

Confirmation of 177 objects in the New Suspected Variables Catalogue as red long period variables

John Greaves

variabilitiness@yahoo.com

Abstract : Colours are derived from online surveys for suspected variables in the NSV having good positions and a red subset of the resultant data is assessed against the ASAS3 online time series database

Introduction

The electronic combined Catalogue New Suspected Variables (NSV) archived at the Centre de Données astronomiques de Strasbourg (CDS) (Samus *et al* 2004) is used as a source for gaining positions and colour information from the Second United States Naval Observatory CCD Astrographic Catalogue (Zacharias *et al* 2004). In colour index plots of near optical against near infrared magnitudes the red dwarf and giant stars diverge from the normal sequence apparently due to the effect of TiO absorption bands upon the background blackbody continuum flux normally measured by these passbands (see, for example, Bessell and Brett, 1988, figure 2 and the text).

Using this colour information a subset of objects likely to be red long period variables can be selected and assessed against the timer series data archived at the All Sky Automated Survey, specifically ASAS3 (Pojmanski 2002) to test to see if the suspects are variable.

In some cases these objects have been identified via automated cross matching of variables published by ASAS3 (see for example Pojmanski 2003) and where those miss objects even in their own survey area, in the Northern Sky Variability Survey's Red Variables (Williams *et al* 2004). However, most of these catalogues are not readily available, rarely being in Vizier, and certainly not in SIMBAD, at the CDS. When they are available (eg the recently launched Variable Star Index or VSX, Watson *et al* 2006) their astrometric accuracy is such that automated cross matching of objects with the NSV, itself prone to astrometric error, can be problematic and incorrect, not only missing matches, but sometimes incorrectly matching the wrong NSV object with an ASAS3 or NSVS variable.

It is in this context that this list is presented, as it provides accurate positions and confirmatory lightcurves together in a medium that will allow SIMBAD linkage to this information for their NSV identities.

Unfortunately at the time of writing the ASAS3 system is having equipment problems, so many lightcurves were not available. Indeed during the processing of the data for this paper a further loss of capability occurred such that an initial 238 objects were further reduced to 177 during the markup of the lightcurves, as data present at the initial stage disappeared as the second batch of lightcurves were regenerated!

Although most have been noted as variable by either ASAS3 or NSVS in the past, albeit independent on any certainty of accurate NSV cross matching in those cases, about ten percent of the following are previously unconfirmed, being fainter objects than those mostly automated variability surveys normally safely deal with.

Methodology

The NSV electronic file as archived at the CDS ftp holdings was crossed against the UCAC2 catalogue using a small two arc seconds search radius in VizieR. From this data positions, UCAC2 red magnitude (Zacharias *et al* 2004) and 2MASS photometry (Skrutskie *et al*) were taken. The UCAC2 is an astrometric, and not a photometric, catalogue which can have errors of up to +/- 0.3 magnitudes on the global level (Zacharias *et al* 2004), but is adequate for this purpose as the colour index it is to be used for, red-J, has a large range thus diluting problems normally caused by such errors.

The derived data consisting of some 5,050 datapoints was used to generate the colour indices red-J and J-K_s. A colour - colour diagram of the resultant data was generated with red-J versus J-K_s as shown in figure 1. As noted in Bessell and Brett (1988) there is a turnoff point for the red giants, which for these colours is completely covered by J-K_s > 1 and red-J > 3.

Accordingly those objects were selected as likely to be mostly red long period variables, leading to a subsample of approximately 1,700 objects. As the ASAS3 survey does not currently extend further than +28° Declination objects north of this were further removed from the subsample leaving approximately 850 objects.

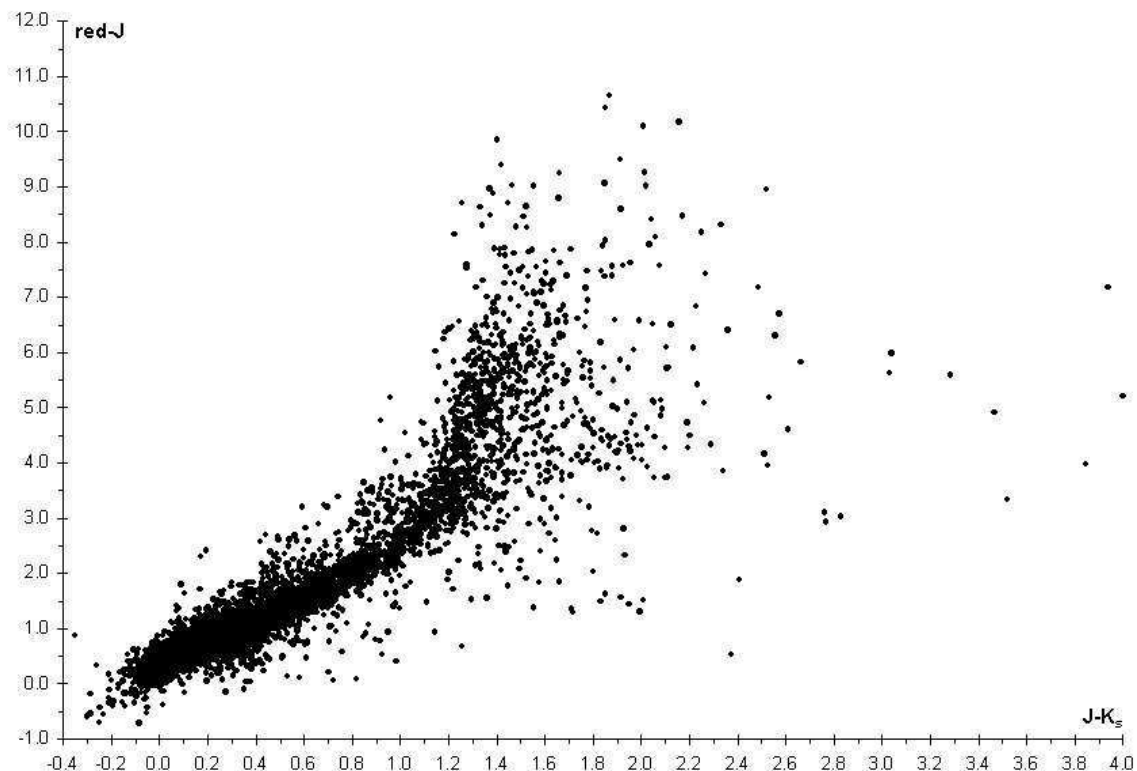


Figure 1 : A plot of the 5050 NSV objects as red-J versus J-K_s

These were then checked by eye against the ASAS3 online time series archive in order to assess variability. Any object found to be evidently variable by inspection of the light curves was thereby confirmed variable. Many were constant, and not a small few were too faint for the ASAS3 survey to give any data, which combined with the current reduced nature of the ASAS3 archive due to equipment problems of uncertain duration, led to only about 240 objects being readily confirmed. Further reduction in the available dataset for objects of RA > 12 hours during processing led to only 177 cases being able to be provided with evidence.

Results.

The automated cgi data retrieval and light curve generating system provided by the ASAS3 server (<http://www.astrouw.edu.pl/~gp/asas/asas.html>) was used to create on the fly plots of the confirmed objects showing the evidence of their variability. Each object is identified by its NSV number, an accurate J2000 position given, and the plot of the light curve for that object shown.

The complete ensemble of an NSV position tallying to good accuracy with the position of a accurate astrometric catalogue, said position itself being able to be used to generate a light curve showing variability for an object at that position (within the confines of ASAS3 resolution) gives good confidence that the suspected variables and indeed really variable.

One hundred and seventy seven objects are presented here in an appendix immediately following the references. Most of the objects are semiregular variables, with a handful of Mira, and at some possible RV Tauri variables.

Acknowledgements

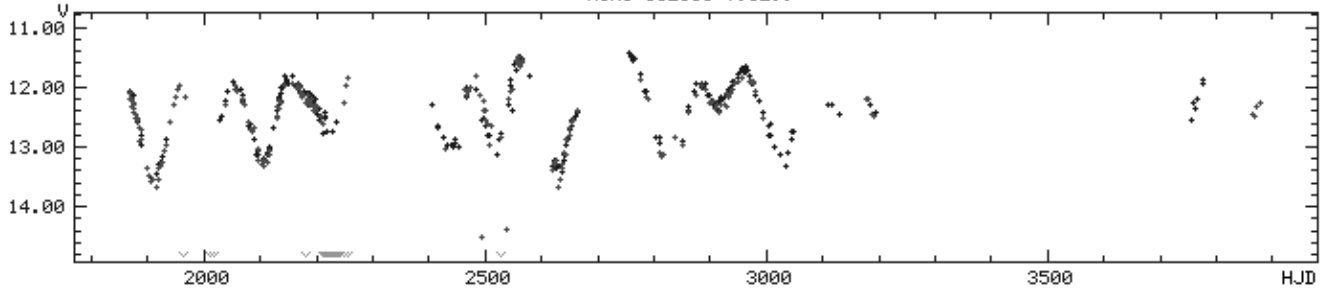
This work used data products generated by the Sternberg Astronomical Institute, Moscow, Russia; the United States Naval Observatory, Washington DC, USA; and the All Sky Automated Survey (ASAS), Warsaw University, Poland. Archival data and VizieR interactive database facilities, both hosted by the Centre de Données astronomiques de Strasbourg, were also utilised. Some photometric data contained in the UCAC2 catalogue originates from the 2MASS survey, which is a joint project of the University of Massachusetts and The Infrared Processing and Analysis Center of the National Aeronautics and Space Administration, USA. The online ASAS cgi engine was used to generate the plots.

References

- Bessell, M. S., Brett, J. M., 1988, PASP 100, 1134
Pojmanski, G., 2002, Acta Astronomica, 52, 397
Pojmanski, G., 2003 Acta Astronomica, 53, 341
Samus, N. N., Durlevich O. V., *et al*, 2004 <ftp://cdsarc.u-strasbg.fr/pub/cats/II/250/>
Skrutskie, M. F., Cutrie, R., *et al* 2006, AJ, 131, 1163
Watson, C. L, Henden, A. A., Price, A., 2006, SAS *in press*
Williams, P. R., Woziak, S. J., Vestrand, W. T., Gupta, V, 2004, AJ, 128, 2965
Zacharias, N., Urban, S. E., Zacharias, M. I., Wycoff, G. L., Hall, D. M., Monet, D. G., Rafferty, T. J., 2004, AJ, 127, 3059

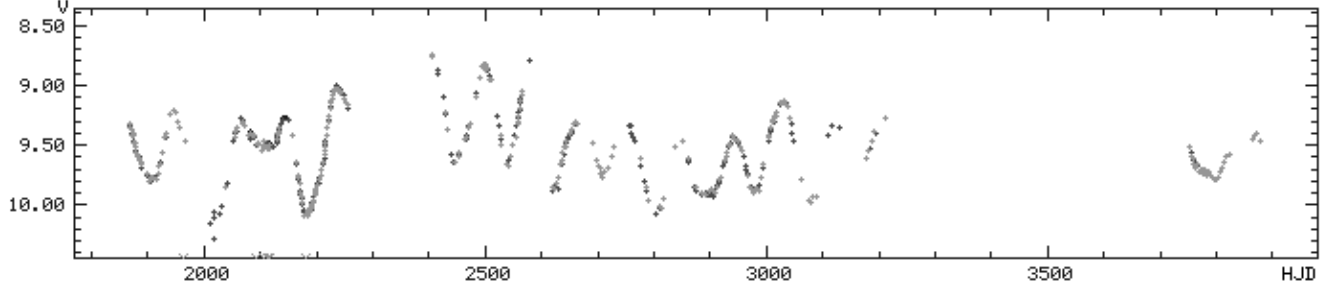
NSV 166 J2000 00 26 56.3 -79 32 55

ASAS 002656-7932.9



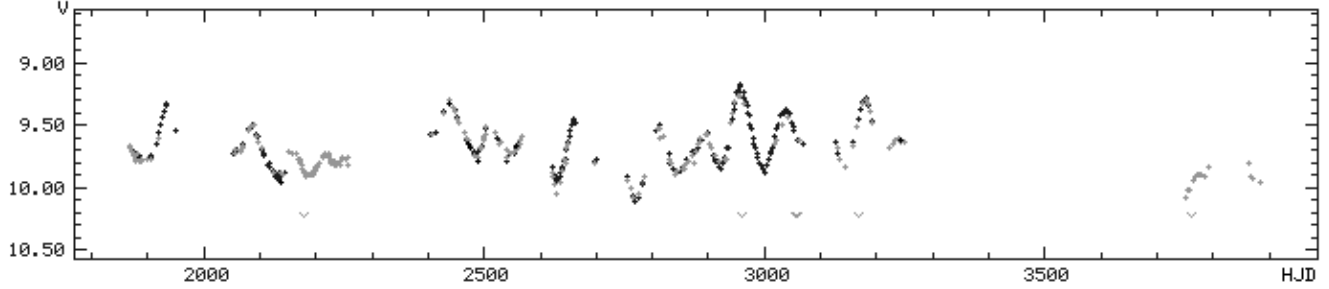
NSV 244 J2000 00 37 52.9 -82 37 14

ASAS 003753-8237.2 003800-8237.2 003743-8237.4 003752-8237.2



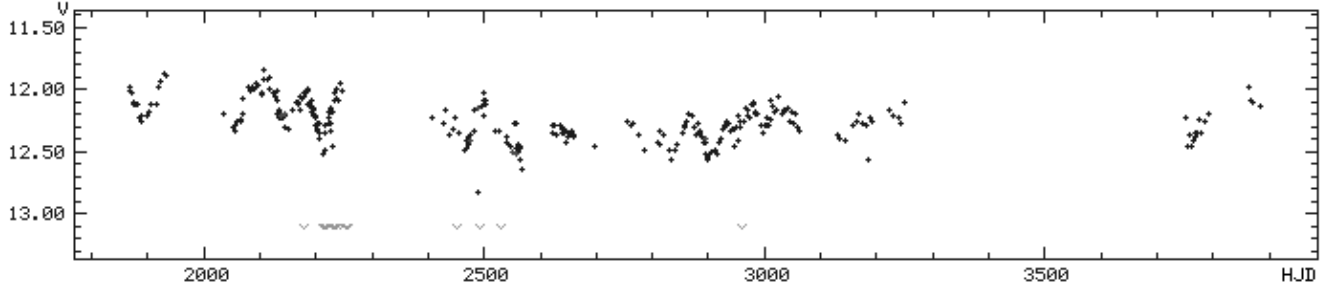
NSV 326 J2000 00 51 23.7 -59 37 46

ASAS 005124-5937.8 005123-5937.7 005124-5937.7



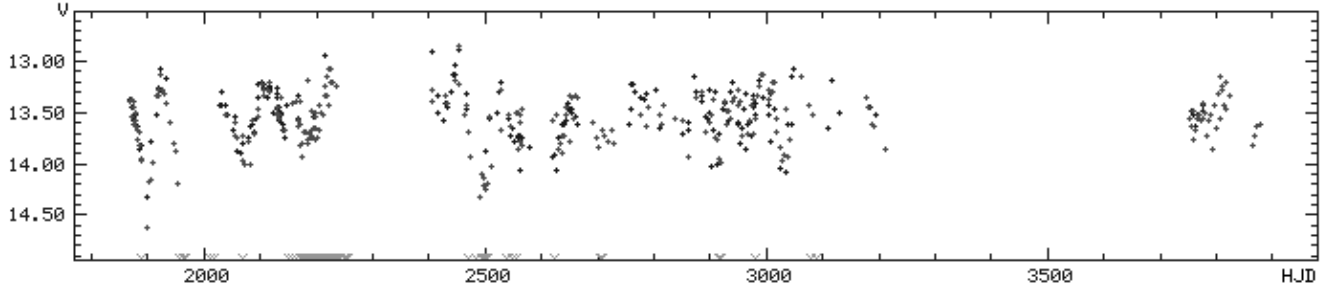
NSV 329 J2000 00 51 51.5 -55 50 24

ASAS 005153-5550.3 005151-5550.4 005152-5550.4



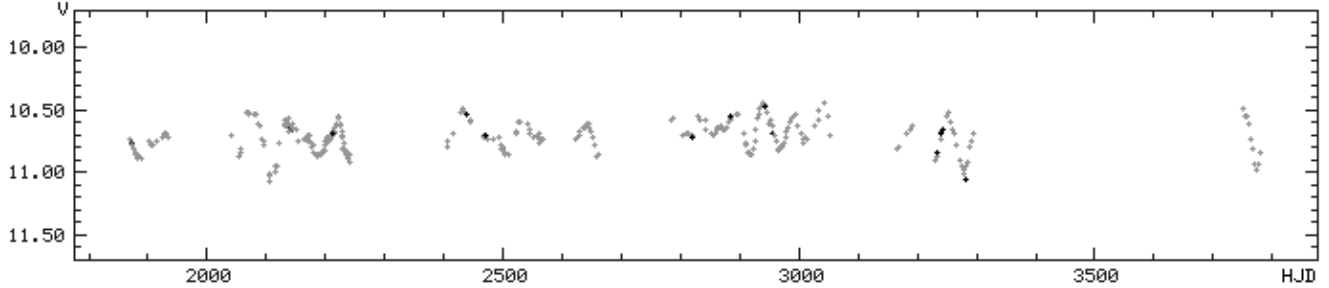
NSV 350 J2000 00 55 23.5 -79 41 33

ASAS 005524-7941.6 005521-7941.3 005519-7941.8



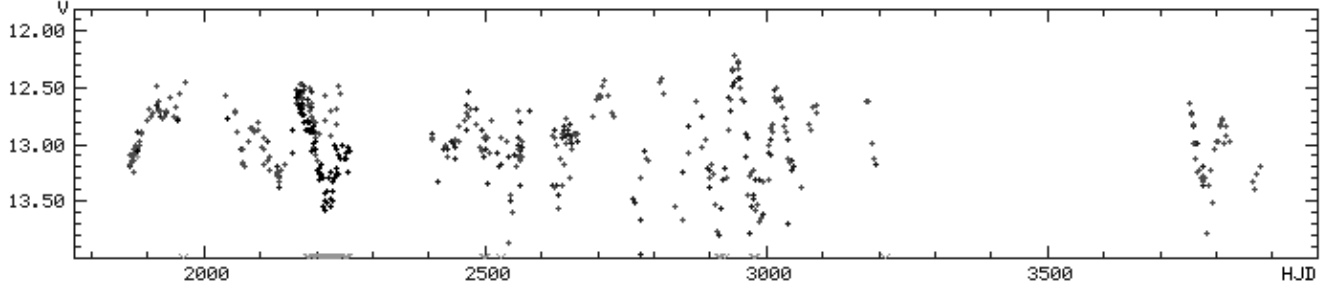
NSV 443 J2000 01 13 39.4 -26 17 09

311339-2617.1 011340-2617.3 011338-2617.3 011339-2617.2 01 3282.72640 11.050 11.047 11.037 11.051 11.049 0.017 0



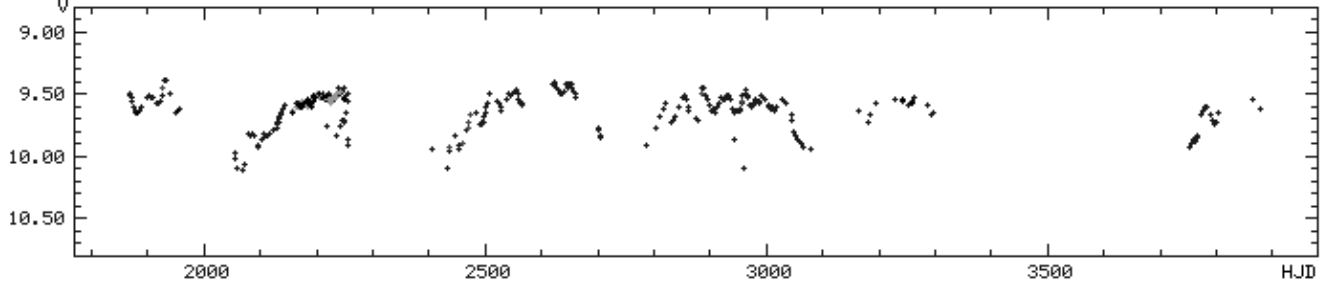
NSV 502 J2000 01 23 41.1 -78 23 10

012347-7822.9 012348-7823.4 012341-7823.1 012341-7823.2 01 2177.66697 12.519 12.569 12.529 12.470 12.396 0.056 6



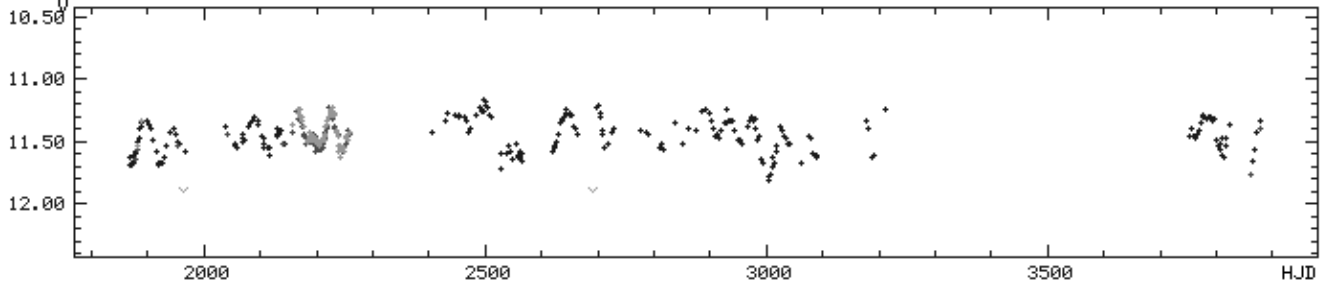
NSV 605 J2000 01 42 24.0 -46 40 52

ASAS 014226-4641.0 014224-4640.9 014222-4640.9



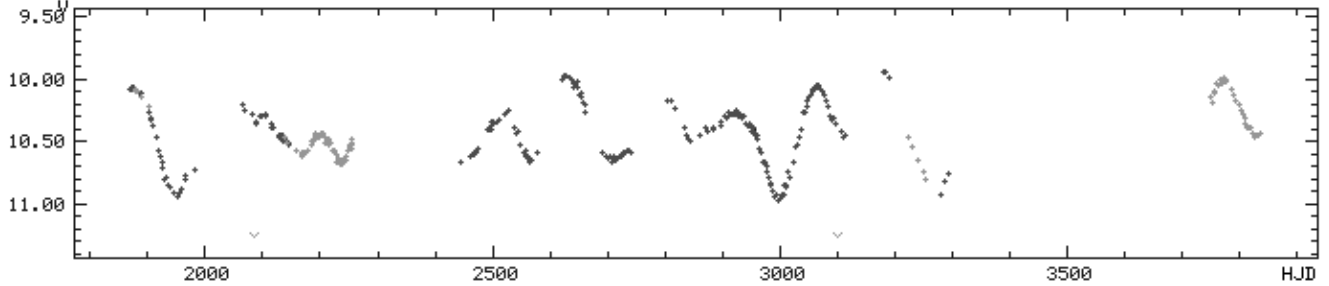
NSV 620 J2000 01 44 38.1 -77 22 13

ASAS 014438-7722.3 014439-7722.3 014438-7722.2



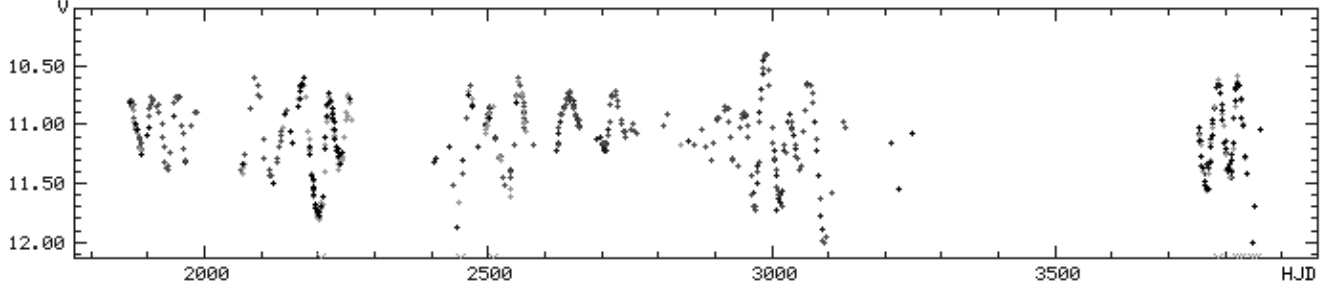
NSV 1043 J2000 03 05 21.3 -52 18 05

ASAS 030521-5218.1 030521-5218.0



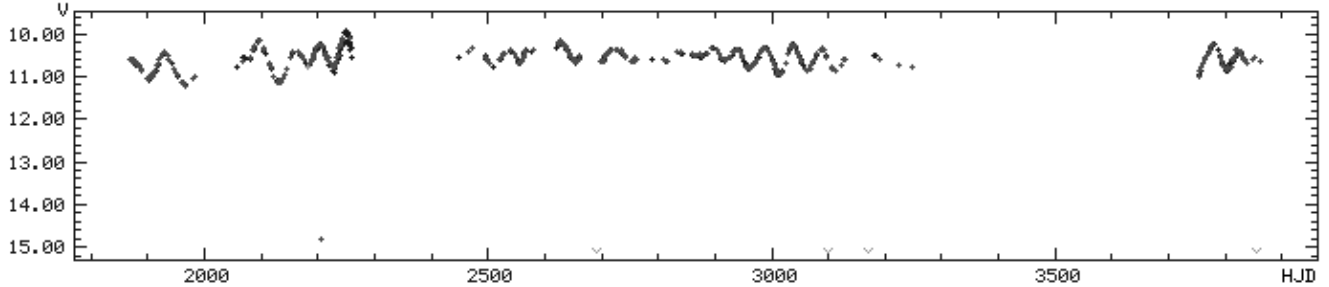
NSV 1071 J2000 03 08 41.8 -75 47 24

ASAS 030841-7547.4 030840-7547.7 030842-7547.4 030838-7547.5



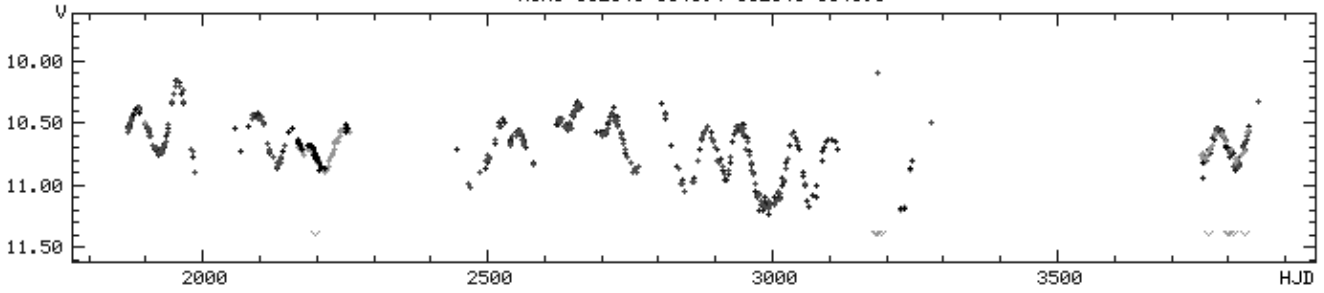
NSV 1120 J2000 03 20 09.5 -71 36 10

032009-7136.2 032013-7136.4 032014-7135.9 032009-7136.1 03 2180.64502 10.779 10.938 10.838 10.760 10.756 0.024 6



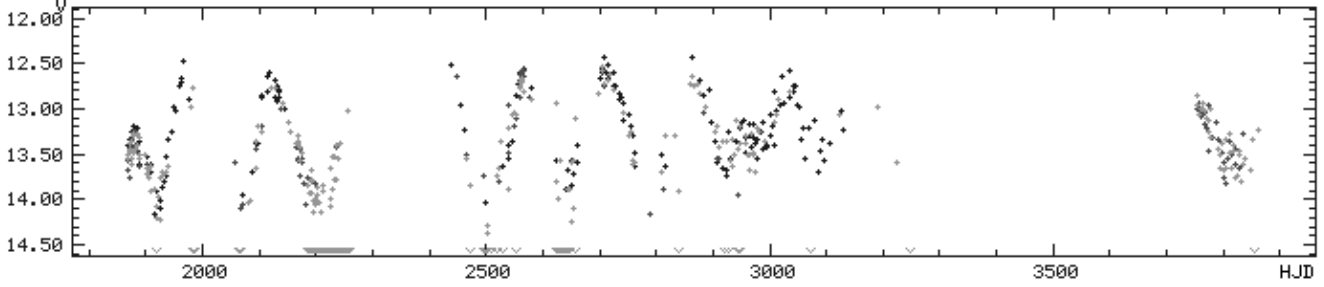
NSV 1171 J2000 03 28 45.8 -60 41 26

ASAS 032846-6041.4 032846-6041.5



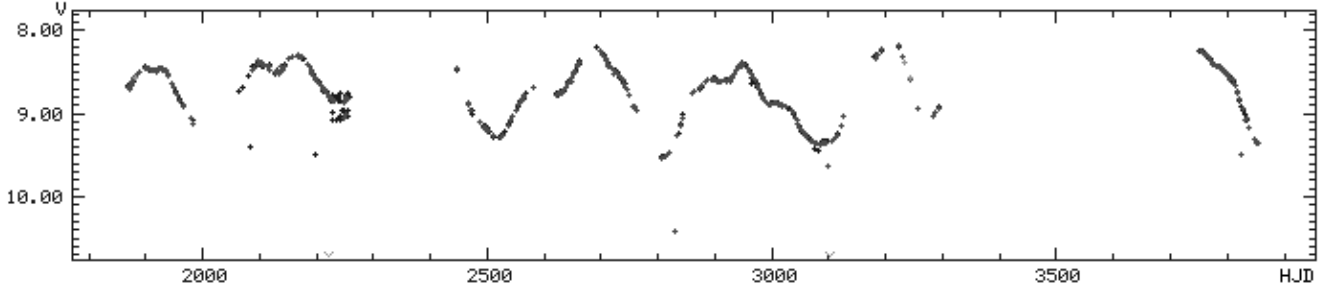
NSV 1196 J2000 03 31 24.6 -75 27 21

033121-7527.5 033124-7527.6 033125-7527.3 033124-7527.3 03 3861.46788 13.223 13.266 13.341 13.315 13.279 0.049 0



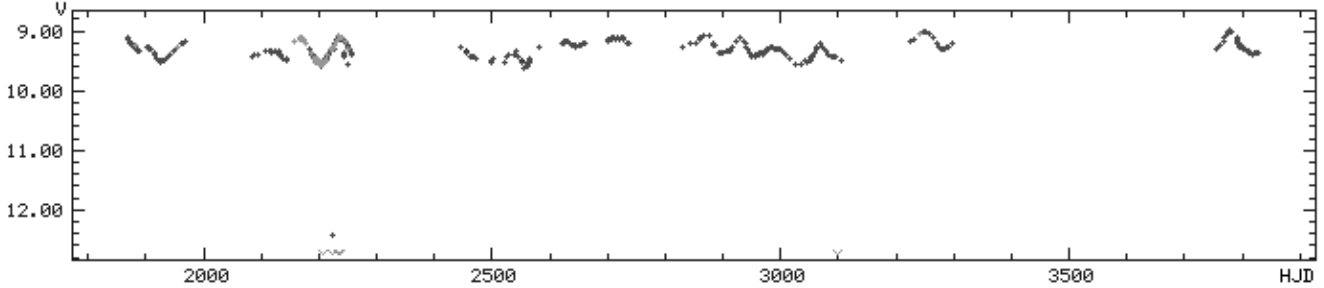
NSV 1214 J2000 03 37 44.6 -55 23 47

ASAS 033746-5524.0 033745-5523.8 033744-5523.8 033743-5524.0



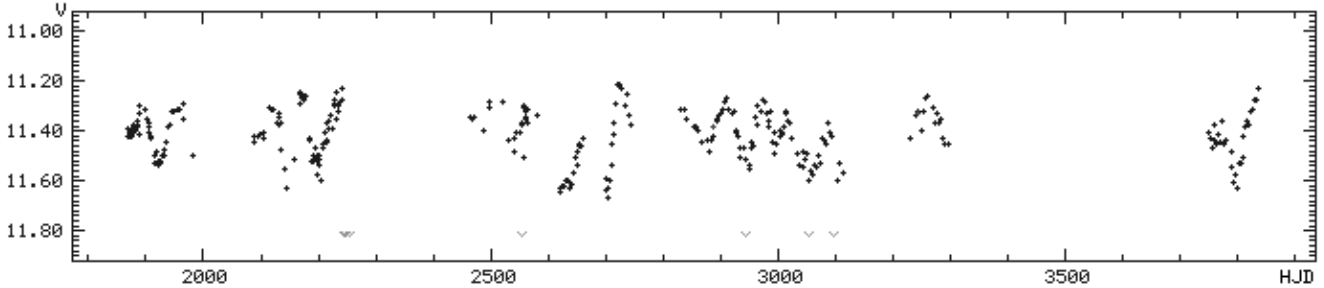
NSV 1237 J2000 03 42 33.6 -14 50 43

ASAS 034234-1450.7 034234-1450.8 034233-1451.0



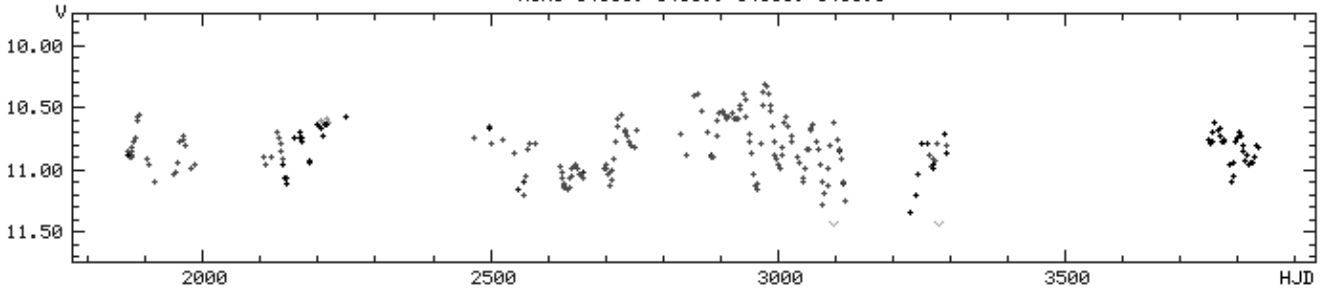
NSV 1564 J2000 04 20 33.1 -15 54 50

ASAS 042033-1554.9 042034-1554.6 042032-1554.8 042033-1554.8

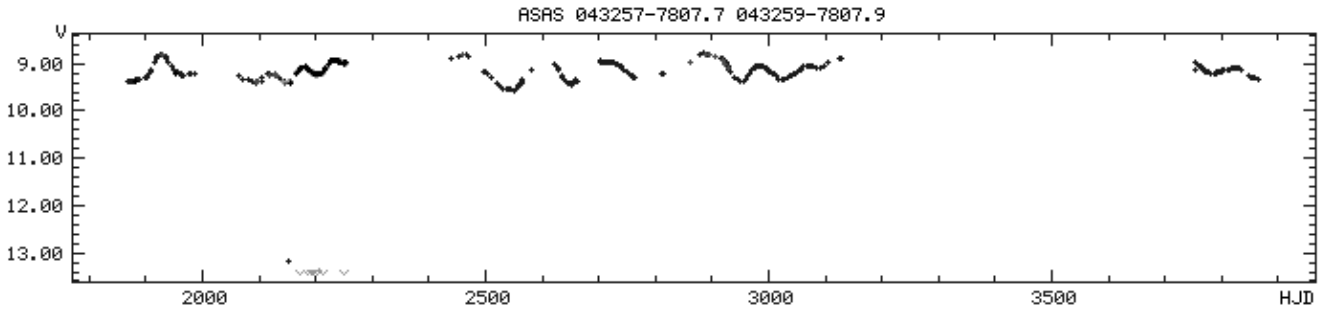


NSV 1660 J2000 04 35 38.9 -04 05 54

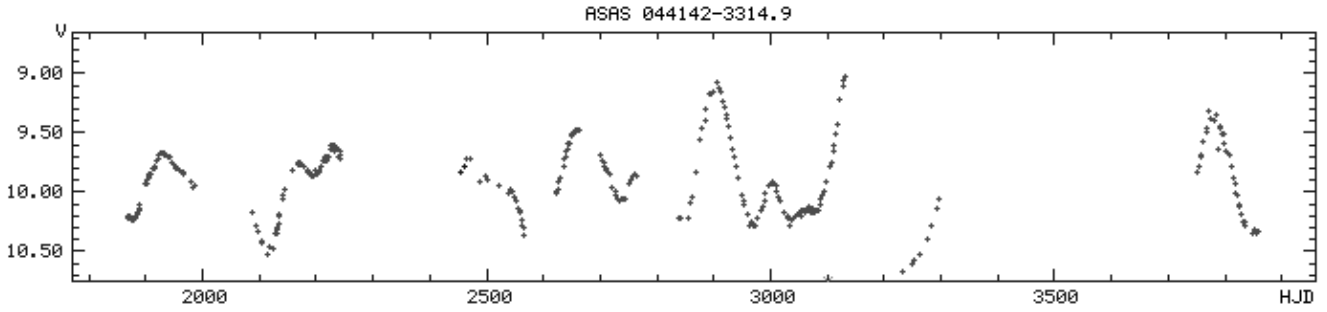
ASAS 043539-0405.9 043539-0406.0



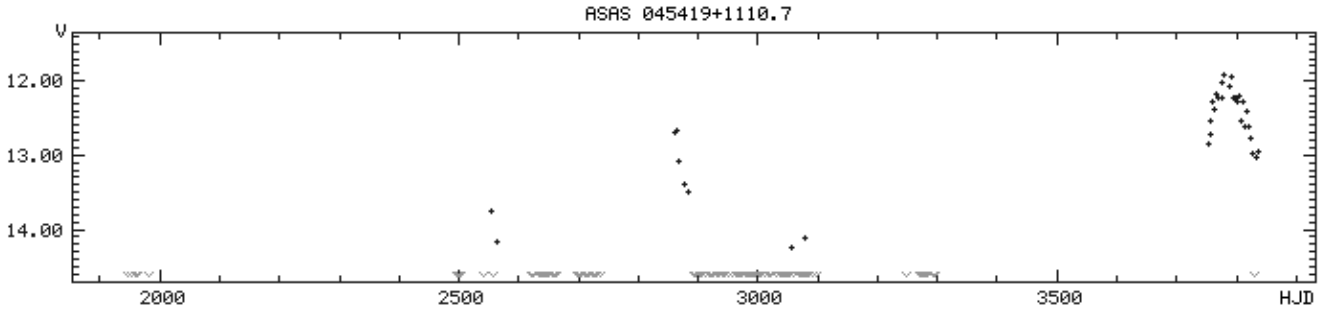
NSV 1675 J2000 04 32 56.8 -78 07 41



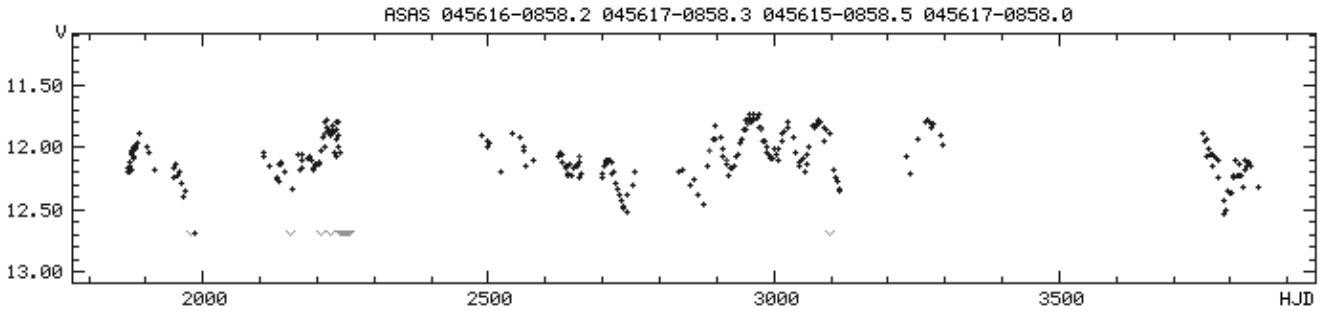
NSV 1698 J2000 04 41 41.9 -33 14 53



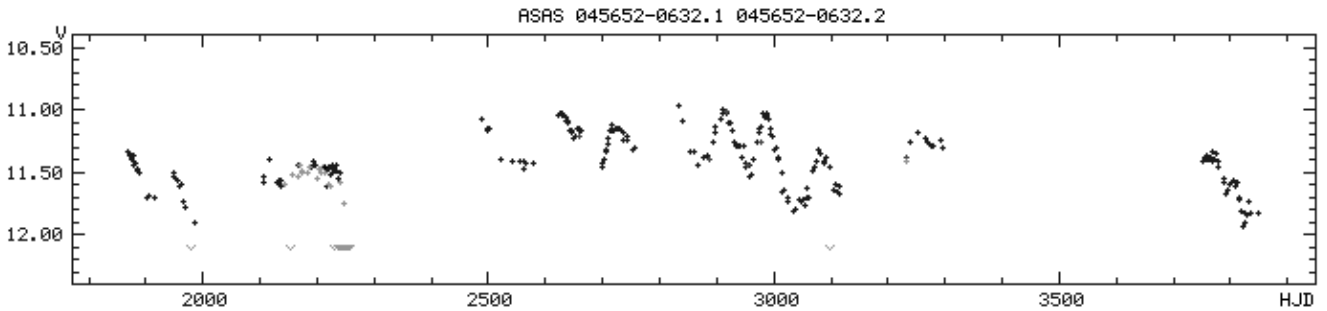
NSV 1760 J2000 04 54 18.7 +11 10 43



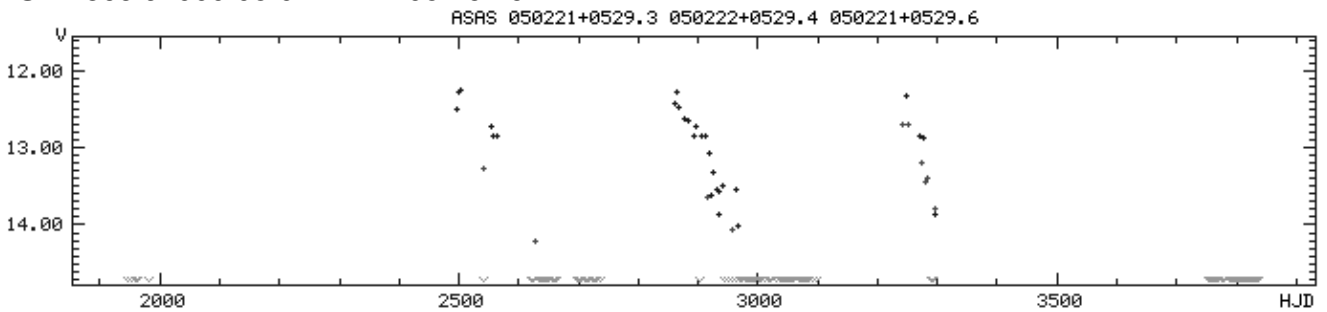
NSV 1780 J2000 04 56 16.1 -08 58 14



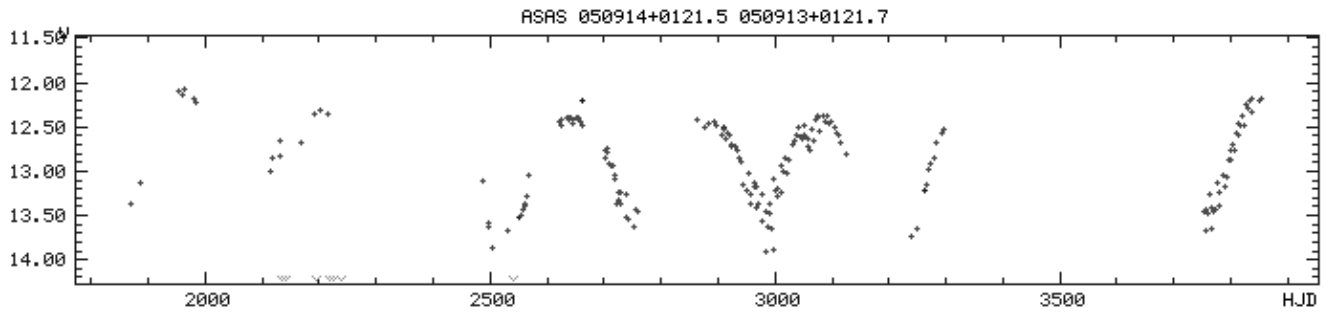
NSV 1781 J2000 04 56 51.9 -06 32 09



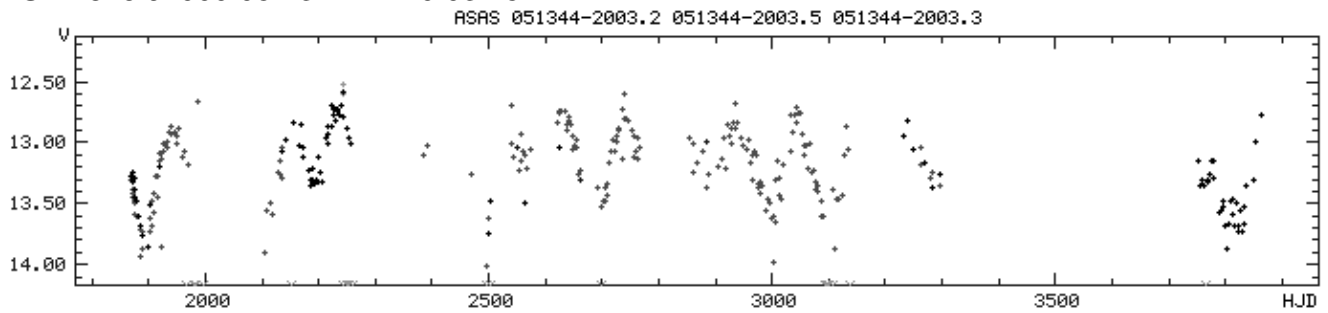
NSV 1809 J2000 05 02 21.2 +05 29 19



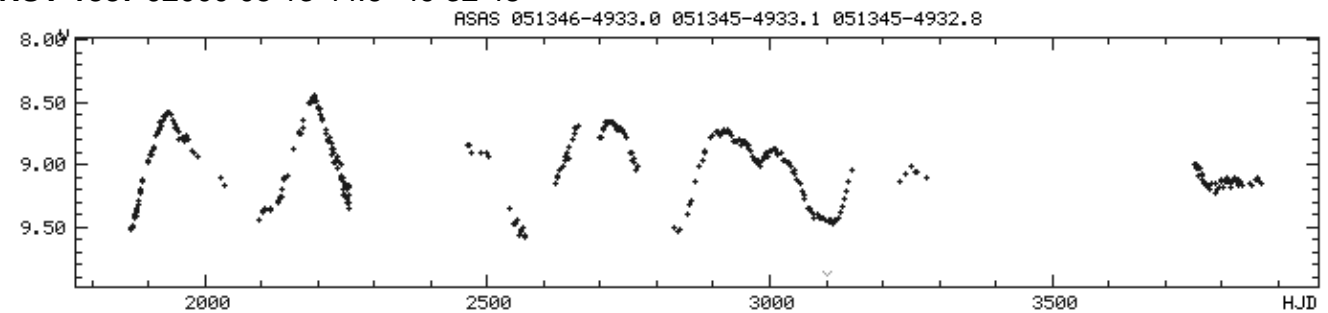
NSV 1850 J2000 05 09 13.7 +01 21 31



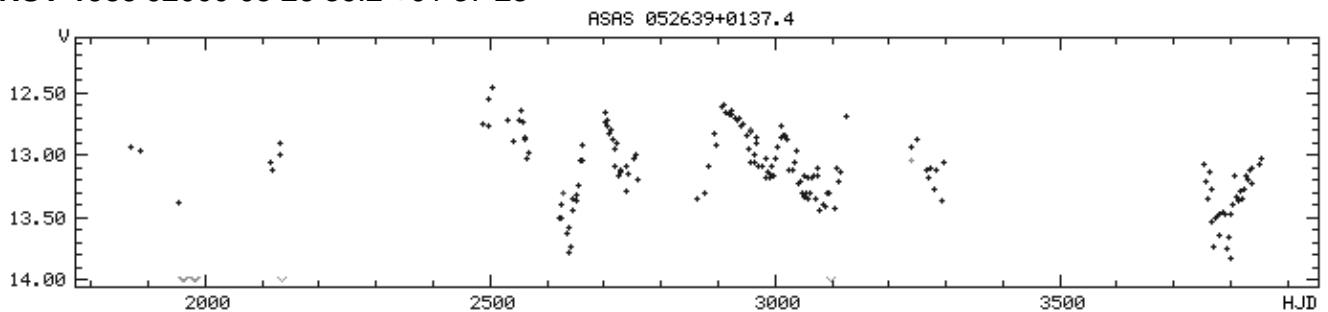
NSV 1875 J2000 05 13 44.2 -20 03 15



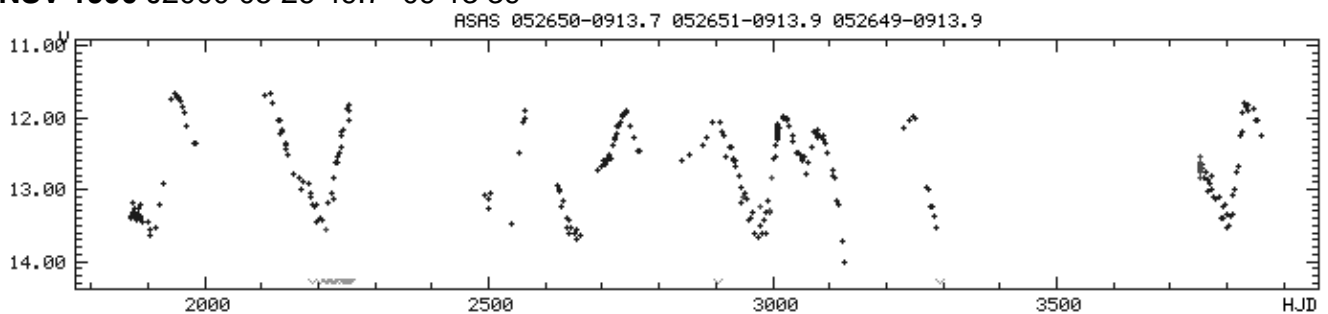
NSV 1887 J2000 05 13 44.6 -49 32 48



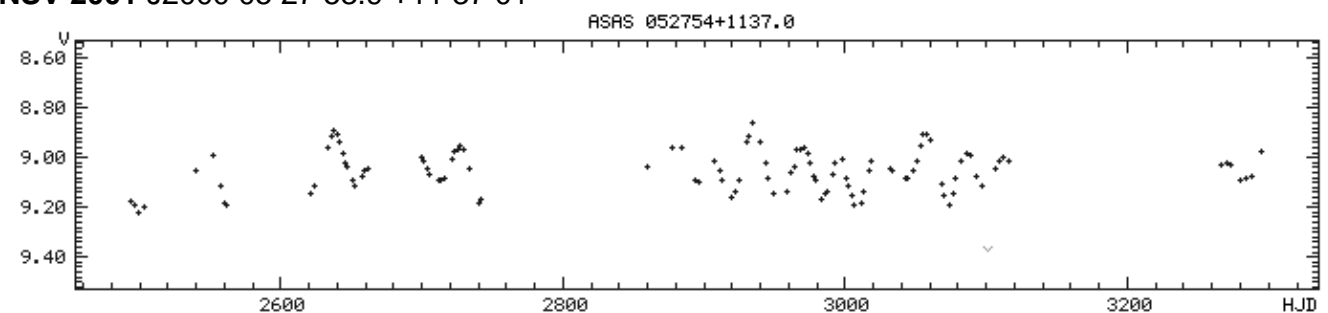
NSV 1985 J2000 05 26 39.2 +01 37 23



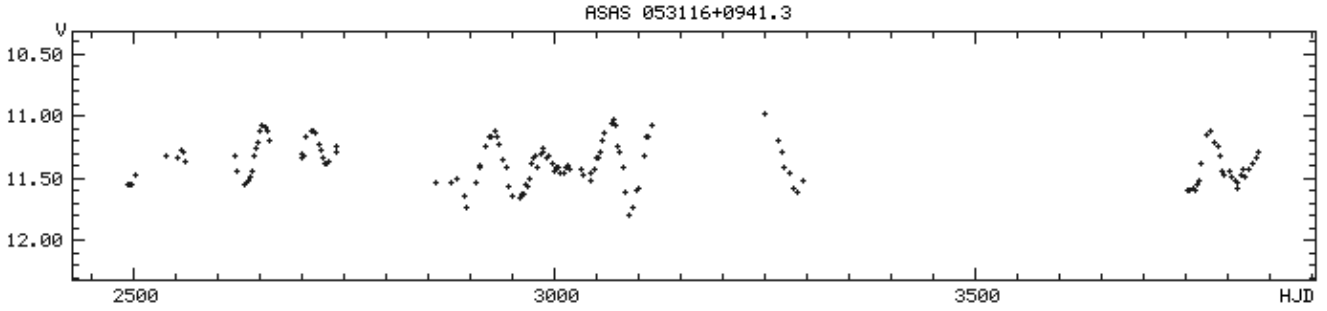
NSV 1990 J2000 05 26 49.7 -09 13 39



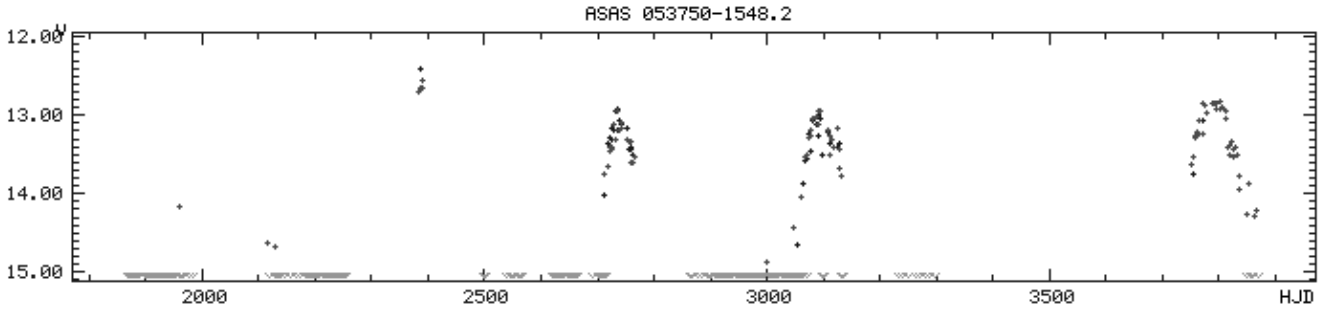
NSV 2001 J2000 05 27 53.9 +11 37 01



NSV 2064 J2000 05 31 15.8 +09 41 20

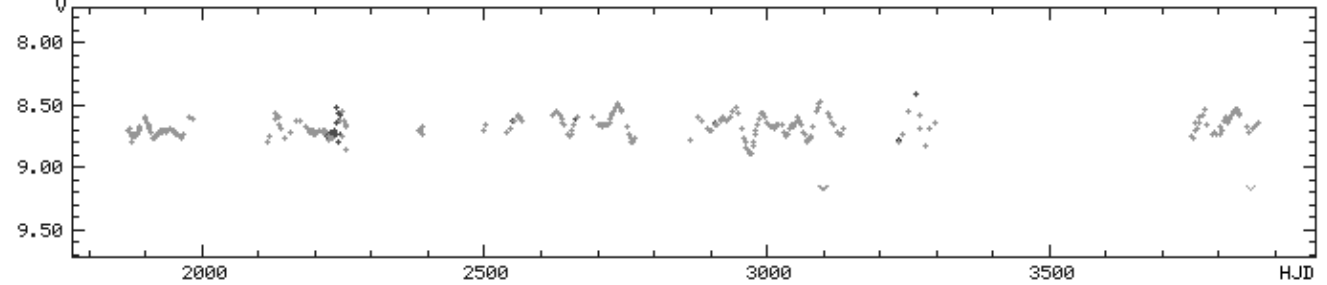


NSV 2490 J2000 05 37 50.1 -15 48 11

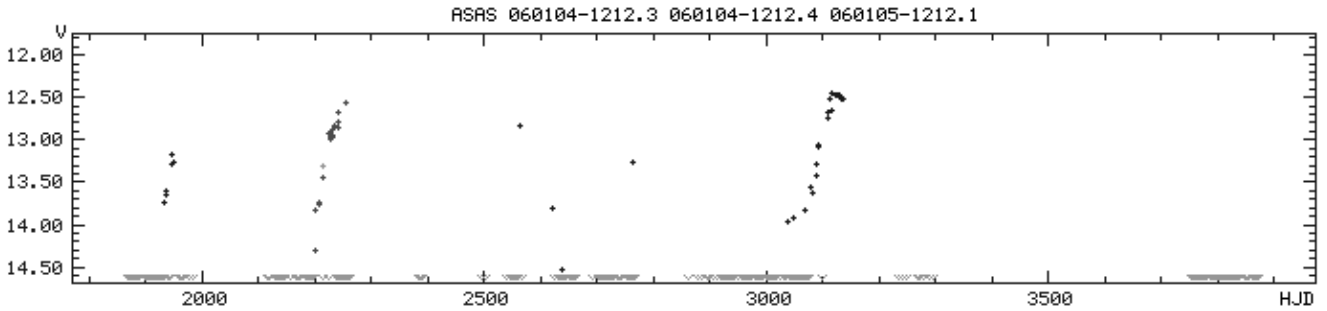


NSV 2575 J2000 05 41 11.8 -16 52 32

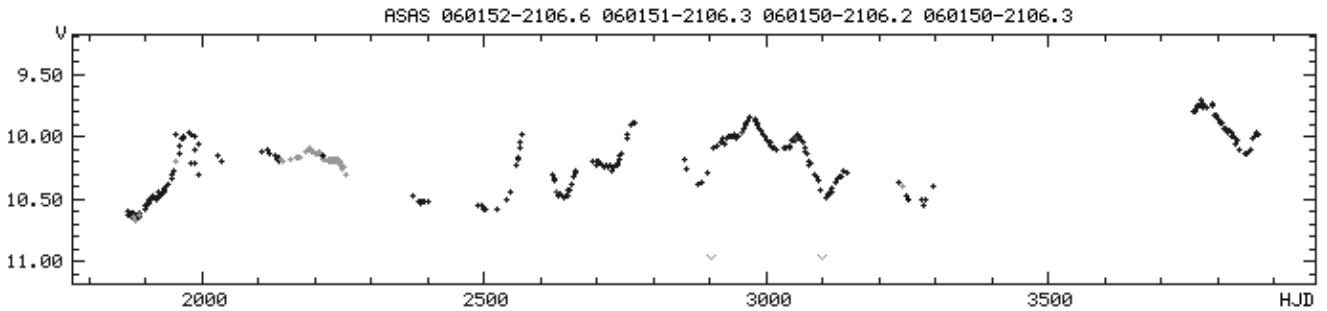
354112-1652.5 054111-1652.3 054112-1652.8 054113-1652.6 05 3869.45985 8.637 8.682 8.633 8.629 8.636 0.030 0



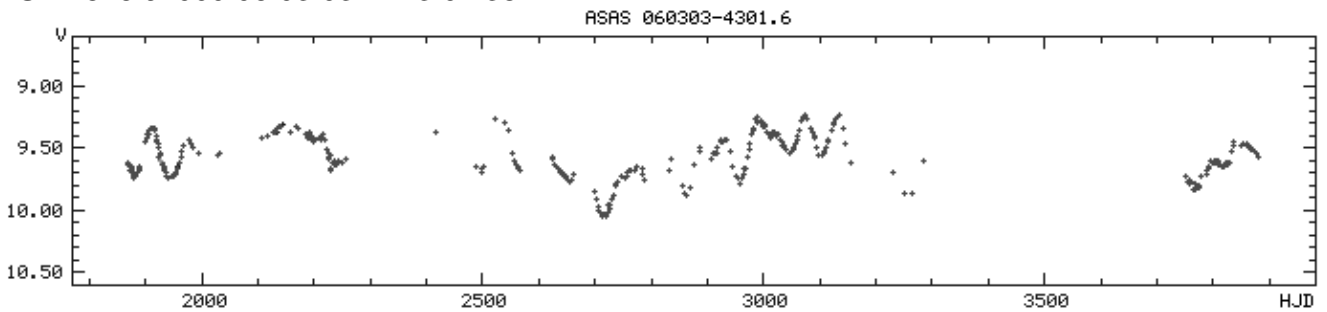
NSV 2781 J2000 06 01 04.4 -12 12 21



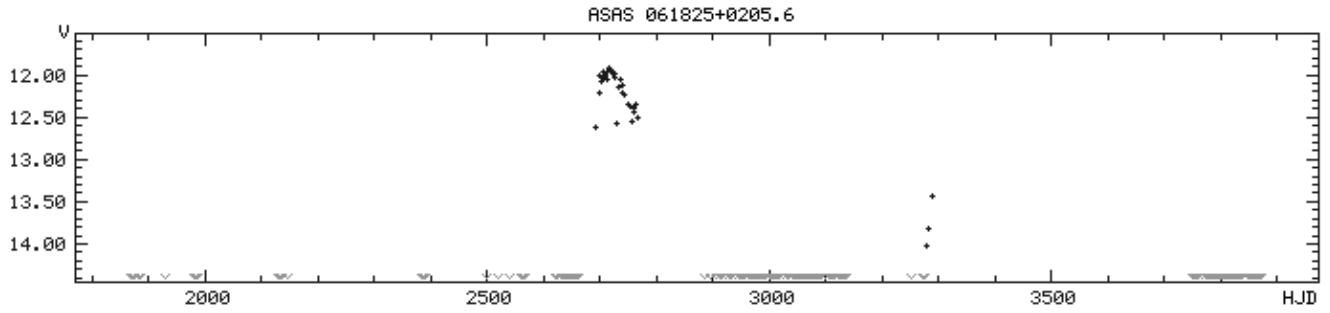
NSV 2795 J2000 06 01 50.8 -21 06 18



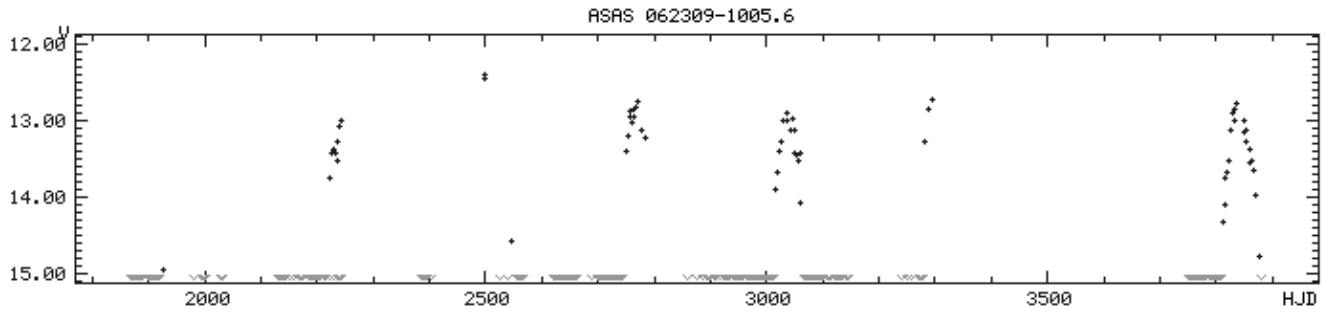
NSV 2813 J2000 06 03 03.2 -43 01 38



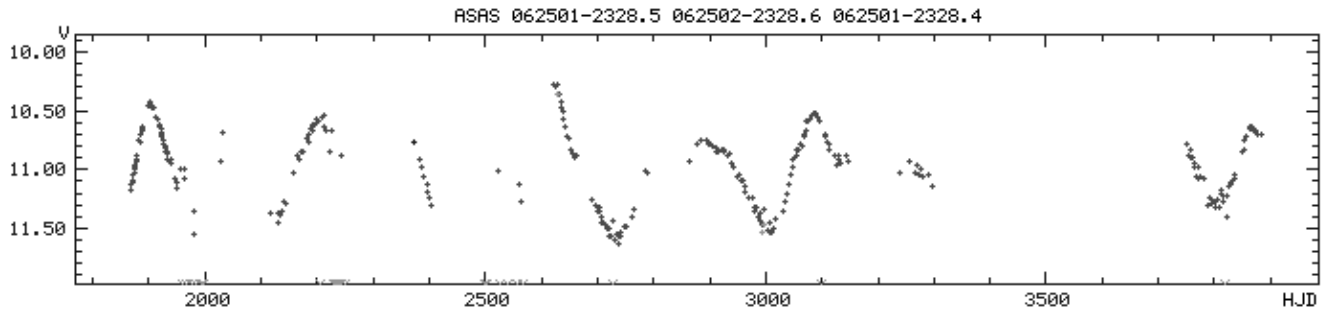
NSV 2904 J2000 06 18 24.8 +02 05 34



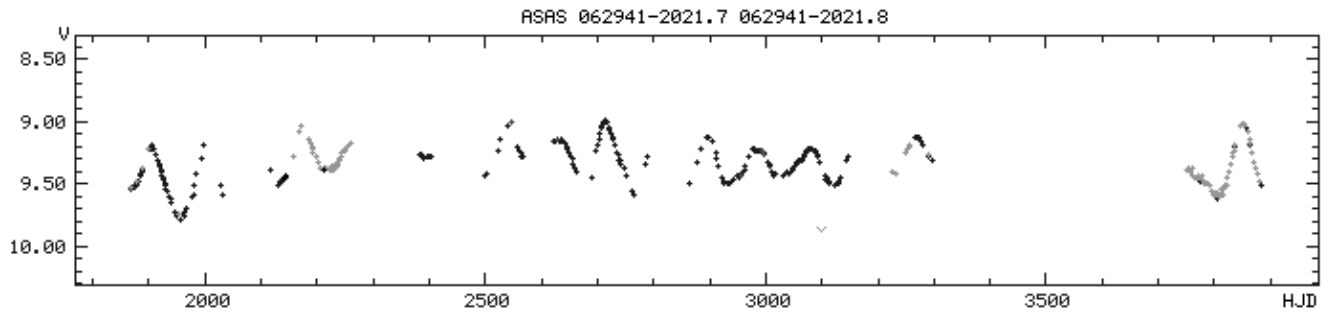
NSV 2941 J2000 06 23 09.1 -10 05 31



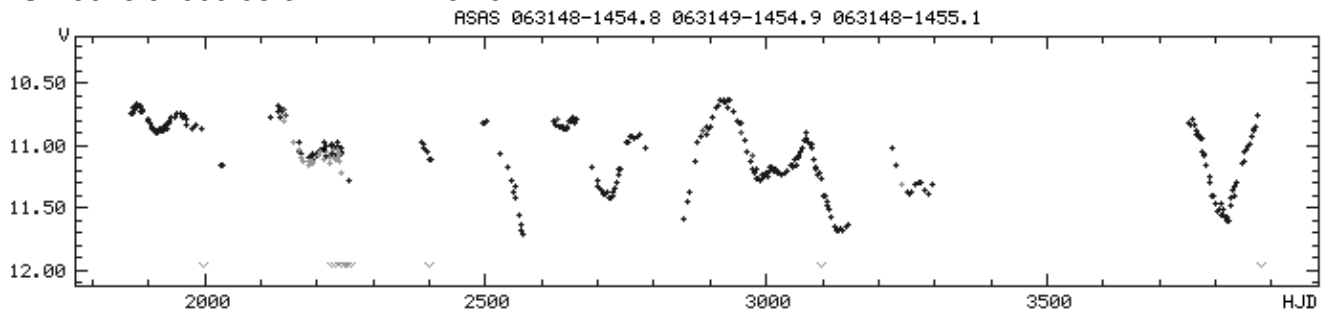
NSV 2956 J2000 06 25 01.2 -23 28 26



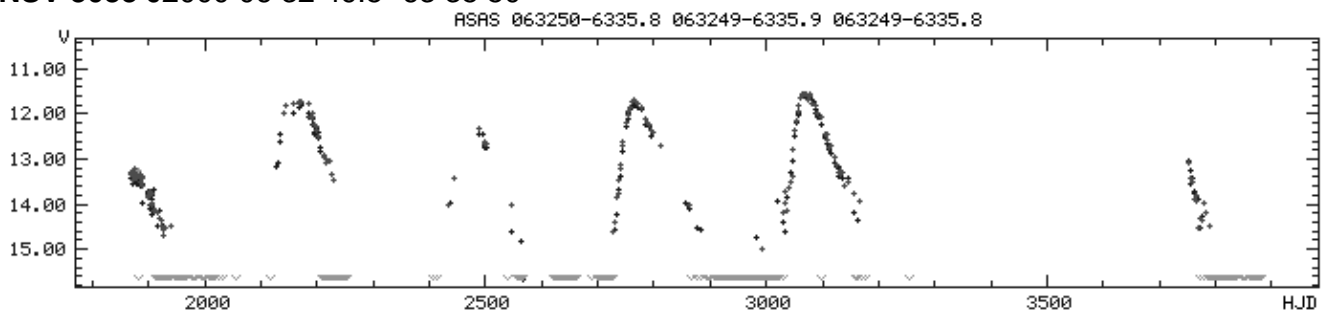
NSV 2985 J2000 06 29 41.3 -20 21 46



NSV 3015 J2000 06 31 47.7 -14 54 51

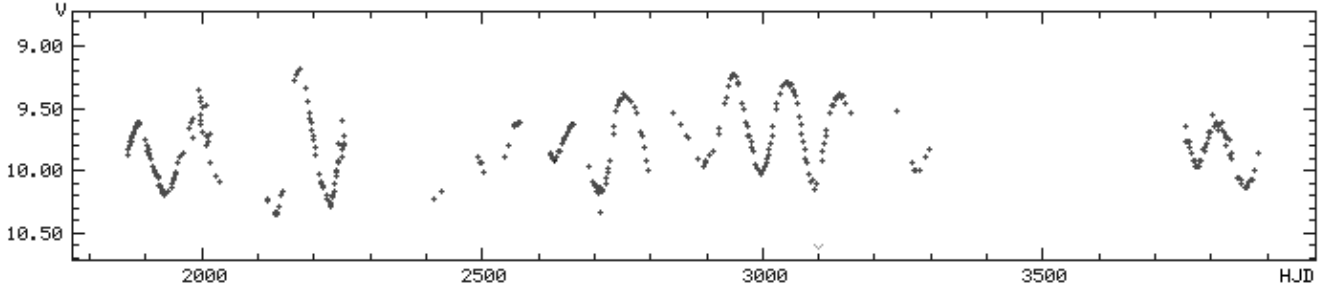


NSV 3033 J2000 06 32 49.5 -63 35 50



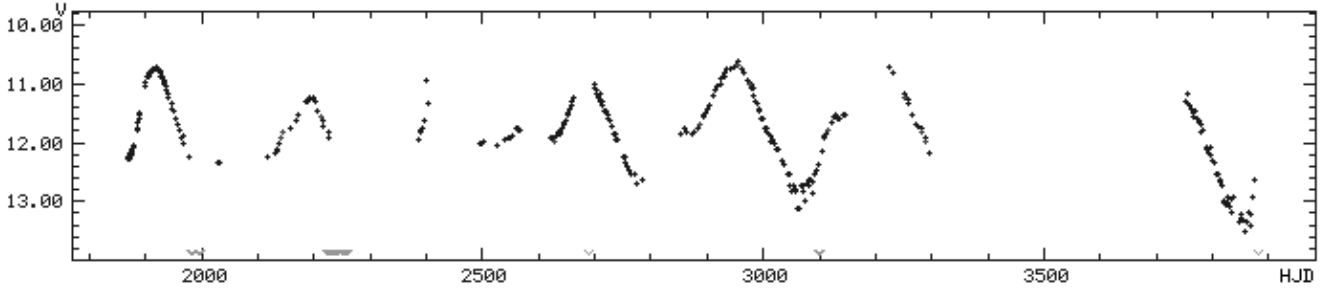
NSV 3034 J2000 06 34 04.9 -41 32 32

063405-4132.5 063407-4132.6 063407-4132.3 063404-4132.7 06 3883.47270 9.861 9.860 9.870 9.863 9.856 0.018 0



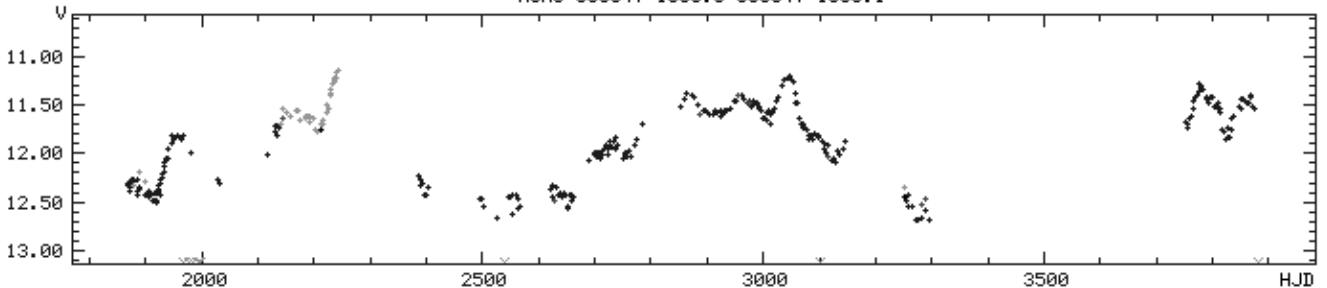
NSV 3037 J2000 06 35 17.9 -15 22 50

ASAS 063518-1522.8



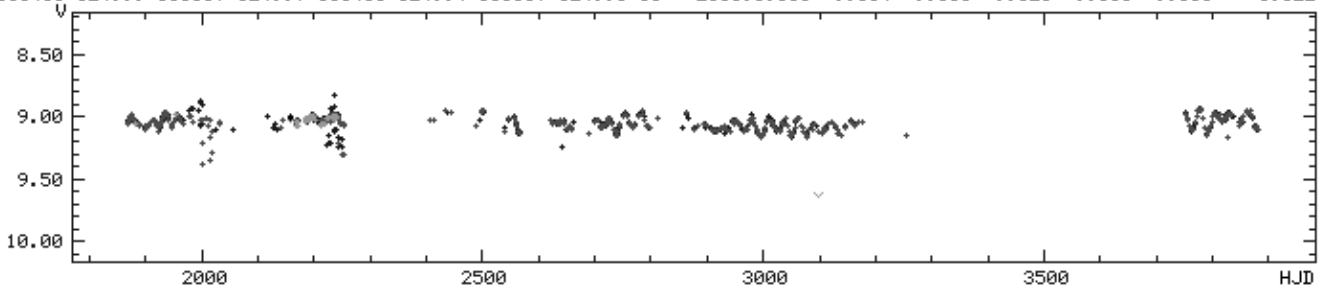
NSV 3042 J2000 06 35 46.9 -13 05 02

ASAS 063547-1305.0 063547-1305.1



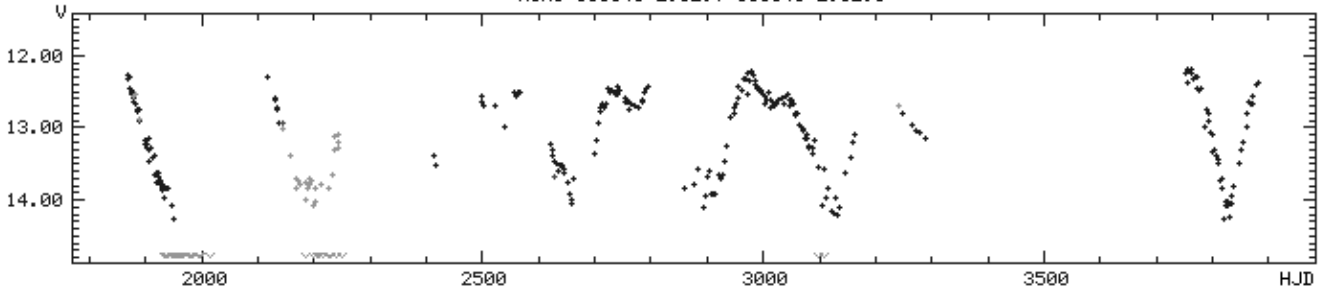
NSV 3043 J2000 06 33 56.8 -62 49 44

063400-6249.9 063357-6249.7 063400-6249.4 063357-6249.8 06 2156.89011 9.014 9.008 9.023 9.013 9.015 0.022 0



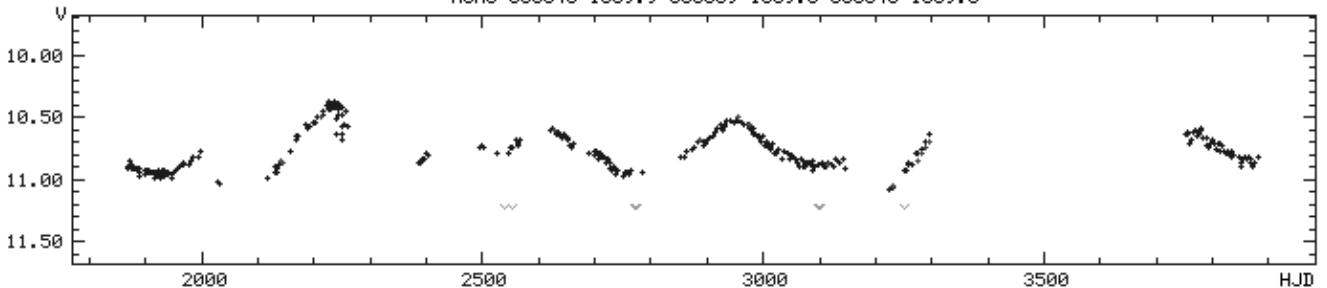
NSV 3044 J2000 06 35 41.0 -29 12 46

ASAS 063541-2912.7 063541-2912.8

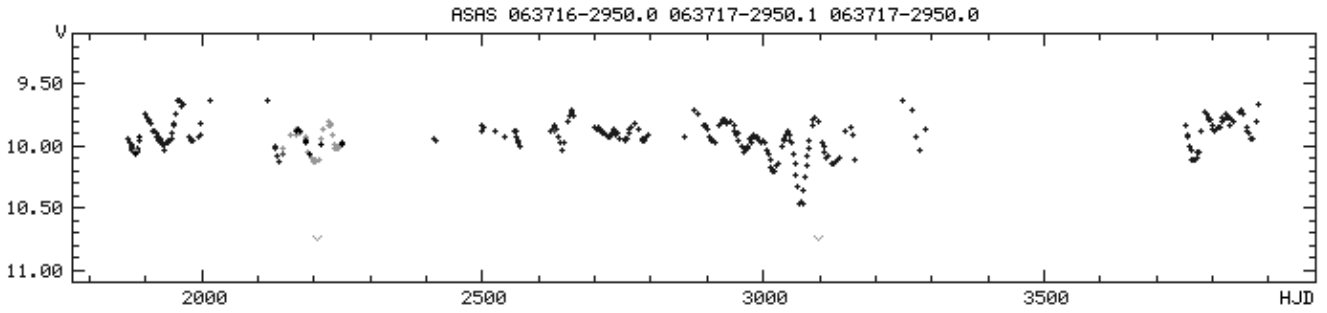


NSV 3046 J2000 06 36 39.5 -16 59 34

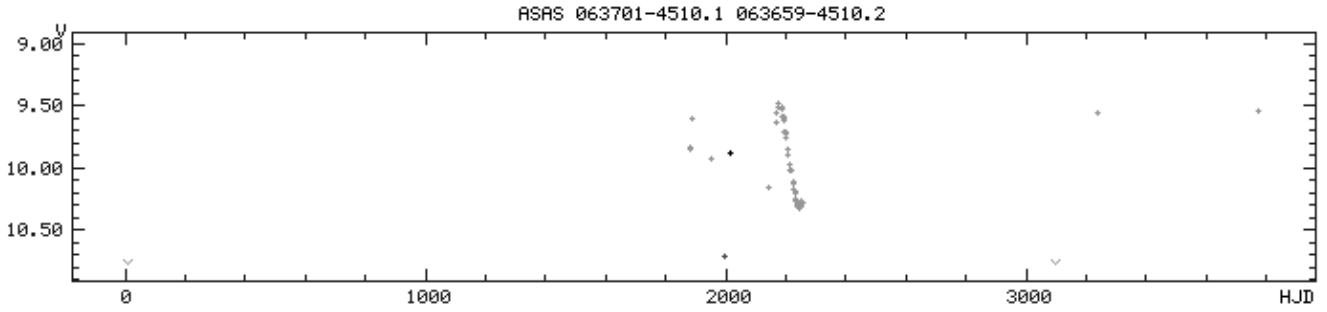
ASAS 063640-1659.9 063639-1659.6 063640-1659.6



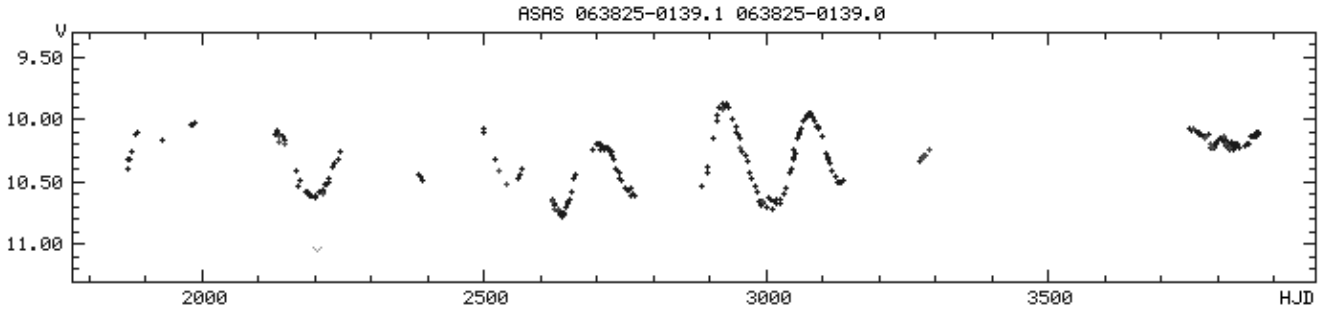
NSV 3051 J2000 06 37 16.5 -29 50 02



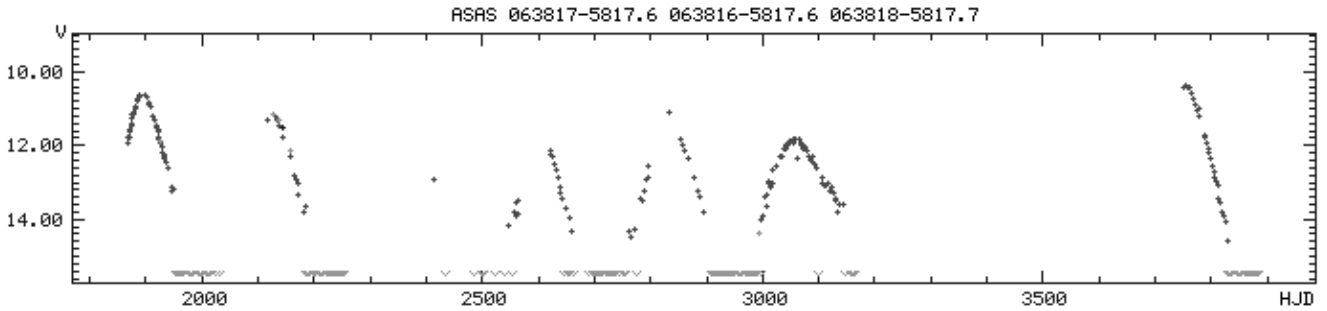
NSV 3053 J2000 06 36 58.8 -45 10 13



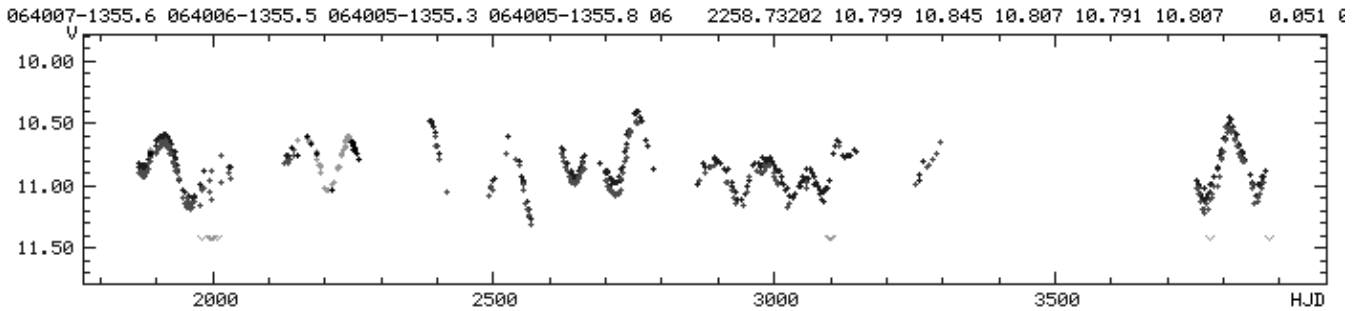
NSV 3057 J2000 06 38 24.6 -01 39 03



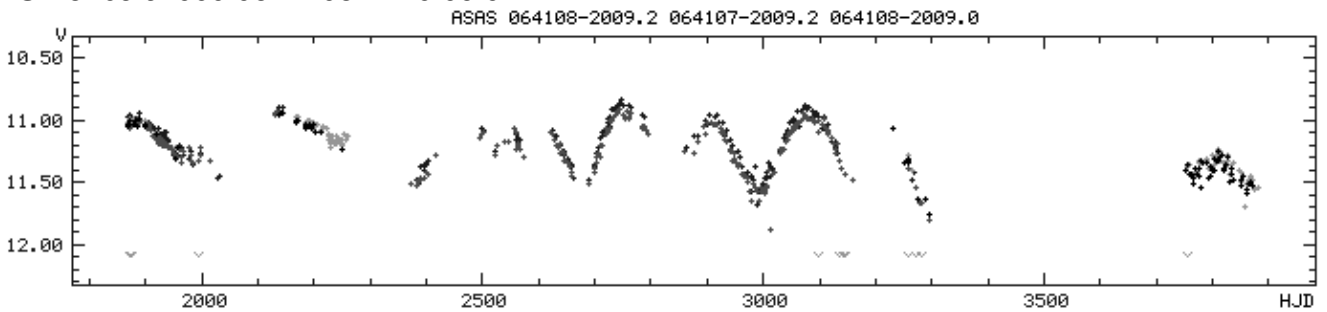
NSV 3075 J2000 06 38 16.5 -58 17 35



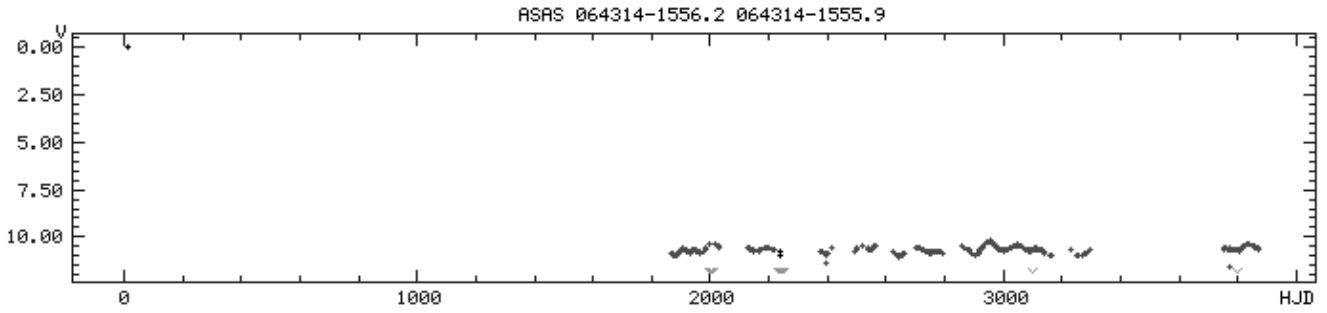
NSV 3084 J2000 06 40 05.5 -13 55 31



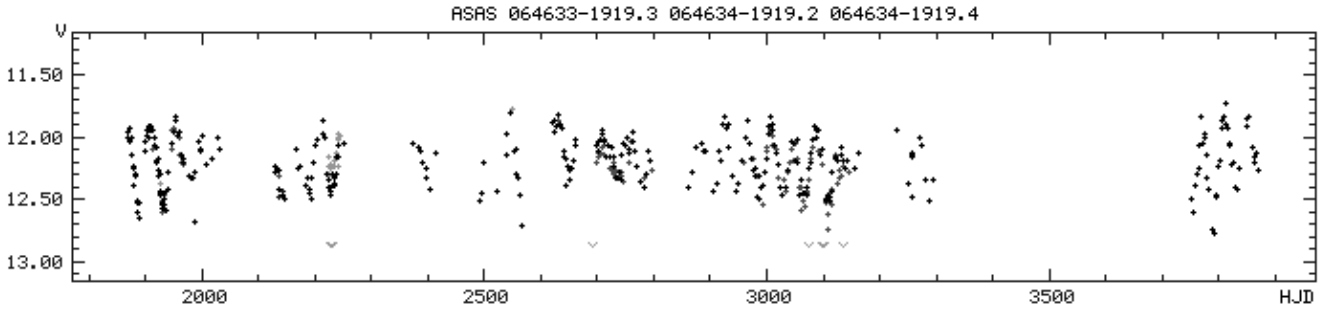
NSV 3169 J2000 06 41 08.1 -20 09 04



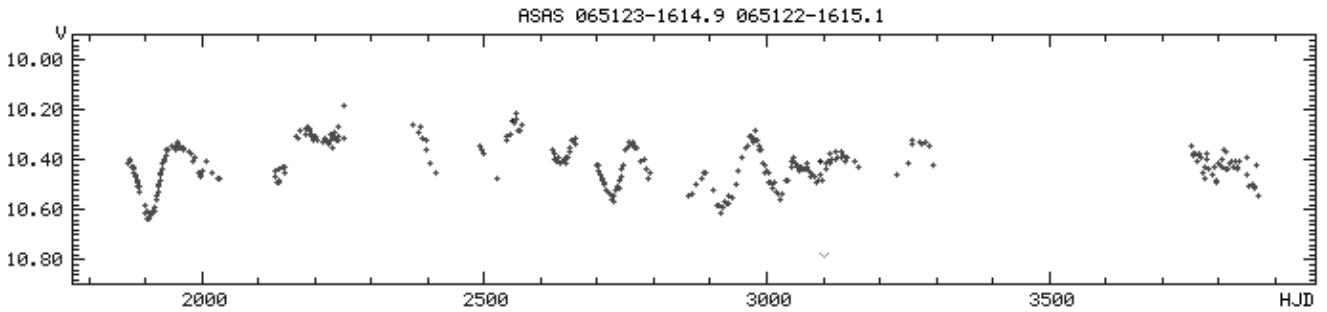
NSV 3184 J2000 06 43 14.2 -15 56 12



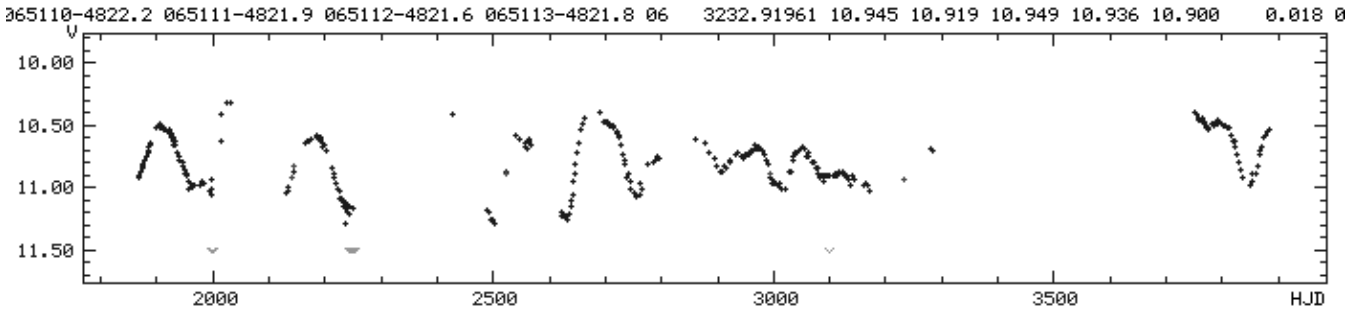
NSV 3209 J2000 06 46 33.0 -19 19 18



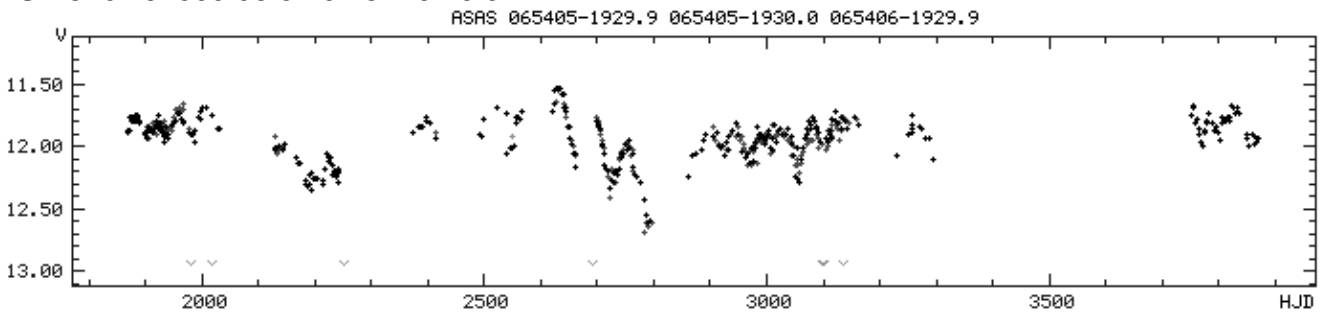
NSV 3242 J2000 06 51 23.2 -16 14 56



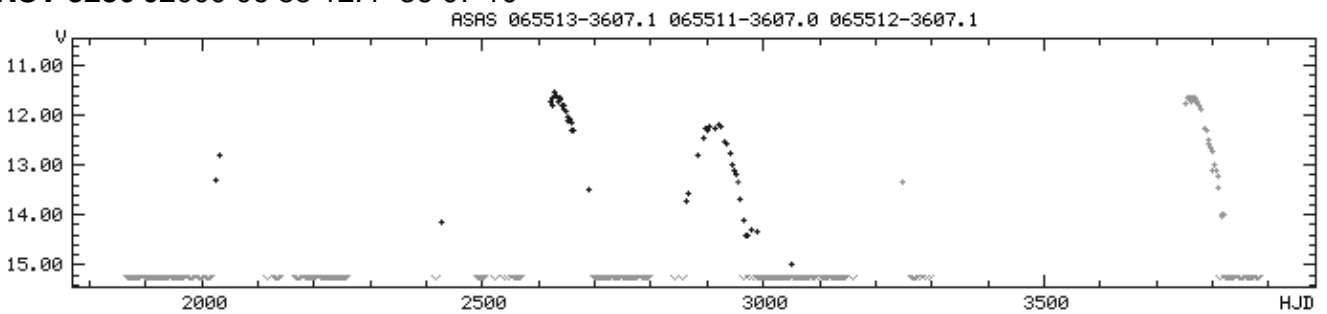
NSV 3252 J2000 06 51 11.4 -48 21 56



NSV 3267 J2000 06 54 04.8 -19 29 54

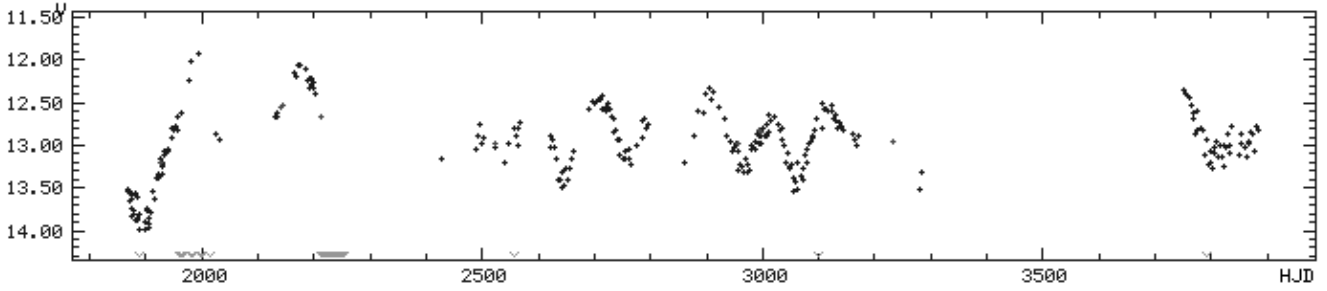


NSV 3286 J2000 06 55 12.4 -36 07 10



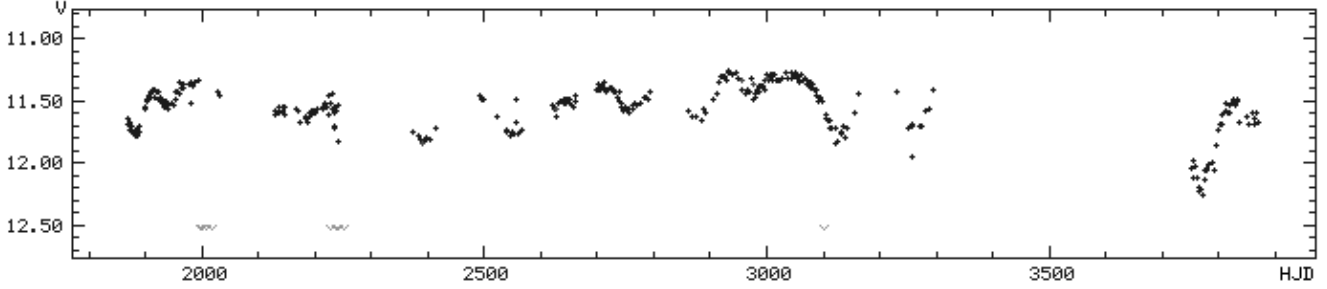
NSV 3294 J2000 06 55 45.9 -47 35 03

ASAS 065548-4735.2 065546-4735.1 065546-4735.0



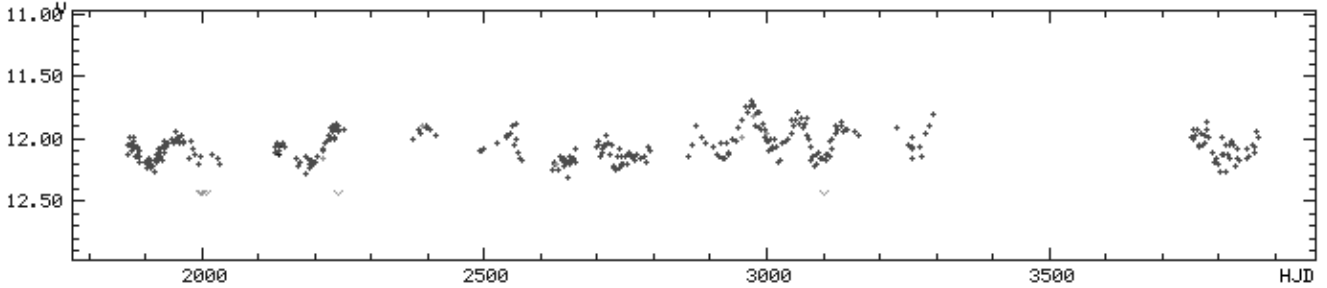
NSV 3327 J2000 06 59 55.8 -15 55 48

ASAS 065956-1555.8 065957-1555.6 065955-1556.0



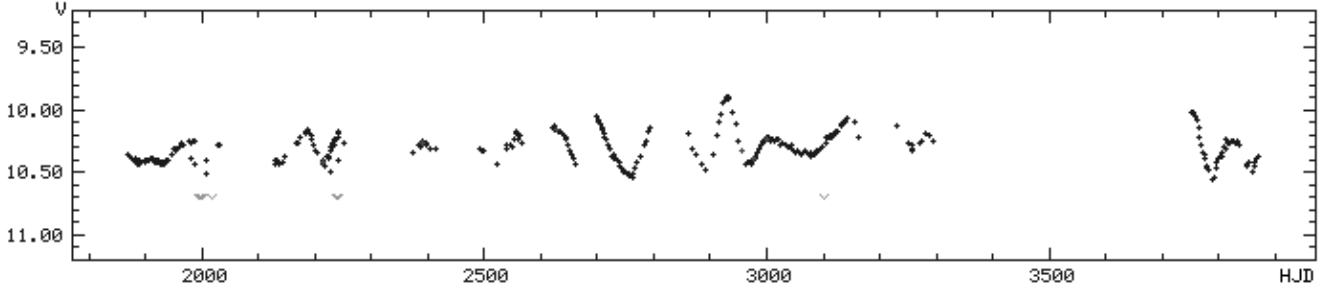
NSV 3336 J2000 07 01 04.0 -18 51 36

ASAS 070104-1851.6 070103-1851.7



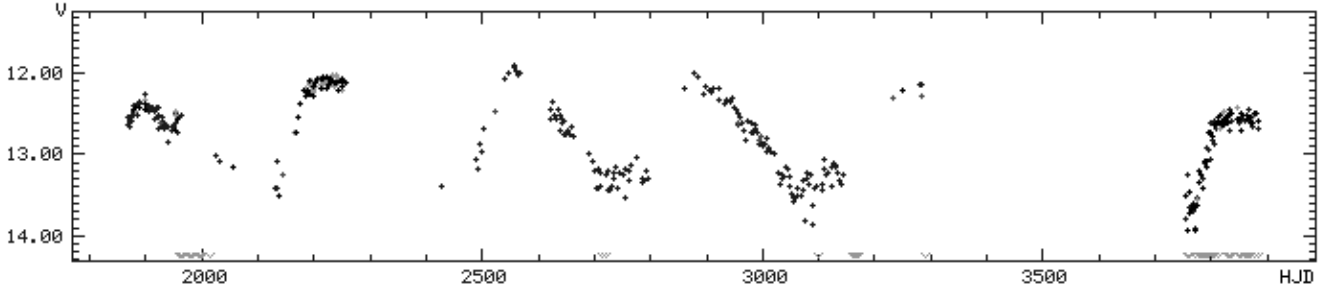
NSV 3348 J2000 07 02 29.7 -15 39 20

ASAS 070230-1539.4 070231-1539.6 070229-1539.6



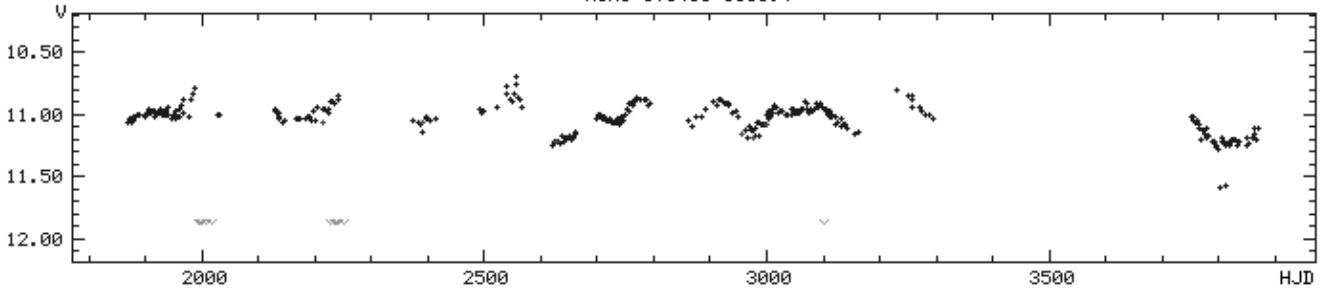
NSV 3358 J2000 07 03 18.8 -44 29 39

ASAS 070319-4429.6 070320-4429.8



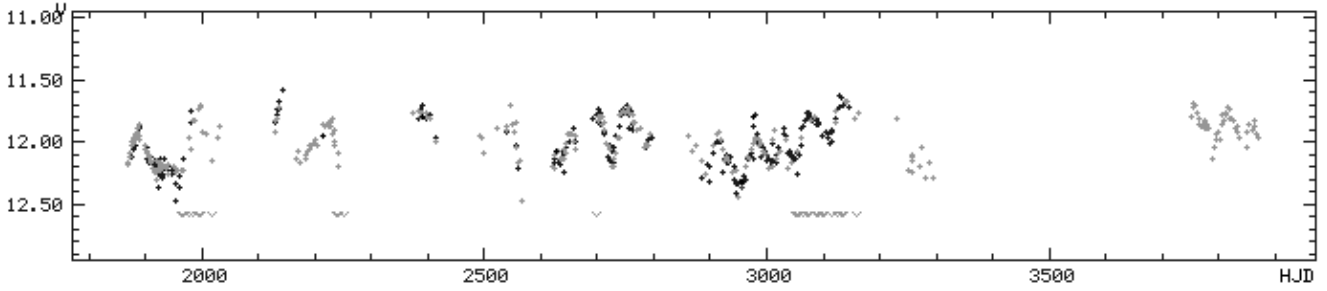
NSV 3361 J2000 07 04 04.7 -16 06 23

ASAS 070405-1606.4



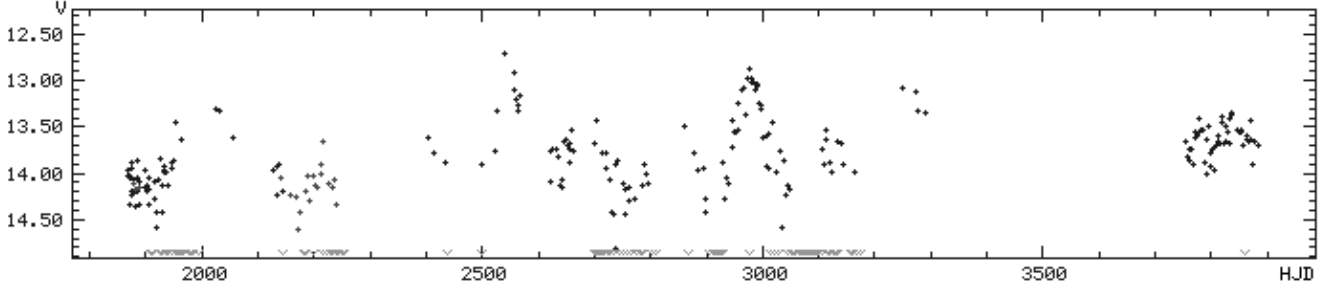
NSV 3366 J2000 07 04 32.3 -19 37 46

ASAS 070432-1937.8 070431-1937.7 070432-1937.7 070433-1937.6



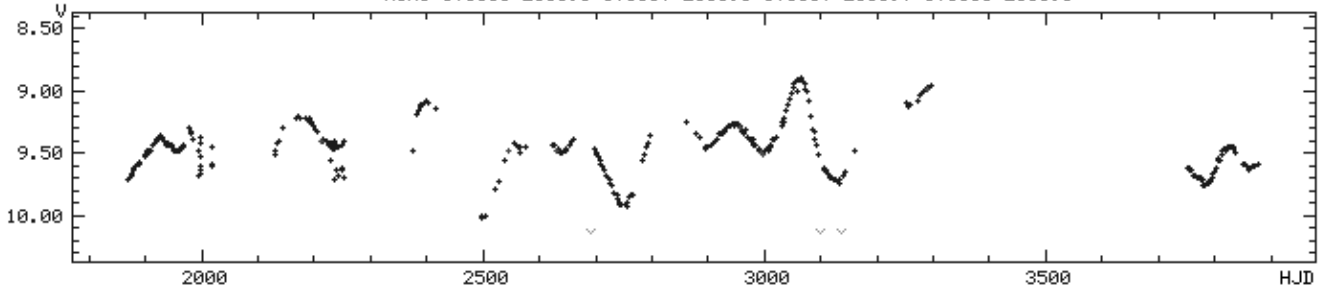
NSV 3380 J2000 07 05 07.5 -37 17 30

ASAS 070507-3717.5 070509-3717.4 070507-3717.2 070508-3717.4



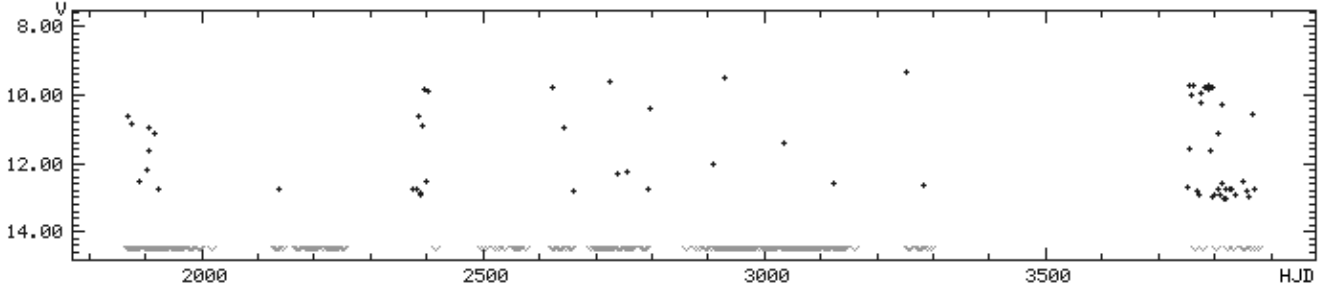
NSV 3384 J2000 07 05 36.1 -25 06 33

ASAS 070536-2506.5 070537-2506.3 070537-2506.7 070535-2506.8



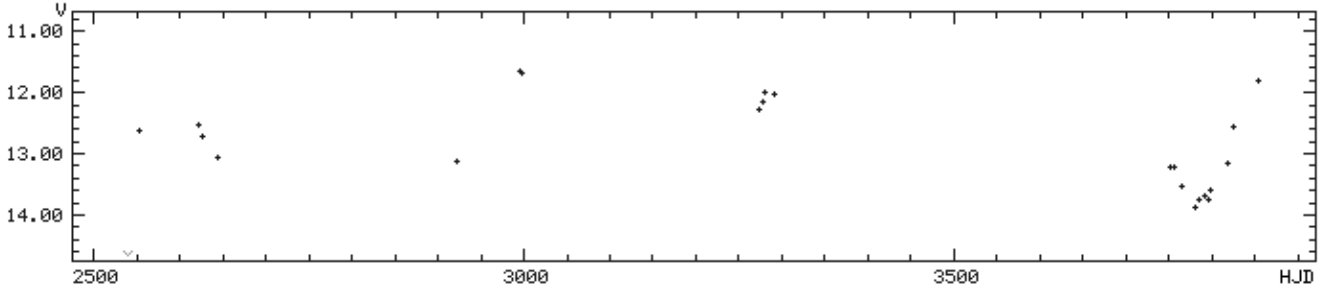
NSV 3391 J2000 07 06 17.2 -24 36 58

ASAS 070617-2436.1 070617-2436.4



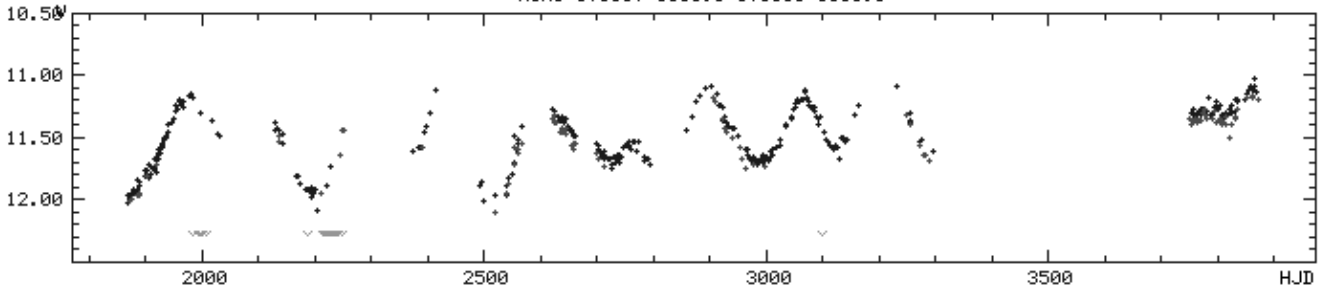
NSV 3434 J2000 07 10 23.2 +06 29 11

ASAS 071023+0629.3



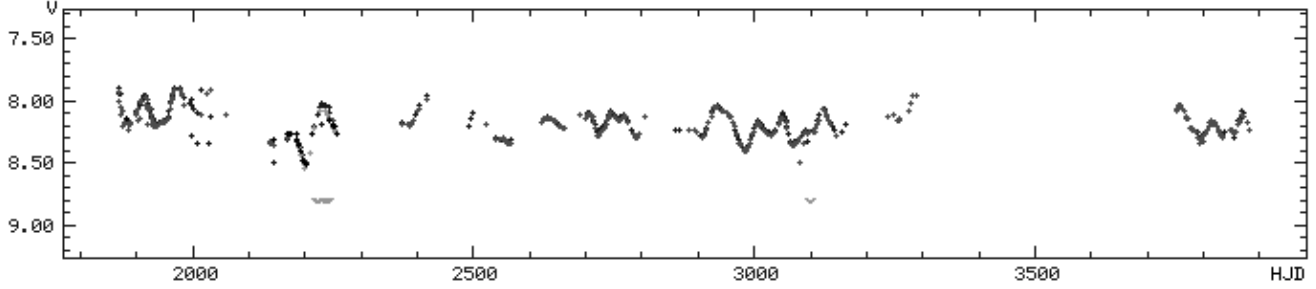
NSV 3439 J2000 07 10 16.4 -16 15 49

ASAS 071017-1616.0 071016-1615.8



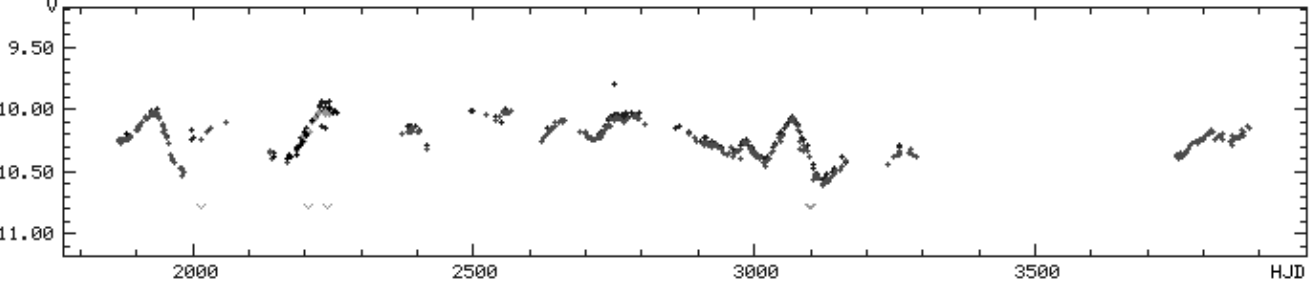
NSV 3466 J2000 07 13 18.2 -14 34 47

071319-1434.9 071318-1434.8 071317-1435.0 071318-1434.7 07 2255.74184 8.267 8.303 8.275 8.262 8.268 0.049 6



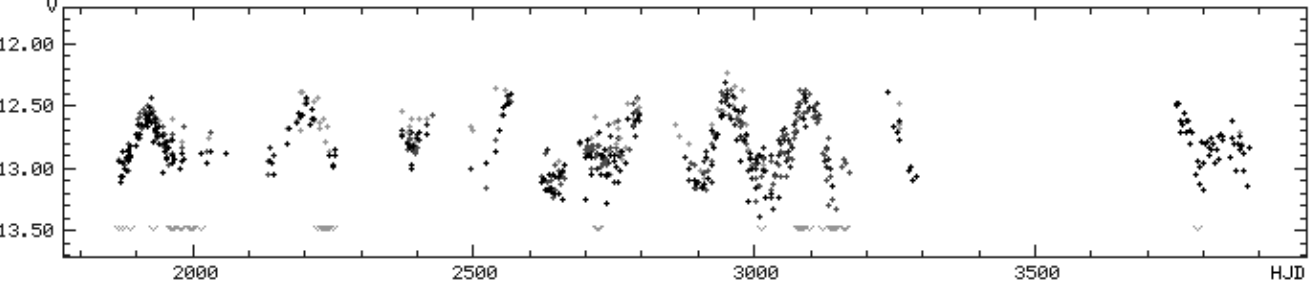
NSV 3471 J2000 07 14 01.7 -14 36 00

071402-1436.0 071403-1436.2 071401-1436.2 071403-1436.1 07 2255.74184 10.031 9.977 10.057 10.018 10.007 0.043 6



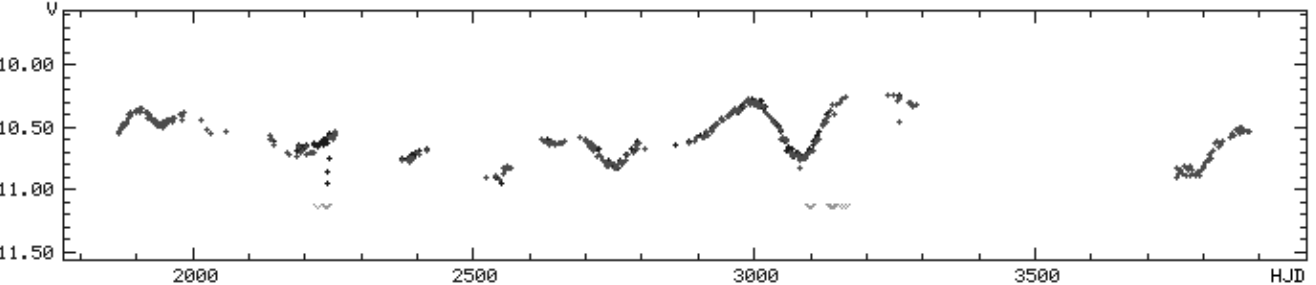
NSV 3475 J2000 07 14 20.3 -19 40 23

071420-1940.5 071421-1940.4 071420-1940.3 071421-1940.1 07 3142.48977 29.999 29.999 29.999 29.999 29.999 0.044 0



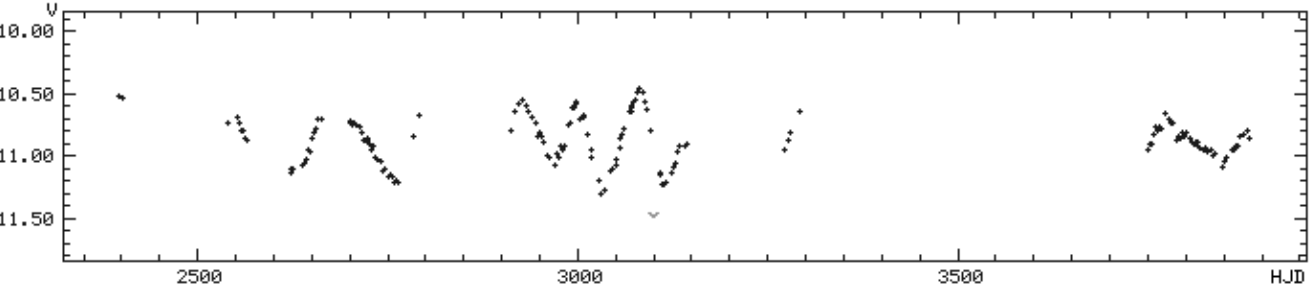
NSV 3482 J2000 07 14 42.1 -17 25 41

ASAS 071442-1725.7 071441-1726.0 071443-1725.9



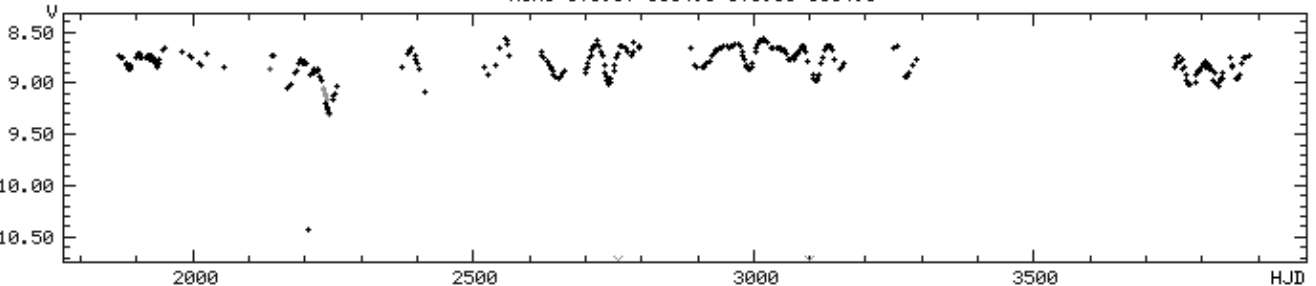
NSV 3522 J2000 07 18 44.7 +10 21 53

ASAS 071845+1021.9



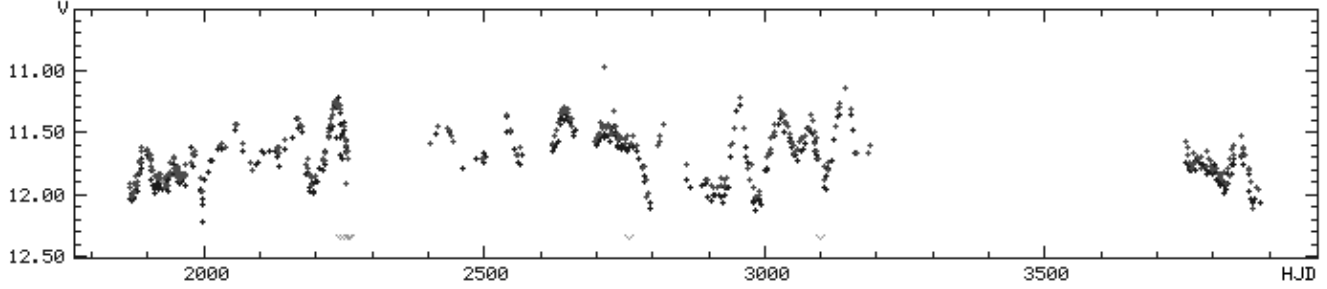
NSV 3532 J2000 07 19 17.2 -10 54 32

ASAS 071917-1054.5 071918-1054.6



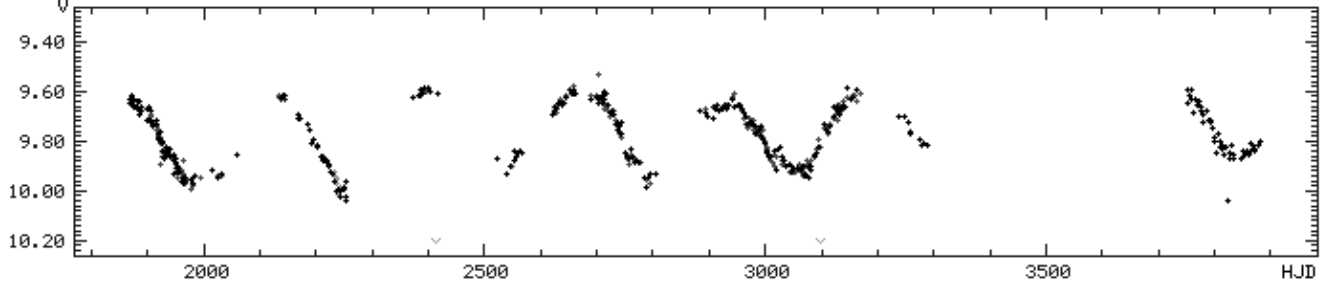
NSV 3534 J2000 07 12 01.6 -82 00 24

071201-8200.4 071153-8200.1 071155-8200.6 071210-8200.2 07 1927.73818 11.893 11.911 11.843 11.771 11.692 0.024



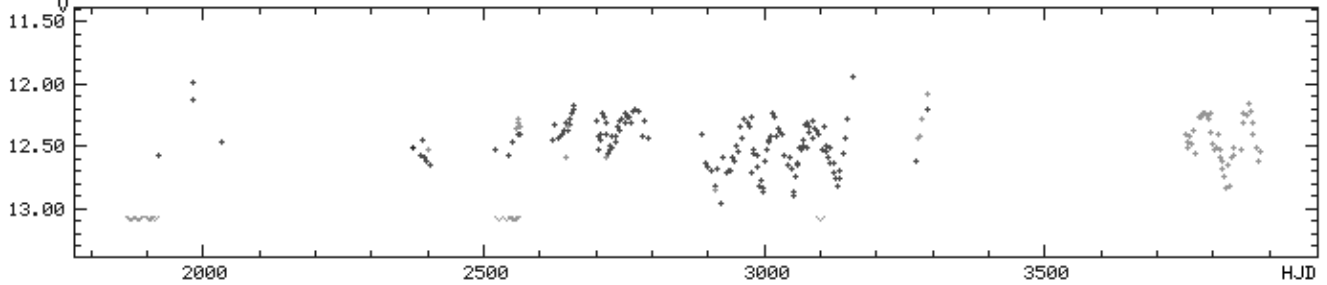
NSV 3539 J2000 07 20 04.1 -19 30 46

ASAS 072003-1931.0 072004-1930.8 072004-1930.7



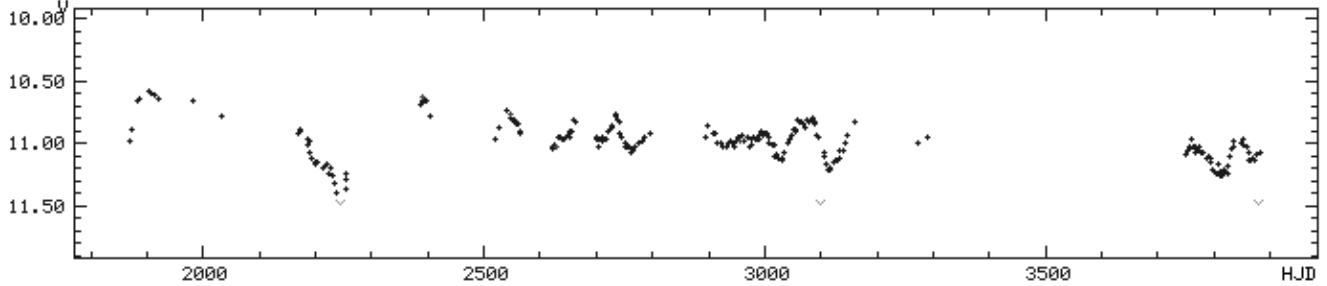
NSV 3594 J2000 07 27 00.3 +03 58 27

ASAS 072700+0358.4 072701+0358.4 072659+0358.5 072700+0358.5



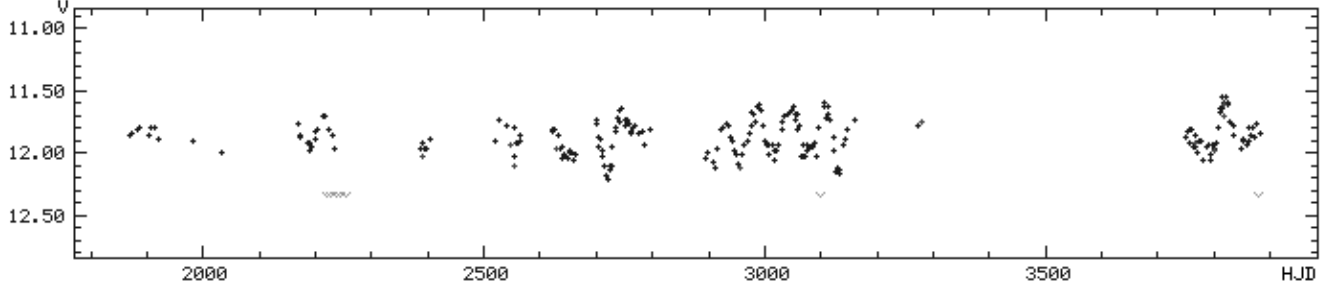
NSV 3647 J2000 07 34 23.0 -01 27 23

ASAS 073422-0127.2 073423-0127.4



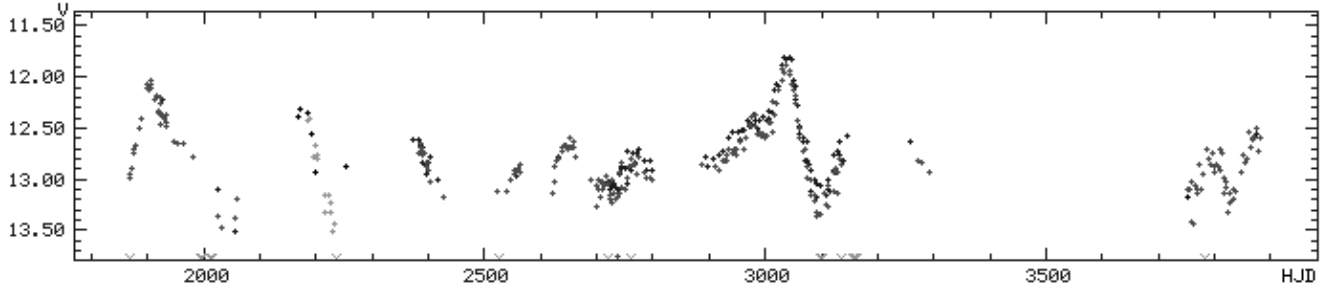
NSV 3692 J2000 07 41 55.7 -01 16 36

ASAS 074157-0116.7 074156-0116.6



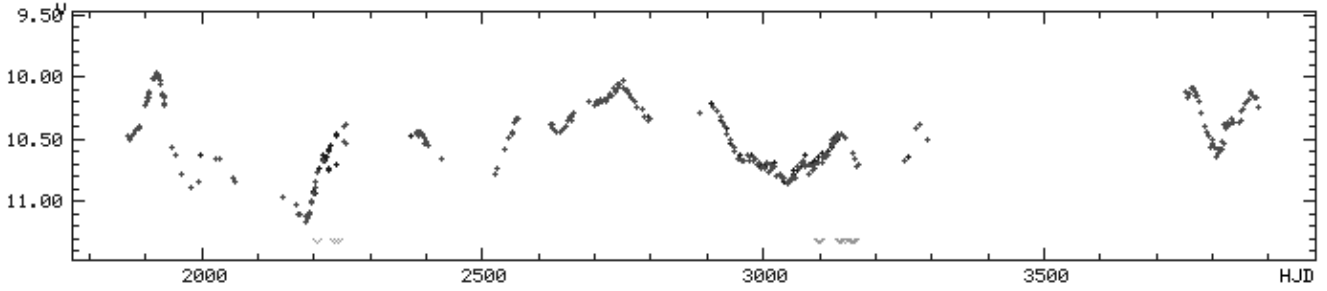
NSV 3719 J2000 07 45 27.2 -05 13 11

ASAS 074527-0513.2 074527-0513.4



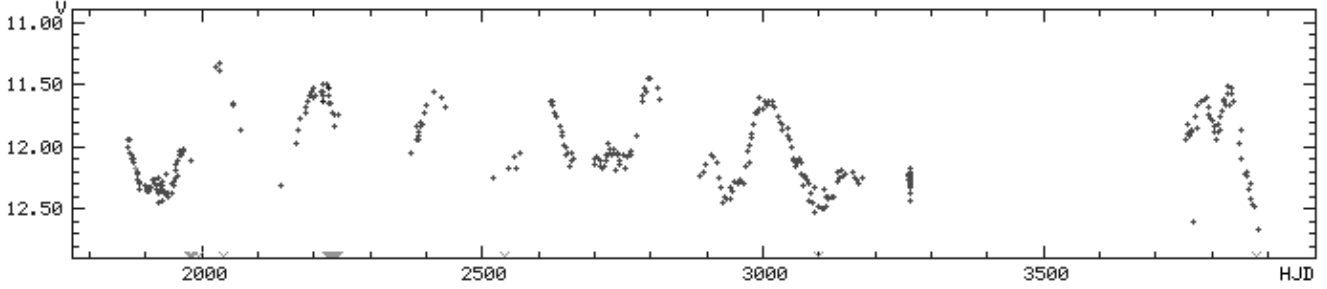
NSV 3730 J2000 07 46 51.5 -07 52 26

ASAS 074652-0752.4 074652-0752.6 074651-0752.7



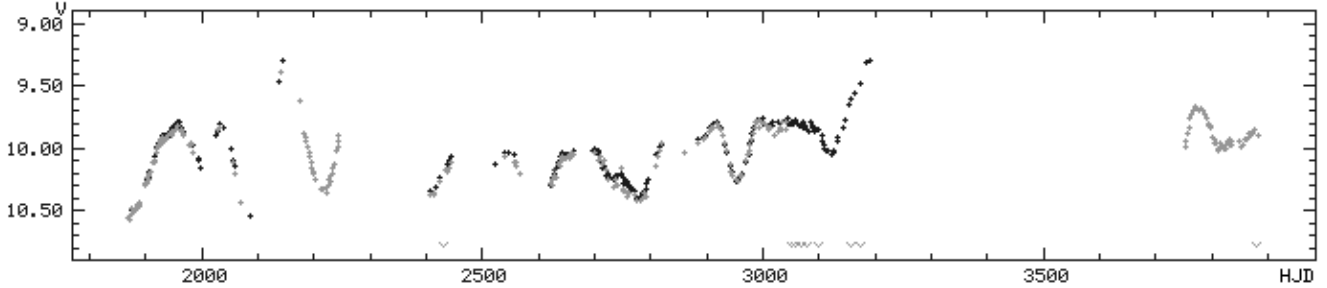
NSV 3759 J2000 07 50 21.4 -23 25 21

ASAS 075021-2325.3 075022-2325.4



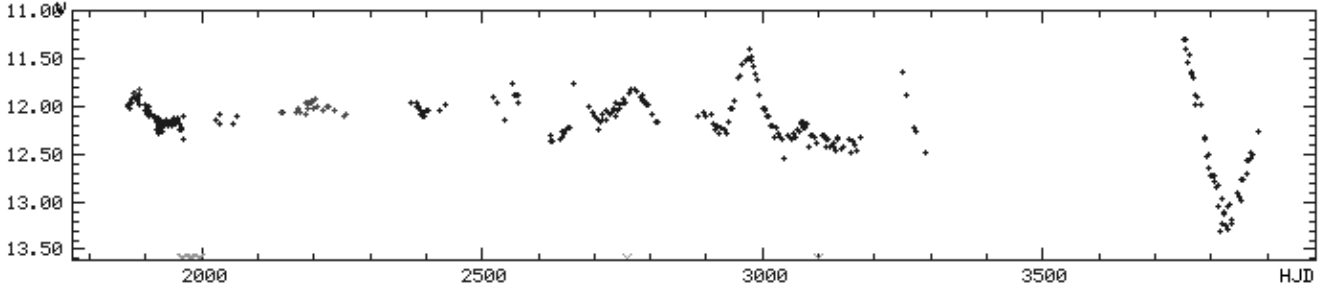
NSV 3790 J2000 07 51 05.5 -67 34 38

ASAS 075106-6734.6 075105-6734.6 075106-6734.7



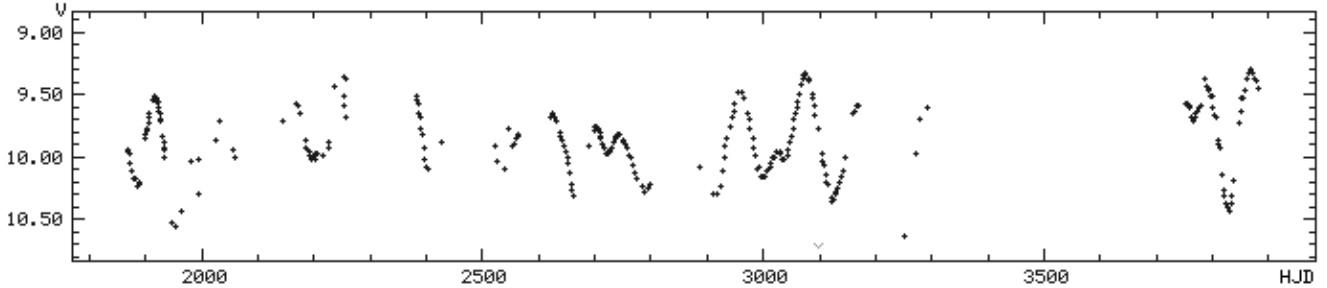
NSV 3820 J2000 07 56 21.1 -13 54 39

ASAS 075621-1354.7



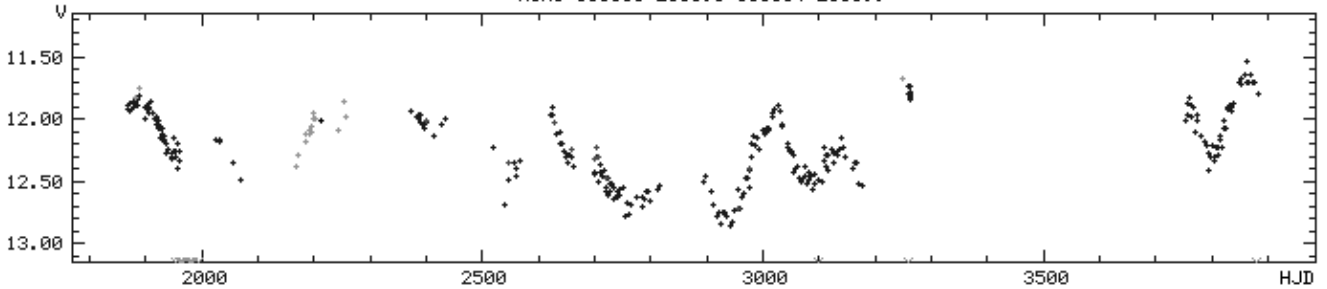
NSV 3850 J2000 08 00 07.8 -08 57 26

ASAS 080007-0857.6 080009-0857.7 080008-0857.4

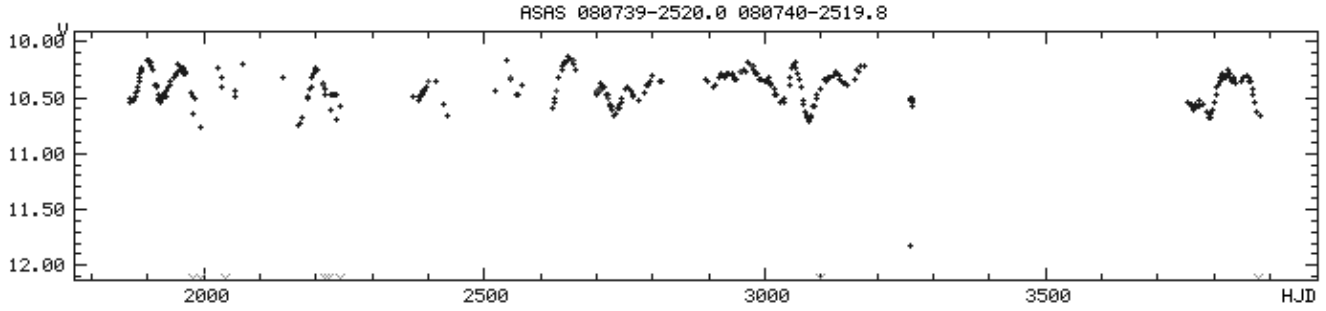


NSV 3898 J2000 08 05 32.8 -21 11 47

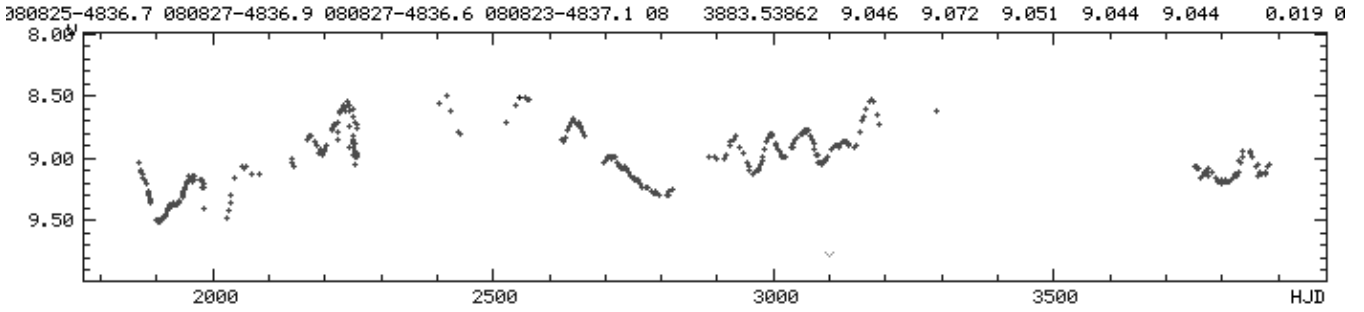
ASAS 080533-2111.8 080534-2111.9



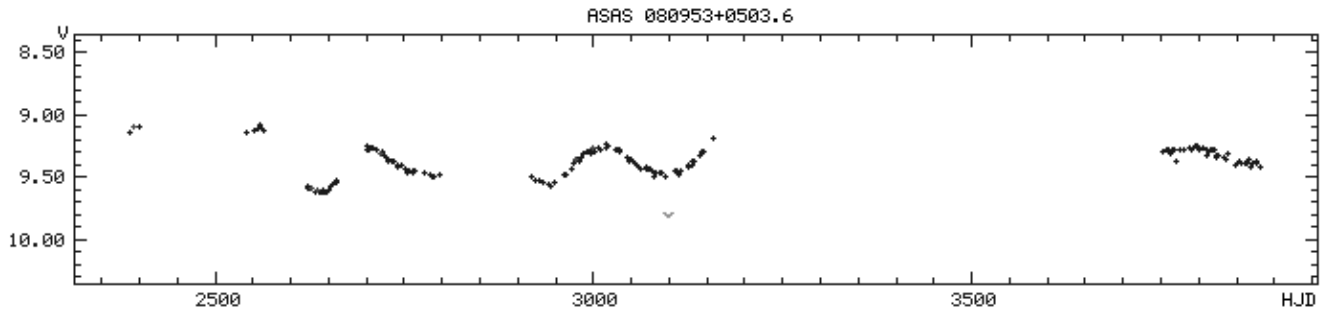
NSV 3913 J2000 08 07 40.3 -25 19 51



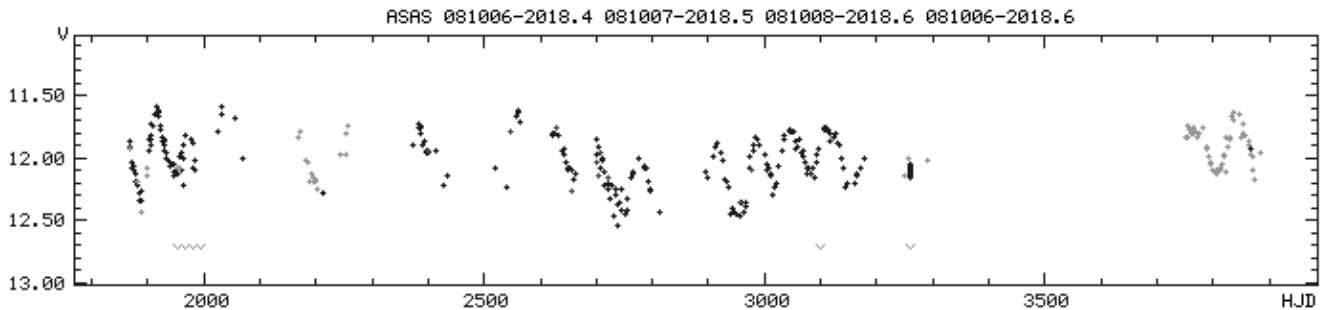
NSV 3926 J2000 08 08 25.1 -48 36 45



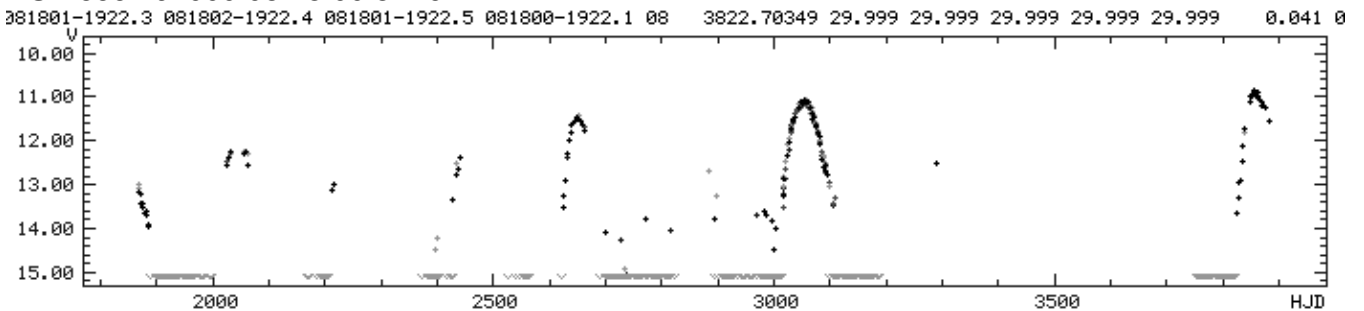
NSV 3927 J2000 08 09 52.9 +05 03 36



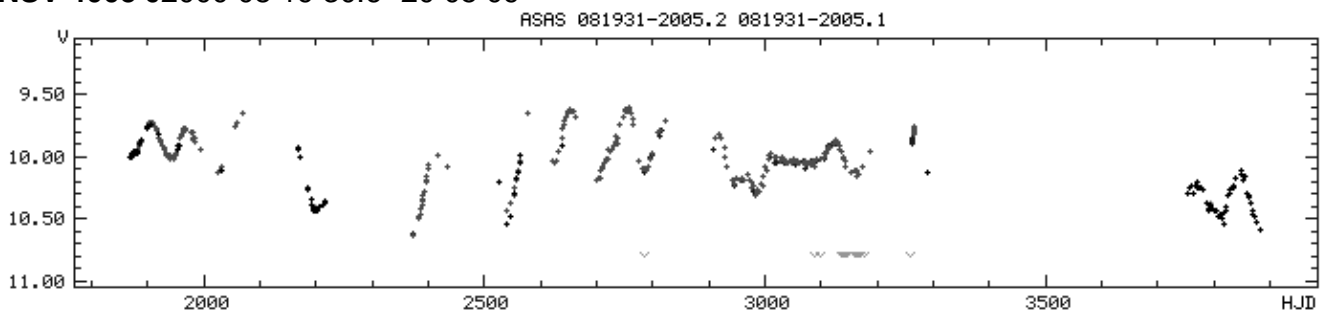
NSV 3929 J2000 08 10 07.0 -20 18 29



NSV 3994 J2000 08 18 00.8 -19 22 14

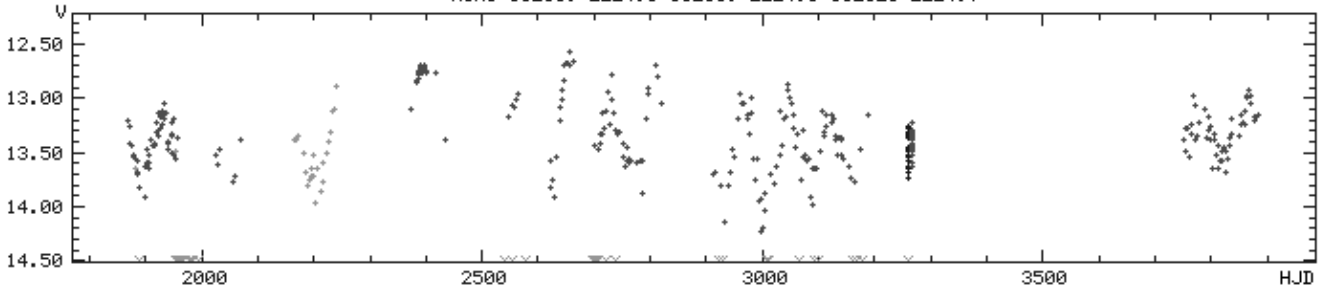


NSV 4005 J2000 08 19 30.6 -20 05 09



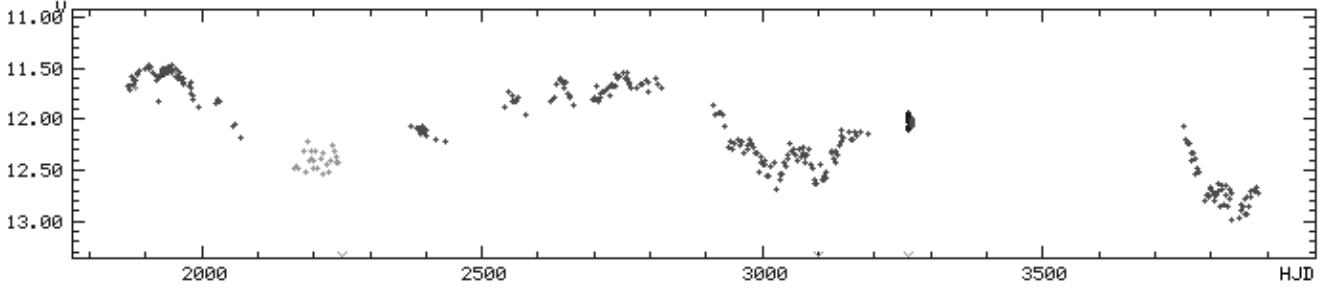
NSV 4028 J2000 08 21 19.5 -22 24 37

ASAS 082119-2224.6 082119-2224.8 082120-2224.7



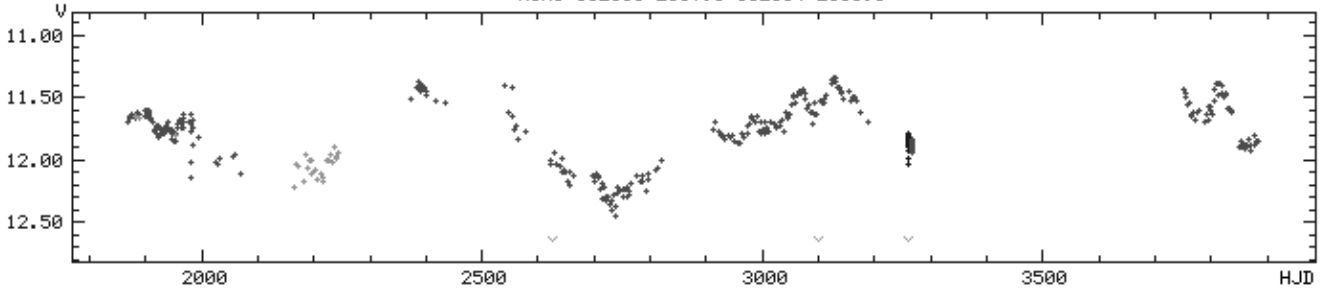
NSV 4036 J2000 08 22 02.8 -22 25 56

ASAS 082203-2225.9 082204-2225.8



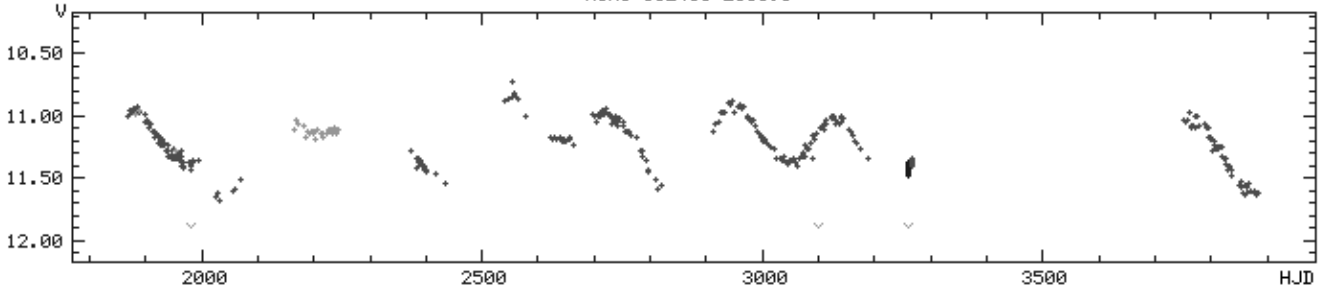
NSV 4054 J2000 08 23 34.9 -21 57 49

ASAS 082335-2157.8 082334-2158.1



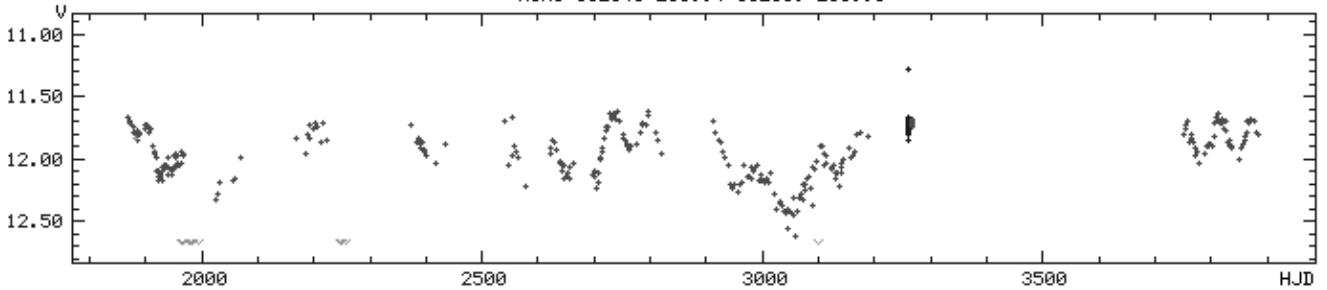
NSV 4059 J2000 08 24 09.7 -21 58 06

ASAS 082410-2158.1



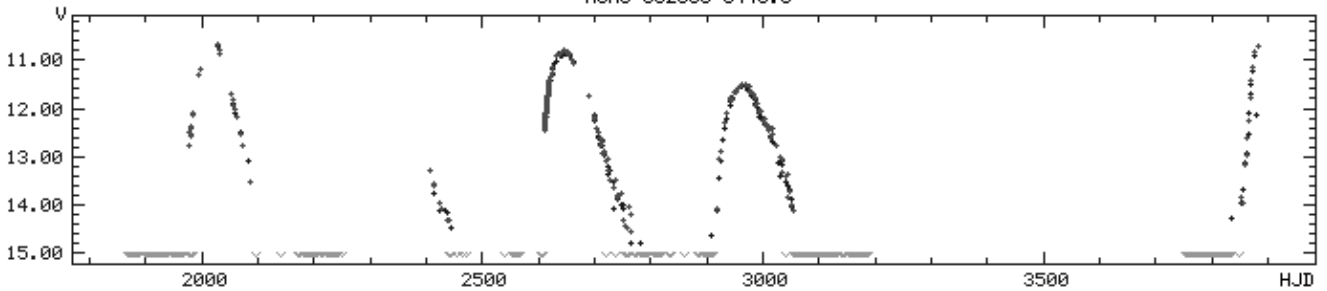
NSV 4072 J2000 08 25 40.0 -23 39 24

ASAS 082540-2339.4 082539-2339.5



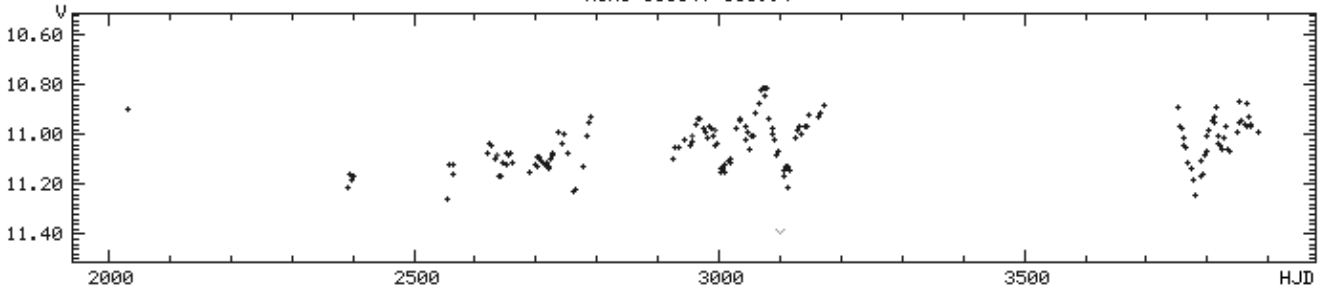
NSV 4109 J2000 08 28 30.1 -64 43 20

ASAS 082830-6443.3



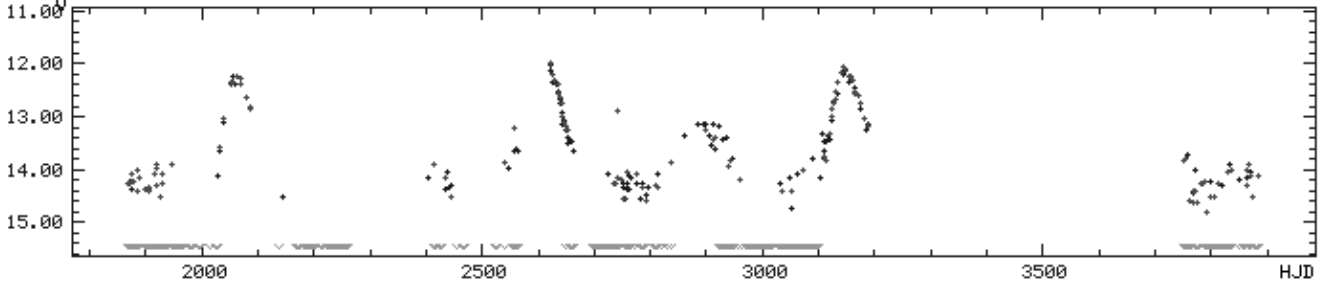
NSV 4150 J2000 08 36 47.4 +06 59 22

ASAS 083647+0659.4



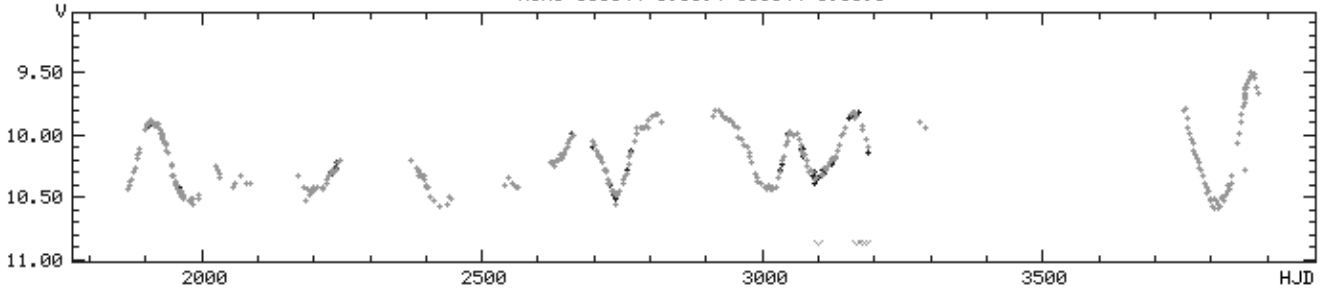
NSV 4249 J2000 08 44 40.0 -71 07 41

384442-7108.0 084436-7107.7 084440-7107.7 084442-7107.9 08 3882.51412 14.129 14.120 14.037 13.811 13.236 0.041 0



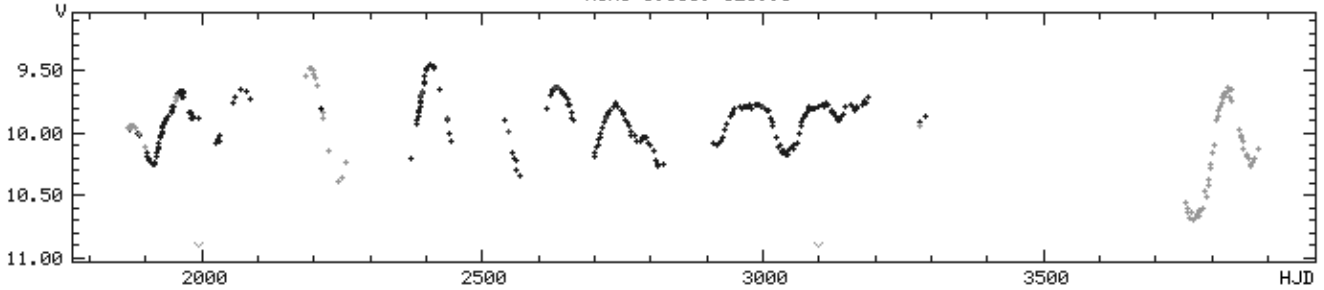
NSV 4312 J2000 08 55 43.8 -19 13 28

ASAS 085544-1913.4 085544-1913.5



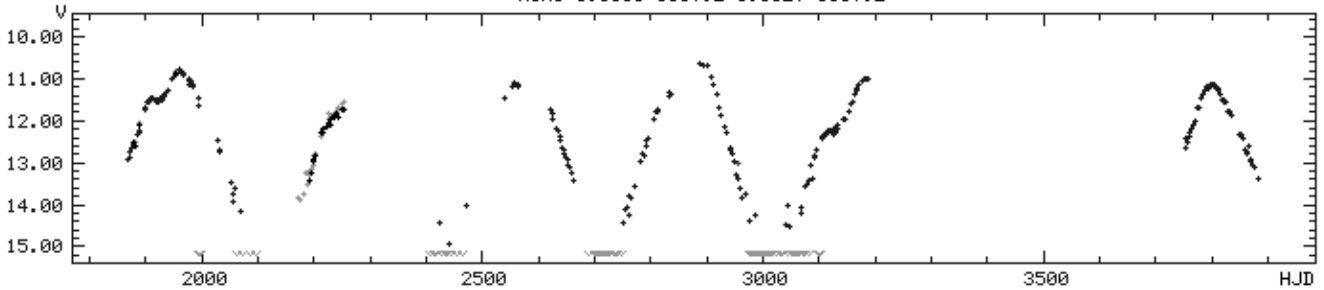
NSV 4412 J2000 09 11 39.4 -12 09 35

ASAS 091139-1209.6



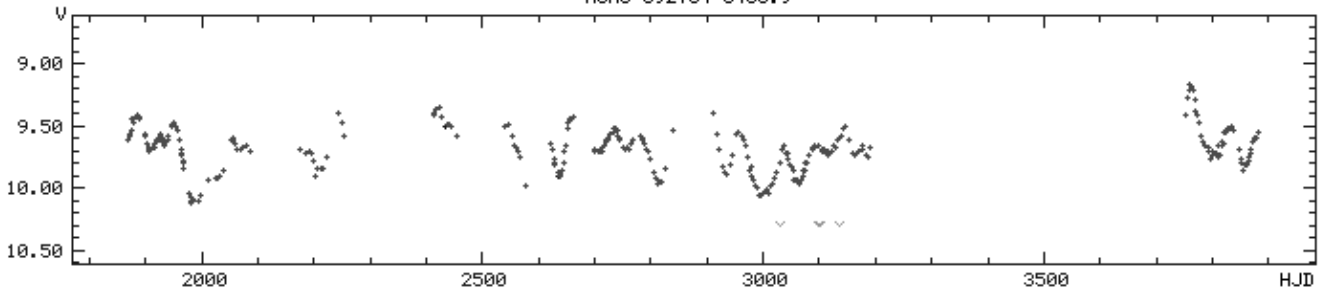
NSV 4416 J2000 09 11 30.0 -61 37 13

ASAS 091130-6137.2 091127-6137.2

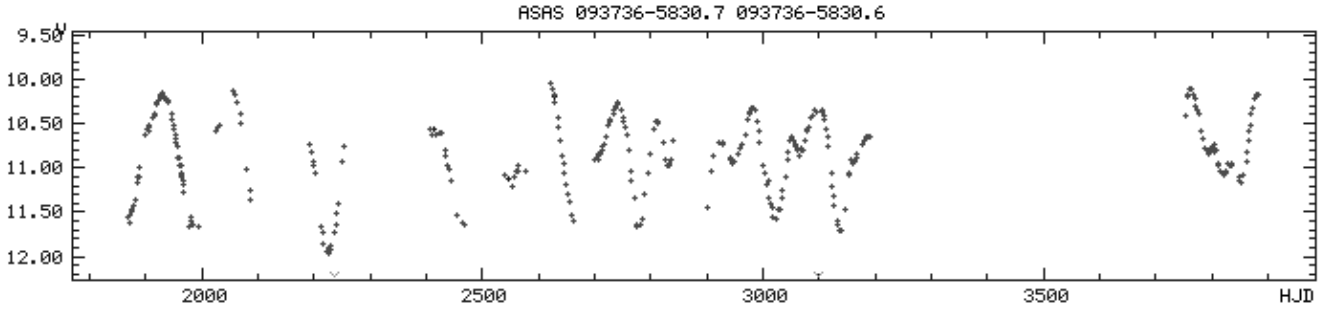


NSV 4495 J2000 09 27 04.0 -34 53 50

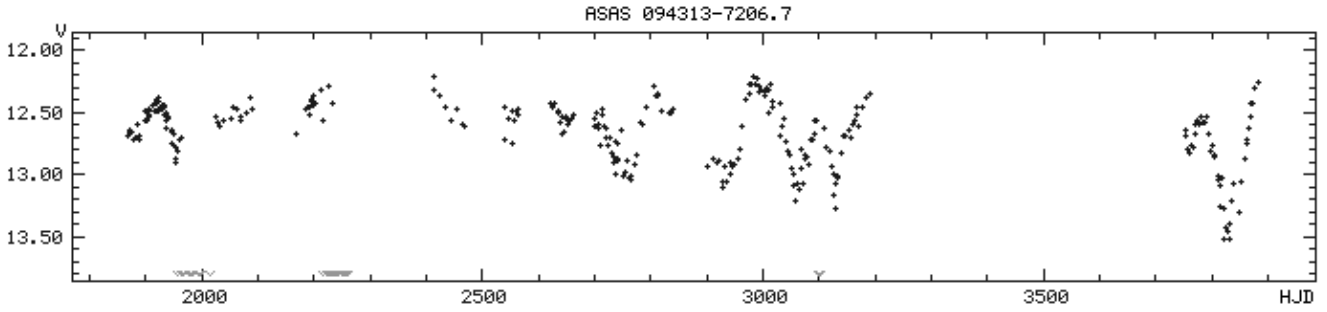
ASAS 092704-3453.9



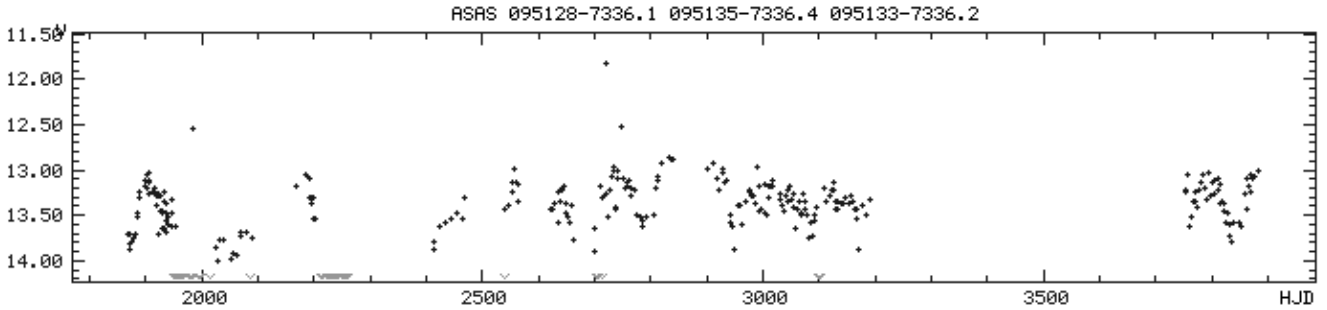
NSV 4560 J2000 09 37 35.8 -58 30 38



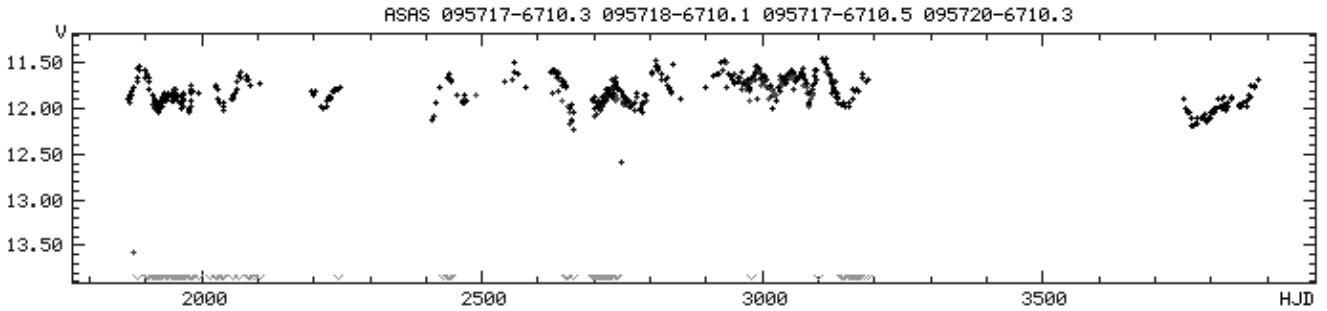
NSV 4610 J2000 09 43 13.1 -72 06 38



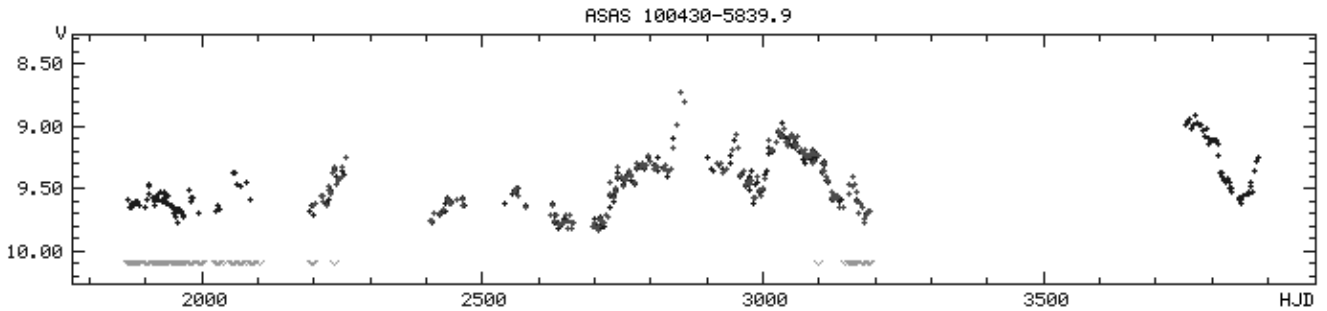
NSV 4666 J2000 09 51 33.3 -73 36 11



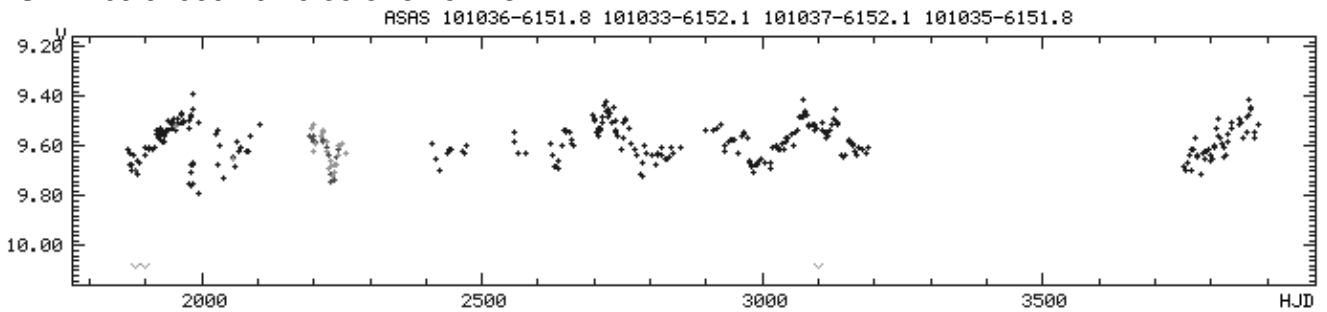
NSV 4687 J2000 09 57 18.3 -67 10 10



NSV 4727 J2000 10 04 30.4 -58 39 52

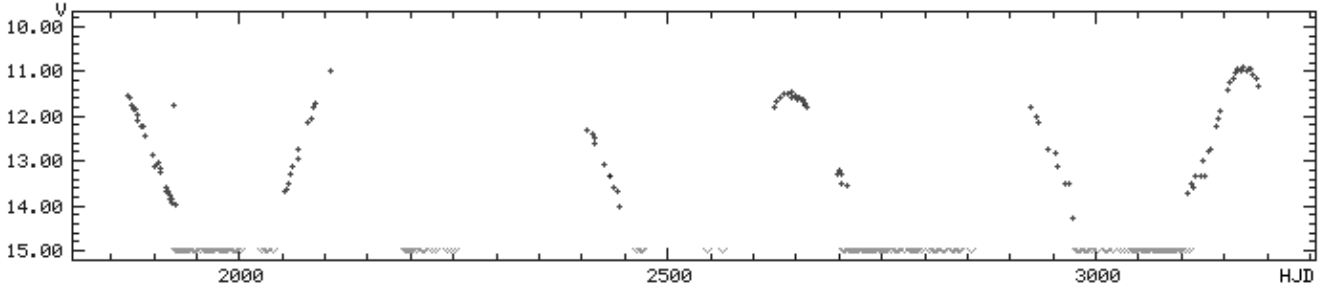


NSV 4769 J2000 10 10 35.5 -61 51 48



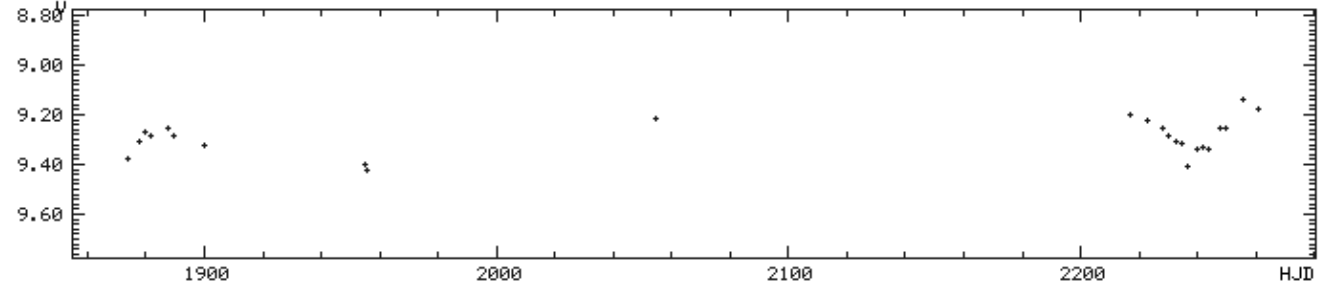
NSV 4814 J2000 10 17 11.9 -48 47 27

ASAS 101712-4847.4 101712-4847.5



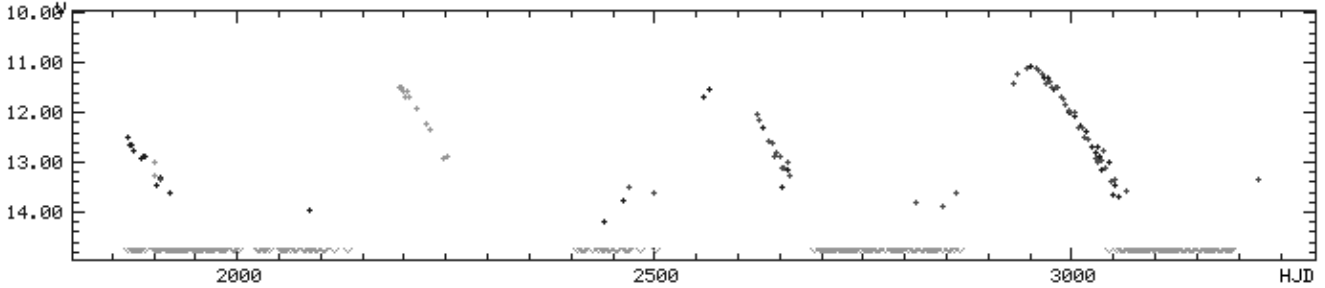
NSV 4915 J2000 10 37 58.3 -20 11 09

ASAS 103758-2011.1



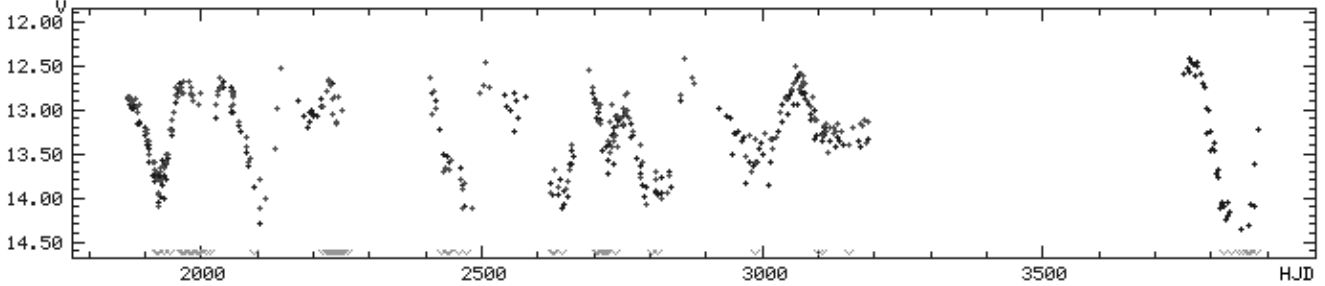
NSV 4989 J2000 10 50 36.3 -52 30 40

ASAS 105036-5230.7 105037-5230.7



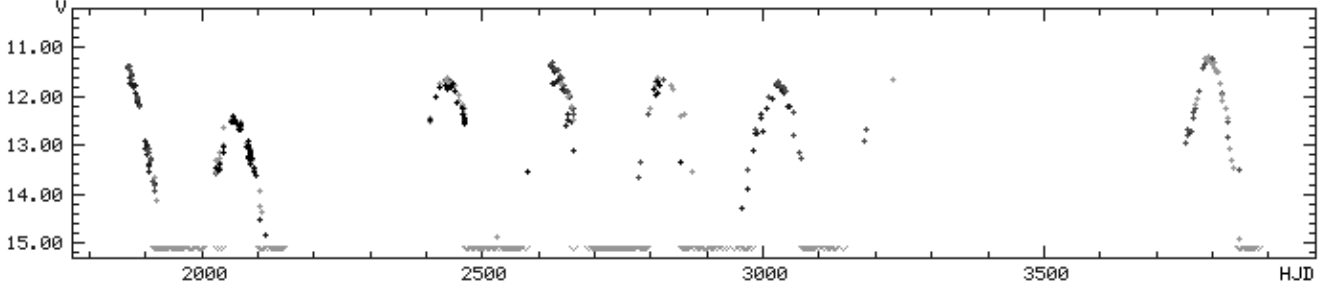
NSV 5004 J2000 10 51 28.7 -80 46 41

105129-8046.7 105135-8046.7 105127-8046.7 105134-8046.7 10 2725.68842 13.365 13.137 13.046 12.947 12.891 0.117 0



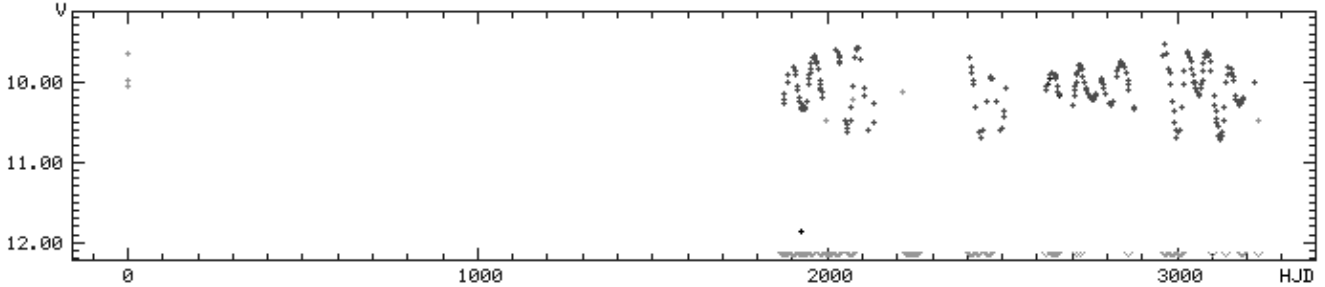
NSV 5292 J2000 11 39 25.9 -87 09 26

113920-8709.1 113926-8709.4 113947-8709.5 113936-8709.7 11 1880.75905 11.784 11.803 11.736 11.685 11.545 0.022



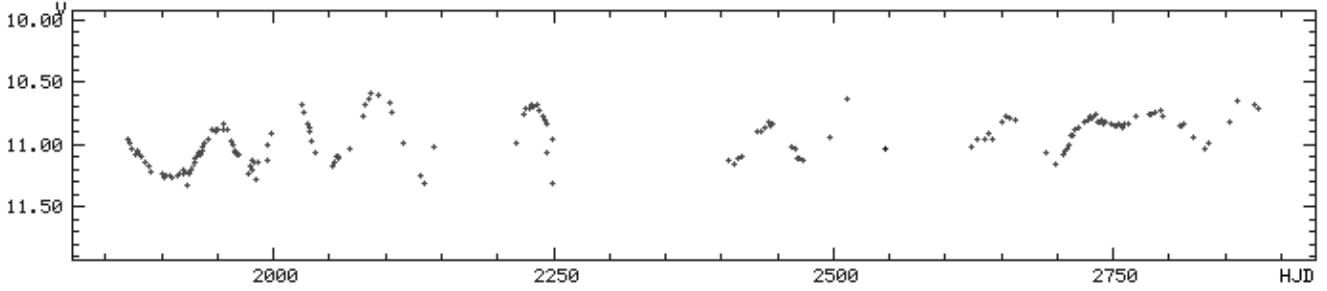
NSV 5302 J2000 11 42 48.4 -51 46 08

114249-5146.1 114248-5146.3 114248-5146.1 114247-5145.9 11 3230.49777 29.999 29.999 29.999 29.999 29.999 0.018 0



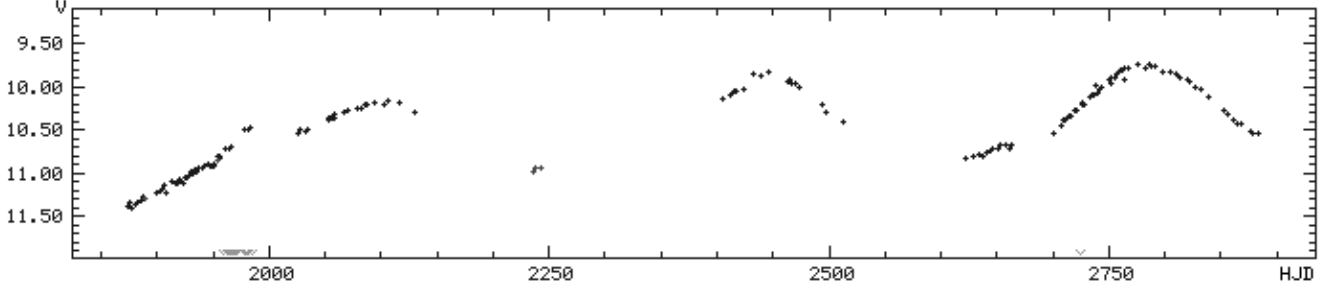
NSV 5423 J2000 12 00 59.4 -79 46 00

ASAS 120059-7946.0 120052-7946.2 120104-7945.7



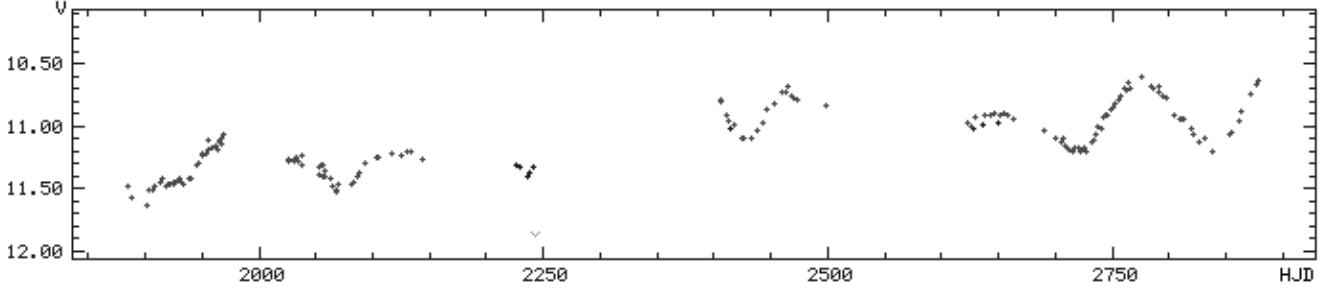
NSV 5443 J2000 12 03 52.0 -69 30 55

ASAS 120348-6931.1 120352-6930.9



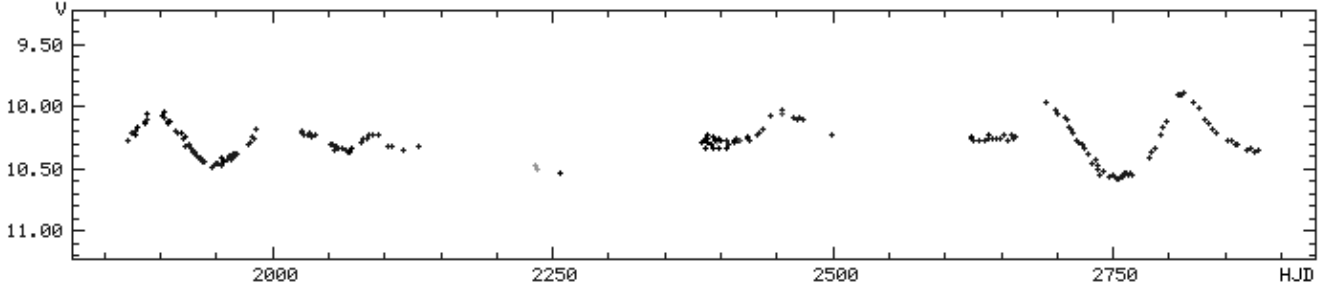
NSV 5642 J2000 12 29 01.2 -47 57 39

ASAS 122902-4757.8 122901-4757.6 122901-4757.7 122904-4757.5



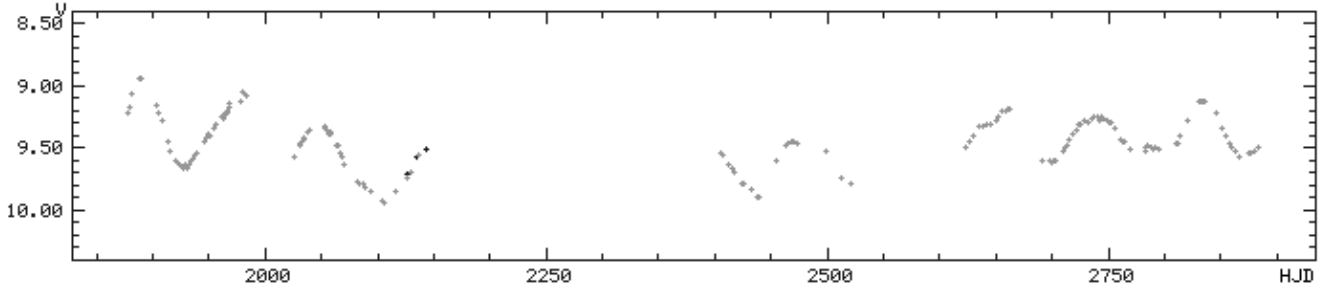
NSV 5789 J2000 12 37 22.7 -28 02 40

ASAS 123723-2802.7 123723-2802.6



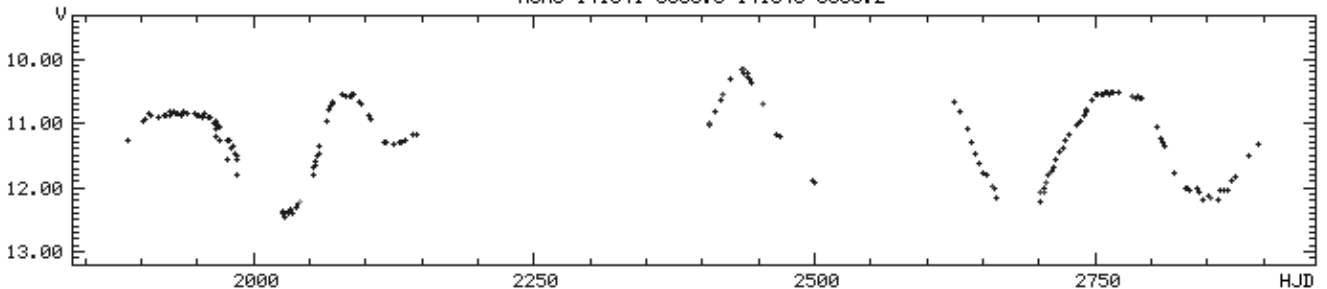
NSV 5870 J2000 12 42 21.3 -58 28 06

ASAS 124221-5828.1



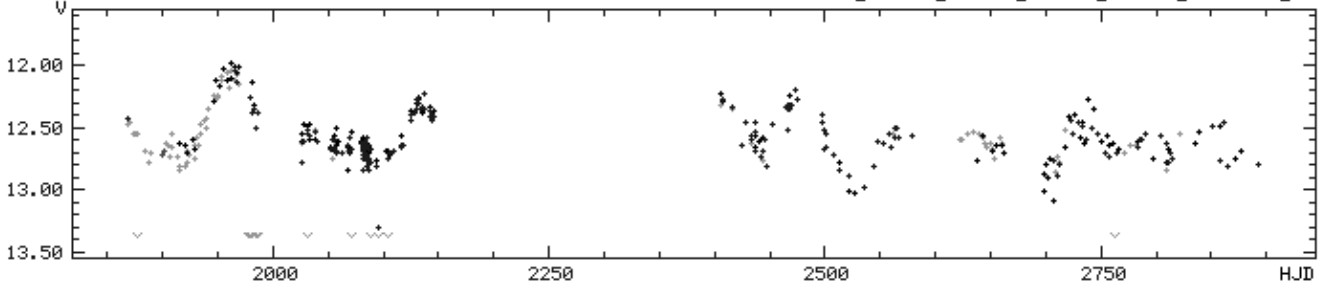
NSV 6605 J2000 14 16 40.8 -36 56 18

ASAS 141641-3656.3 141640-3656.2



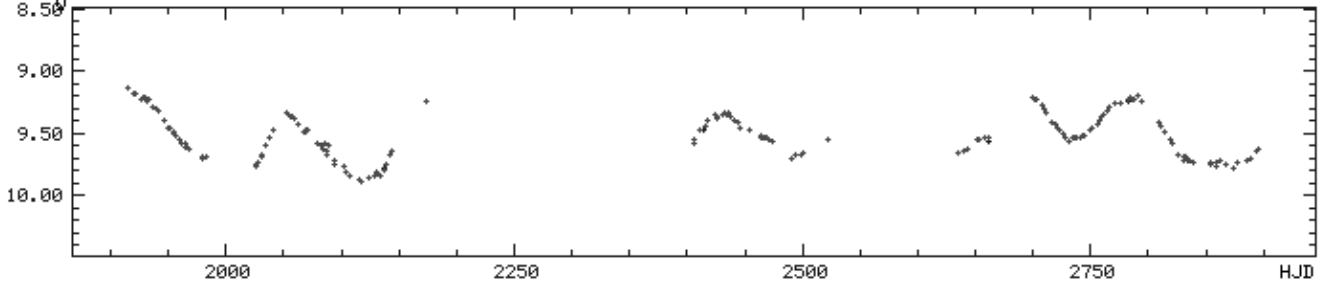
NSV 6749 J2000 14 54 22.0 -87 21 05

45425-8721.0 145455-8721.1 145418-8721.1 145456-8721.3 14# HJD MAG_0 MAG_1 MAG_2 MAG_3 MAG_4 MER_0 ME



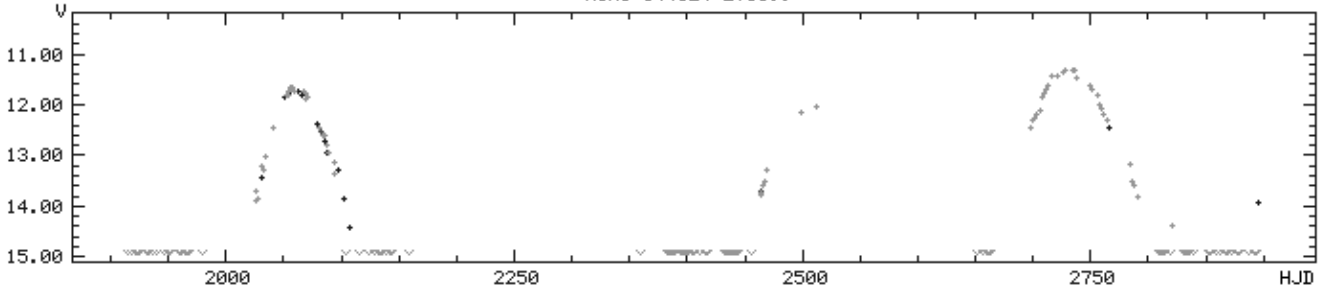
NSV 6799 J2000 14 47 34.9 -49 19 13

ASAS 144735-4919.2 144737-4919.4



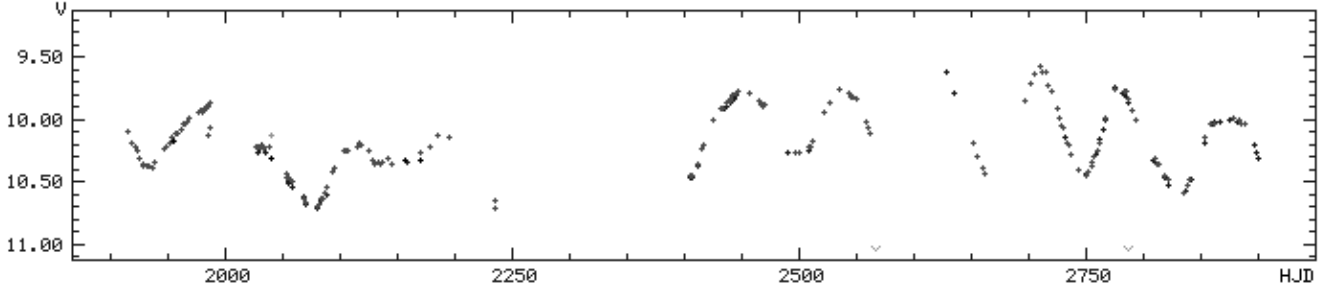
NSV 6806 J2000 14 48 24.0 -27 15 54

ASAS 144824-2715.9



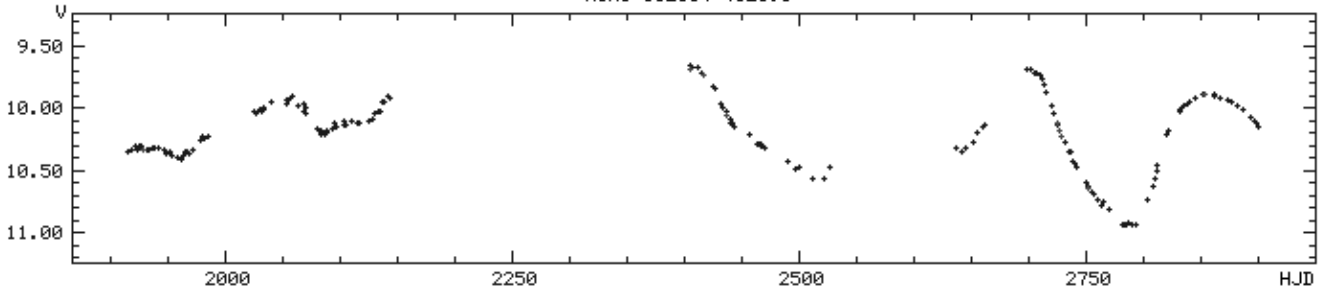
NSV 7039 J2000 15 25 28.6 -78 26 55

152528-7826.9 152533-7827.2 152523-7826.9 152522-7827.2 15 2169.50560 10.316 10.391 10.358 10.302 10.298 0.027 6



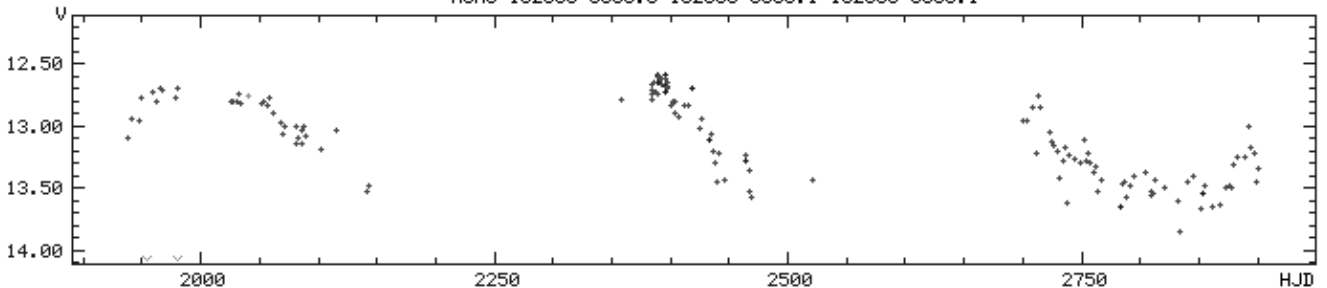
NSV 7070 J2000 15 26 14.3 -41 28 35

ASAS 152614-4128.6

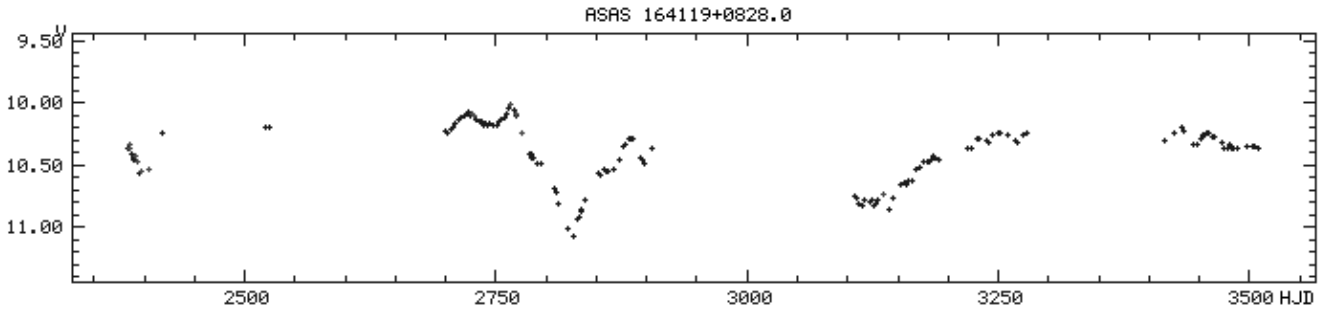


NSV 7722 J2000 16 26 35.1 -05 58 03

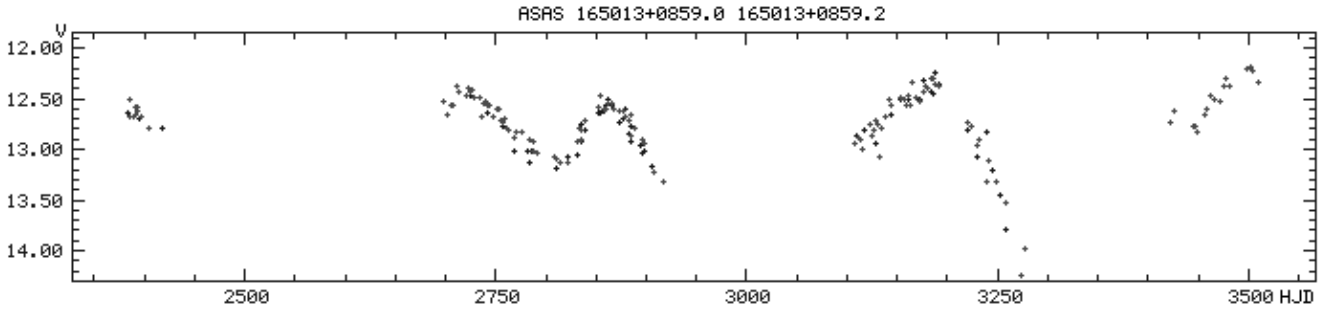
ASAS 162635-0558.0 162635-0558.1 162636-0558.1



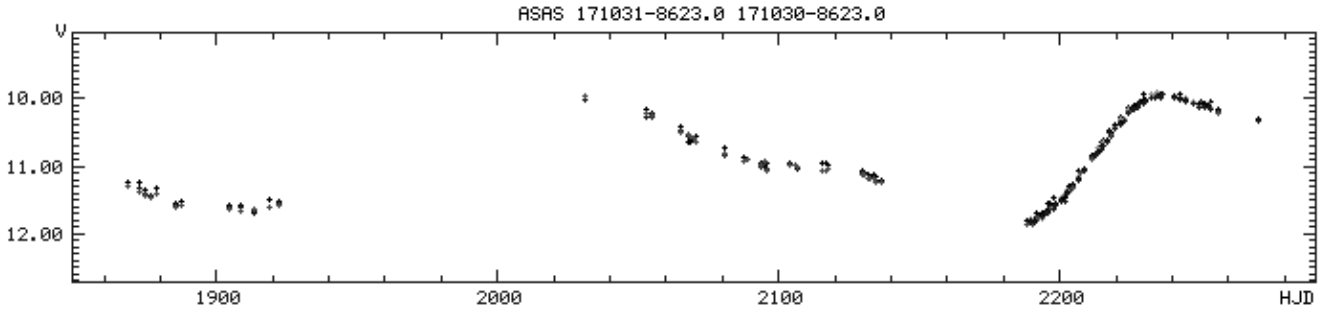
NSV 7913 J2000 16 41 19.4 +08 28 02



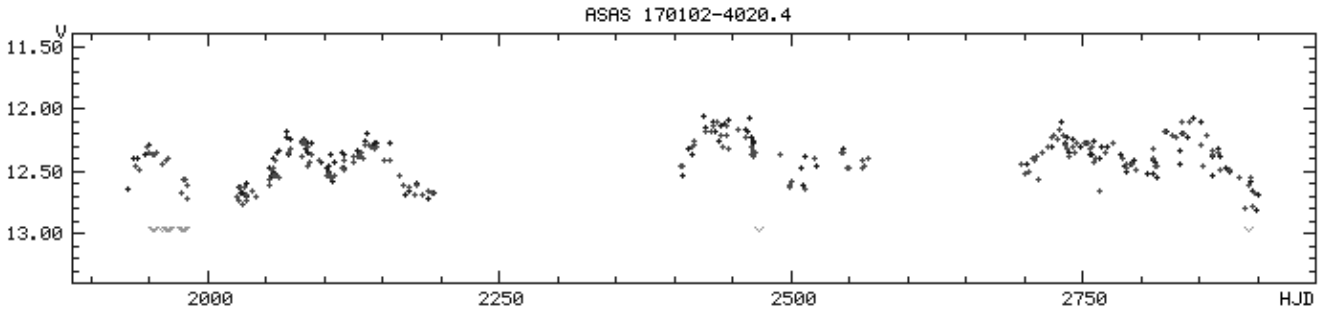
NSV 7989 J2000 16 50 13.1 +08 59 11



NSV 8042 J2000 17 10 29.6 -86 23 00

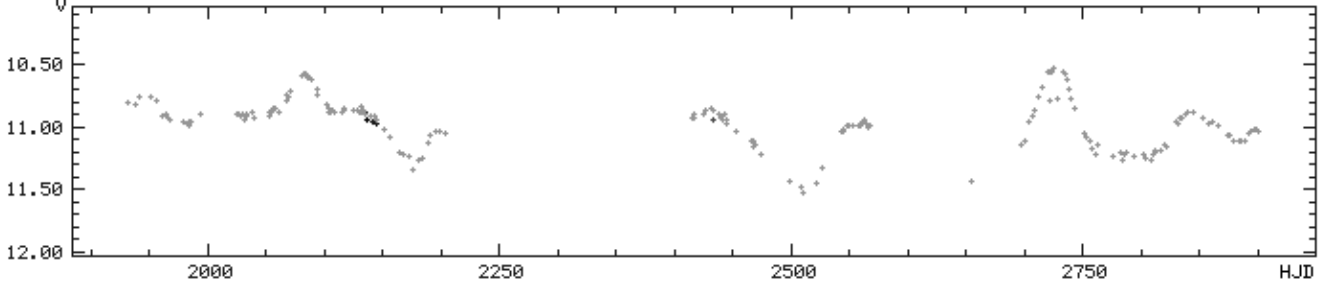


NSV 8099 J2000 17 01 02.3 -40 20 24

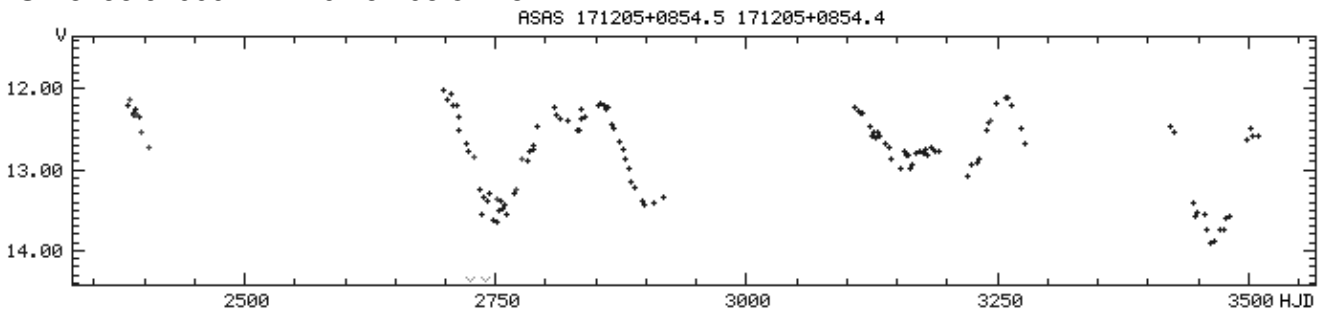


NSV 8251 J2000 17 13 40.2 -73 53 43

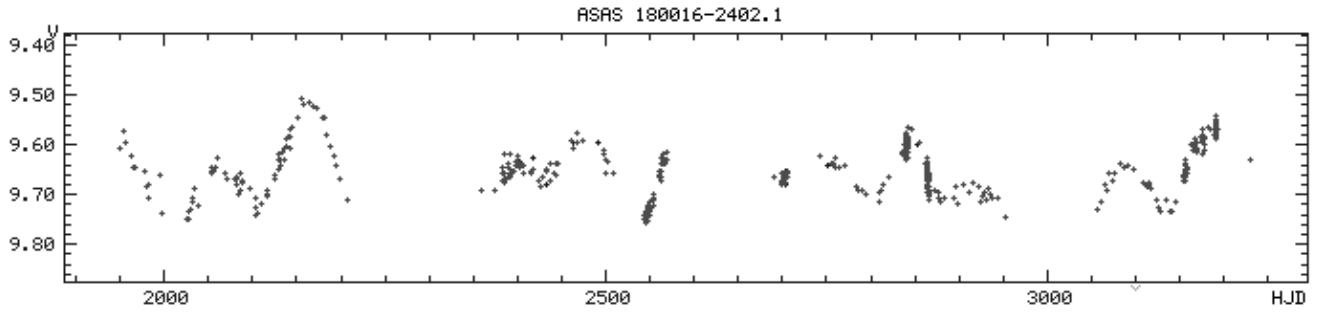
171341-7353.8 171340-7353.8 171343-7354.1 171340-7353.7 17 2137.53525 10.938 11.110 10.961 10.933 10.931 0.015 6



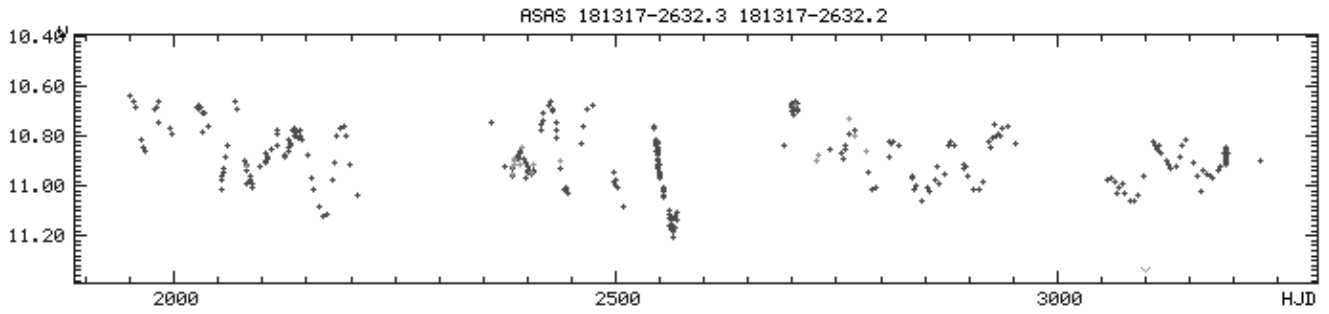
NSV 8293 J2000 17 12 04.6 +08 54 28



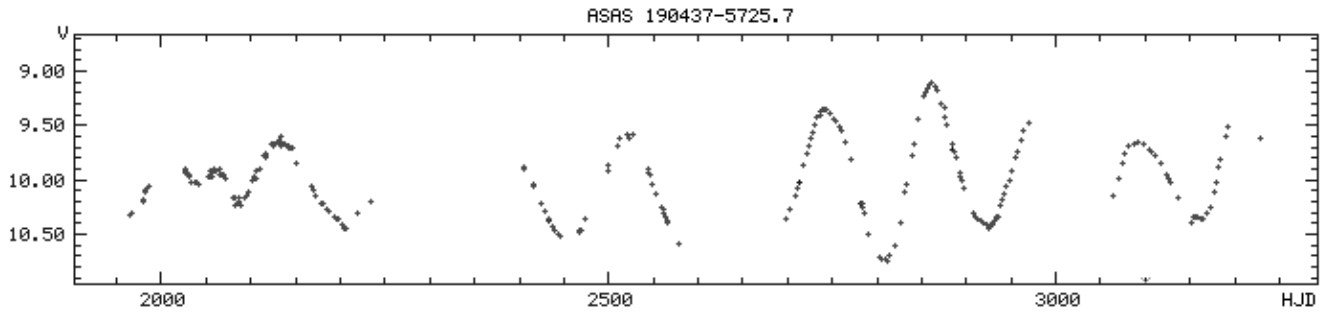
NSV 9957 J2000 18 00 16.1 -24 02 06



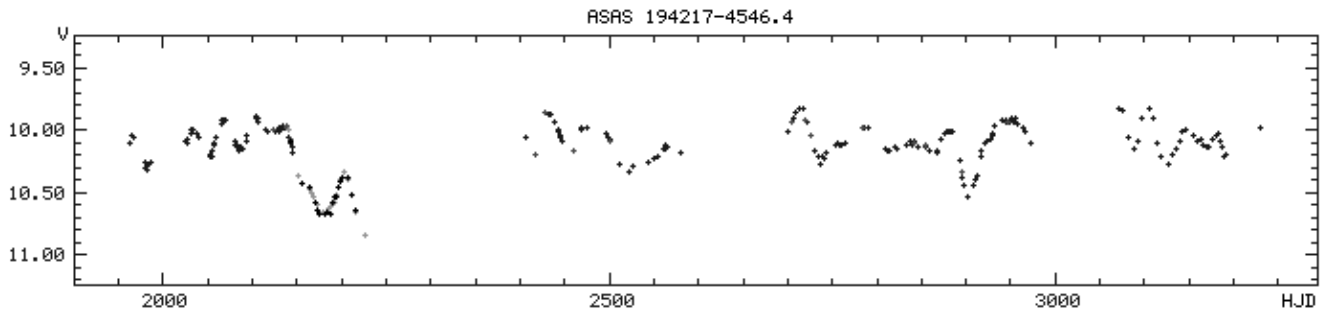
NSV 10368 J2000 18 13 17.3 -26 32 14



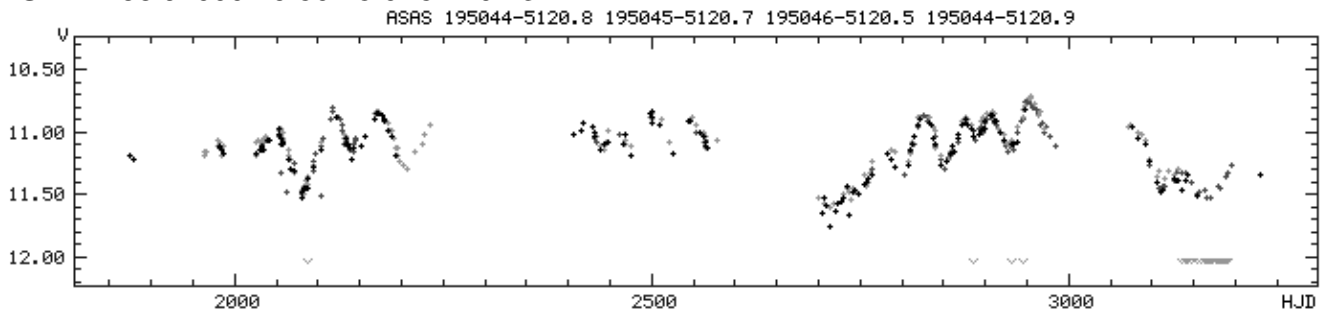
NSV 11686 J2000 19 04 36.6 -57 25 42



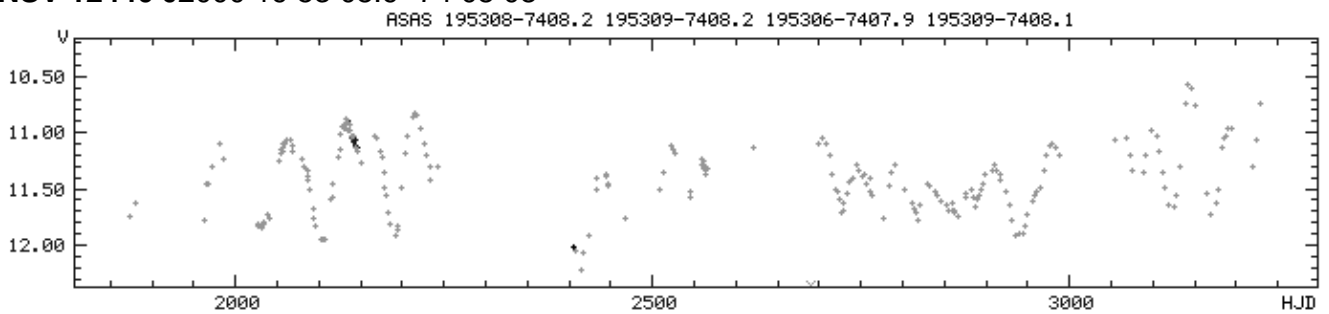
NSV 12283 J2000 19 42 17.1 -45 46 22



NSV 12438 J2000 19 50 45.0 -51 20 43

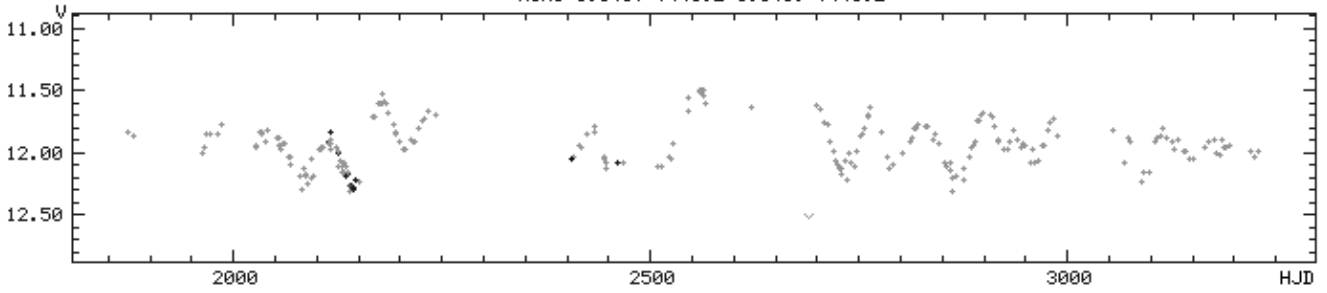


NSV 12440 J2000 19 53 08.9 -74 08 08



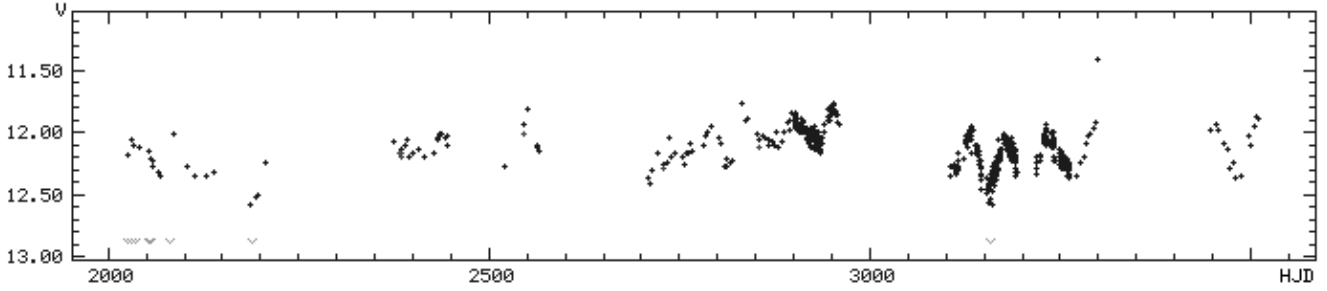
NSV 12460 J2000 19 54 17.4 -74 43 10

ASAS 195417-7443.2 195419-7443.2



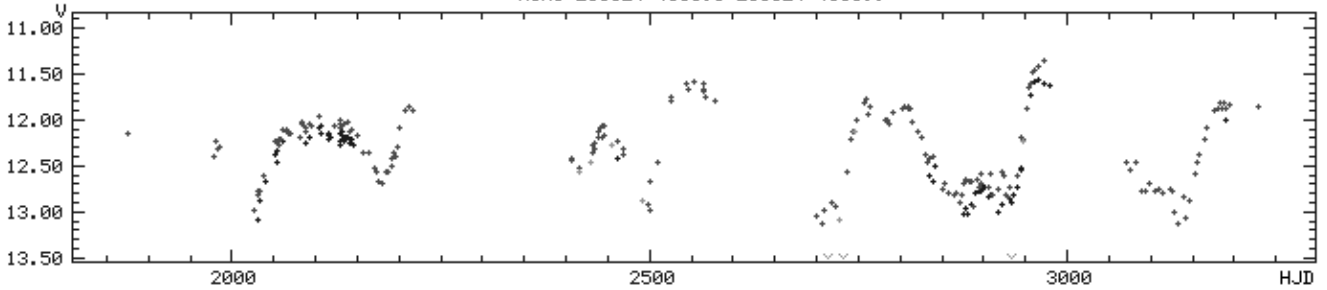
NSV 12461 J2000 19 50 34.0 +00 54 38

ASAS 195034+0054.6



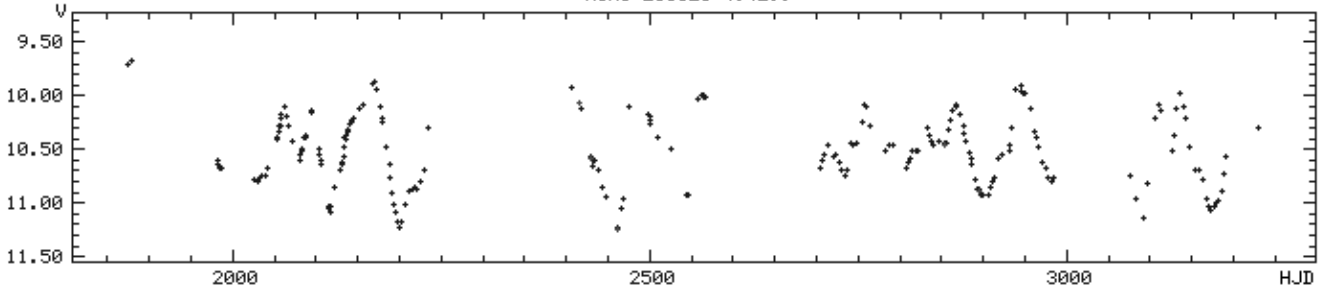
NSV 12854 J2000 20 11 23.5 -43 13 48

ASAS 201124-4313.8 201124-4313.9



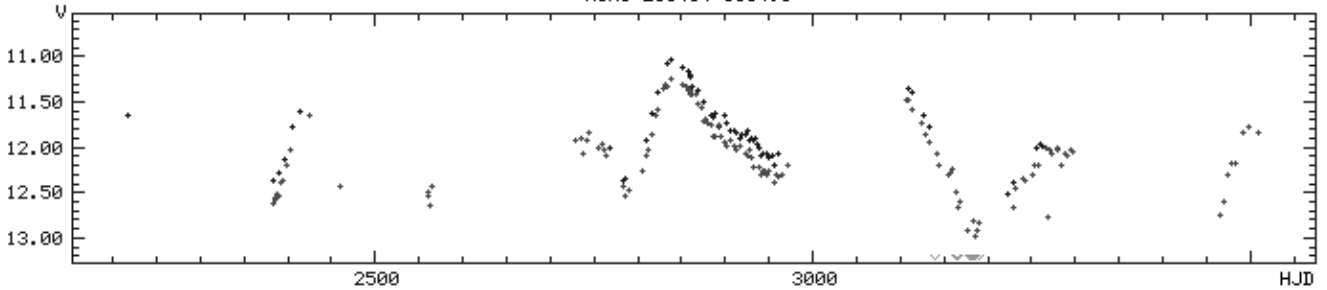
NSV 12974 J2000 20 18 28.1 -49 42 56

ASAS 201828-4942.9



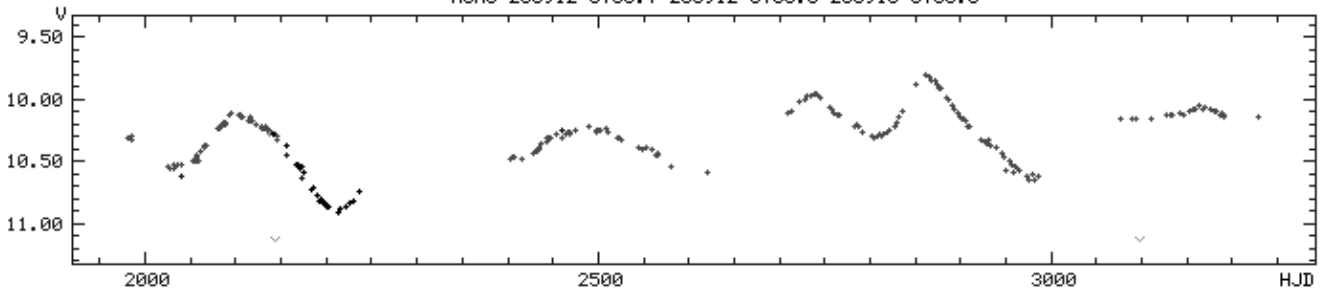
NSV 13149 J2000 20 34 14.3 +06 34 05

ASAS 203414+0634.1



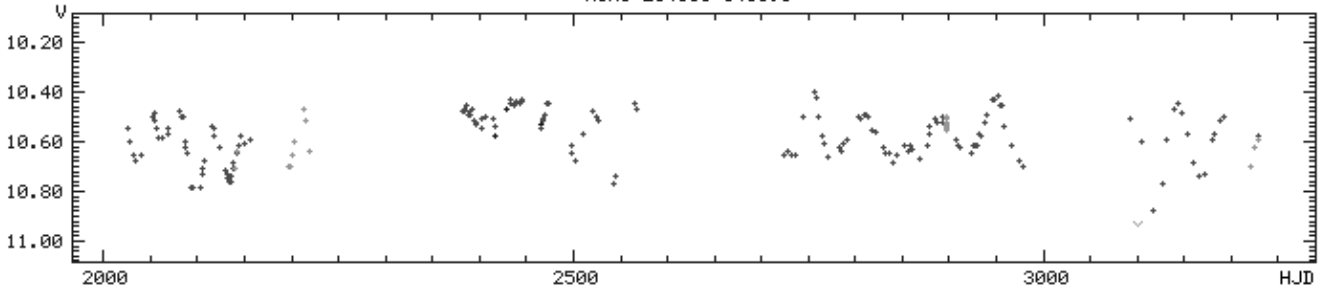
NSV 13190 J2000 20 39 11.6 -37 55 48

ASAS 203912-3755.7 203912-3755.8 203913-3755.8



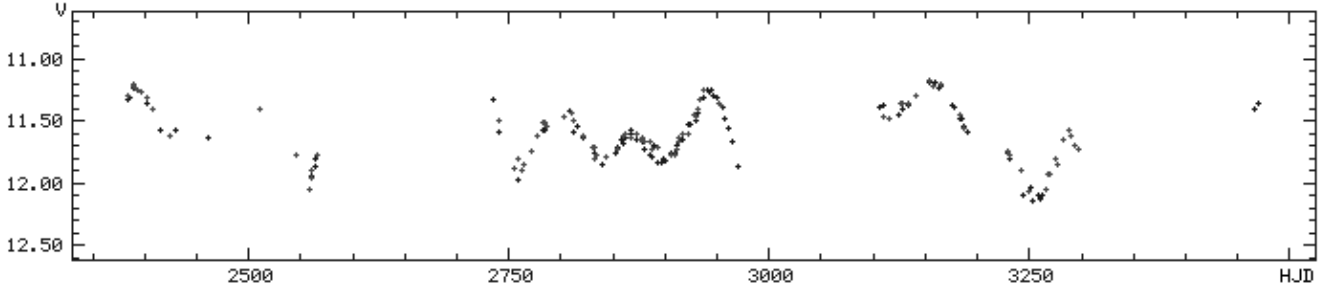
NSV 13281 J2000 20 46 05.1 -04 31 07

ASAS 204605-0431.1



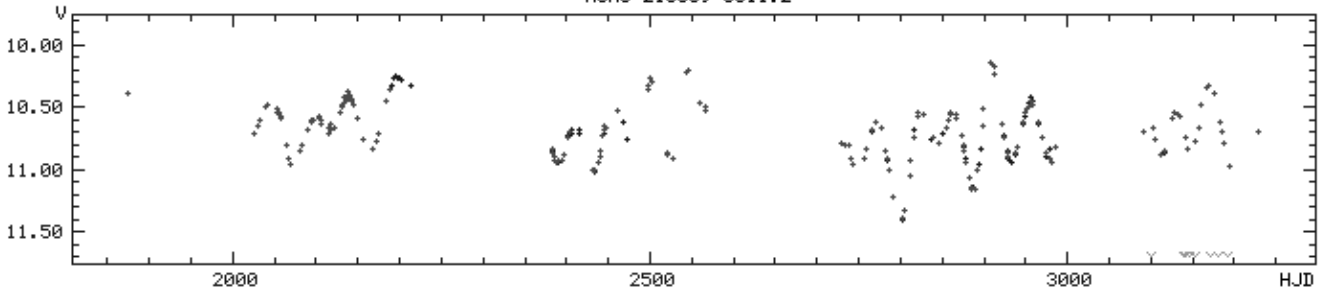
NSV 13510 J2000 21 05 02.4 +08 26 51

ASAS 210502+0826.9



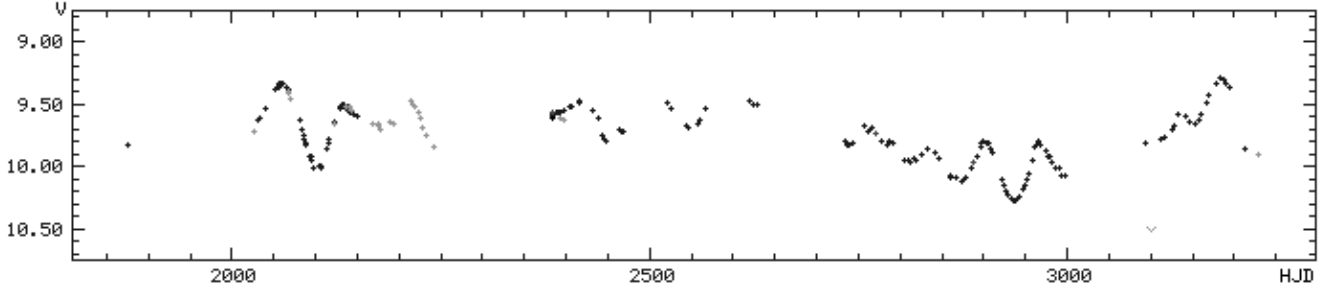
NSV 13526 J2000 21 06 09.1 -08 11 12

ASAS 210609-0811.2



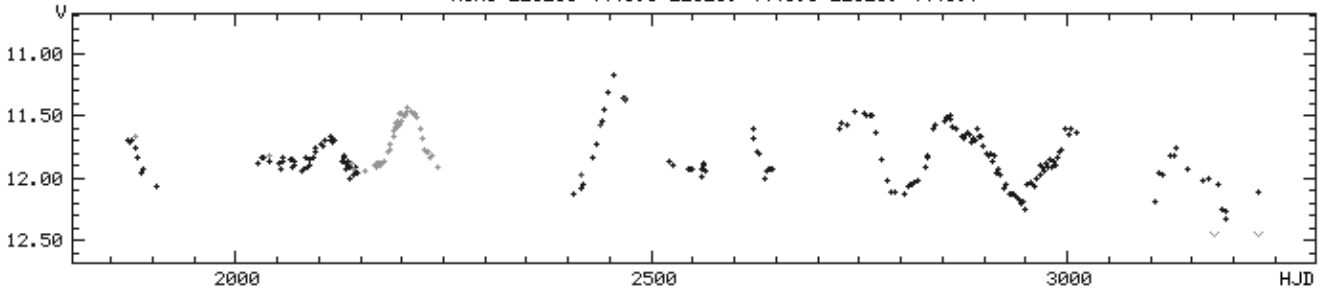
NSV 13967 J2000 21 56 54.3 -12 12 50

215654-1212.8 215653-1212.9 215655-1212.8 215654-1212.9 21 2382.90796 9.604 9.625 9.607 9.605 9.603 0.016



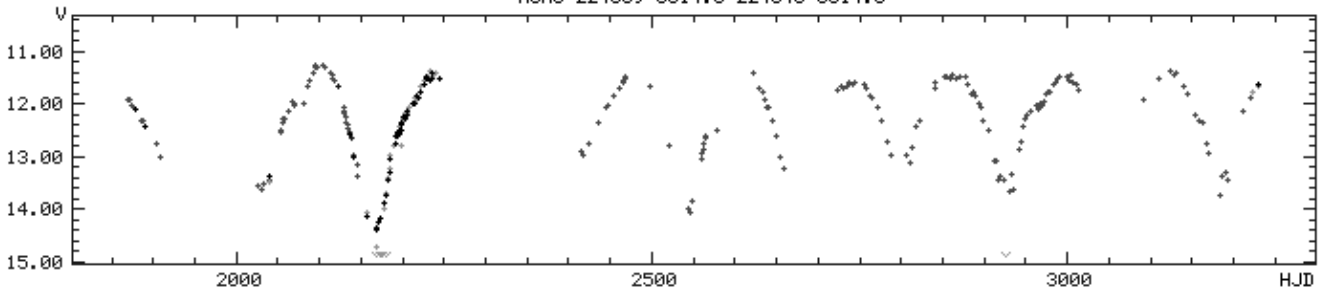
NSV 14195 J2000 22 32 59.3 -44 48 45

ASAS 223258-4448.8 223259-4448.8 223259-4448.7

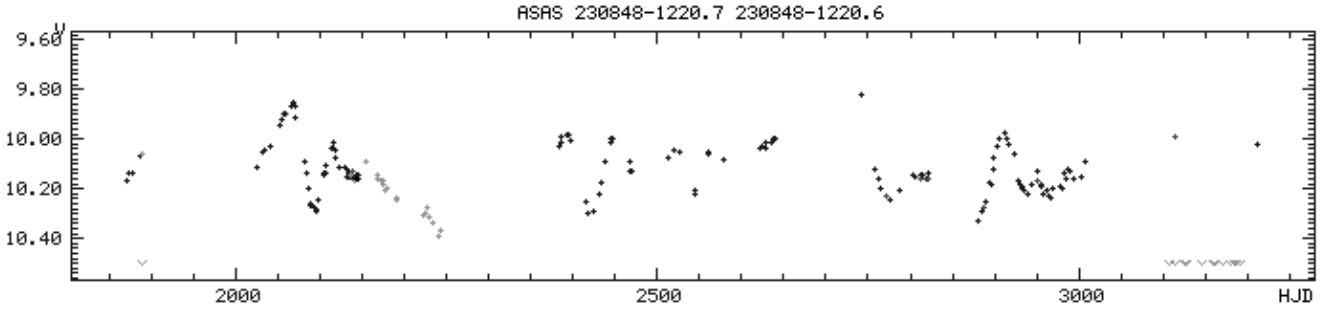


NSV 14263 J2000 22 40 39.7 -68 14 17

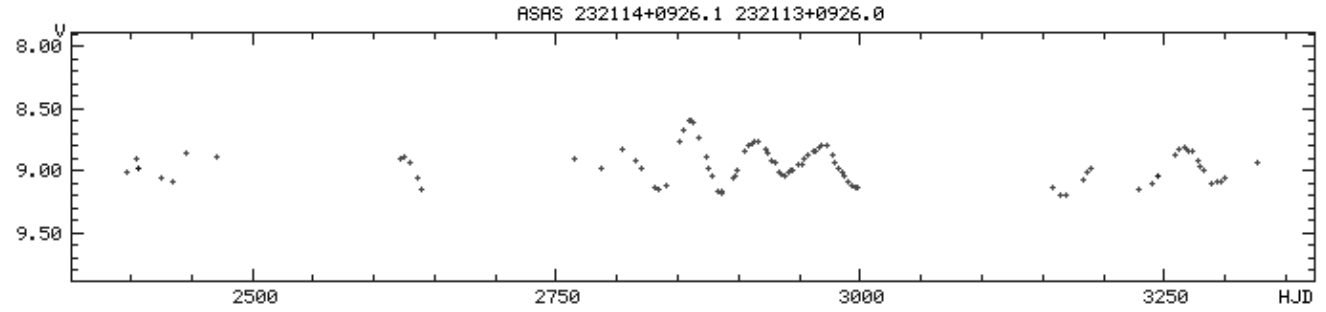
ASAS 224039-6814.3 224040-6814.3



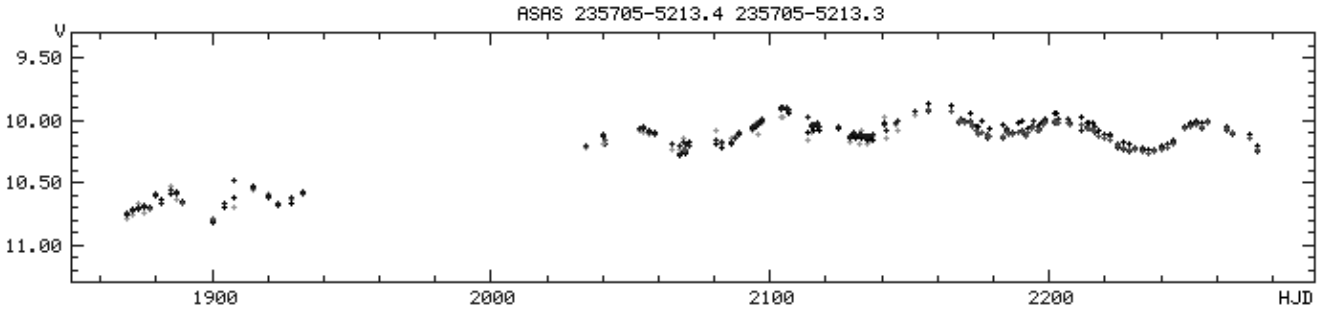
NSV 14437 J2000 23 08 48.0 -12 20 40



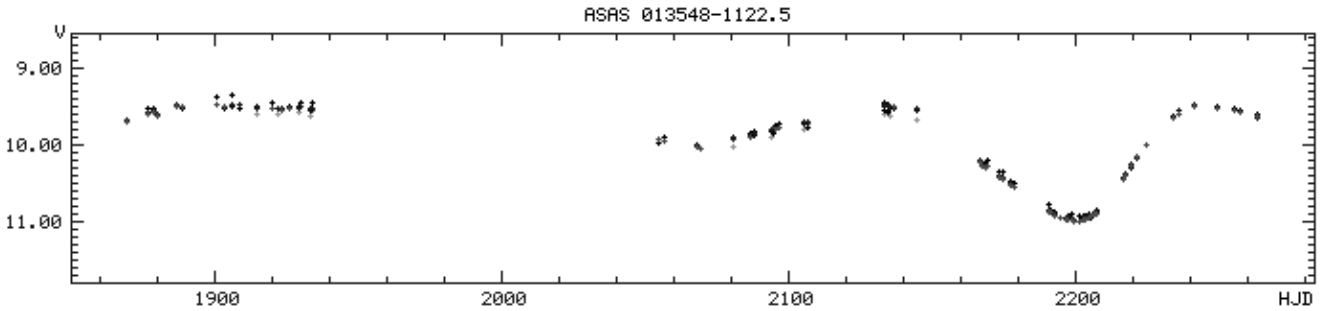
NSV 14520 J2000 23 21 14.1 +09 26 07



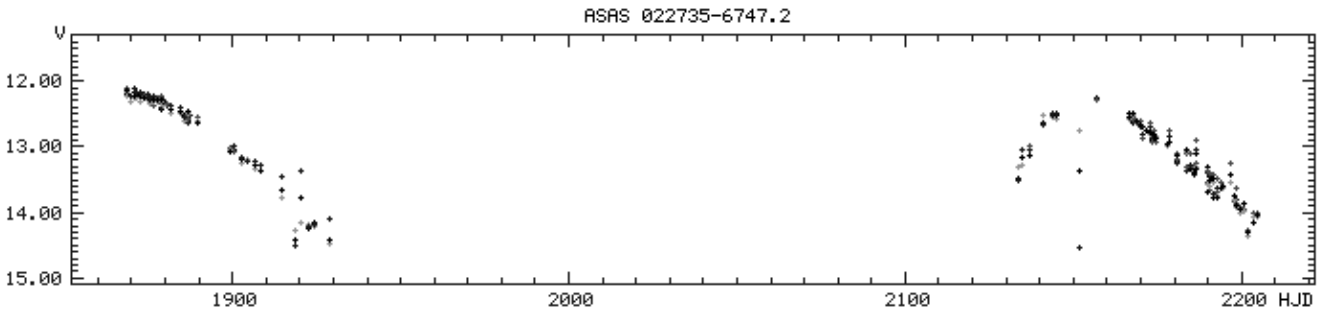
NSV 14769 J2000 23 57 04.6 -52 13 18



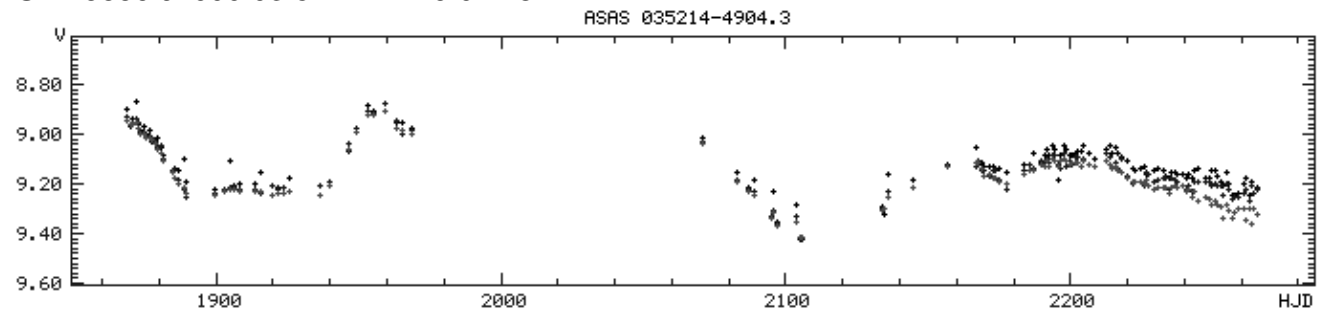
NSV 15337 J2000 01 35 47.9 -11 22 30



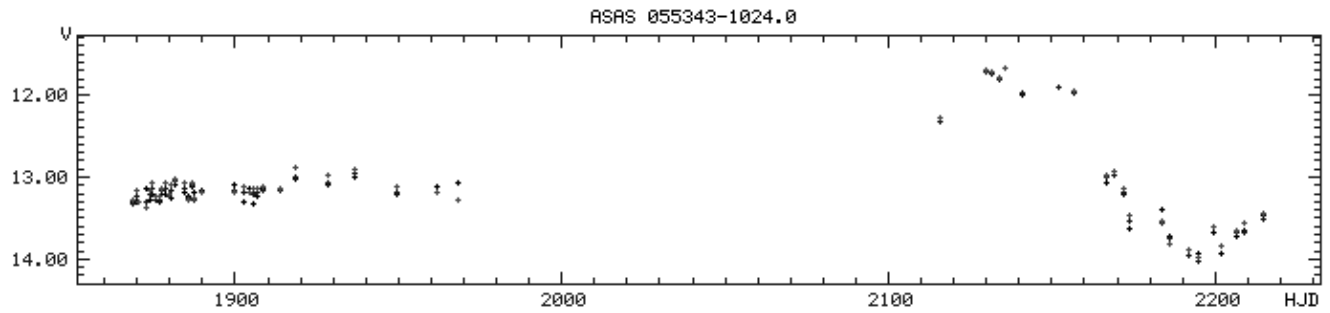
NSV 15526 J2000 02 27 34.9 -67 47 12



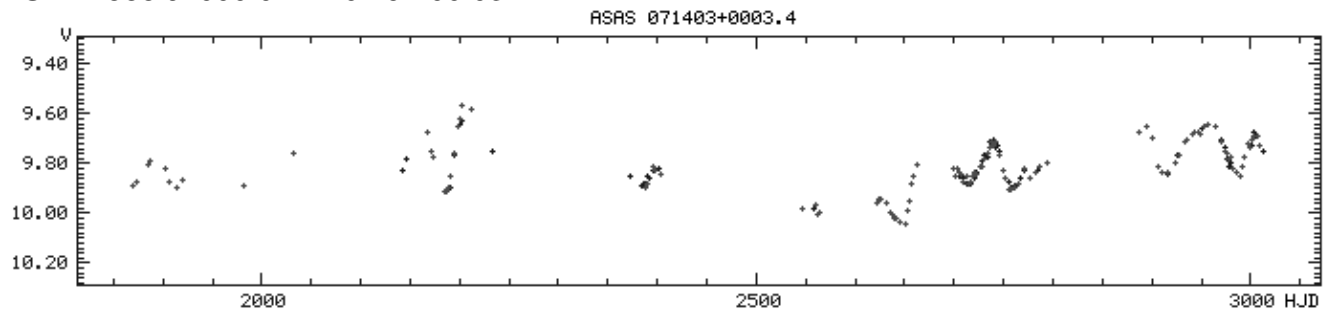
NSV 15830 J2000 03 52 14.4 -49 04 18



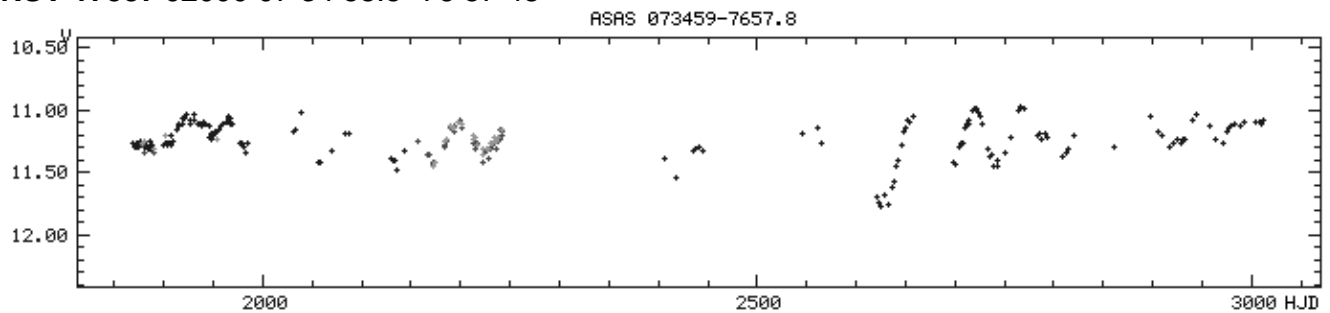
NSV 16725 J2000 05 53 42.5 -10 24 01



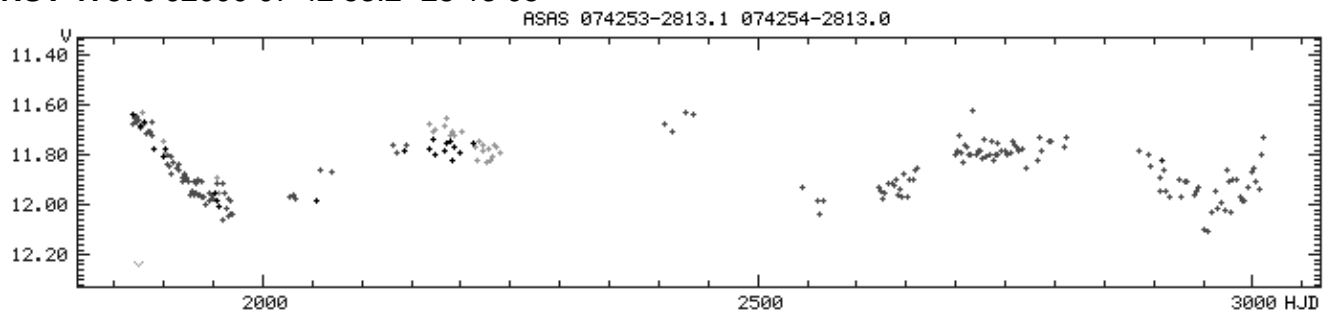
NSV 17388 J2000 07 14 02.9 +00 03 24



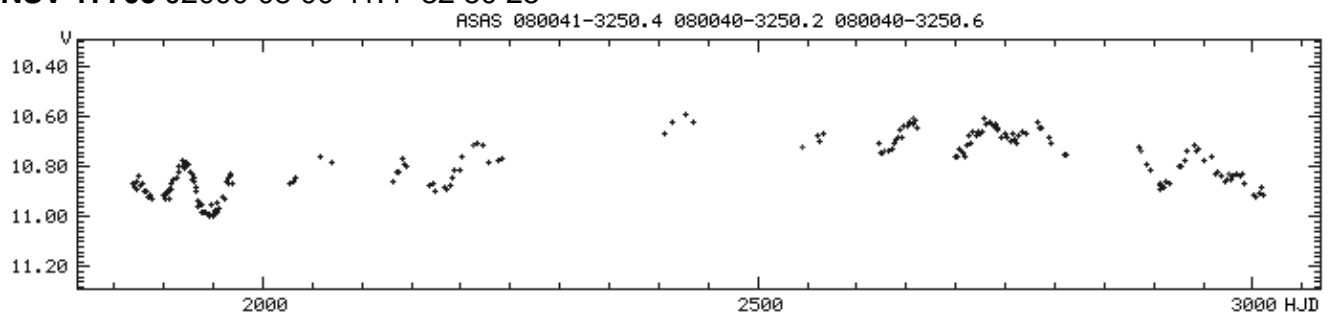
NSV 17537 J2000 07 34 58.5 -76 57 48



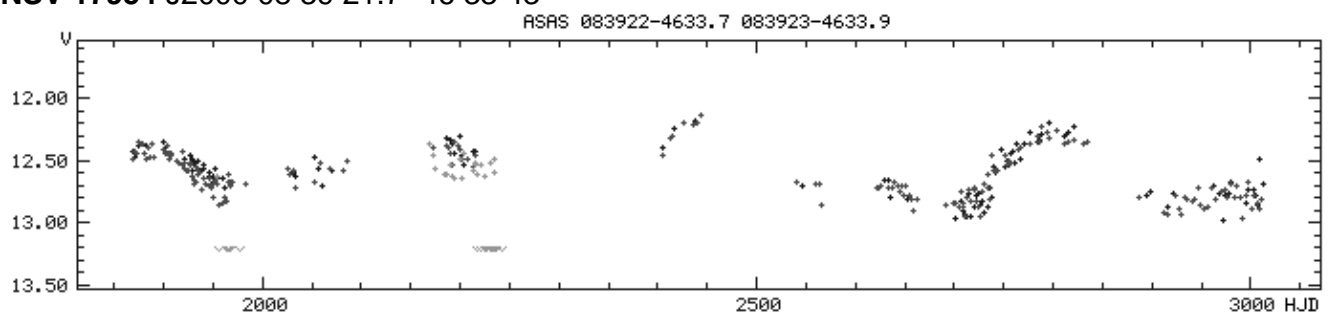
NSV 17570 J2000 07 42 53.2 -28 13 05



NSV 17705 J2000 08 00 41.4 -32 50 25

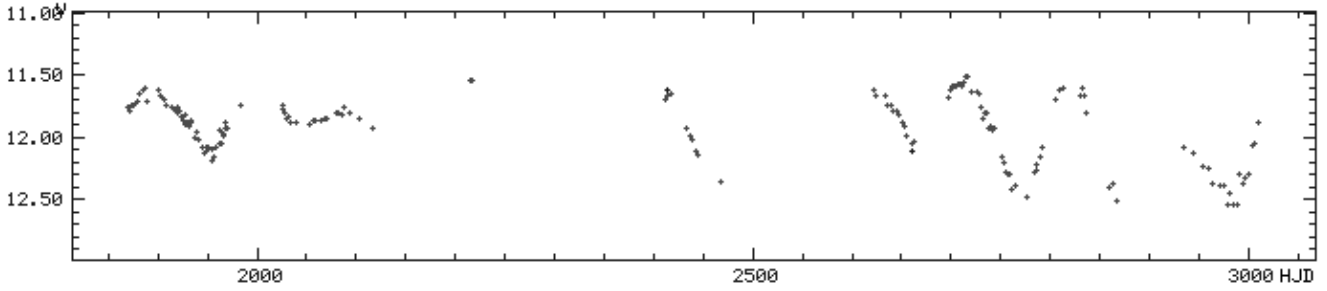


NSV 17954 J2000 08 39 21.7 -46 33 43



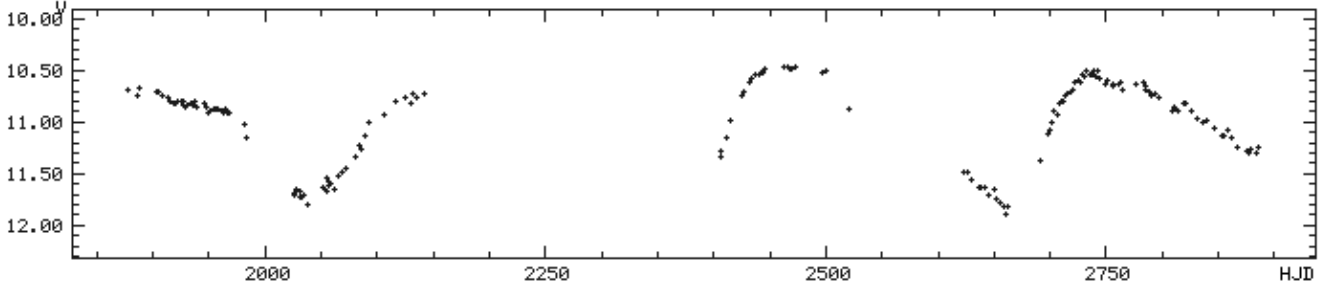
NSV 18645 J2000 11 06 38.2 -49 18 01

ASAS 110638-4918.0 110637-4918.1 110637-4917.8



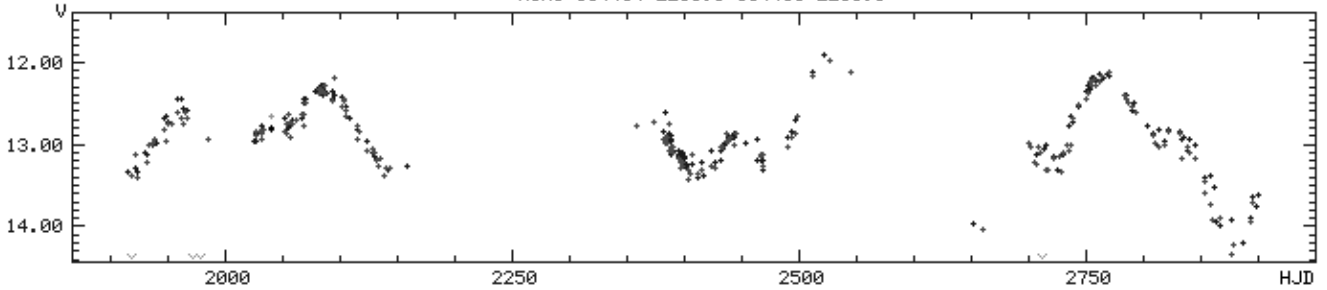
NSV 19569 J2000 13 00 50.3 -64 37 51

ASAS 130050-6437.9 130053-6437.7



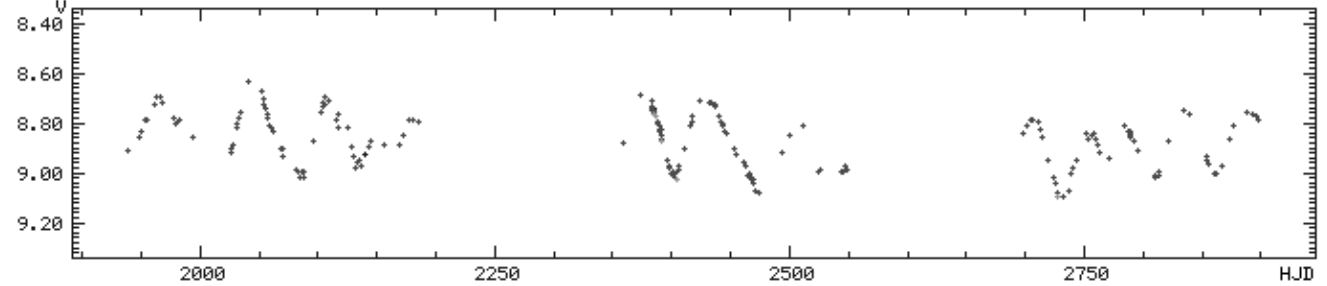
NSV 20387 J2000 15 44 14.3 -22 55 32

ASAS 154414-2255.5 154415-2255.3



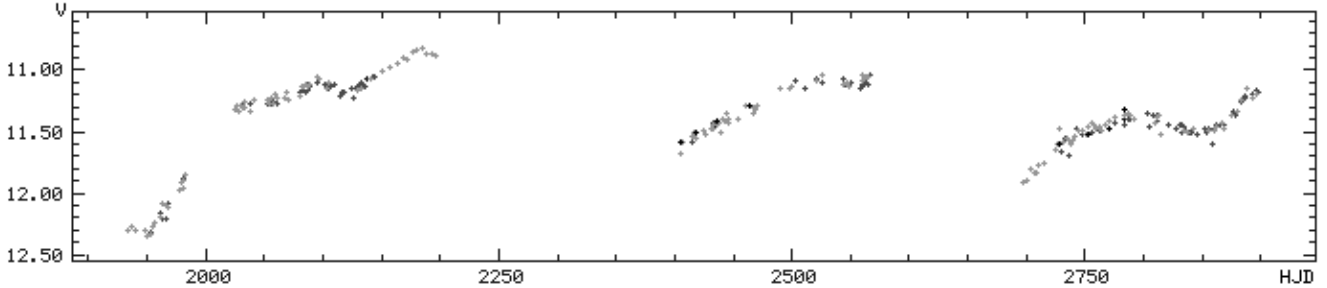
NSV 20892 J2000 17 03 53.7 -24 50 43

170354-2450.7 170352-2451.1 170355-2450.9 170355-2450.4 17 2727.83998 9.092 9.003 9.092 9.093 9.104 0.022 6



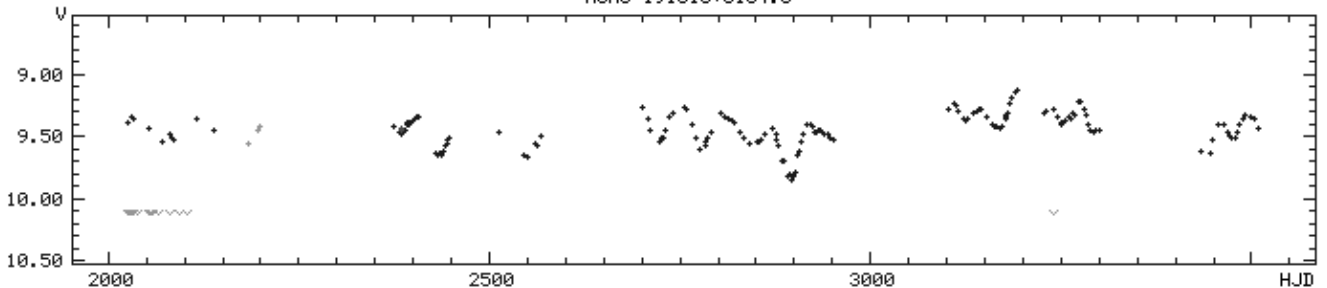
NSV 21540 J2000 17 21 56.1 -51 25 26

ASAS 172156-5125.4 172156-5125.5



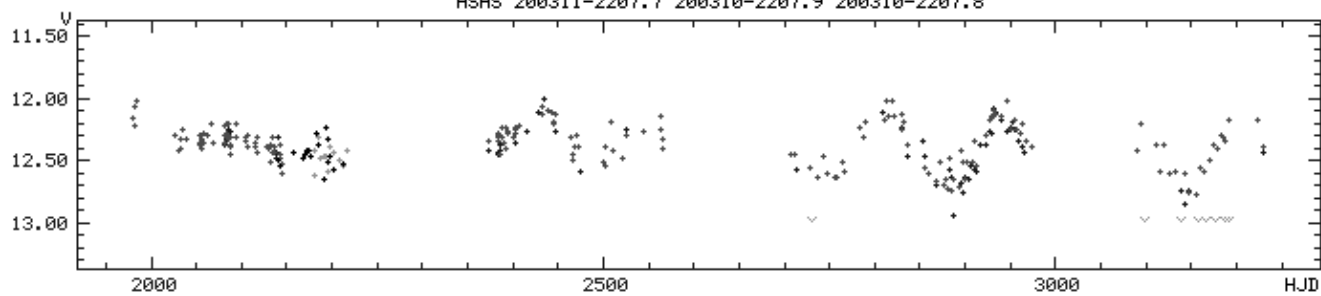
NSV 24712 J2000 19 13 15.1 +01 34 38

ASAS 191315+0134.6



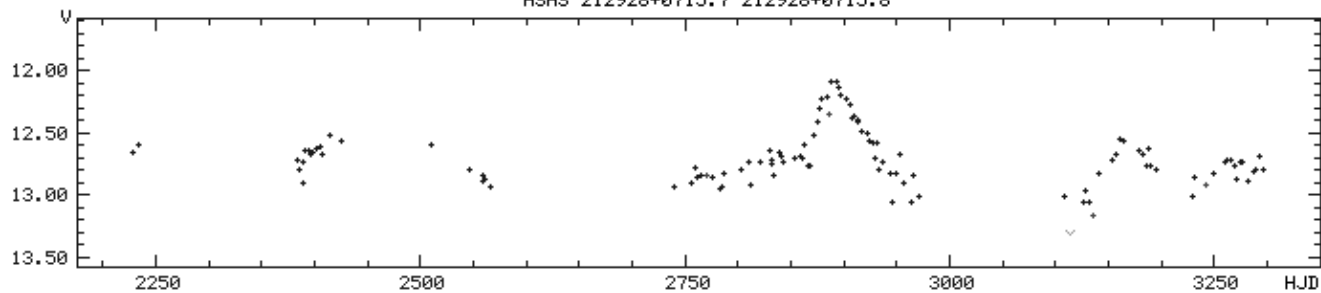
NSV 24979 J2000 20 03 11.1 -22 07 39

ASAS 200311-2207.7 200310-2207.9 200310-2207.8



NSV 25617 J2000 21 29 28.2 +07 15 44

ASAS 212928+0715.7 212928+0715.8



NSV 25913 J2000 22 29 13.3 -09 02 54

ASAS 222913-0902.9

