Appendix C: Submitting observations to the AAVSO

Submitting observations to the AAVSO — whether they were obtained visually, by using a CCD, a Photoelectric Photometer, a DSLR, or in some other way — is all done through use of the online tool WebObs (*http://www.aavso.org/webobs*).

You then must choose whether you wish to "Submit observations individually" or "Upload a file of observations". If you have just a small number of observations then the individual option may be the easiest for you. If on the other hand, you are submitting a large number of CCD observations (either time–series or for many different stars), creating a file in "AAVSO Extended File Format" is definitely the better way to go. Fortunately, many of the photometry software packages in use today come with an option to export your results in the form of an AAVSO report — you simply need to upload it through WebObs. Should you have to create or tweak your own report, however, it is essential that you follow the format outlined in this Appendix. Even if you submit individual observations, you may find some of the field descriptions in the "Data" section helpful.

General information

The "Extended Format" file must be a plain text (ASCII) type file. It is not case sensitive.
There are two parts to the file; *Parameters* (or header information) and *Data*.

Parameters

The Parameters are specified at the top of the file and are used to describe the data that follows. Parameters must begin with a pound/hash sign (#) at the start of the line. There are six specific parameters that the AAVSO requires you to include at the top of the file. Personal comments may also be added as long as they follow a pound/hash sign (#). These comments will be ignored by the software and will not be loaded into the database. However, they will be retained when the complete file is stored in the AAVSO permanent archives.

The six parameters that we require are:

#TYPE=Extended
#OBSCODE=
#SOFTWARE=
#DELIM=
#DATE=
#OBSTYPE=

Here is an explanation of each:

- **TYPE:** Should always say "Extended" for this format.
- **OBSCODE:** The official AAVSO Observer Code for the observer, which was previously assigned by the AAVSO.
- **SOFTWARE:** Name and version of software used to create the format. If it is private software, put some type of description here. For example: "#SOFTWARE=AIP4Win Version 2.2". This is limited to 30 characters.
- **DELIM:** The delimiter used to separate fields in the report. Any ASCII character or UNICODE number that corresponds to ASCII code 32–126 is acceptable as long as it is not used in any field. Suggested delimiters are: comma (,) semi–colon (;), exclamation point (!), and pipe (|). The only character that cannot be used are the pound/hash sign (#) and the " " (space). If you want to use a tab, use the word "tab" instead of an actual tab character. *Note*: Excel users who want to use a comma will have to type the word "comma" here instead of a ",". Otherwise, Excel will export the field incorrectly.
- **DATE:** The format of the date used in the report. Times are midpoint of the observation. Convert all times from UT to one of the following formats:
  - JD: Julian Day (Ex: 2454101.7563)
  - HJD: Heliocentric Julian Day
  - EXCEL: the format created by Excel's NOW() function
    (e.g. 12/31/2007 12:59:59 a.m.)
- **OBSTYPE:** The type of observation in the data file. It can be CCD, DSLR, PEP (for Photoelectric Photometry), or VISDIG (for *VIS*ual observations made from *DIG*ital images). If no obstype is specified, it is assumed to be CCD.

The OBSCODE and DATE parameters may also be included elsewhere in the data. Our data processing software will read these parameters and will expect all following data to adhere to them. (For example, you can add "#OBSCODE=TST01" to the report and all subsequent observations will be attributed to observer TST01.)

If you want to put a blank line between your parameter records and your data records, be sure to comment the line out with the pound/hash sign (#). WebObs will not accept a file with blank lines that are not commented out.

Data

After the parameters, come the actual variable star observations. There should be one observation per line and the fields should be separated by the same character that is defined in the DELIM parameter field. If you do not have data for one of the optional fields, you must use "na" (not applicable) as a place holder. The list of fields are:

- **STARID:** The star's identifier. It can be the AAVSO Designation, the AAVSO Name, or the AAVSO Unique Identifier (AUID), but NOT more than one of these. *(25 character limit)*
- **DATE:** The date and time of the observation, in the format specified in the DATE parameter. The AAVSO requires that you report the mid–point of the exposure time. If you stack images, this becomes more complicated so please add a note about how you have computed the exposure time in the NOTES field.
- **MAGNITUDE:** The magnitude of the observation. Prepend with < if a fainter–than. A decimal point is required (e.g. "9.0" rather than "9").
- **MAGERR:** Photometric uncertainty associated with the variable star magnitude. If not available put "na".
- **FILTER:** The filter used for the observation. This can be one of the following letters (in bold):
    - **U:** Johnson U
    - **B:** Johnson B
    - **V:** Johnson V
    - **R**: Cousins R (or Rc)
    - **I:** Cousins I (or Ic)
    - **J:** NIR 1.2 micron
    - **H:** NIR 1.6 micron
    - **K:** NIR 2.2 micron
    - **TG:** Green Filter (or Tri–color green). This is commonly known as the "green–channel" in a DSLR or color CCD camera. These observations use V–band comp star magnitudes.
    - **TB:** Blue Filter (or Tri–color blue). This is commonly known as the "blue–channel" in a DSLR or color CCD camera. These observations use B–band comp star magnitudes.
    - **TR**: Red Filter (or Tri–color red). This is commonly known as the "red–channel" in a DSLR or color CCD camera. These observations use R–band comp star magnitudes.
    - **CV:** Clear (unfiltered) using V–band comp star magnitudes (this is more common than CR)
    - **CR:** Clear (unfiltered) using R–band comp star magnitudes
    - **SZ:** Sloan z
    - **SU:** Sloan u
    - **SG:** Sloan g
    - **SR:** Sloan r

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- **SI:** Sloan i
- **STU:** Stromgren u
- **STV:** Stromgren v
- **STB:** Stromgren b
- **STY:** Stromgren y
- **STHBW:** Stromgren Hbw
- **STHBN:** Stromgren Hbn
- **MA:** Optec Wing A
- **MB:** Optec Wing B
- **MI:** Optec Wing C

Please note: There are a few other (rarely used but legitimate) filters, which can be specified. If you are using a filter that is not listed here, please contact AAVSO HQ with as much information as possible about what you are using and we will let you know how to report it.

- **TRANS:** YES if transformed using the Landolt Standards or those fields that contain secondary standards as discussed in Chapter 6, or NO if not.
- **MTYPE:** Magnitude type. STD if standardized by utilizing the published magnitudes of the comparison stars or DIF if differential (uncommon),. Differential means that the published magnitudes of the comparison stars were not used and only instrumental magnitudes are being reported. DIF requires the use of CNAME. Please note that use of the word "differential" in this case is not the same as saying you are doing "differential photometry".
- **CNAME:** Comparison star name or label such as the chart label or the AUID for the comparison star used. If not present, use "na". *(20 character limit)*
- **CMAG:** Instrumental magnitude of the comparison star. If not present, use "na".
- **KNAME:** Check star name or label such as the chart label or AUID for the check star. If not present, use "na". *(20 character limit)*
- **KMAG:** Instrumental magnitude of the check star. If not present, use "na".
- **AIRMASS:** Airmass of observation. If not present, use "na".
- **GROUP:** Grouping identifier (maximum 5 characters). It is used for grouping multiple observations together — usually an observation set that was taken through multiple filters. It makes it easier to retrieve all magnitudes from a given set in the database in case the researcher wanted to form color indices such as (B-V) with them. If you are just doing time series, or using the same filter for multiple stars, etc., set GROUP to "na." For cases where you want to group observations, GROUP should be an integer, identical for all observations in a group, and unique for a given observer for a given star on a given Julian Date.
- **CHART:** Please use the sequence ID you will find in red at the bottom of the photometry table. If a non–AAVSO sequence was used, please describe it as clearly as possible. *(20 character limit)*.
- **NOTES:** Comments or notes about the observation. This field has a maximum length of 100 characters. If no comments, use "na".

Examples

Here is a simple report with multiple stars (the data used are not necessarily realistic!):

```
#TYPE=EXTENDED
#OBSCODE=TST01
#SOFTWARE=MAXIM DL 6.0
#DELIM=,
#DATE=JD
#OBSTYPE=CCD
#NAME,DATE,MAG,MERR,FILT,TRANS,MTYPE,CNAME,CMAG,KNAME,KMAG,AMASS,GROUP,CHART,
NOTES
SS CYG,2450702.1234,8.235,0.003,V,NO,STD,105,10.593,110,11.090,1.561,na,13577KCZ,outburst
V1668 CYG,2450702.1254,18.135,0.0180,V,NO,STD,105,10.594,110,10.994,1.563,na,3577KCZ,na
WY CYG,2450702.1274,14.258,0.004,V,NO,STD,105,10.594,110,10.896,1.564,na,13577KCZ,na
SS CYG,2450722.1294,10.935,0.006,V,NO,STD,105,10.592,110,10.793,1.567,na,13577KCZ,na
```

Note the existence of the #NAME, DATE... line in the above format. Since it is prepended with a #, it will be ignored by our software. Feel free to do this if it makes writing and reading the format easier for you.

Reporting ensemble photometry is permitted under this format. You need to pick one star (the check star) in addition to the target to be measured by the technique. The check star should not be included in the comparison–star ensemble. This star's calculated magnitude should be put in the KMAG field, so that if the true magnitude of the check star is found to be different at a later date, a simple zeropoint offset can be added to your ensemble value. If ensemble is used, CNAME should be set to ENSEMBLE and CMAG should be set to "na", as shown below.

```
#TYPE=EXTENDED
#OBSCODE=TST01
#SOFTWARE=IRAF 12.4
#DELIM=,
#DATE=JD
#NAME,DATE,MAG,MERR,FILT,TRANS,MTYPE,CNAME,CMAG,KNAME,KMAG,AMASS,GROUP,CHART,
NOTES
SS CYG,2450702.1234,11.235,0.003,B,NO,STD,ENSEMBLE,na,105,10.593,1.561,1,070613,na
SS CYG,2450702.1254,11.135,0.003,V,NO,STD,ENSEMBLE,na,105,10.492,1.563,1,070613,na
SS CYG,2450702.1274,11.035,0.003,R,NO,STD,ENSEMBLE,na,105,10.398,1.564,1,070613,na
SS CYG,2450702.1294,10.935,0.003,I,NO,STD,ENSEMBLE,na,105,10.295,1.567,1,070613,na
SS CYG,2450702.2234,11.244,0.003,B,NO,STD,ENSEMBLE,na,105,10.590,1.661,2,070613,na
SS CYG,2450702.2254,11.166,0.003,V,NO,STD,ENSEMBLE,na,105,10.497,1.663,2,070613,na
SS CYG,2450702.2274,11.030,0.003,R,NO,STD,ENSEMBLE,na,105,10.402,1.664,2,070613,na
SS CYG,2450702.2294,10.927,0.003,I,NO,STD,ENSEMBLE,na,105,10.292,1.667,2,070613,na
```

In this report, the ensemble solution gave 11.235, 11.135, 11.035 and 10.935 for the B, V, Rc, and Ic (respectively) magnitudes of SS Cyg for the first group, and 11.244, 11.116, 11.030 and 10.927 for the second group. The ensemble solution also gave 10.593, 10.492, 10.398, and 10.295 for the BVRcIc magnitudes of the check star for the first group.

<u>After Submission</u>

Once you have submitted your observations to the AAVSO database, it is a good idea to take a look at the light curves of the stars you have observed using the Light Curve Generator (*LCG – http:// www.aavso.org/lcg*) or VStar (*http://www.aavso.org/vstar-overview*) and see if you think that your data makes sense. If you find that your observations seem to be very different from those of other observers using similar equipment, it is important that you go back and check things against your observing notes or original images. Your observations may be correct while those of another ob-server or observers could have problems, but if you see a discrepancy, you should start by checking your own data again.

It is not uncommon for observers to make typographical errors resulting in the mislabeling of a star, reporting the wrong date or time, and mixing up the reported bands. If your report seems correct, go back and review your images. Could you have misidentified any of the stars, included a close companion in the aperture or saturated the target or any of the comparison stars?

If you do find a problem, you have the power to fix it. One of the other options available to you through WebObs is "Search for observations". Using this search tool you should be able to narrow your search so that you can isolate the observation or observations with problems. Then you can either delete the observations and re–submit the corrected ones or edit the erroneous observation. Which option you choose depends on how many observations you have and the nature of the error.

One thing to note about the WebObs Search tool use is that by clicking the little unlabeled box in the left corner of the header row of the "Results" page, you can select all of the observations on that page which makes it much easier to delete a large group of observations rather than clicking on them one–by–one.

If you discover a problem with your data that would be very time consuming to correct, please do not hesitate to contact AAVSO Headquarters to ask for help. Alternatively, if you see something suspicious about another observer's observations, you can report that to AAVSO HQ either through use of VStar, Zapper or an email describing what you see.