

Light Curve Submission via SODIS/ xml and a comparison of work-flows.

! Occult 4.2023.7.9 has a new feature !

Dave Herald requests light curves for VisieR. These records help to check quality and preserve data.



Y98

Tim Haymes
BAA, IOTA-ES
(a SODIS reviewer for GB)

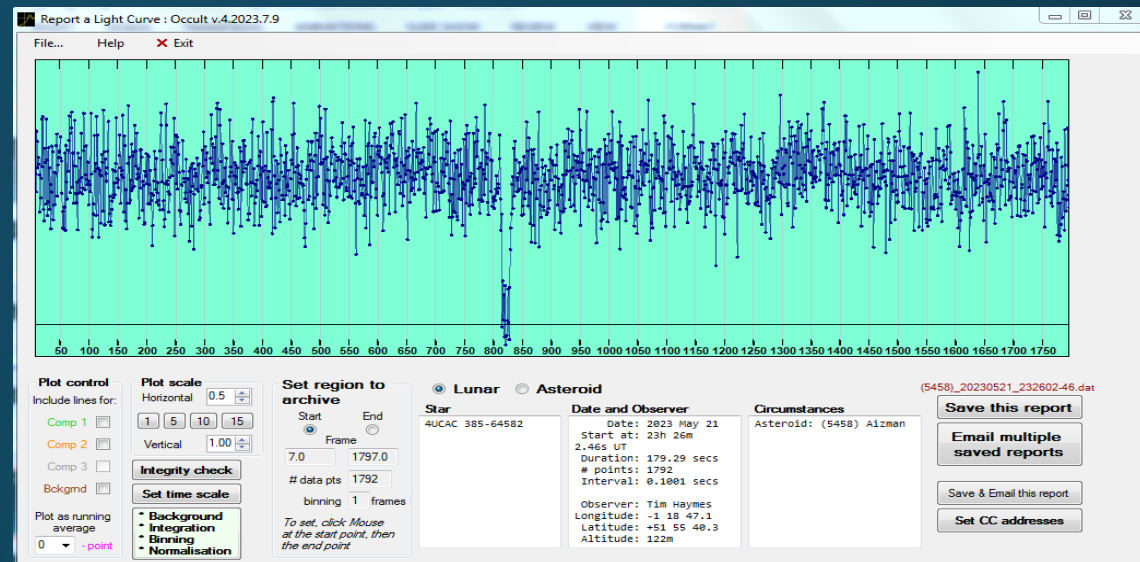
ESOP LXII, @ Armagh Observatory.



C11+ QHY

What is a light curve .dat report file ?

.dat displayed in the report editor:-



To clear up possible misconception:

We use the .csv saved from Tangra , LiMovie, PyMovie or AOTA.
This is the basic light curve, often without any post-processing.

It is *not* the .lc file.

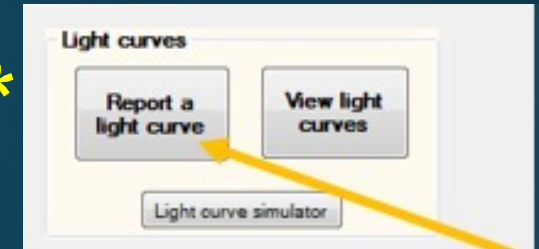
Typical file sizes:

- .SER : 1 Gb
- .lc : 10 Mb
- .csv : 1 - 3 Kb

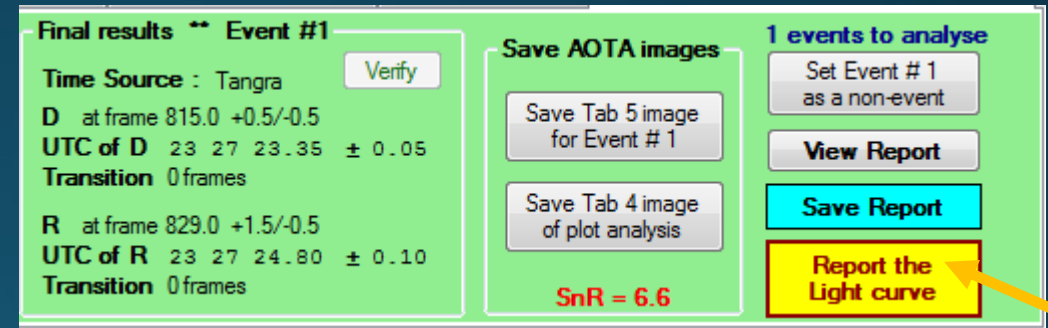
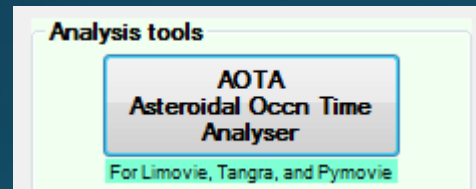
```
(5458)_20230521_232700-22.dat - Notepad
File Edit Format View Help
Date: 2023-5-21 23:27:0.22: 48.85: 489
Star: 0: 0: 0: 0: 0-0-1: 385-64582
Observer: -1:18:47.1: +51:55:40.3: 122: T. Haymes
Object: Asteroid: 5458: Aizman
Values:7685:8549:3363:7096:5413:7569:6055:6019:6952:6694:
72:6797:7083:5174:4640:7770:8089:8113:6979:5638:6945:4994
4730:7566:6237:7227:4337:6273:8084:6781:6024:7295:6605:78
```

What are the Work-Flows for reporting light curves?

1) Tangra .lc => save csv * => Open Occult4 => use Report *
* or via PyOTE * Enter: Observer, Date, Star, Asteroid .

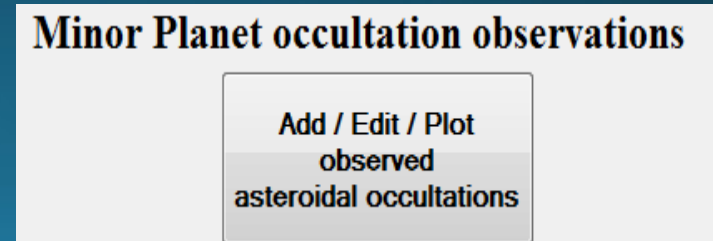


2) Tangra .lc => Plugin for AOTA =>

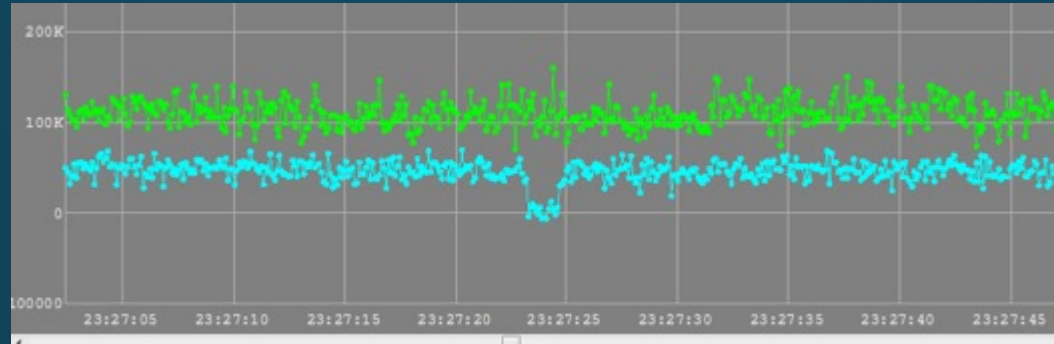


NEW:

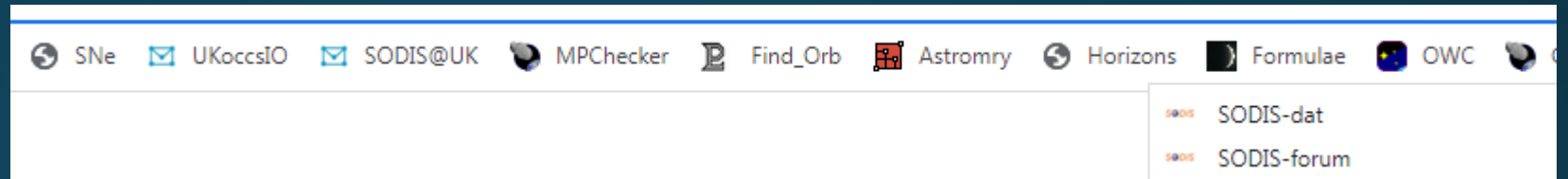
3) Tangra.lc => save csv => SODIS => export XML=> Read with Occult



New Work Flow via SODIS e.g. (5458) Aizman 1/7



From the browser:



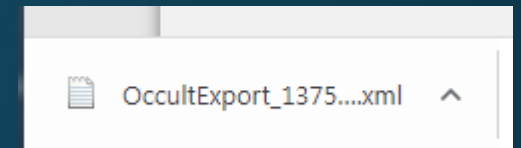
Open SODIS (data)
Filter on 5458

Date	ID	AstName	Occ
2022-11-14	0 (1)	2000 GN81	O+ 1 (434)
2022-11-27	0 (5)	2000 KY48	O- 1 (1035)
2022-11-28	0 (2)	2000 LA25	
2022-11-29	0 (1)	1282 T-2	
2022-11-30	0 (2)	1958 TL1	
2022-12-03	0 (1)	1964 VZ2	
2022-12-04	0 (5)	1981 EJ6	

New Work Flow via SODIS e.g. (5458) Aizman 2/7

SODIS data for (5458) *logged-in as Reviewer.*

Use the EXPORT button to download the xml file



ID	Date	Predicttime	AstNo	AstName	Occ	Duration	CC	Observer	ObsMeth	Review Status	
1375	2023-05-21	2023-05-21, 23:27:33	5458	Aizman	O+	1.5	GB	Tim Haymes	Analogue & digital video	✓ Finished	REVIEW EXPORT
1356	2023-05-21	2023-05-21, 23:27:44	5458	Aizman	O-		GB	William Stewart	Analogue & digital video	✓ Finished	REVIEW EXPORT

Showing 1 to 2 of 2 entries (filtered from 1,471 total entries)

New Work Flow via SODIS e.g. (5458) Aizman 4/7

Open Occult Observation Editor
Open the XML

Minor Planet occultation observations

Add / Edit / Plot
observed
asteroidal occultations

The screenshot shows the 'Asteroid observations editor' window. The 'File...' menu is open, showing options like 'New', 'Open', 'Save', and 'Add to Historical file'. The main interface includes several panels: 'Asteroid' (with radio buttons for Asteroids, Planets, Comets), 'Historical observations' (with filters for Date, Name, Number, Class), 'Times [UT]' (with input fields for hours, minutes, seconds, and event weight), 'Conditions' (with dropdowns for Method, Time, Signal-to-Noise, Stability, Transparency), and 'Manage observers' (with buttons for ADD, REPLACE, DELETE, RENUMBER). The status bar at the bottom indicates 'Current Solution : 0.0 x 0.0 km, PA 0.0 : No reliable position or size'.

New Work Flow via SODIS e.g. (5458) Aizman 5/7

Opening the XML will give you extra windows, but we only need this one!

Date
Year: 2023, Mth: 5, Day: 21
Hrs: 23.4
Approximate mid-time (hh.h)

Star
Catalogue: UCAC4
Number: 385 - 064582
RA = 14 11 3.58489
Dec = -13 5 20.1554
Mvr = 12.31 GaiaEDR3

Asteroid
Asteroids (selected), Planets, Comets
DAMIT ISAM
Number: 5458
Name: Aizman
Get details
dX = -9.206 km/s, dY = 6.024 km/s
π = 3.8610", -0.4 mas/hr, Mv: 17.24
Dia: 20 ± 2 km = 12.3 mas

Historical observations
by Date: 2023 to June
by Name: All
by Number: All
by Class: Amor
490 / 8981 0

Observer
Name 1: William Stewart
Optional Name 2:
located near: Nantwich, country: GB
Aperture: 28 cm, SCT
E. Longitude: -2 34 7.5 dms
Latitude: 53 3 27.0 dm.m
Datum: WGS84, Altitude: 68 m

Times [UT]
D: 23 23 0, R: 23 23 0
Clouded out: Time shift (sec):
Event qualifier:
 No occn detected, 2nd star
 Prediction, Ring
 unseen Satellite parent, Satellite

Conditions
Method: Analogue or Digital video
Time: GPS
Signal-to-Noise: 5
Stability: Slight flickering
Transparency: Thin cloud <2
Free text: n
Include in solution: Include observation

Manage observers
ADD as new #3
REPLACE record #1
Move record up down
DELETE record #1
RENUMBER list

Manage Historical file
Add event to Historical file 25m 18s

Mag. drop : 4.9 (99%)
Current Solution : 1.0 x 1.0 km, PA 0.0 : No reliable position or size

1	William Stewart, Nantwich, GB	-	234	7.5	+53	327.0	68	28323a2323	0.	M	2323	0.	M	a
2	Tim Haymes, Oxford, GB	-	11847.1	+515540.3	122	28321a232723	.3	D0.1			232724	.80R0	.15	a

New Work Flow via SODIS e.g. (5458) Aizman 6/7

Right click on the observer to open the report window. (Tim Haymes in this example)

The screenshot displays the 'Asteroid observations editor' software interface. The main window title is 'Asteroid observations editor : File = OccultExport_1375_2023-05-21_5458_Aizman.xml'. The interface is divided into several panels:

- Date:** Year 2023, Mth 5, Day 21. Approximate mid-time (hh.h) 23.4.
- Star:** Catalogue UCAC4, Number 385 - 064582. RA = 14 11 3.58489, Dec = -13 5 20.1554, Mv = 12.31, GaiaEDR3.
- Asteroid:** Asteroids selected, DAMIT ISAM. Number 5458, Name Aizman. dX = -9.206 km/s, dY = 6.024 km/s, $\pi = 3.8610'' - 0.4 \text{ mas/hr}$, Mv: 17.24, Dia: $20 \pm 2 \text{ km} = 12.3 \text{ mas}$.
- Historical observations:** by Date 2023 to June, by Name All, by Number All, by Class Amor. 490 / 8981 0.
- Observer:** Name 1 Tim Haymes, Name 2 (Optional). Located near Oxford, country GB. Aperture 28 cm, SCT. E. Longitude -1 18 47.1, Latitude 51 55 40.3. Datum WGS84, Altitude 122.
- Times [UT]:** D 23 27 23.3, R 23 27 24.80.
- Conditions:** Method Analogue or Digital video, Time GPS, Signal-to-Noise 5.
- Manage observers:** ADD as new #3, REPLACE record #2, DELETE record #2, RENUMBER list, Add event to Historical file.

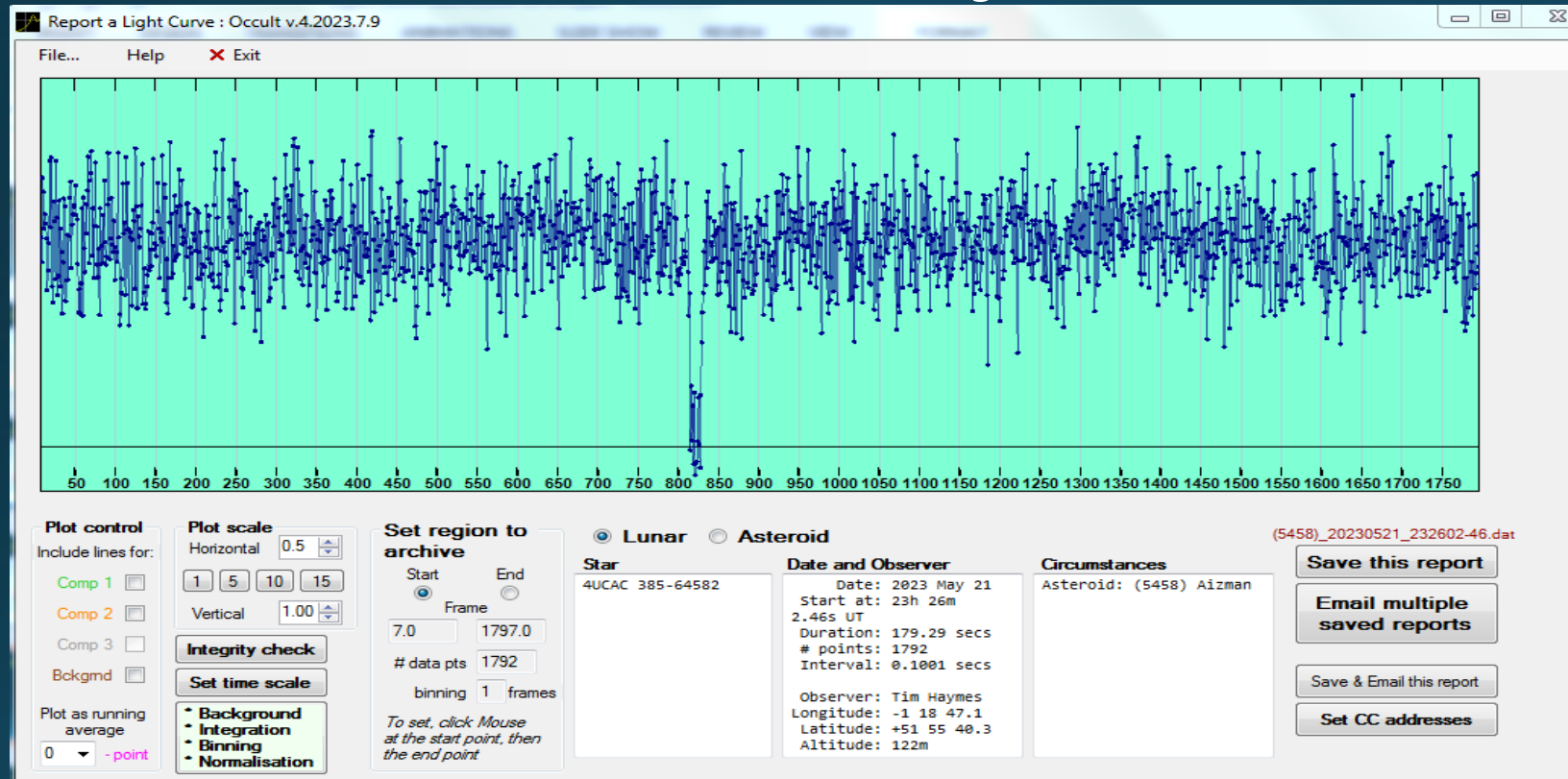
A confirmation dialog box is open in the foreground, titled 'Confirm light curve & Observer'. It contains a question mark icon and the text: 'Do you want to open the Light Curve Report form to report a light curve from a .csv file, for Tim Haymes'. An 'OK' button is at the bottom.

At the bottom of the main window, there is a table of observers:

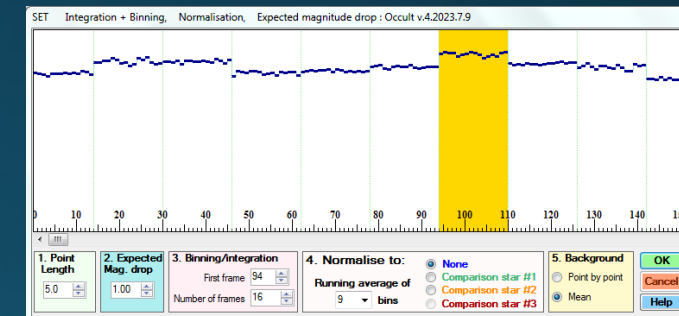
Observer ID	Name	Location	Country	RA	Dec	Magnitude
1	William Stewart	Nantwich, GB	GB	234	7.5	+53
2	Tim Haymes	Oxford, GB	GB	11847.1	+51	

New Work Flow via SODIS e.g. (5458) Aizman 7/7

Yes we do! Read the CSV and click **OK** through a few windows – and there we are:



For integrated video you are asked to bin the frames by selecting, 2, 4, 8, 16 frames etc...



DONE

The screenshot shows a Windows File Explorer window with the following structure:

- Computer > WINDOWS (C:) > Program Files (x86) > Occult 4 > Observations > LightCurves
- File list:

Name	Date modified	Type	Size
Reported	11/07/2023 16:51	File folder	
(5458)_20230521_232602-46.dat	13/07/2023 22:00	DAT File	9 KB

Recall Work Flow-1: We have avoided the re-typing step:

The screenshot displays the Occult v.4.2023.7.9 software interface. The main window shows a plot of occultation data with a horizontal axis from 200 to 1750 and a vertical axis representing magnitude. A yellow arrow points from the plot to the '3. Asteroid' section of the 'Details of the asteroidal occultation' dialog box.

Details of the asteroidal occultation

1. Site and Observer

E. Longitude: -01 18 47.1
Latitude: 51 55 40.3
Altitude (msl): 122 meters
Observer: Tim Haymes
Separate multiple observers with: /
Buttons: Set as default, Use default

2. Date of the event

Year: 2023, Month: Jul, Day: 13

3. Asteroid

Number: -1, Name: [empty]

4. Star

Catalogue: Hipparcos, Number: [empty]

Select / Manage Observers

Select site from observer list: Tickner

Add site to the observer list, using the following identifier: Tickner

Delete selected site

Plot scale

Horizontal: 0.5, Vertical: 1.00

Integrity check, **Set time scale**

Background, **Integration**, **Binning**, **Normalisation**

Set region to archive

Start: 7.0, End: 1797.0, # data pts: 1792, binning: 1 frames

To set, click Mouse at the start point, then the end point

Star

Date and Observer

Date: 1900 0, Start at: 23h 26m 2.46s UT, Duration: 179.19 secs, # points: 1792, Interval: 0.1000 secs, Observer: Longitude: +0 00 00.0, Latitude: +0 00 00.0, Altitude: 0m

Circumstances

Asteroid: (-1)

19000000_232602-46.dat

Save this report, **Email multiple saved reports**, **Save & Email this report**, **Set CC addresses**

Transfer data and Exit, **Cancel**

Reminder on setting up Occult to send emails

Sending the light curve to Dave via Occult can be a problem to set up. An SMTP server is needed. Read the Occult help File.

My working environment for sending light curves is Win-7.

4. Email settings

To Email your observations, you must enter your email address and your SMTP email server name here.

User's email address SMTP Email Server Name

Advanced Email settings - specify only if needed

If your Email server requires separate authentication Email user name Password Email server requires SSL connection If your Email server uses a Port other than 25

Port

At start-up, Occult will display a page for downloading updated data if that page hasn't been displayed for Days ['0' = never displayed]

NOTE: Several data files used by Occult can be updated using 'Anonymous' ftp download. Anonymous FTP requires a password, which is usually your email address. Note that the default password used in browsers such as Netscape and Mozilla will NOT work on the Minor Planet Center site. Enter your email address above for use with Anonymous FTP downloads.

OR send the light curve file to : <LightCurves>
HeraldDR@bigpond.com

Any Questions / Discussion?

Another new feature (starting with PyOTE 5.0.5) is the creation of occultation light curves in the VizieR required format (AOTA already has this option) for export to Dave Herald. The lightcurves can be seen from Occult4/Asteroid Observations/Light curves. They are exported to VizieR by D. Herald. [Figure 3.36](#) shows PyOTE's "VizieR export" tab and a lightcurve example.

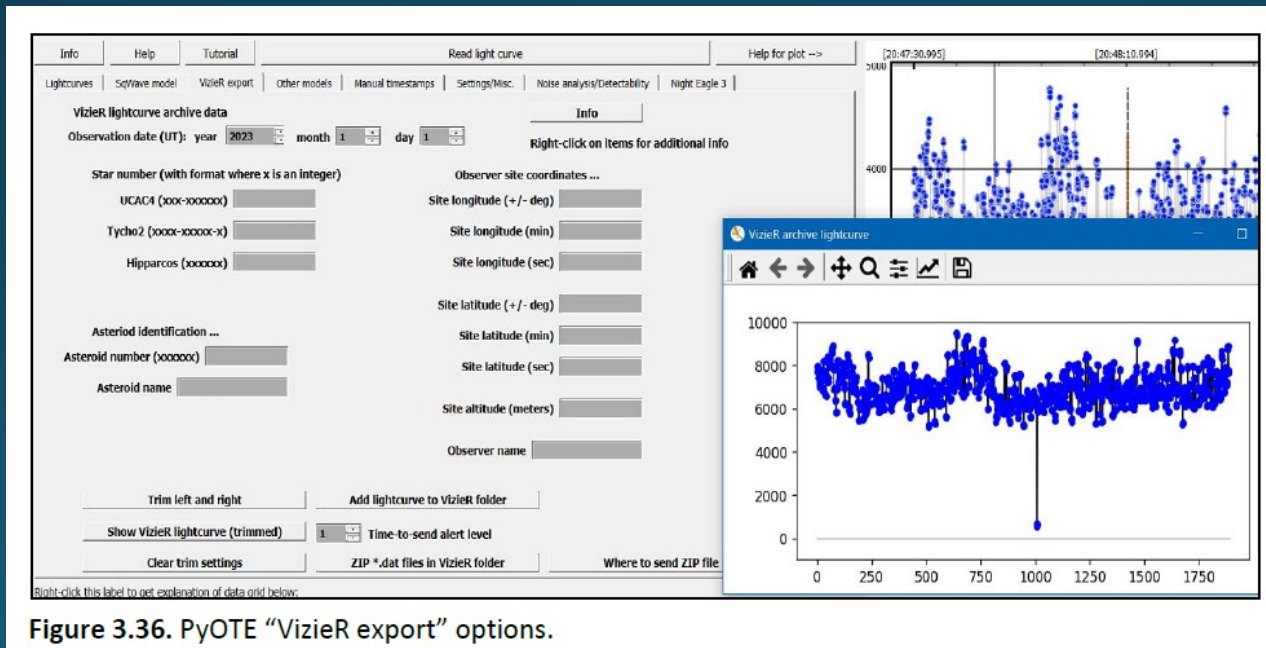


Figure 3.36. PyOTE "VizieR export" options.