, but it also continuously updates the lightcurves in real time.”

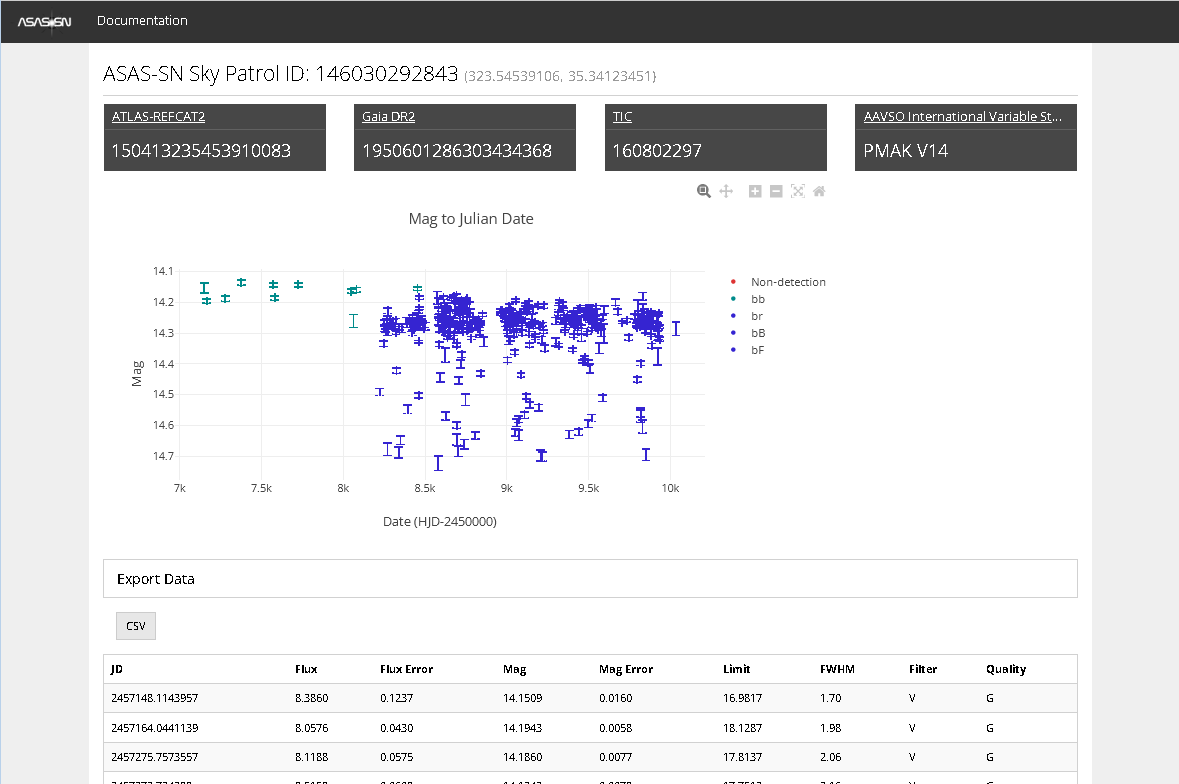
To find the light curve, go to <http://asas-sn.ifa.hawaii.edu/skypatrol/>. On the page, enter RA, Dec, and the search radius in the appropriate fields, then click [Search]:



If the search is successful, you will see one or more links to the light curves:

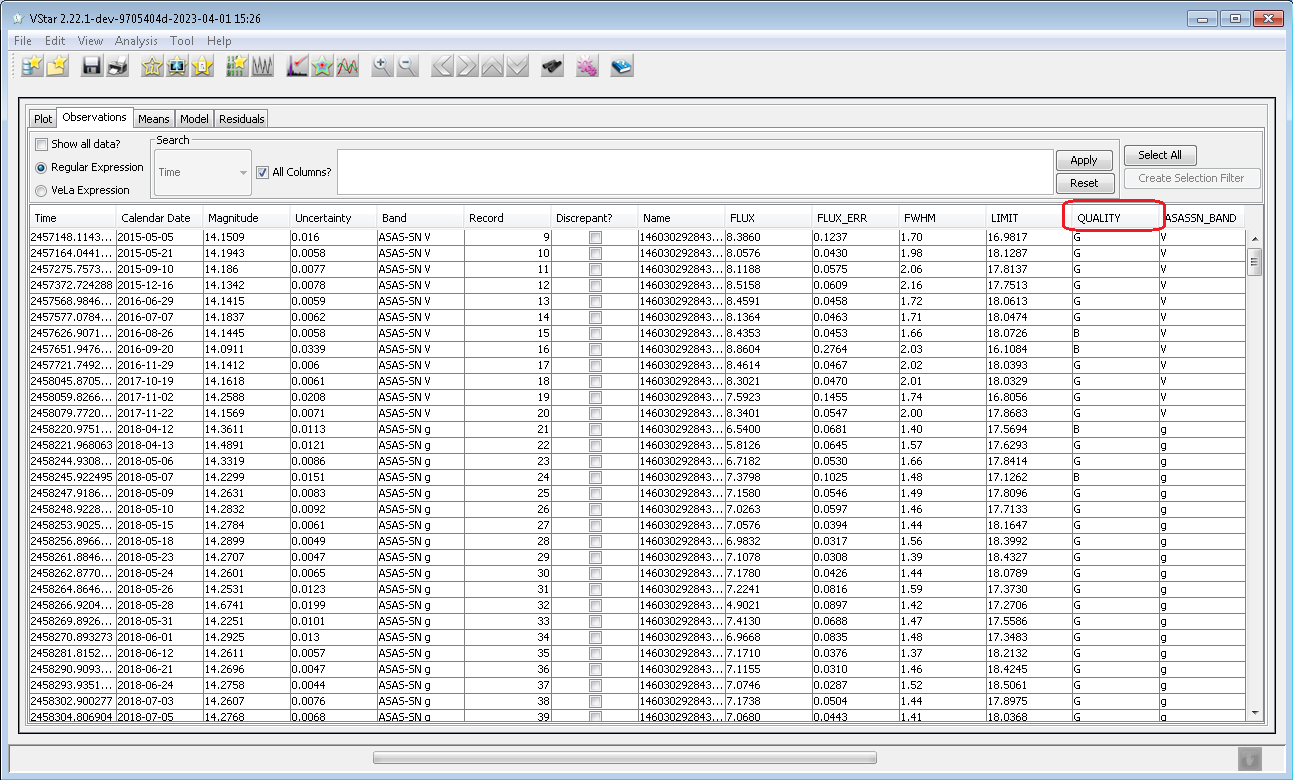


Click on a link, and you will be redirected to the light curve page. Click the [CSV] button to download the data:



Open the CSV file in the same way as described in the previous chapter (in this example, all three V, g, and 5-sigma checkboxes were checked):

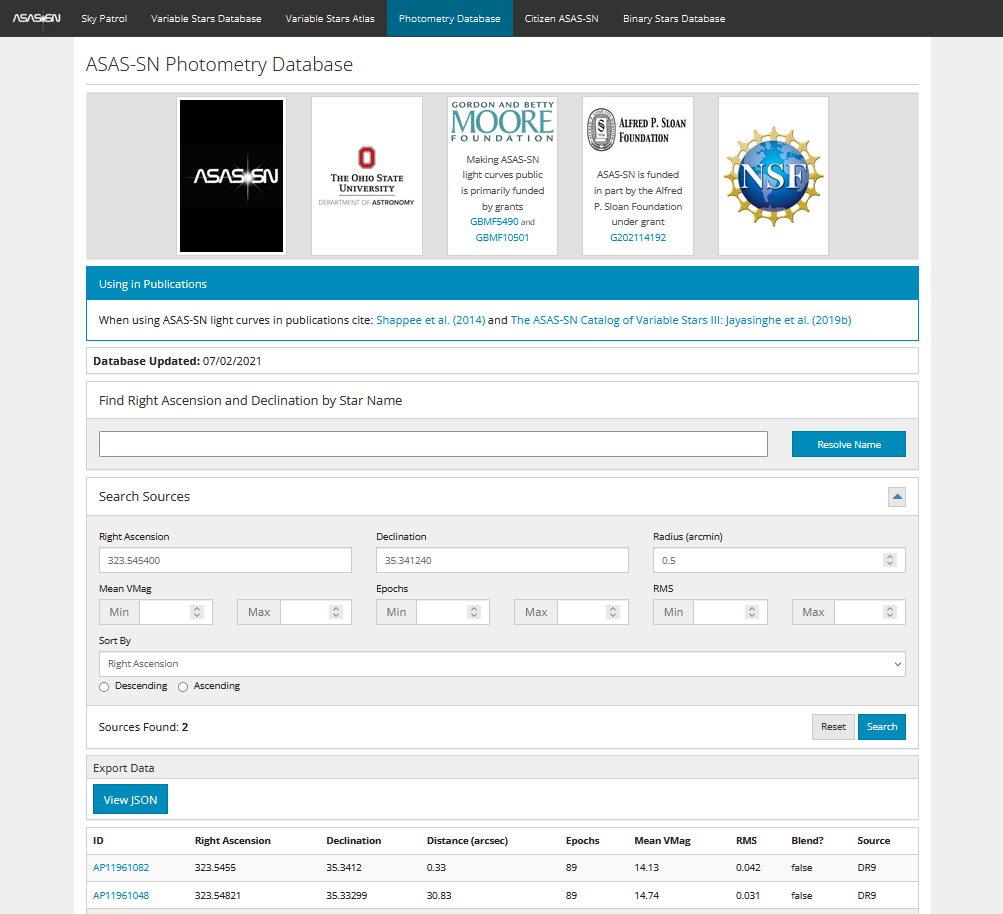
The new format contains the “Quality” column. ASAS-SN advises caution when using data that has not been flagged as “good” [ <https://arxiv.org/abs/2304.03791> ] (i.e., contains the “G“ flag in the “Quality” column:



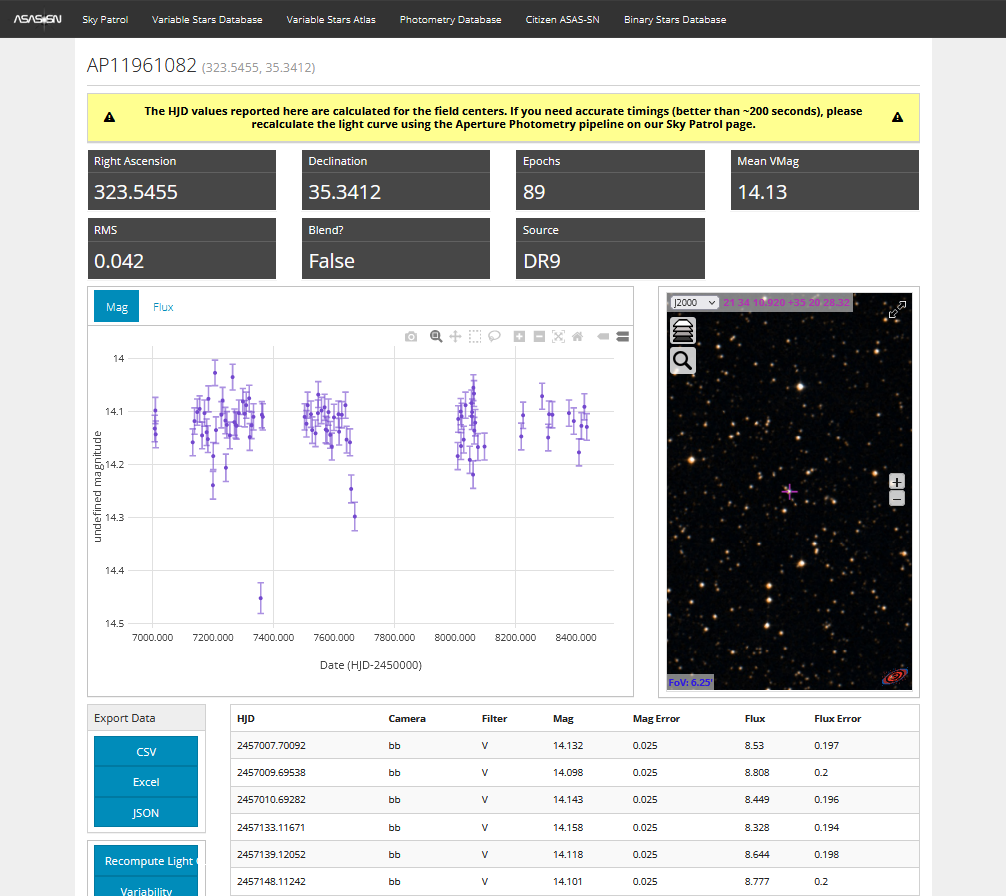
# Pre-computed ASAS-SN Light Curves

Other sources for ASAS-SN light curves are ASAS-SN Photometry Database [ <https://asas-sn.osu.edu/photometry> ] and ASAS-SN Variable Stars Database [ <https://asas-sn.osu.edu/variables> ]. Those databases contain ready-to-use light curves in a format that differs from one produced by Sky Patrol. The plugin loads files of both formats.

To download a light curve, go to one of the databases and enter the coordinates and the search radius (for both databases) or ASAS-SN variable name (for the Variable Star Database). If precomputed curves exist, they will be listed. Do *not* load the data via [Download CSV Dataset] button (the format is currently not supported by the plugin). Instead, click on one of the curves’ IDs.



You will see a new window with a preview plot. Click on the [CSV] button under “Export Data” to download a file. This file can be opened by the plugin in the same way as described above.



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Rev D

2023-04-18

**Revision History**

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| --- | --- | --- |
| Rev | Date | Description |
| D | 2023-04-18 | SkyPatrol V2.0 |
| C | 2023-04-02 | Updated according to the last plugin’s revision |
| B | 2020-04-26 | Open Dialog image added |
| A | 2020-04-17 | Initial Release |