

## Red variables in ASAS, part I, 0h - 2h RA

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Abstract: Based on the rationale outlined by Greaves (2005) the 2MASS survey was data-mined for entries that matched the following criteria:  $\text{dec} < 0.000$  and  $j_m - k_m > 1.2$  and  $\text{vr}_m\text{opt} - j_m > 6$  and  $j_m < 6.00$ . A total of 4,128 stars matched these four criteria. The publically available ASAS light curves for those matching stars - between 0 and 2 hrs in right ascension - are presented.

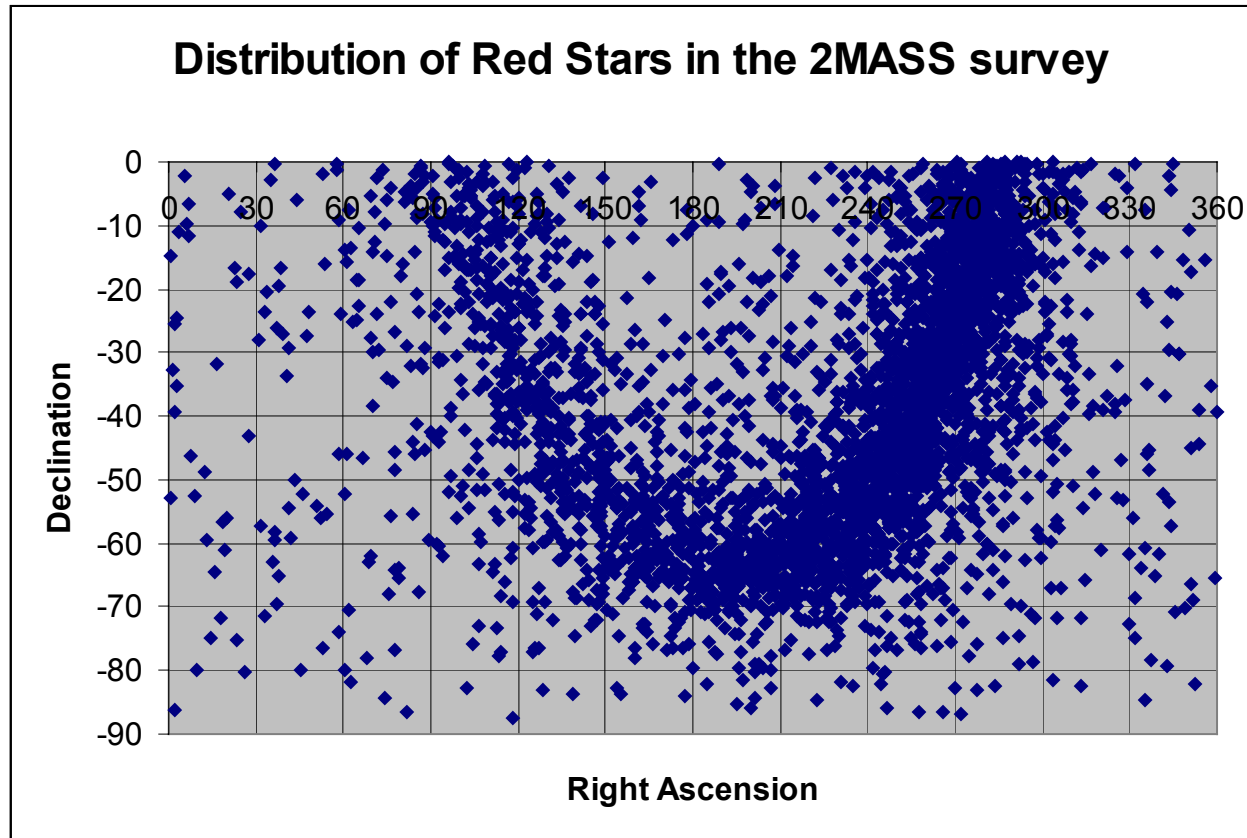
Introduction: Greaves (2005) was of the opinion that “red long period variables occupy specific regions within redmag-J and J-Ks plots” and previous work by Nicholson and Whiting (2006) and Sokolovsky and Pojmanski (2006) has shown that many red long period variables do not yet appear in the [International Variable Star Index](#) maintained by the [American Association of Variable Star Observers](#). The current project was intended to confirm, or deny, the statement made by Greaves - with the bonus that new discoveries were likely if this were the case.

Methodology: The ease with which on-line databases can be “mined” for stars that match specific criteria differs widely. Luckily the [2MASS All-Sky Catalog of Point Sources](#) is relatively easy to examine for stars of interest.

Although the number of stars that met the 4 pre-set criteria was relatively small at 4,128 only the facility to mail merge the data files obtained from 2MASS into the standard format required to access ASAS light curves made analysis a realistic proposition.

I have some reservations about including the light curves within the published paper rather than providing the reader with a hyperlink facility. However given the recent access problems (May 2006) to both the ASAS and the [Northern Sky Variability Survey](#) this seems a sensible precaution.

Results As might be expected the distribution of the stars identified during the data mining process was highly uneven.



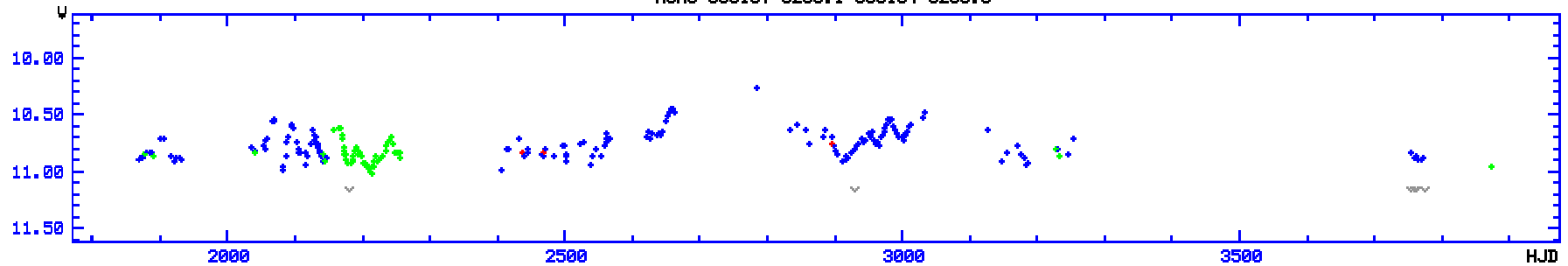
Only 31 stars (less than 0.8% of the total) were found in the first zone to be examined. 18 were variable stars listed in the [GCVS](#), 10 were variable stars previously discovered by the ASAS, 2 were new discoveries and 1 was a previously suspected variable. All had light curves that showed clear variability.

<b>2MASS location</b>	<b>Variable Name</b>	<b>Type</b>	<b>Simbad</b>	<b>Alternative Identity</b>
00015695-5250068	ASAS 000157-5250.1	SRB	<a href="#">IRAS 23593-5306</a>	GSC 08464-00015
00020740-1440332	W CET	M	<a href="#">V* W CET</a>	
00063583-3235351	XY SCL	SRB	<a href="#">V* XY SCL</a>	
00073624-2529398	SY SCL	M	<a href="#">V* SY SCL</a>	
00083736-3913047	V SCL	M	<a href="#">V* V SCL</a>	
00084621-8611185	RU OCT	M	<a href="#">V* RU OCT</a>	
00115980-2433585	PREVIOUSLY UNREPORTED	SRB	No entry	GSC 06413-01081 and IRAS 00094-2450
00121708-3511143	ASAS 001217-3511.2	SRB	<a href="#">IRAS 00097-3527</a>	GSC 06996-00359
00124494-1101178	PREVIOUSLY UNREPORTED	SRB	No entry	GSC 05264-00555 and IRAS 00101-1117
00210890-0221250	ASAS 002109-0221.5	SRB	<a href="#">BD-03 40</a>	GSC 04665-00180
00243149-0954040	ASAS 002431-0954.0	SRB	<a href="#">BD-10 66</a>	GSC 05262-00225
00270644-0636168	UY CET	SRB	<a href="#">V* UY CET</a>	
00280053-1139318	AG CET	SRB	<a href="#">V* AG CET</a>	
00302622-4624333	T PHE	M	<a href="#">V* T PHE</a>	
00361253-5231131	ASAS 003613-5231.2	SRB	No entry	GSC 08466-00199
00393897-8002048	X HYI	M	<a href="#">V* X HYI</a>	
00500255-4843465	ASAS 005002-4843.8	SRB	<a href="#">IRAS 00477-4900</a>	GSC 08034-00772
00512373-5937458	NSV 236	LB	<a href="#">SV* SON 5342</a>	
00571313-7500002	U TUC	M	<a href="#">V* U TUC</a>	
01031852-6421479	ASAS 010319-6421.8	SRB	<a href="#">IRAS 01013-6437</a>	GSC 08845-01443
01052871-3141370	AD SCL	M	<a href="#">V* AD SCL</a>	
01110046-7136291	ASAS 011101-7136.5	SRB	<a href="#">IRAS 01094-7152</a>	GSC 09139-00863
01165160-6101042	XX TUC	SR:	<a href="#">V* XX TUC</a>	
01195257-5555041	W PHE	M	<a href="#">V* W PHE</a>	
01223617-0456121	CV CET	SRB	<a href="#">V* CV CET</a>	
01320019-1649242	ASAS 013200-1649.4	SRB	No entry	GSC 05852-00794
01333406-7512269	RY HYI	M	<a href="#">V* RY HYI</a>	
01342587-1858275	AP CET	SR:	<a href="#">V* AP CET</a>	
01393550-0754221	ASAS 013935-0754.4	SRB	<a href="#">IRAS 01371-0809</a>	GSC 05277-01600
01445841-8011080	VZ HYI	?	<a href="#">V* VZ HYI</a>	
01495099-4258097	AM PHE	LB	<a href="#">V* AM PHE</a>	

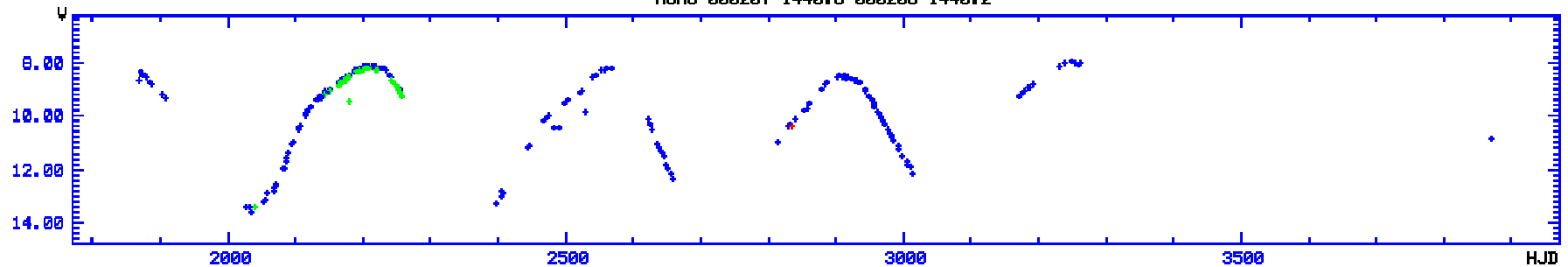
Important notes about the light curves –

- The X axis is HJD 2450000 + the number quoted
- The Y axis is the V band magnitude
- The different colours correspond to different data collection runs
- The v sign means fainter than the value
- A few extraneous points appear in some light curves – usually well above all other points, ignore!

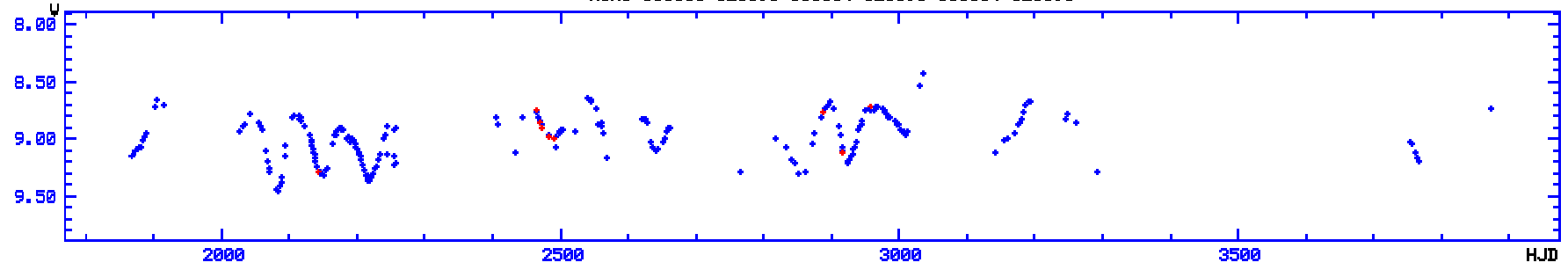
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ASAS 000157-5250.1 000154-5250.0



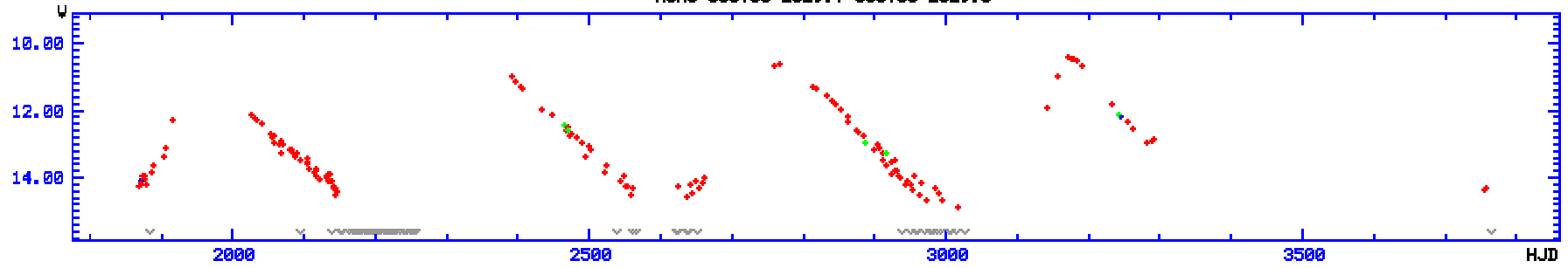
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ASAS 000207-1440.5 000208-1440.2



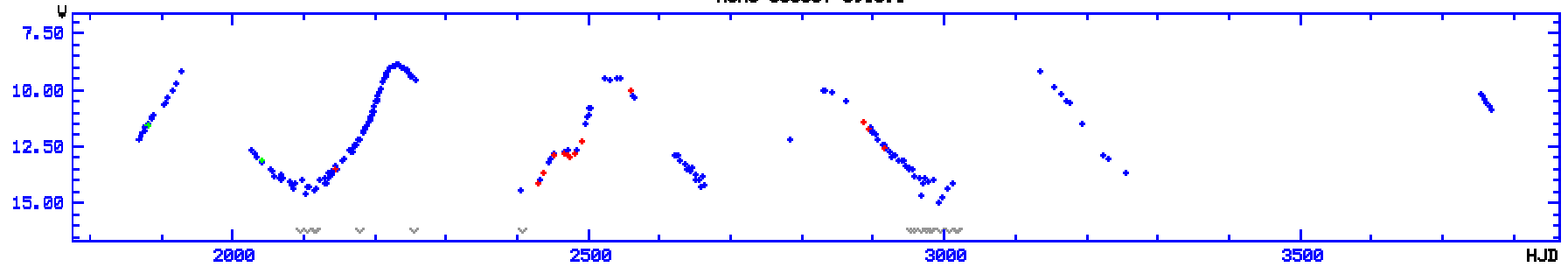
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ASAS 000636-3235.6 000634-3235.6 000634-3235.8



SY SCL = 00073624-2529398  
ASAS 000736-2529.7 000736-2529.6

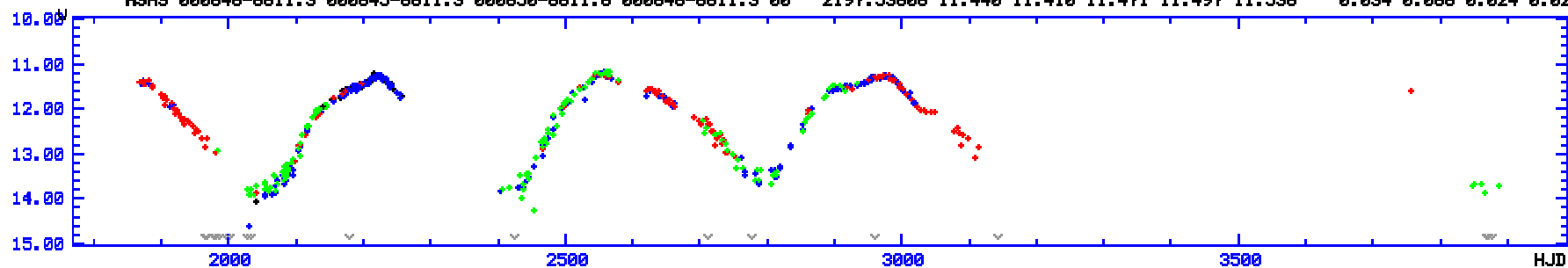


V SCL = 00083736-3913047  
ASAS 000837-3913.1



RU OCT = 00084621-8611185

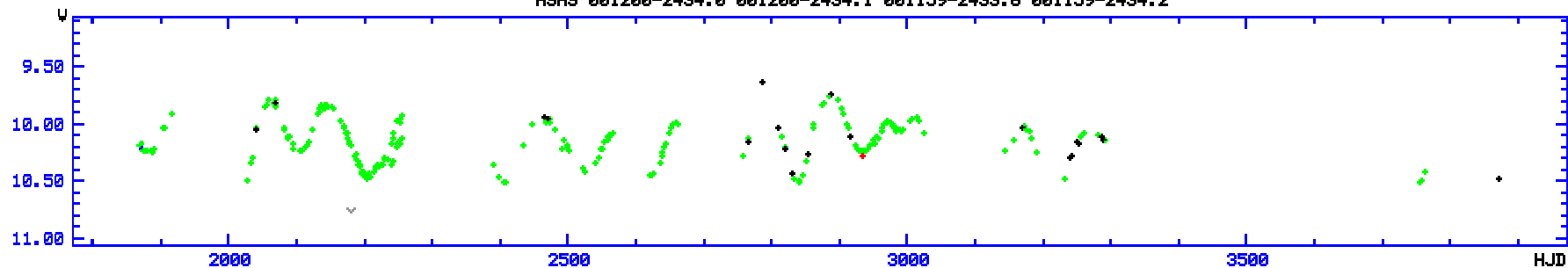
ASAS 000846-8611.3 000845-8611.3 000850-8611.6 000848-8611.3 00 2197.53606 11.440 11.410 11.471 11.497 11.538 0.034 0.066 0.024 0.024



PREVIOUSLY UNREPORTED VARIABLE

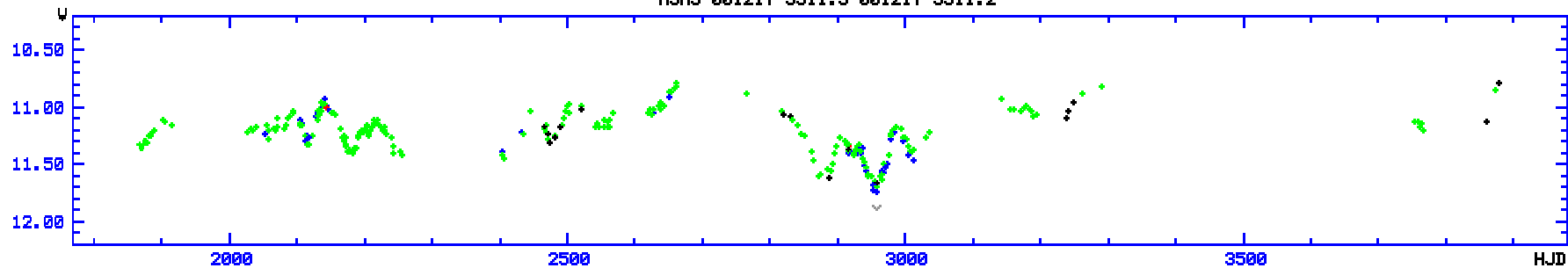
GSC 06413-01081 = 00115980-2433585

ASAS 001200-2434.0 001200-2434.1 001159-2433.8 001159-2434.2



ASAS 001217-3511.2 = 00121708-3511143

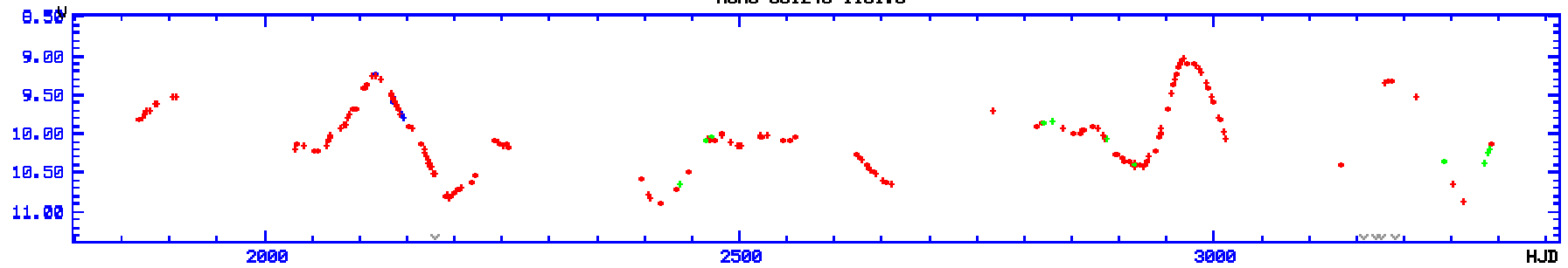
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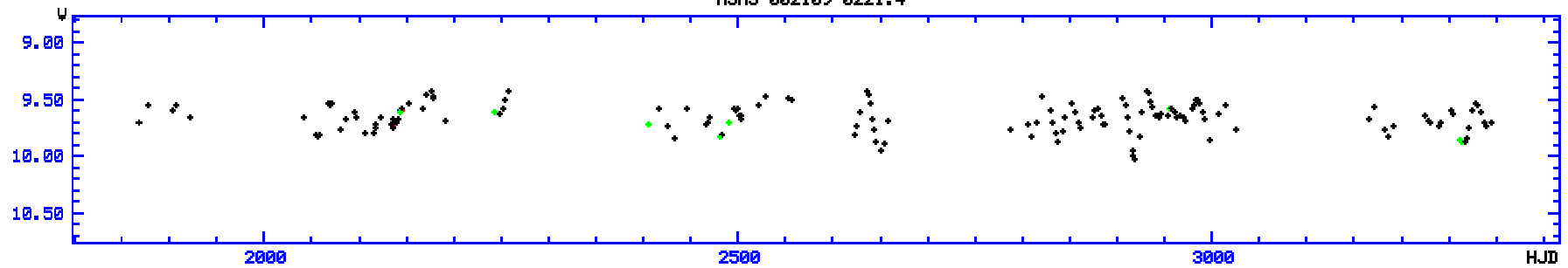
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ASAS 001245-1101.3



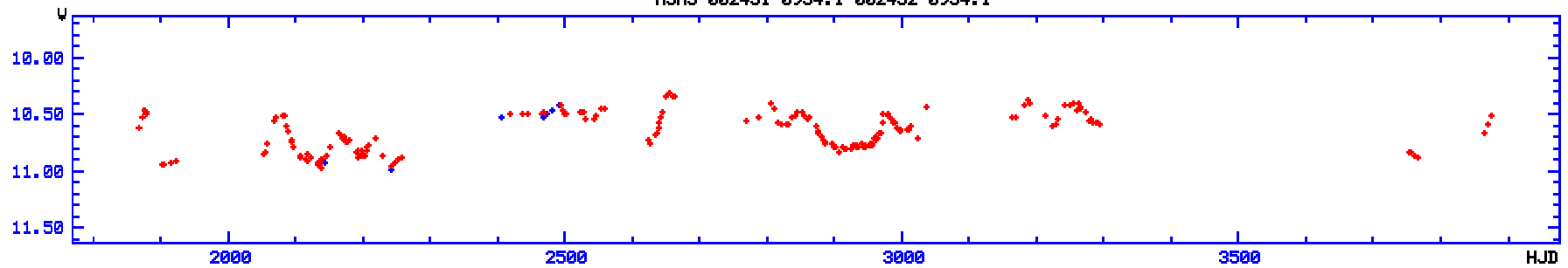
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ASAS 002109-0221.4

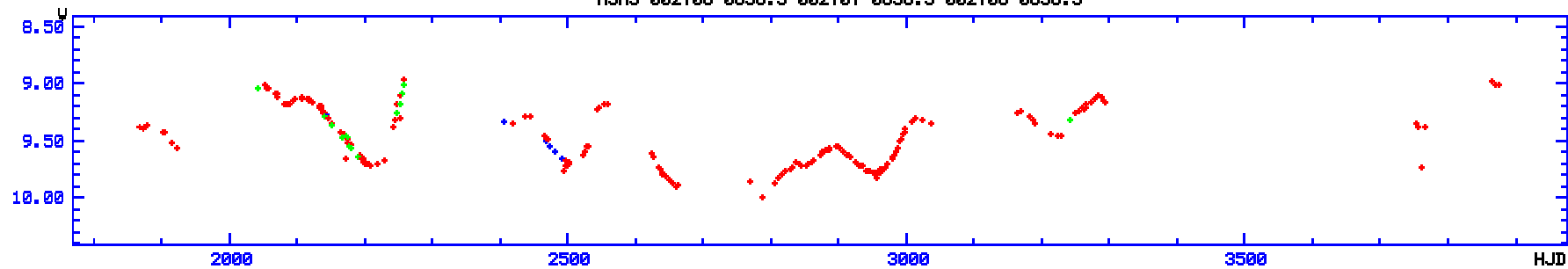


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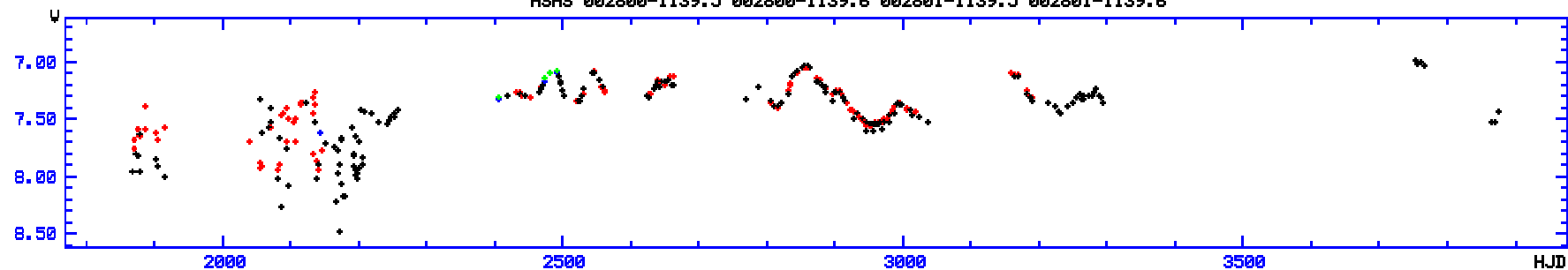
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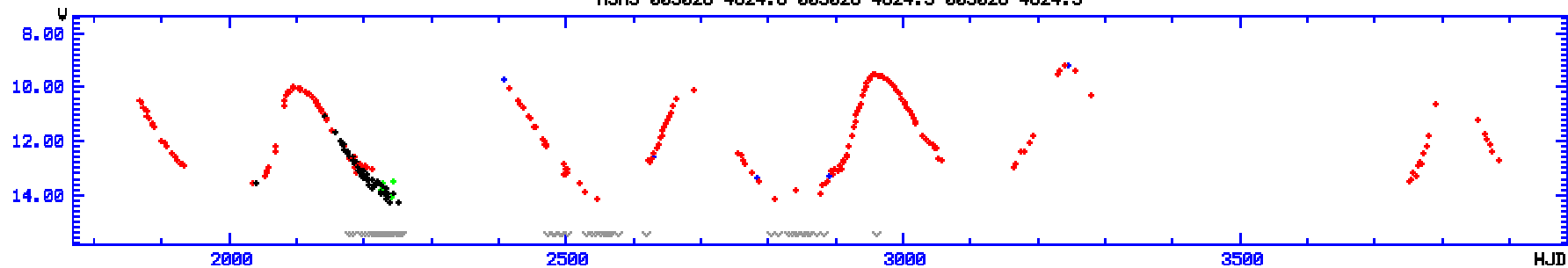
UY CET = 00270644-0636168  
ASAS 002706-0636.3 002707-0636.3 002706-0636.5



AG CET = 00280053-1139318  
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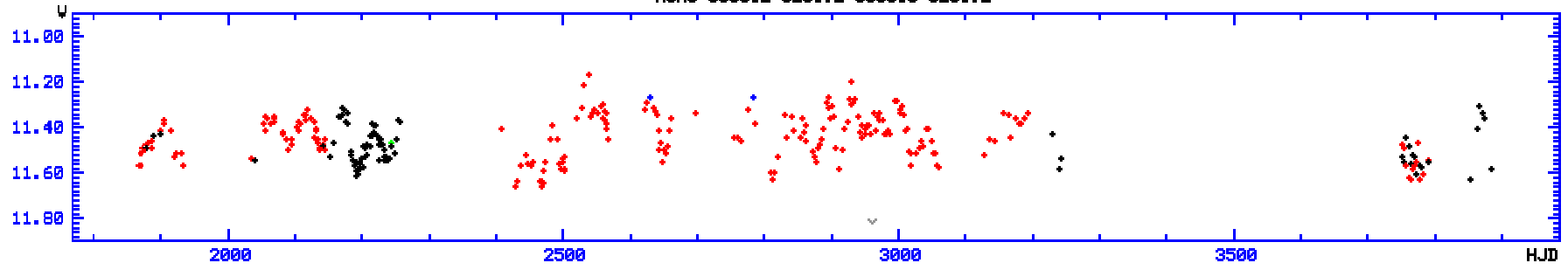


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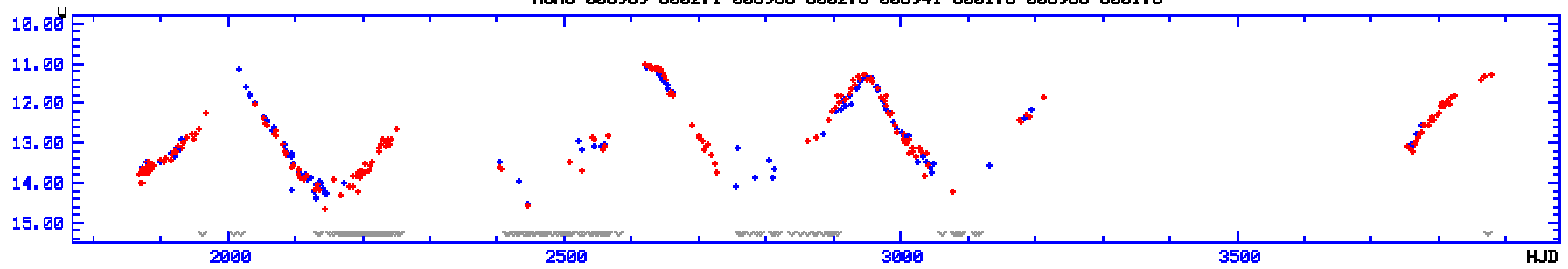




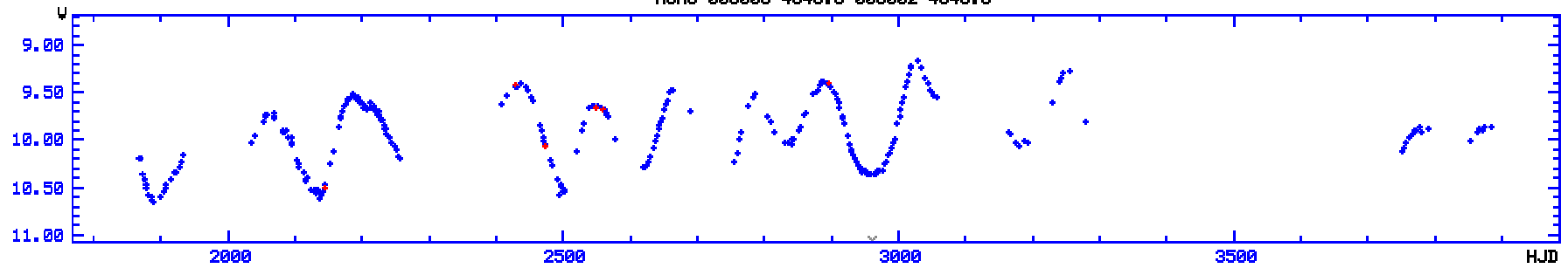
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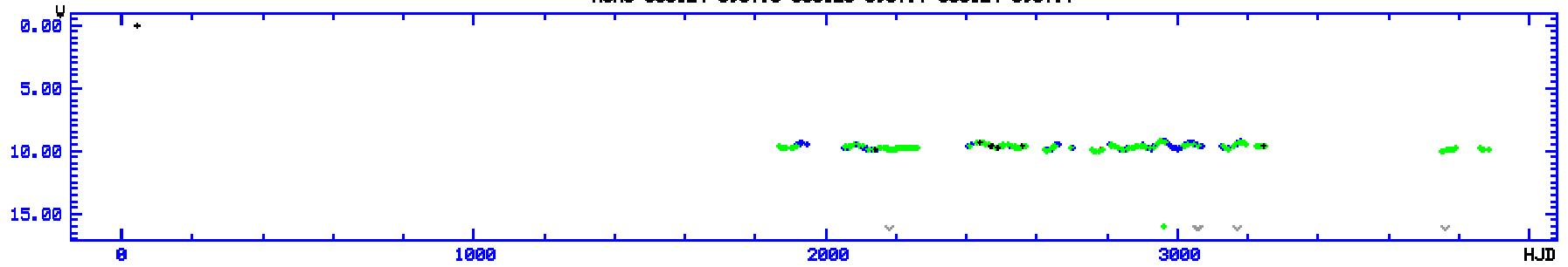
X HYI = 00393897-8002048  
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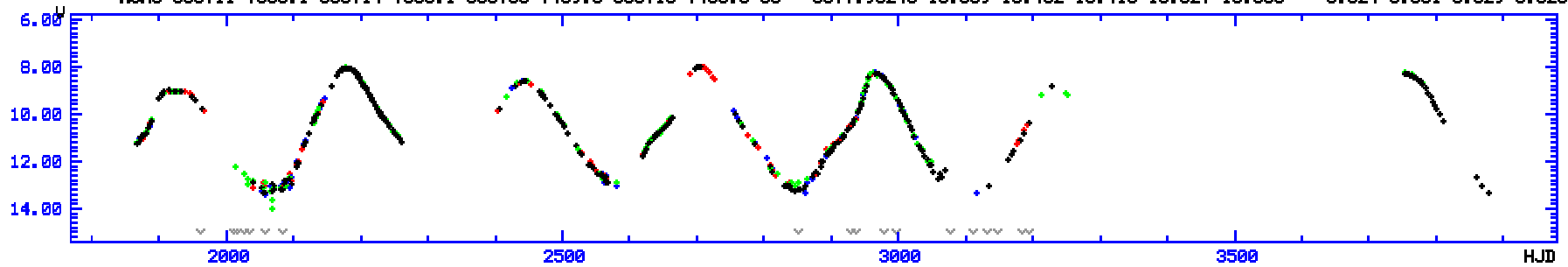
ASAS 005002-4843.8 = 00500255-4843465  
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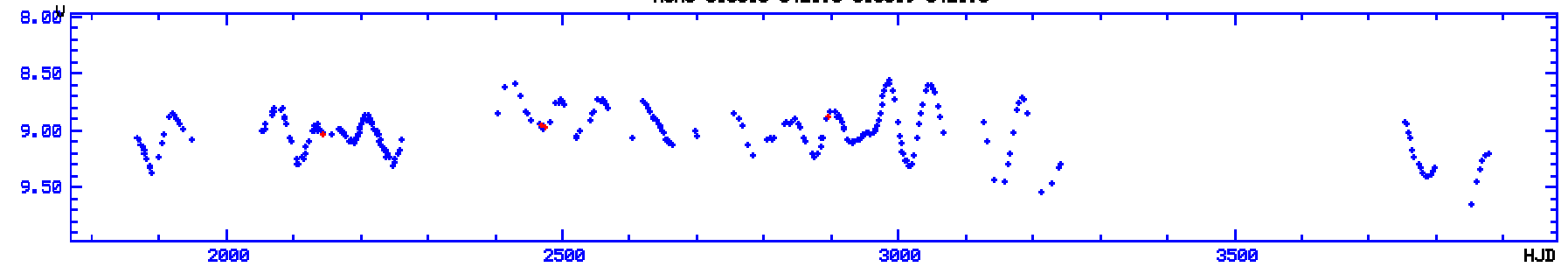
**NSV 236 = 00512373-5937458**  
ASAS 005124-5937.8 005123-5937.7 005124-5937.7



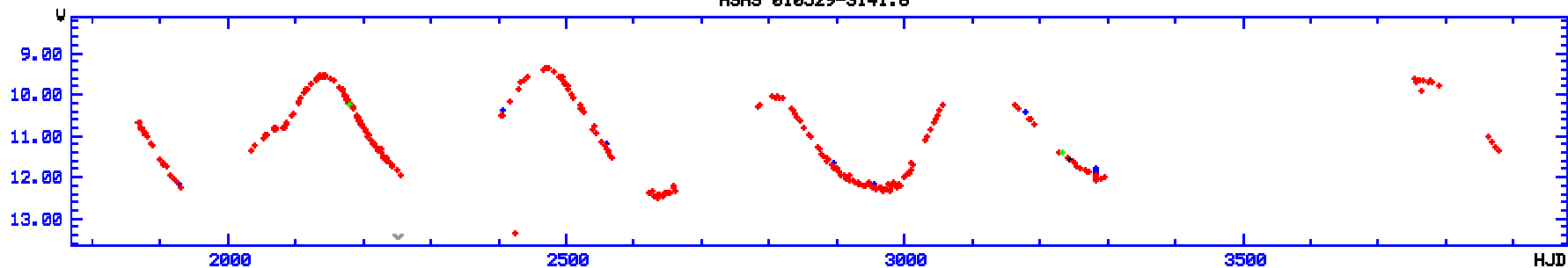
**U TUC = 00571313-7500002**  
ASAS 005711-7500.1 005714-7500.1 005708-7459.8 005713-7460.0 00 3877.90243 13.359 13.452 13.413 13.327 13.330 0.024 0.061 0.029 0.025



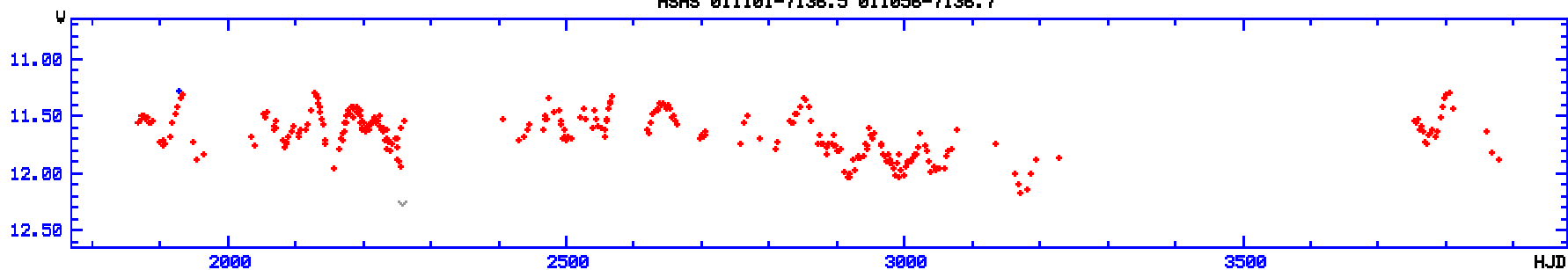
**ASAS 010319-6421.8 = 01031852-6421479**  
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AD SCL = 01052871-3141370  
ASAS 010529-3141.6

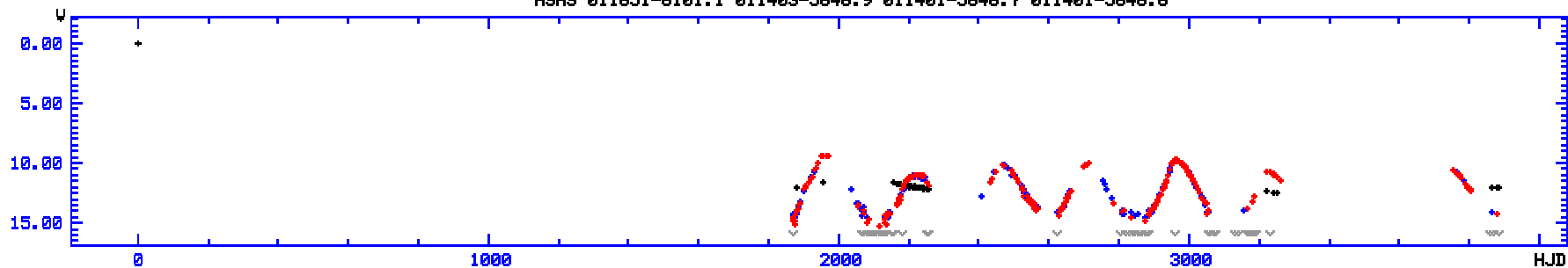


ASAS 011101-7136.5 = 01110046-7136291  
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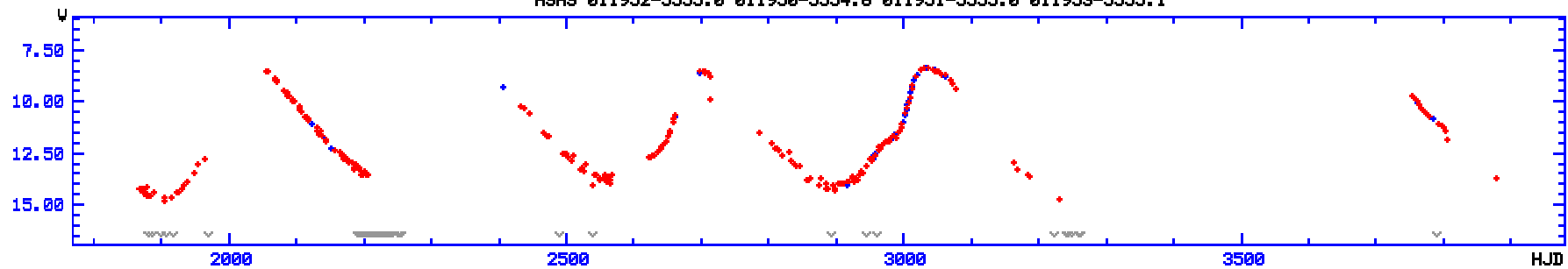


XX TUC = 01165160-6101042

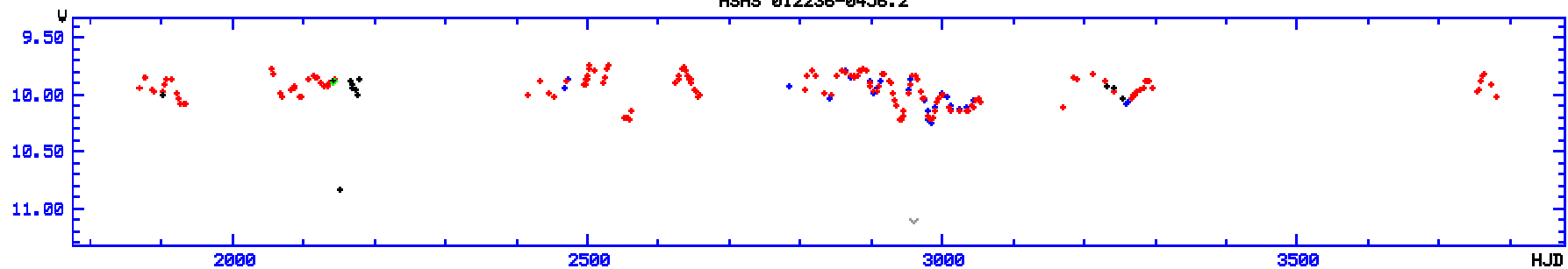
*Light curve seems to have been effected by a neighbouring star around HJD 2200*  
ASAS 011651-6101.1 011403-5646.9 011401-5646.7 011401-5646.8



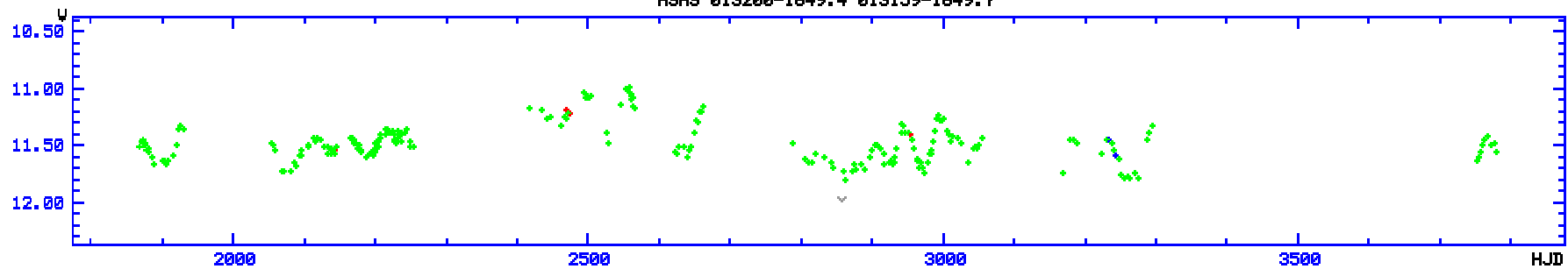
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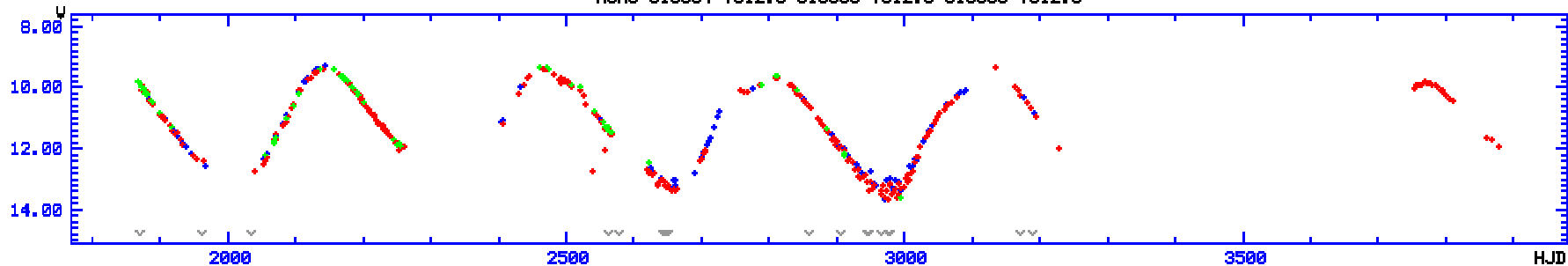
CV CET = 01223617-0456121  
ASAS 012236-0456.2



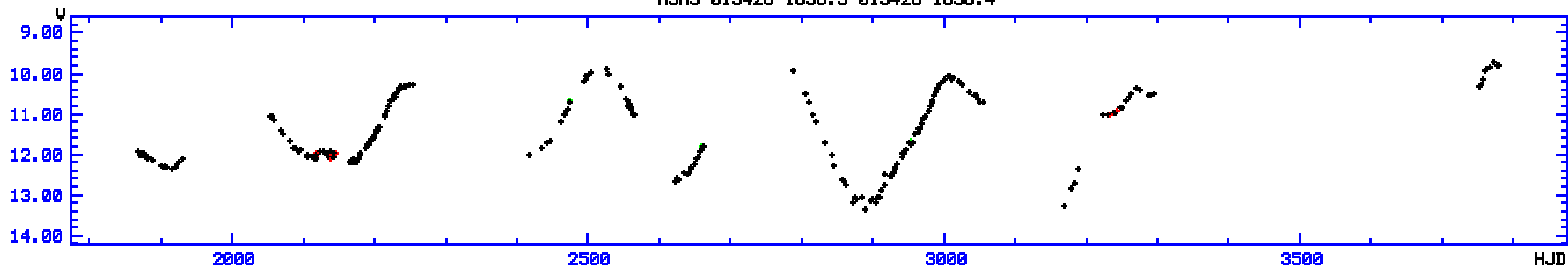
ASAS 013200-1649.4 = 01320019-1649242  
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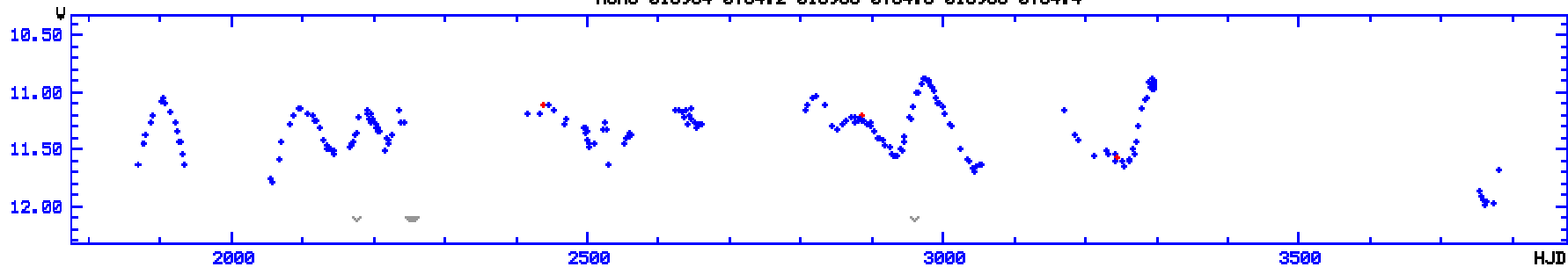
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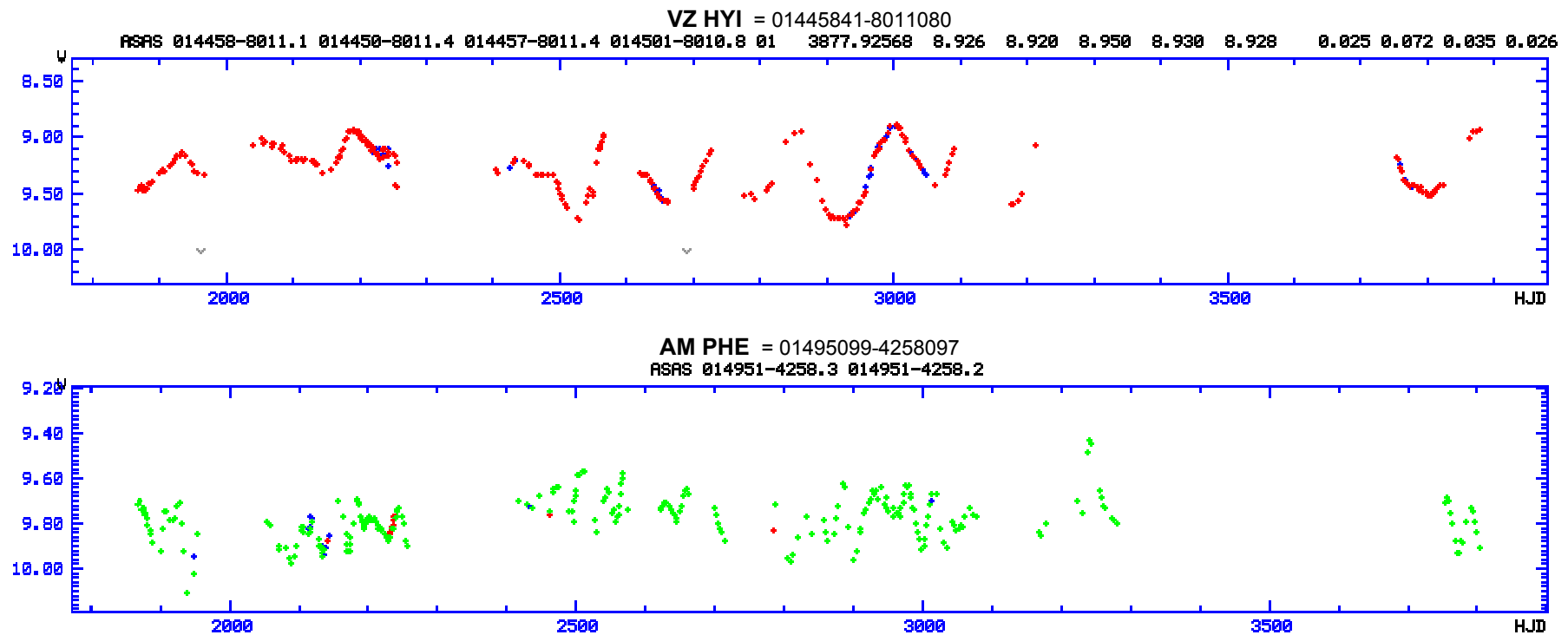


**AP CET = 01342587-1858275**  
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**ASAS 013935-0754.4 = 01393550-0754221**  
ASAS 013934-0754.2 013935-0754.3 013936-0754.4





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The online All Sky Automated Survey cgi engine was used to generate the ASAS plots.

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[Confirmation of 177 objects in the New Suspected Variables Catalogue as red long period variables.](#) John Greaves, Open European Journal on Variable Stars, May 2006.

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## Websites

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The Simbad Astronomical Database - <http://simbad.harvard.edu/Simbad>

The Combined General Catalogue of Variable Stars - <http://vizier.hia.nrc.ca/viz-bin/VizieR?-source=II/250>

The International Variable Star Index - <http://www.aavso.org/vsx/>