

Testing VStar

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Introduction

There are two main types of testing necessary for an application such as VStar: unit testing and system testing.

Unit Testing

VStar contains a set of so-called unit tests that can be run via *ant test* (see `build.xml` at the top-level of the VStar distribution available from SourceForge: <http://vstar.svn.sourceforge.net/viewvc/vstar/trunk/test/?pathrev=671>) to determine whether key modules (Java classes) and functionality work and continue to work over time in the face of changes to the code base. The ability to perform such *regression testing* provides some confidence in the health of VStar's code base and allows the code to be modified without fear. If a unit test fails after a change is made, the test itself can help to debug the cause of the problem.

There are many more unit tests that could be written to improve *code coverage*, and anyone interested in writing unit tests for VStar should put their hand up.

System Testing

As important as unit testing is, it is no substitute for GUI or system testing. In the case of VStar, this is something that has been done in a very ad hoc way, usually just before a release.

The strategy in future releases is to first make a WebStart release available to the Citizen Sky VStar Software Development Team. After a period of system testing by team members, the version will be deployed to the broader AAVSO community.

The focus of this document is to set out some system testing scenarios. For a new version of VStar, please choose one or more scenarios and test VStar against it, reporting any problems you find to the Citizen Sky VStar Team forum or to me (dbenn@computer.org). The forum is better, especially if more than one person finds the same bug.

Some scenarios make use of 5 star analysis tutorial data files (hereafter referred to as “5-star file”). You can obtain `5star-data-files.zip` from SourceForge: <https://sourceforge.net/projects/vstar/files/>

The test scenarios are, to some extent, meant only as guides. I would recommend initially following them mechanically, later coming up with your own variations. There is value in simple repetition, from a regression viewpoint, i.e. to answer the question: has anything broken/changed/been fixed since the last time I did this?

If you would like to contribute scenarios to this document, please do so either via the Citizen Sky VStar Team forum or via email.

Of course, you should also carry out any other kind of testing you desire. Try to break VStar! The change log:

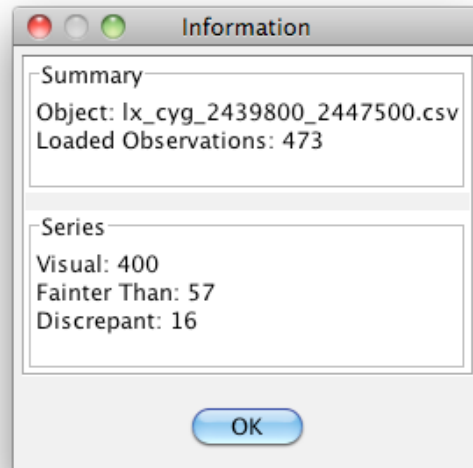
<http://vstar.svn.sourceforge.net/viewvc/vstar/trunk/ChangeLog.txt?revision=671&view=markup&pathrev=671>

is updated for each release, and provides a good indication of new features and bug fixes that need testing over and above the scenarios below.

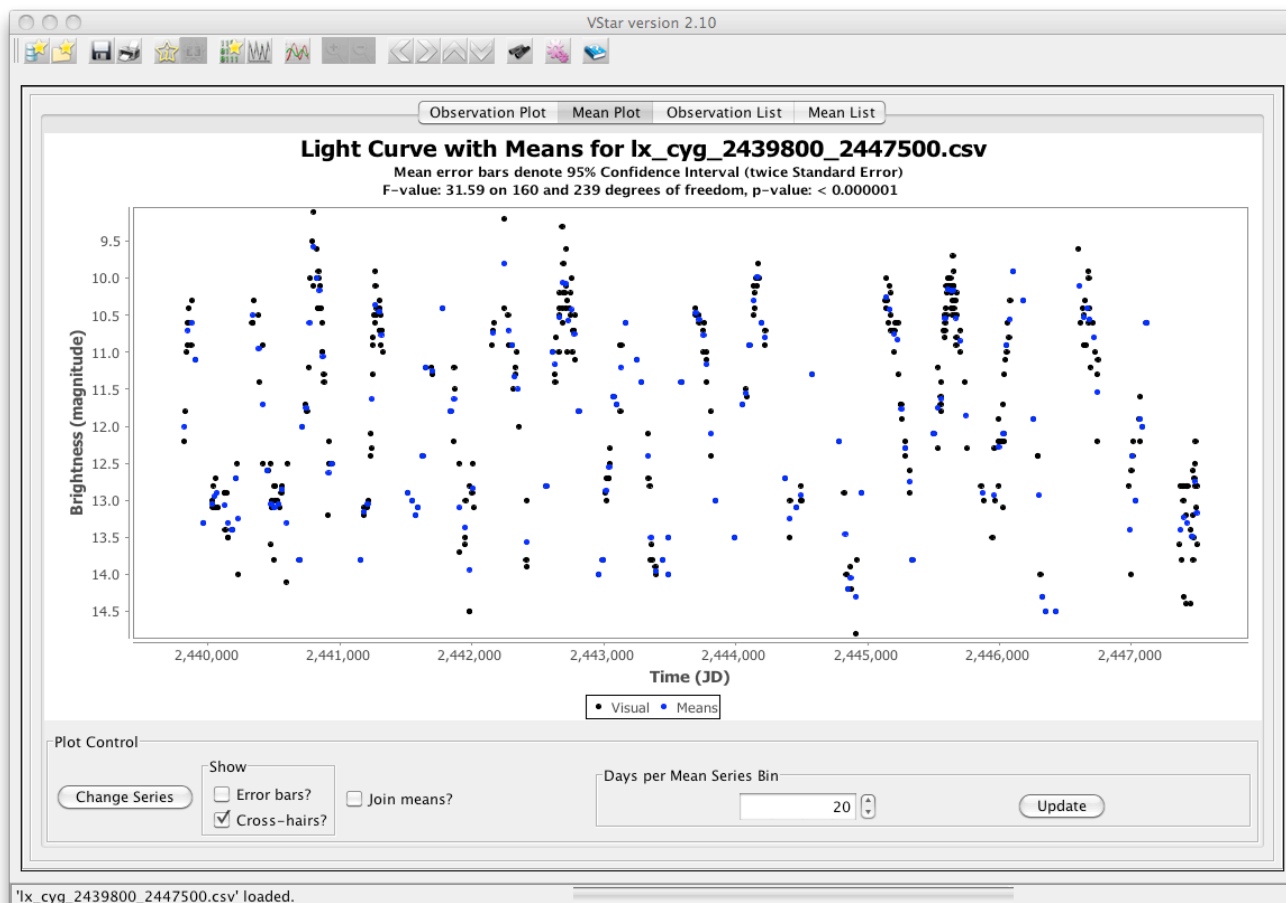
Scenario: General Tour

This scenario takes a broad approach to testing key VStar features.

1. Select `New Star` from `File` from the `File` menu or toolbar.
2. Open the 5-star file `lx_cyg_2439800_2447500.csv`
3. Select `Information` from the `File` menu or toolbar. The opened dialog should look like this:



4. Select the Mean Plot tab. Unselect Error bars? and Join means? check-boxes. The mean plot should look like this:



5. Select the Observation List tab. Select the row whose Julian Day is 2440130.6. This is what you should see:

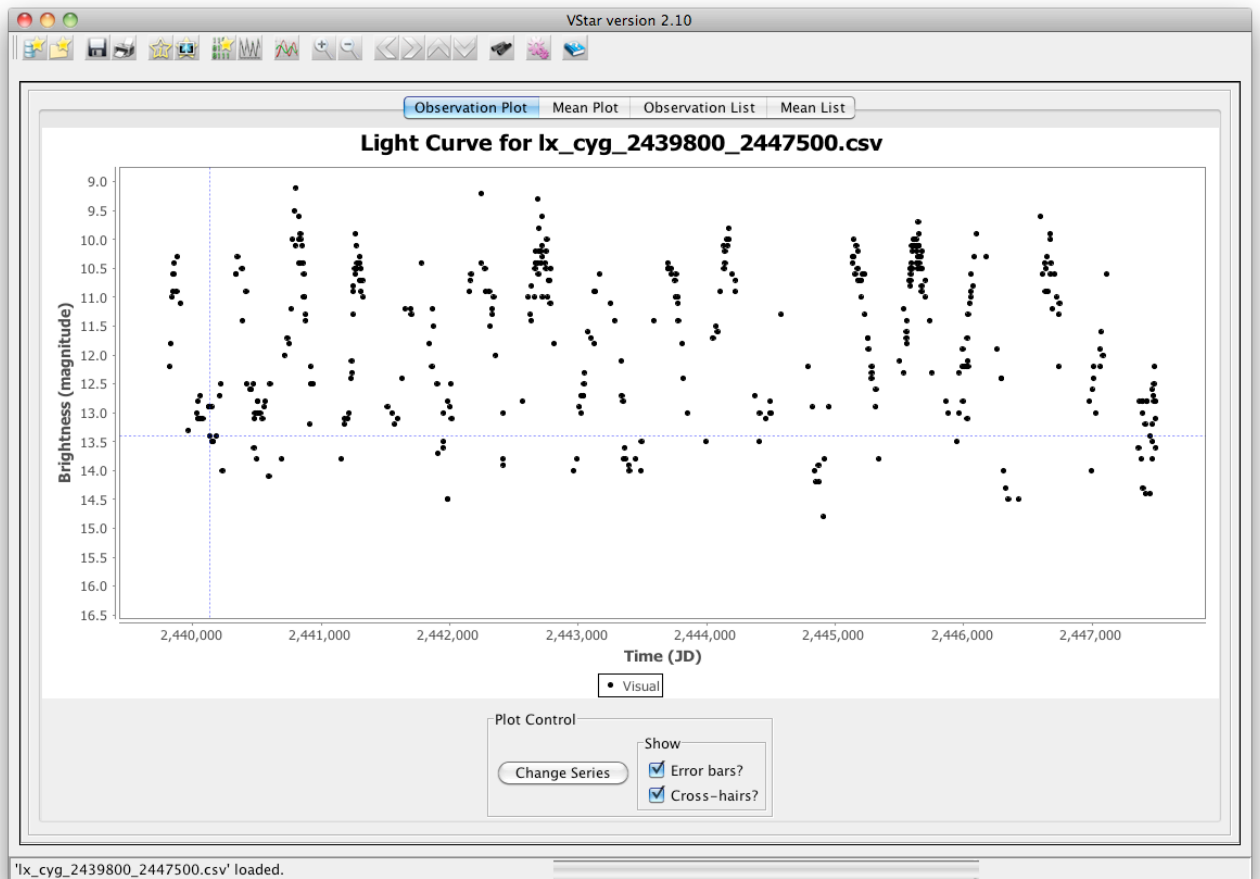
VStar version 2.10

Observation Plot Mean Plot **Observation List** Mean List

Julian Day	Calendar...	Magnitude	Band	Observer...	Validation	Comp Star 1	Comp Star 2	Charts	Comment...	Comments	Transform...	Airmass	CMag	KA
2439818.6	1967 NO...	12.2	Visual	FD	Good						no			
2439826.6	1967 DEC 2	11.8	Visual	FD	Good						no			
2439838.5	1967 DEC...	11.0	Visual	LS	Good						no			
2439844.6	1967 DEC...	10.9	Visual	LS	Good						no			
2439845.6	1967 DEC...	10.6	Visual	FD	Good						no			
2439851.7	1967 DEC...	10.6	Visual	CR	Good						no			
2439854.5	1967 DEC...	10.4	Visual	TJ	Good						no			
2439874.5	1968 JAN...	10.9	Visual	LS	Good						no			
2439877.5	1968 JAN...	10.3	Visual	FD	Good						no			
2439903.5	1968 FEB...	11.1	Visual	LS	Good						no			
2439965.8	1968 APR...	13.3	Visual	FD	Good						no			
2440031.8	1968 JUN...	13.0	Visual	FD	Good						no			
2440036.8	1968 JUN...	13.1	Visual	CR	Good						no			
2440038.8	1968 JUL 1	12.8	Visual	AC	Good						no			
2440039.8	1968 JUL 2	11.2	Visual	AD	Discrepant						no			
2440056.8	1968 JUL...	13.1	Visual	CR	Good						no			
2440058.6	1968 JUL...	12.7	Visual	LS	Good						no			
2440066.7	1968 JUL...	<13.7	Visual	SCE	Good						no			
2440077.6	1968 AU...	13.1	Visual	FD	Good						no			
2440089.7	1968 AU...	<14.5	Visual	TJ	Good						no			
2440097.9	1968 AU...	16.2	Visual	CE	Discrepant						no			
2440097.9	1968 AU...	<16.0	Visual	FD	Good						no			
2440126.8	1968 SEP...	12.9	Visual	HR	Good						no			
2440126.9	1968 SEP...	12.9	Visual	CR	Good						no			
2440127.6	1968 SEP...	<14.0	Visual	AD	Good						no			
2440130.6	1968 OC...	13.4	Visual	FD	Good						no			
2440134.7	1968 OC...	<13.7	Visual	FD	Good						no			
2440145.7	1968 OC...	12.9	Visual	LS	Good						no			
2440153.7	1968 OC...	13.5	Visual	FD	Good						no			
2440154.8	1968 OC...	13.5	Visual	CR	Good						no			
2440181.6	1968 NO...	13.4	Visual	SCE	Good						no			
2440209.6	1968 DEC...	12.7	Visual	FD	Good						no			
2440220.6	1968 DEC...	12.5	Visual	CR	Good						no			
2440230.5	1969 JAN 9	14.0	Visual	FD	Good						no			
2440334.9	1969 APR...	10.6	Visual	AC	Good						no			
2440338.9	1969 APR...	10.6	Visual	HR	Good						no			
2440347.8	1969 MA...	10.3	Visual	FD	Good						no			
2440382.8	1969 JUN	10.5	Visual	FD	Good						no			

'lx_cyg_2439800_2447500.csv' loaded.

- Notice that the observation details and zoom toolbar buttons and View menu items are now active but were not before the selection.
- Select the Observation Plot tab. The cross-hair should be on the observation whose Julian Day is 2440130.6, as follows:



8. Select the Observation Details View menu item or toolbar button. The dialog should look like this:

Details

LX CYG

Julian Date: 2440130.6

Calendar Date: 1968 OCT 1

Magnitude: 13.4

Validation: Good

Band: Visual

Observer Code: FD

Comment Codes:

Comparison Star 1:

Comparison Star 2:

CMag:

KMag:

☐ Discrepant?

OK

9. Close this dialog, then:

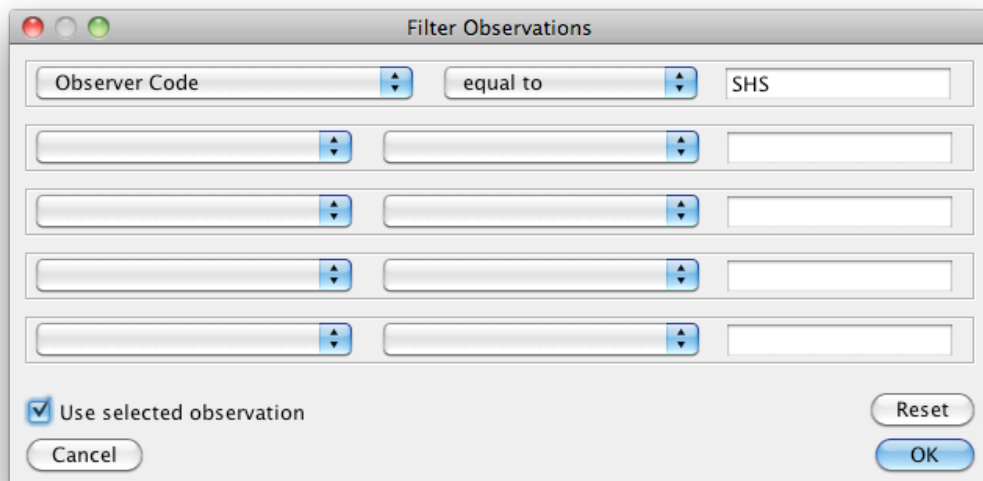
- Select another data point in the Observation Plot by clicking once with the mouse elsewhere on the plot.
- Compare the result of opening the Observation Details dialog via this view and via the Observation List tab; they should be identical. *Hint:* you can have multiple Observation Details dialogs open at once.
- Check that the selected row in the Observation List contains information that is consistent with the data point selected in the Observation Plot view.

10. Carry out similar operations using the Mean Plot and Mean List views.

11. Select the Observation Plot view and select a data point somewhere near the middle.

- Use the toolbar zoom buttons to zoom in a few steps, then back out again.
- Zoom in a few steps and use the left, right, up, and down pan arrow keys to ensure you can view parts of the plot “hidden” by the zoom operation.

12. Open the filter dialog via the toolbar “binoculars” button or the View menu item. Select an observer code matcher and select the “Use selected observation?” checkbox. Depending upon which star the cross hairs are on, the filter dialog should look like this, possibly with a different observer code:

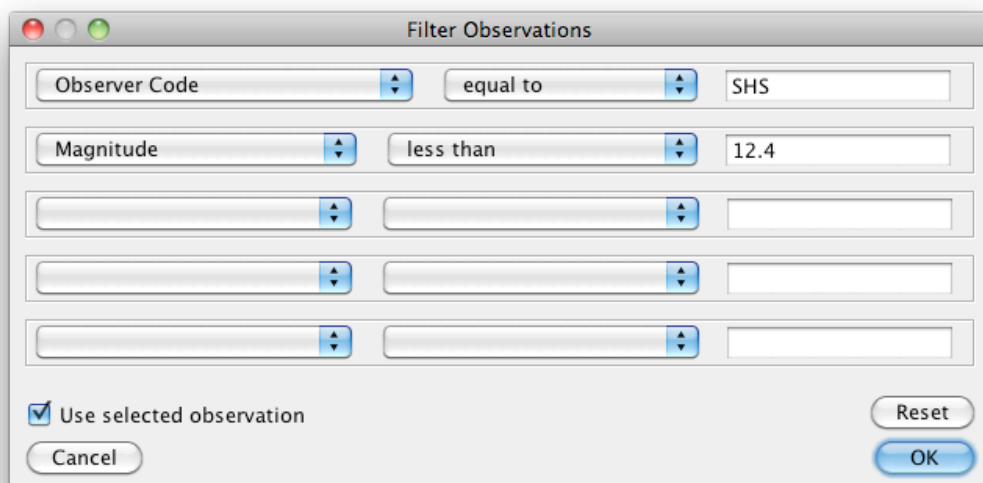


13. Click the OK button. A new series should appear, showing all data points made by the observer corresponding to the data point under the cross hair.

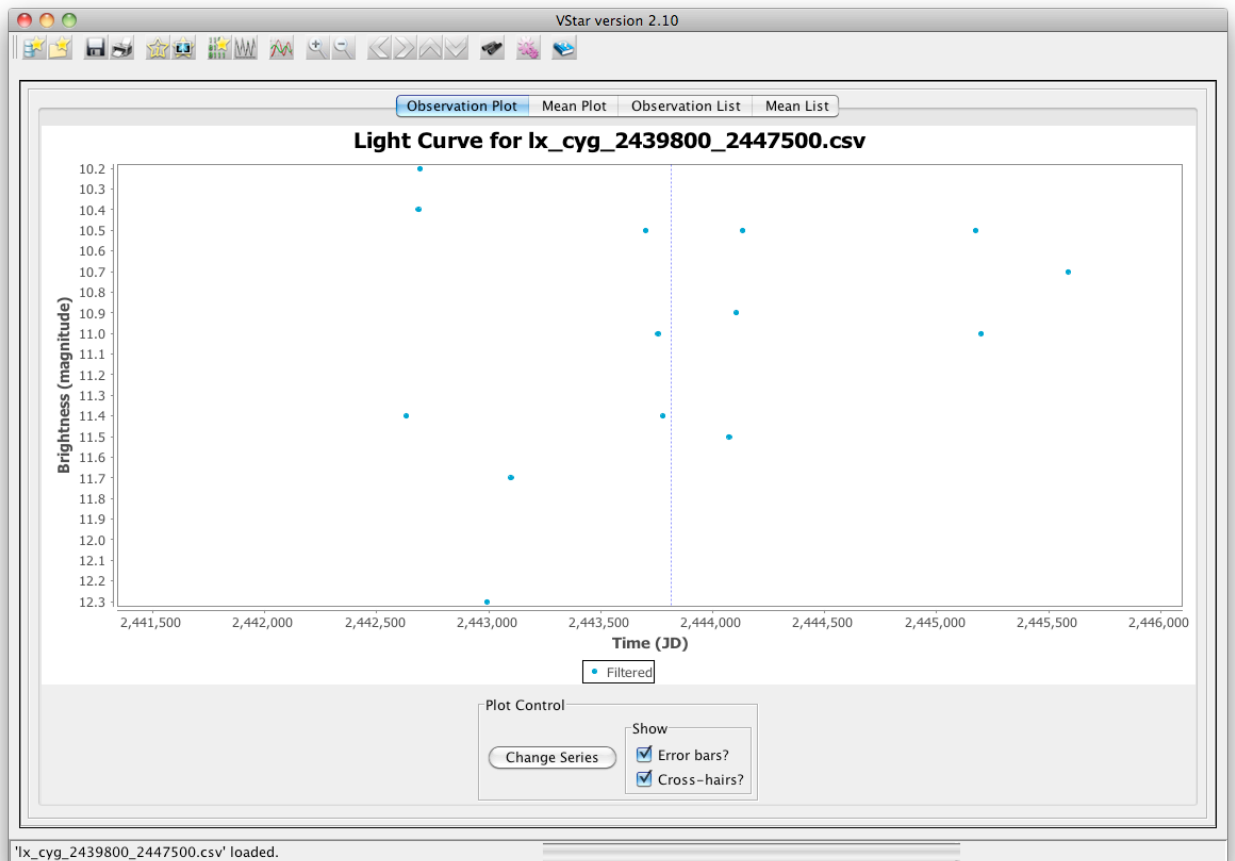
14. Click the `Change Series` button near the bottom of the `Observation Plot` view, deselecting all but the `Filtered` series, so that only the filtered observations appear, like this:



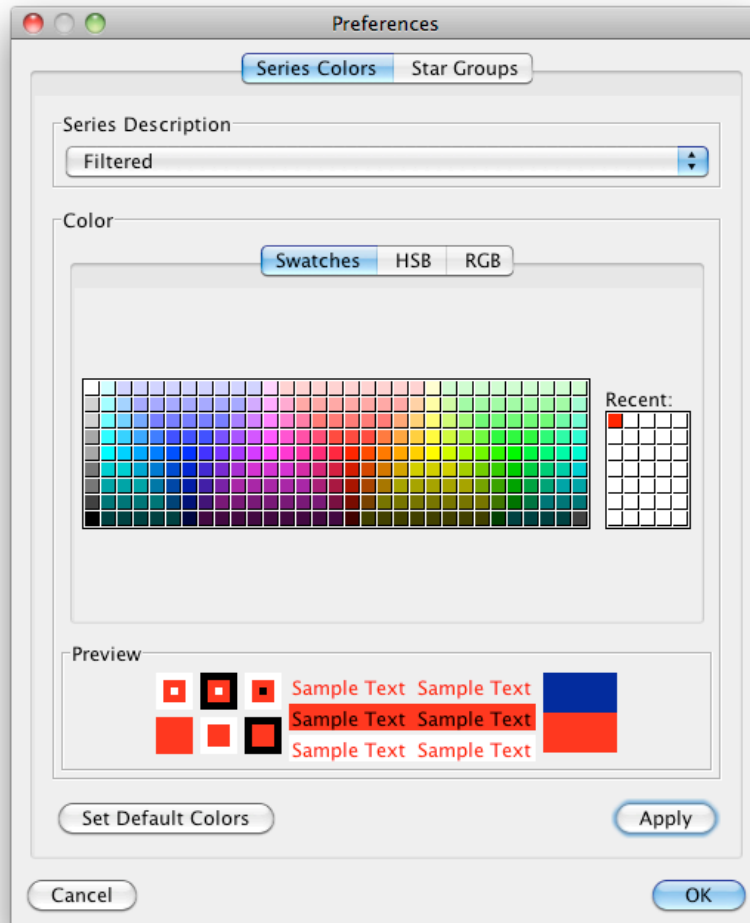
15. Open the filter dialog again and add another matcher, such as magnitude, and an operator such as "less than":



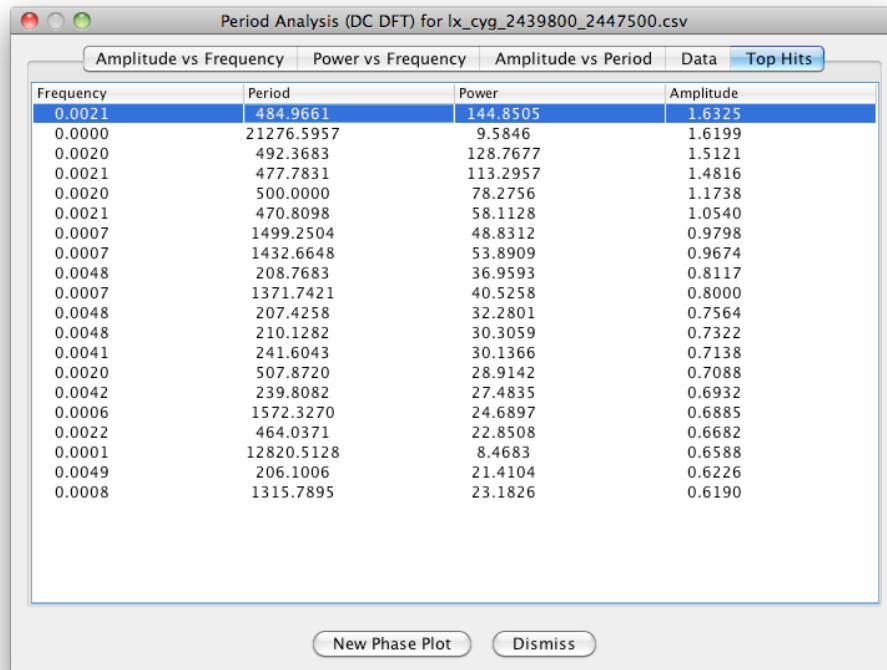
16. Check that the `Observation Plot` and `Observation List` views match what you would expect, e.g. for the filtering operation above:



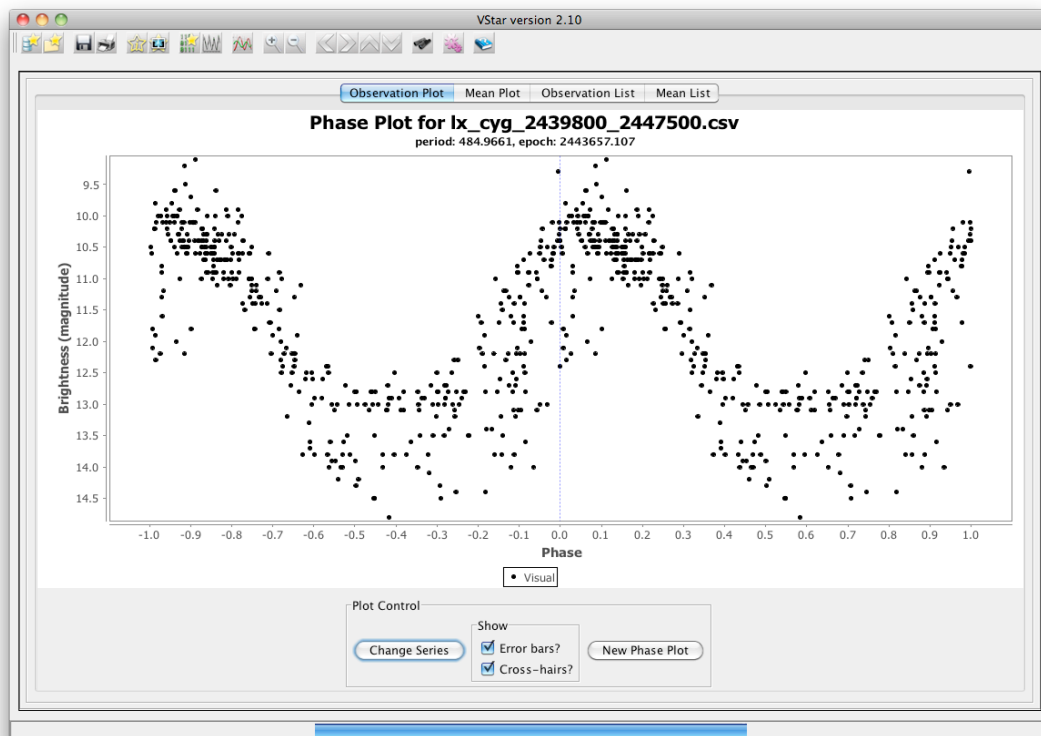
17. Repeat similar operations with different 5-star files.
18. Open the Preferences dialog and change the color of the Filtered series, ensuring that the Observation Plot view updates accordingly after clicking the Apply or OK buttons. The following shows an example Preferences setting change for the Filtered series.



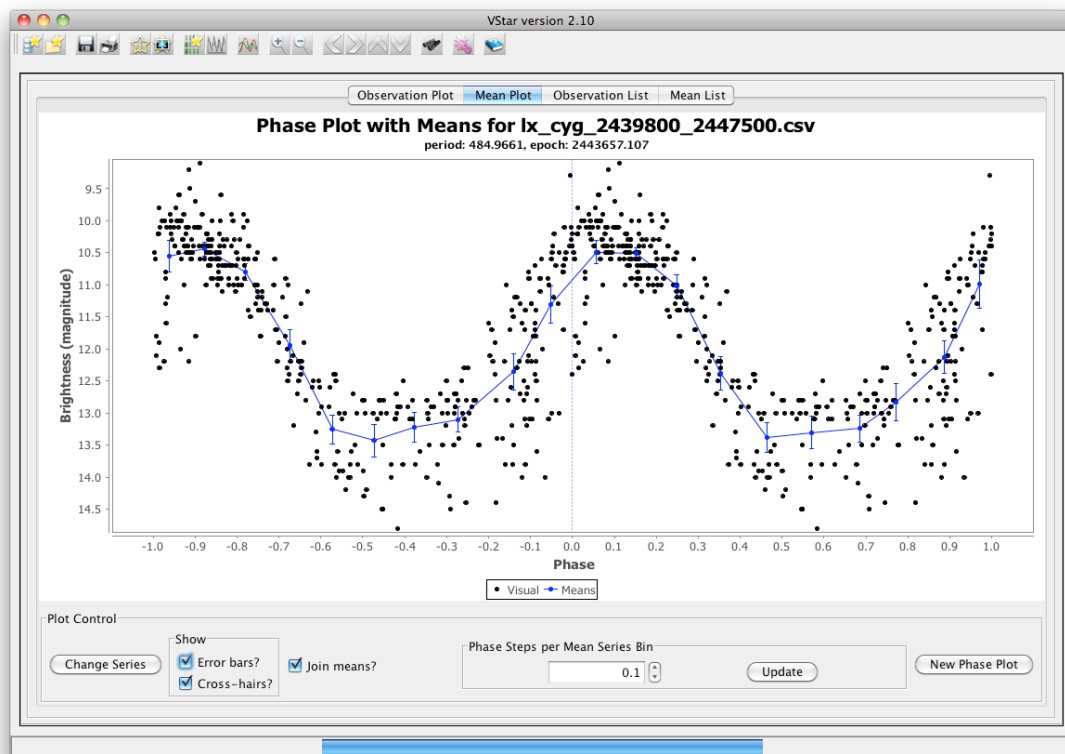
19. Negate the filter by selecting `No Filter` from the `View` menu.
20. Right-click (or ctrl-click on Mac OS X ...) on the `Observation Plot` and select `Auto Range ► Both Axes` (or zoom out if you prefer) to see all the data points.
21. Select `Date Compensated DFT...` from the `Period Search` sub-menu of the `Anaysis` menu.
22. Accept the default parameters in the dialog box that opens by clicking `OK`.
23. From the `Top Hits` tab of the resulting dialog box, select the row with the highest power value, like this:



24. Notice that before selecting this row, the New Phase Plot button was disabled. Now that it is enabled, click that button. Accept the period and epoch values in the Phase Plot dialog box that opens next by clicking OK.
25. Dismissing the period analysis dialog box, you should see a phase plot like this:



26. The Mean Plot view should look like this:



27. Select the Raw View and Phase Plot buttons in the toolbar to switch between analysis modes.

28. Try opening observation detail dialogs for selected phase plot view data points.

29. Quit VStar either via the menu item or by closing the window itself.

Scenario: Saving and Printing

Scenario: Loading from the AAVSO International Database

Scenario: Polynomial Fit

Scenario: Response to Erroneous Input

Scenario: Installing and Using an Observation Source Plug-in

Scenario: Star Group Management