ASAS Plug-In for VStar

Description: This plugin allows you to open text files in the format of the All Sky Automated Survey (ASAS).

Data files can be downloaded from the ASAS website or by using the AAVSO's VSX.

For the ASAS website, click on the above link. This will give you the All Sky Automated Survey main page. On the left side of the main page click on "Catalogs" (under Services). The Catalogs page discusses measurements through both I-band and V-band filters. However, I-band filter data does not seem to be accessible, so only Johnson V-band photometry is utilized in the VStar ASAS plug-in. Select "The ASAS-3 Photometric V-Band Catalog" under ASAS-3 Results. This yields the ASAS All Star Catalog. ASAS uses a designation for each object that incorporates RA and DEC, for example 035812+1629.7. The plugin creates observations with a name of the format "ASAS " + this designation. And you will find star names in VSX and other databases with this name. As an example, use the RA/DEC coordinates 035812+1629.7 in the Source field and click "Search". This will give:

ASAS (asas3) Catalog Query Results (15")

#	ID	mag	err	Nobs
#035812+1629.7				
035812+1629.7	9.516	0.034	224	
035812+1629.7	9.529	0.036	36	
035812+1629.7	9.528	0.075	183	
035812+1629.7	9.500	0.042	34	

Alternately, the star name may be entered such as R Car. This yields:

ASAS (asas3) Catalog Query Results (15")

#	ID	mag	err	Nobs
#R Car (093215-6247.3)				
093215-6247.3	7.392	1.357	565	
093217-6247.5	6.641	0.631	12	
093213-6247.1	6.126	0.000	1	
093215-6247.3	7.575	0.191	22	
093215-6247.3	7.602	1.274	567	
093217-6247.4	5.121	0.128	17	
093213-6247.2	6.068	0.000	1	

Click on one of the entries. This yields

ASAS 093215-6247.3 Light Curve (asas3).

Click on "GetData". The data file will look like:

```
                          ASAS-J190333+3941.0
# The All Sky Automated Survey Data
# gp@astrouw.edu.pl
#
# ################    DESCRIPTION    ###############
# The ASAS Photometric Catalog is maintained separately for each
# observed field, so for some stars independent 'datasets' of
# measurements are available. Their mean magnitudes may slightly differ.
#
# In each 'dataset' (starting with #dataset=0,1,2,...):
# 'desig' is ASAS designation (they may differ (by 1) at the last
# digit of the RA & DEC fields
# 'cra', 'cdec' are initial Catalog coordinates
# 'ndata' is number of points in each dataset
# 'cmag_*', 'cmer_*' are reference magnitude & dispersion for each aperture
# 'nskip_*' is number of data points skipped when calculating 'cmag' & 'cmer'
# 'ra', 'dec', 'mag', 'mer' are coordinates, magnitude and dispersion
# calculated directly from the data
#
# Each data row consists of the following fields:
# -   HJD-2450000
# -   magnitudes (one for each aperture)
# -   frame errors describing average photometric quality of the frame (for
each aperture)
# -   frame number
# -   grade :
#       A - best data, no 29.999 (not measured) indication
#       B - mean data, no 29.999 (not measured) indication
#       C - A and B with 29.999 (not measured) indication
#       D - worst data, probably useless
#
# ########## LIGHT CURVE BEGINS NEXT LINE ###########
#ndata= 1
#dataset= 1 ; 1 F0208+24_472
#desig= 024155+2507.8
#cra=    2.698656  02:41:55.2
#cdec=   25.129681 25:07:46.9
#class= 0
#cmag_0= 11.699
#cmer_0=  0.000
#nskip_0= 0
#cmag_1= 11.772
#cmer_1=  0.000
#nskip_1= 0
#cmag_2= 11.846
#cmer_2=  0.000
#nskip_2= 0
#cmag_3= 11.899
#cmer_3=  0.000
#nskip_3= 0
#cmag_4= 11.898
#cmer_4=  0.000
#nskip_4= 0
#ra=    2.698684  02:41:55.3
#dec=   25.129903 25:07:47.7
#    HJD     MAG_1  MAG_0  MAG_2  MAG_3  MAG_4    MER_1 MER_0 MER_2 MER_3
MER_4 GRADE FRAME
   2628.57016 11.772 11.699 11.847 11.900 11.899   0.043 0.043 0.039 0.042
0.046  A 30691
#ndata= 233
#dataset= 2 ; 1 F0240+24_473
#desig= 024155+2507.8
#cra=    2.698656  02:41:55.2
#cdec=   25.129681 25:07:46.9
#class= 0
#cmag_0= 11.936
#cmer_0=  0.191
```

```
                              ASAS-J190333+3941.0
#nskip_0= 5
#cmag_1= 11.948
#cmer_1=  0.189
#nskip_1= 5
#cmag_2= 11.956
#cmer_2=  0.191
#nskip_2= 0
#cmag_3= 11.948
#cmer_3=  0.189
#nskip_3= 1
#cmag_4= 11.918
#cmer_4=  0.185
#nskip_4= 1
#ra=     2.698664  02:41:55.2
#dec=  25.129705 25:07:46.9
#      HJD      MAG_1  MAG_0  MAG_2  MAG_3  MAG_4     MER_1 MER_0 MER_2 MER_3
MER_4 GRADE FRAME
    2621.57851 11.777 11.784 11.779 11.789 11.788   0.030 0.027 0.022 0.025
0.027  A 29773
    2627.57105 11.782 11.817 11.800 11.838 11.876   0.030 0.030 0.024 0.027
0.030  A 30541
    2628.57016 11.757 11.690 11.834 11.888 11.892   0.033 0.037 0.028 0.032
0.035  A 30691
    2629.57583 11.715 11.759 11.714 11.700 11.648   0.030 0.034 0.025 0.029
0.032  A 30846
    2635.60290 11.765 11.797 11.782 11.768 11.727   0.032 0.033 0.022 0.023
0.024  A 32211
    2640.55250 11.948 11.937 11.965 11.960 11.926   0.034 0.031 0.025 0.024
0.025  A 32944
    2642.55509 11.945 11.969 11.935 11.929 11.899   0.033 0.032 0.023 0.024
0.025  A 33230
    2644.55760 11.981 11.950 11.973 11.923 11.865   0.031 0.031 0.024 0.025
0.027  A 33536
    2646.55068 12.043 12.046 12.053 12.049 12.013   0.030 0.029 0.025 0.026
0.028  A 33835
    2654.54647 12.304 12.296 12.334 12.316 12.223   0.030 0.030 0.023 0.025
0.029  A 34856
    2658.53755 12.337 12.388 12.319 12.271 12.246   0.039 0.037 0.029 0.030
0.032  A 35556
    2660.55165 12.405 12.391 12.374 12.363 12.331   0.051 0.047 0.047 0.051
0.053  B 35902
    2663.53348 12.053 12.064 12.055 12.028 11.975   0.032 0.031 0.025 0.026
0.029  A 36404
    2665.53997 12.135 12.063 12.103 12.006 11.923   0.036 0.035 0.029 0.026
0.026  A 36758
    2854.89957 11.804 11.738 11.776 11.785 11.762   0.034 0.030 0.024 0.029
0.027  A 65993
    2859.87221 11.772 11.793 11.761 11.738 99.999   0.033 0.028 0.025 0.025
0.025  C 66639
    2861.91427 11.894 11.806 11.906 11.913 11.875   0.037 0.032 0.027 0.031
0.030  A 67079
    2872.89889 11.727 11.775 11.749 11.739 11.696   0.105 0.102 0.102 0.103
0.107  D 68273
    2876.83422 12.272 12.283 12.235 12.179 12.117   0.030 0.025 0.022 0.023
0.024  A 68842
    2879.86364 12.143 12.114 12.166 12.167 12.154   0.045 0.035 0.032 0.037
0.035  A 69347
    2883.85380 12.360 12.290 12.325 12.332 12.296   0.036 0.028 0.027 0.029
0.027  A 69713
    2885.82693 12.254 12.141 12.254 12.275 12.242   0.036 0.027 0.027 0.032
0.028  A 70107
    2892.83948 12.067 12.041 12.062 12.028 11.968   0.032 0.028 0.026 0.027
0.030  A 70762
    2894.81119 11.883 11.794 11.864 11.835 11.807   0.037 0.030 0.029 0.034
0.033  A 71146
    2899.83005 11.850 11.871 11.871 11.878 11.871   0.041 0.034 0.033 0.035
```

Note that each line in the ASAS file has multiple measurements and a grade. The plugin ignores any observation with a grade of C or worse. The multiple measurements per line represent different sized photometric apertures from smallest to largest. Given that ASAS has a plate scale over 10 arcsec per pixel, the plugin always picks the smallest (first) measurement. Copy and paste the data into a .txt file and save. From VStar, select the dropdown *File* menu and select "New Star from ASAS file". This will give you

the VStar light curve plot. A variety of analyses are available from this point. For R Car, the VStar light curve plot is:

Light Curve for ASAS-R_Car.txt
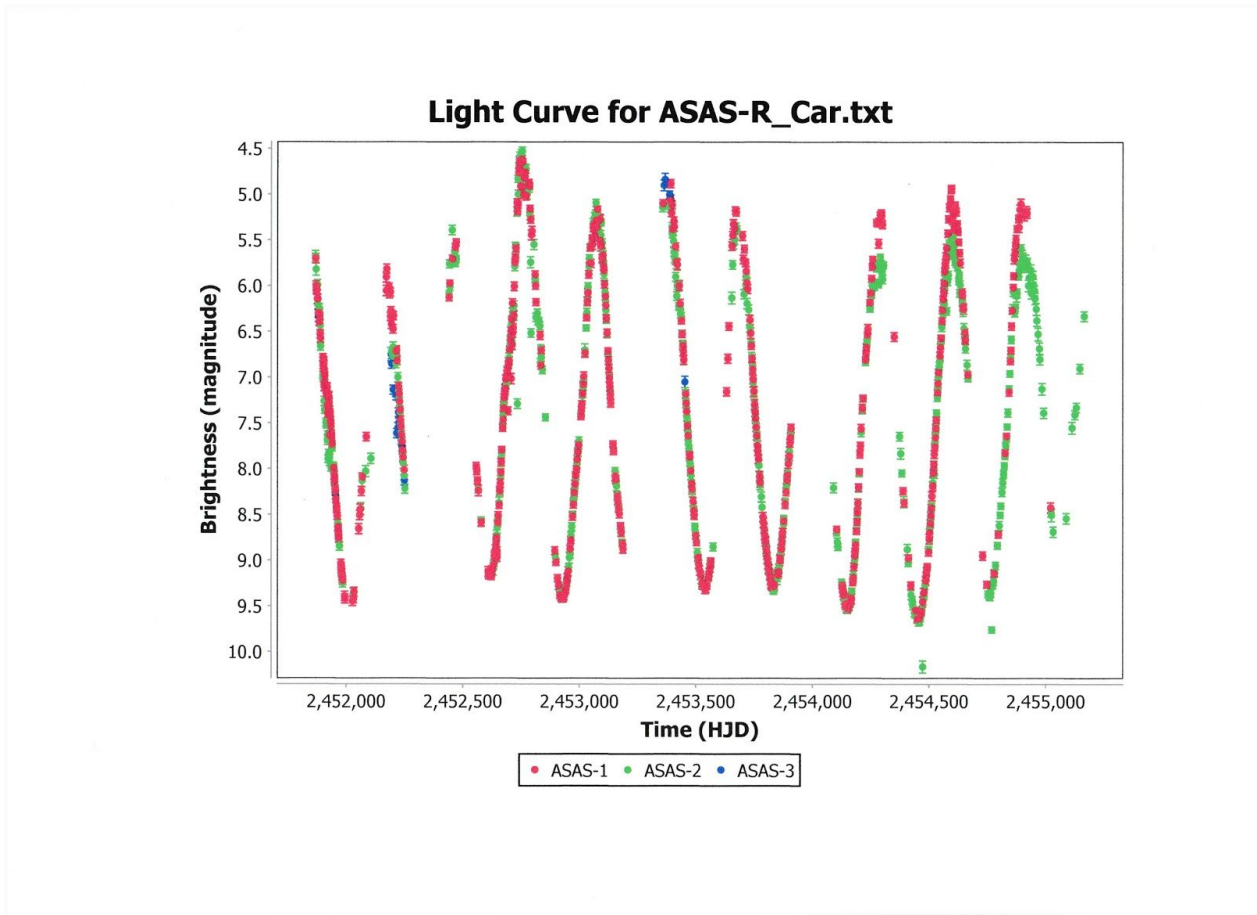
For VSX, chose the Search option, enter the name of the star (R Car in this example), and click Search. This yields the VSX Detail page for R Car. Go to External Links/Location/Select and select ASAS Light Curve from the various options available. Click Go. The resulting page will be the same as for direct access through the ASAS website. Click on "GetData" as above and follow the same procedure by saving the data in a .txt file and executing VStar as above. In either case the light curve is as shown above.