# DASCH Plug-in for VStar

DASCHObservationSource is a VStar observation source plug-in tool which reads DASCH (Digital Access to a Sky Century @ Harvard) data from an input source in tab-delimited "Starbase table" (.txt) format. See bugs-and-features #439 on SourceForge for VStar. More information is available at http://dasch.rc.fas.harvard.edu/project.php

Install the DASCH plugin by going to the Tool menu and selecting Plug-in Manager. AAVSO login is required. Scroll to and select DASCH file reader and click on Install. After installation, restart VStar.
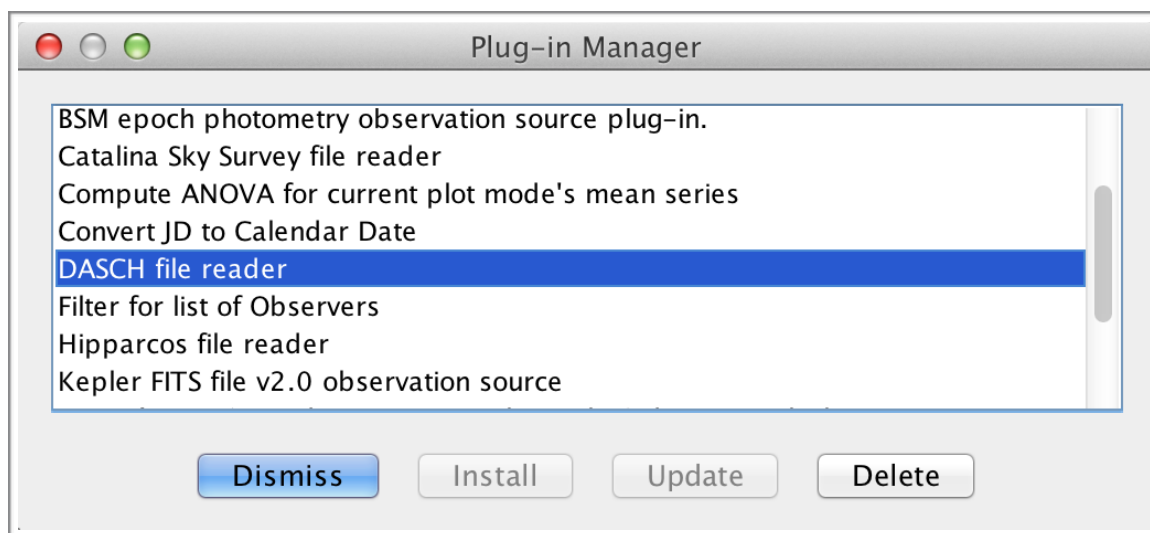
To obtain a DASCH data file, go to the web page http://dasch.rc.fas.harvard.edu/lightcurve.php

Enter a J2000 object position or a SIMBAD-searchable reference in the box and press "Search" to deliver the query results in a separate window.

As an example, entering "SV* HV 873" tells the search facility to "search for variable stars in a window centered on Harvard variable 873, and within a radius of 5 arcsecs. Eventually a search result window containing three frames is produced.

DASCH (apass) Catalog Query Results (5")

`'SV* HV 873'  ra: 04:54:23.8  dec: -70:54:06 approx`

```
arcsec  Nobs Nplot   mag      id   (nearbyObjects [(m
     0     9     1  14.85  S013202053170 (ASAS J04542
     0    15     9  14.03  APASS_J045423.8-705406 (AS
     2  1762  1464  13.59  APASS_J045423.3-705406 (AS
```

Display this table as a text file
Display this table as a VOTable
Download all points in table form.

Click on a point in the plot in the upper right panel and the object image will appear here.

Select an object from the upper left panel and a plot of the DASCH magnitude measurements will appear here.

In the top left hand frame, three sets of results and some display / download options are shown. Choose the option "Download all points in table form", and the resultant page lists several file options (A - F) for each of the three result sets.

DASCH

Digital Access to a Sky Century @ Harvard

A New Look at the Temporal Universe

Data Release Description   Search Magnitudes and Lightcurves   Search Images   Project Page

DASCH Photometry Data for Catalog Query

DASCH lightcurve data is presented as a tab-delimited ASCII "Starbase" table format or as a VOTable suitable for loading into VO tools such as topcat.
Starbase tables may be displayed in the browser window or downloaded as a gzipped file. Tables may be displayed in short or long form. The following columns appear in the short form table.

ExposureDate	Heliocentric Julian Date
year	Ephemeris Date
magcal_magdep	DASCH magnitude.
magcal_local_rms	Magnitude error estimate.
limiting_mag_local	Limiting magnitude estimate.
THETA_J2000	Image angle in degrees East of North.
ELLIPTICITY	1- ((image width)/(image length))
Plate	Plate identification
AFLAGS	Fatal image flags

The full listing shows all of the observation measurement parameters stored in the DASCH photometry database. See the database contents page for definitions of column headers.
Note that the "quality" and "mosaicNumber" are invalid for catalog query data. Lightcurves of unmatched catalog points may not be complete near the edge of the search radius.

…
…

...
...

SV*_HV_873_S013202053170_0000 with 9 points at 0 arcsec from search center
A: short_SV*_HV_873_S013202053170_0000.db
B: short_SV*_HV_873_S013202053170_0000_zip.db.gz
C: short_SV*_HV_873_S013202053170_0000.xml.gz
D: SV*_HV_873_S013202053170_0000.db
E: SV*_HV_873_S013202053170_0000_zip.db.gz
F: SV*_HV_873_S013202053170_0000.xml.gz

SV*_HV_873_APASS_J045423.8-705406_0000 with 15 points at 0 arcsec from search center
A: short_SV*_HV_873_APASS_J045423.8-705406_0000.db
B: short_SV*_HV_873_APASS_J045423.8-705406_0000_zip.db.gz
C: short_SV*_HV_873_APASS_J045423.8-705406_0000.xml.gz
D: SV*_HV_873_APASS_J045423.8-705406_0000.db
E: SV*_HV_873_APASS_J045423.8-705406_0000_zip.db.gz
F: SV*_HV_873_APASS_J045423.8-705406_0000.xml.gz

SV*_HV_873_APASS_J045423.3-705406_0002 with 1762 points at 2 arcsec from search center
A: short_SV*_HV_873_APASS_J045423.3-705406_0002.db
B: short_SV*_HV_873_APASS_J045423.3-705406_0002_zip.db.gz
C: short_SV*_HV_873_APASS_J045423.3-705406_0002.xml.gz
D: SV*_HV_873_APASS_J045423.3-705406_0002.db
E: SV*_HV_873_APASS_J045423.3-705406_0002_zip.db.gz
F: SV*_HV_873_APASS_J045423.3-705406_0002.xml.gz

This plug-in is designed to read files of type A, such as
"short_SV*_HV_873_APASS_J045423.3-705406_0002.db". The plug-in can read this either as a
local file on your PC or Mac (once you download it), or as the appropriate URL, in this case - http://
dasch.rc.fas.harvard.edu/tmp/rv1tC9/short_SV*_HV_873_APASS_J045423.3-705406_0002.db.
Note that these URLs are available only on a temporary basis. Other instances of the same query
may produce a different URL.

In VStar, to use this plugin, select "New Star from DASCH file …" from the File menu.
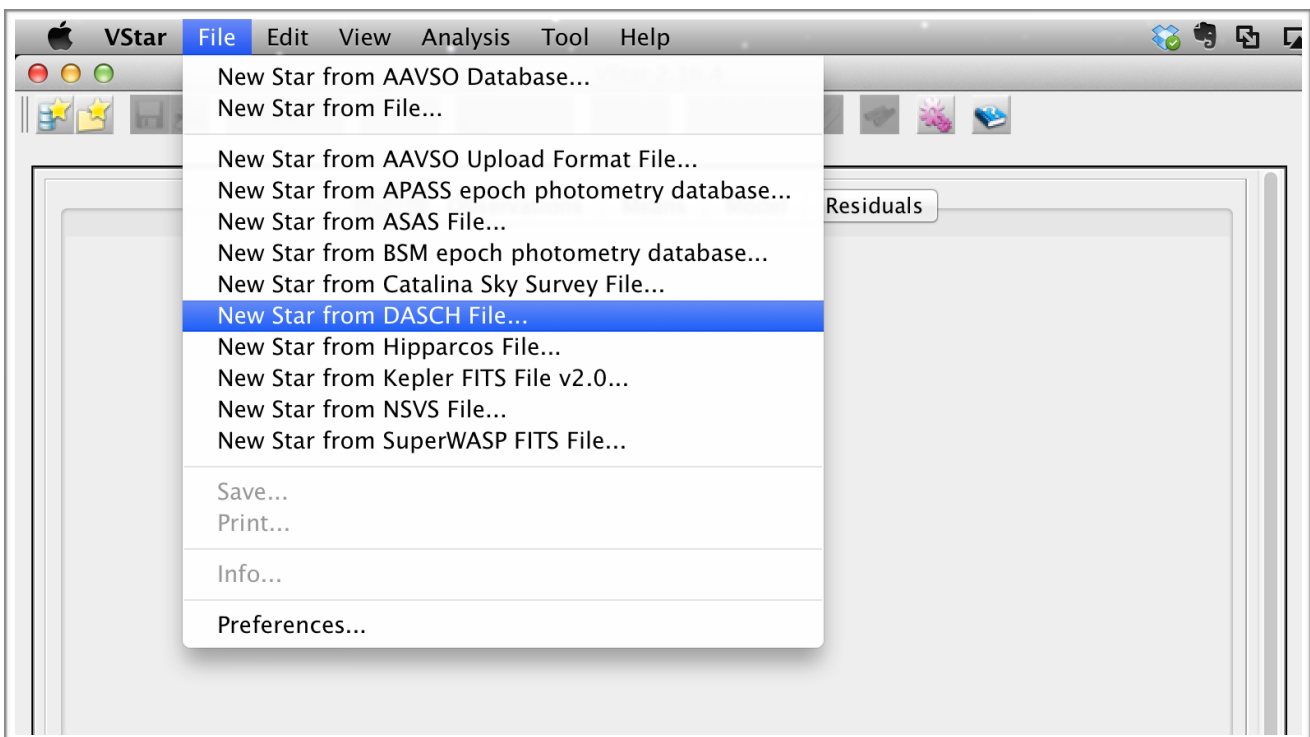
The plugin will display a dialog box, asking you to select a file or input a full URL. The DASCH data will then become available in VStar for analysis.

In the DASCH data, some of the observations show a "magErr" of 99, indicating that the observed magnitude lies beyond the range of the limiting magnitudes for the original plates. The plug-in flags these observations as "excluded. For the above example, the initial plot looks like the following, somewhat distorted by the resultant large error bars -
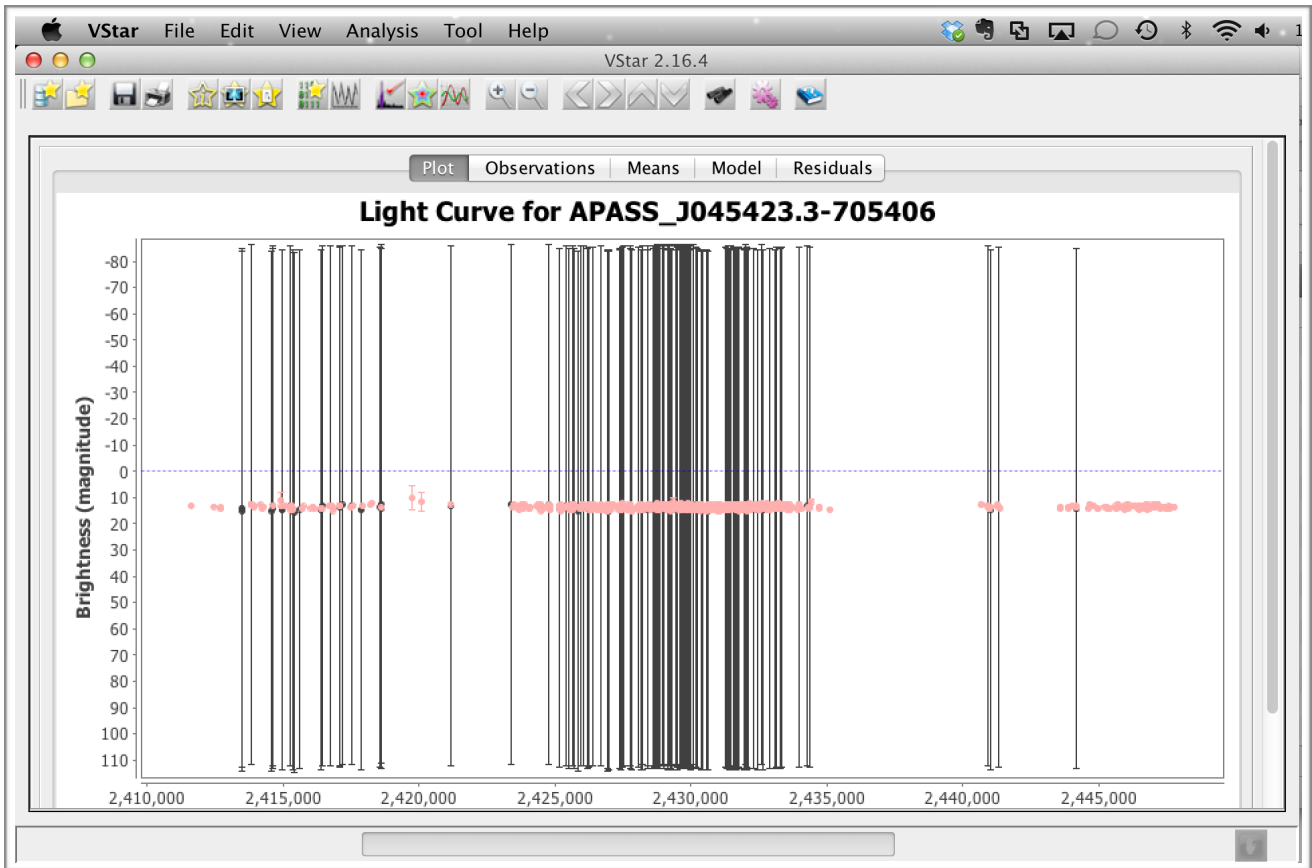
If you then select Plot Control from the View menu and un-check the "Excluded" box under Visibility of Data, the new plot will look much more "reasonable" -