THE VISUAL BEHAVIOR OF SS AURIGAE

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Abstract

All observed outbursts from 1907 to 1984 of the cataclysmic variable star SS Aur are reported, using the data records of the AAVSO. The mean interval between outbursts is 55.7 days. The duration of the outbursts is bimodal, peaking at 4 and 11 days. Three intervals of peculiar activity in 1928-1929, 1970-1971, and at the end of the interval studied in 1983 are discussed. Relationships among the width and maximum brightness of outbursts and length of quiescent time preceding and following an outburst are investigated.

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1. Introduction

SS Aurigae, located at right ascension 06h 05m 48s and declination +47o 45'.9 (1900), was discovered by E. Silbernagel in 1906 (1907). In the Fourth Edition of the **General Catalogue of Variable Stars** (Kholopov 1985) it is classified as a U Geminorum type of cataclysmic variable. Its visual magnitude range is given as 10.3 to 15.8 (V) and its period as 55.5 days. SS Aur is a spectroscopic binary, with a period of 0.1805939 day (Lucy and Sweeney 1971).

2. Observations

SS Aurigae has been under close observation since its discovery. The AAVSO data files contain tens of thousands of observations of SS Aur from 1907 to the present. Observed dates of outburst, together with classification of width and consecutive numbering from epoch zero, December 30, 1907 (JD 2417940), were initially compiled by L. C. Campbell, and later brought up to date and published in **AAVSO Bulletin 22** by M. W. Mayall (1960). In this paper, Table I lists all observed outbursts from 1907 to 1984, including those published by Mayall. During this interval of 77 years, 494 maxima were recorded by AAVSO.

A typical portion of the light curve of SS Aur is shown in Figure 1, covering the interval from August 1979 to May 1982 (JD 2444100 to 2445100).

The extreme range of light variation is between magnitudes 10.2 and 15.7. The mean period of consecutive outbursts is 55.7 days. The standard deviation of the interval between outbursts is 22.6 days. The outbursts tend to fall into two classes: wide (where the star is brighter than magnitude 12 for more than 7 days) and narrow (where the star is brighter than magnitude 12 for 7 or fewer days). The magnitude-12 mark was chosen for analysis as it is well defined on both

the ascending and descending branches of the light curve. The wide outbursts are bright, with a mean maximum magnitude of 10.7 and a long duration - 11 days on the average - while the narrow outbursts are fainter, with a mean maximum magnitude of 11.0 and a short duration - 4 days on the average. Table I lists the number of the outbursts, their classification, the dates when the star reached magnitude 12.0 on the ascending (A) and descending (D) branches of the light curve, and the magnitude at maximum. Figure 2 shows the frequency distribution of outburst widths. This distribution is bimodal, peaking at 4 and 11 days.

The rise to maximum for narrow maxima is fast, on the order of one day. The rise to maximum for wide maxima, on the other hand, may be divided into two classes, one where the rise to maximum is longer than 2 days and the other shorter than 2 days. In both narrow and wide outbursts the decline from maximum ranges from three to five days. Both wide and narrow maxima will occasionally display a "secondary maximum" on top of the primary maximum. When occurring in wide maxima, these short, small "humps" are sometimes preceded or followed by a brief stillstand in brightness. The average duration of the "humps" is about two days, and the average stillstand lasts about four days.

It is interesting to note that three periods of peculiar activity were observed. The first occurred from December 1928 to mid-February 1929 (JD 2425590 to 2425660), the second from September 1970 to mid-May 1971 (JD 2440840 to 2441100), and the third from October 1983 (JD 2445600) through the end of this study, when it was still continuing. During the intervals in 1928, 1929, and 1983, the outbursts were frequent (15 to 30 days apart) and the amplitudes were small, on the average two magnitudes. Each of these intervals of peculiar activity ended with a very faint minimum followed by a wide and bright outburst. The interval of peculiar activity in 1970 and 1971, however, was different in that the light variation was more like erratic oscillations without any pattern or periodicity, and the level of quiescence was one magnitude brighter than usual. As a result of the scarcity of observations it is not possible to comment on whether this interval also ended with a faint minimum. All of the intervals of peculiar activity occurred after years of normal U Geminorum-type behavior. After the irregular behavior, the variable returned to its typical pattern of variation.

It has been noted in the **Third Supplement** to the **General Catalogue of Variable Stars** (Kukarkin et al. 1976) that SS Aur could possibly be a Z Camelopardalis type cataclysmic variable. These stars are characterized by unpredictable stillstands following an outburst. The data on SS Aur do not support this possible conclusion. The peculiar activity of SS Aur in 1970 and 1971 was more like an erratic variation rather than a stillstand.

3. Analysis

Relationships among various parameters such as maximum magnitude, outburst duration, and quiescent intervals preceding and following an outburst were investigated using the data listed in Table I.

Narrow maxima occur 1.9 times as often as wide ones. A narrow maximum is followed by another narrow maximum 1.65 times as often as by a wide one. A wide maximum is followed by a narrow maximum 4.3 times as often as by another wide maximum.

The frequency distribution of the quiescent time, when the star is fainter than magnitude 12, is shown in Figure 3. There is a broad distribution with a peak at 42 days, followed by 49 to 51 and 69 days.

Relationships among magnitude at maximum, duration of outburst,

duration of minimum preceding an outburst, and duration of minimum following an outburst have been tested for correlation. These relationships were tested using all outbursts, narrow outbursts only, and finally wide outbursts only to determine whether the type of outburst has any effect on the correlation. Table II gives the correlation coefficients of the relationships tested. The correlation coefficients (r) all indicate that none of the relationships are strong. The value of the coefficient may be negative because the magnitude scale is used for brightness.

There is a moderately strong correlation (r = -0.55) between the magnitude at maximum and the width of the outburst, in that the brighter the maximum the wider the outburst appears to be. The graph of magnitude at maximum versus width at magnitude 12 is shown in Figure 4.

There is another moderately strong correlation (r = 0.43) between the width of an outburst and the length of the preceding minimum, in that the longer the quiescent interval the wider is the outburst that follows it. It is interesting to note that when only the wide outbursts are used this correlation almost disappears (r = 0.01). This is also true for the correlation between the duration of the wide outburst and the length of the following minimum. This may be due to the fact that the duration of most wide outbursts clumps around 10 and 11 days.

The graphs of the width of the outburst versus the duration of the preceding and the following minimum are shown in Figures 5 and 6, respectively.

The correlation between the maximum brightness of wide maxima and the length of the previous minimum is also of moderate strength (r = -0.47). However, there is almost no correlation (r = -0.07) between the brightness of the wide maximum and the length of the following minimum.

4. Conclusions

Observations from 1907 to 1984 indicate that SS Aur varies between magnitudes 10.2 and 15.7. It has a mean outburst period of 55.7 days. The standard deviation of the interval between outbursts is 22.6 days. It has two types of outbursts - narrow and wide. Narrow outbursts have an average duration of 4 days and a mean maximum magnitude of 11.0. Wide outbursts have an average duration of 11 days and a mean maximum magnitude of 10.7. There are relationships between various parameters of the light curve - the wider an outburst the brighter it is, and, also, the length of the preceding minimum directly affects the duration of the outburst and the brightness of the wide outbursts.

5. Acknowledgements

We are grateful to AAVSO observers, whose valuable observations form the data base for this study. Without their many decades of dedicated efforts this work would not have been possible. Our thanks also go to Christopher Mauche at the Harvard-Smithsonian Center for Astrophysics for the preparation of Figure 1.

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TABLE I

Outbursts of SS Aurigae

n	type	JD (12^mA)	JD (12^mD)	m	n	type	JD (12^mA)	JD (12^mD)	m
0	w	2417940	2417949	10.8	66	w	2421755	2421766	10.7
1	n	2418007	2418011	10.9	68	n	2421880	2421887	10.8
2	w	2418060	2418070	10.7	69	n	2421923	2421927	11.0
4	w	2418180	2418192	10.3	70	n	2421962	2421967	11.0
5	n	2418232	2418238	10.8	71	n	2421992	2421996	10.8
6	w	2418300	2418309	10.7	72	n	2422027	2422033	10.8
7	n	2418368	2418372	10.8	73	w	2422082	2422092	10.8
8	n	2418407	2418411	10.8	74	-	-------	2422151	-
9	w	2418457	2418469	10.6	75	w	2422224	2422232	10.7
10	n	2418506	2418510	10.5	76	w	2422281	2422293	10.8
11	n	2418551	2418556	10.8	77	n	2422371	2422377	10.7
13	w	2418651	2418663	10.3	78	w	2422436	2422446	10.7
14	n	2418732	2418737	10.5	80	n	2422539	2422543	11.0
15	w	2418806	2418818	10.5	81	n	2422572	2422575	-
17	w	2418935	2418947	11.4	82	n	2422609	2422614	11.1
18	w	2419032	2419042	10.5	83	w	2422664	2422675	10.7
20	w	2419172	2419184	10.6	84	n	2422733	2422740	11.0
21	w	2419265	2419274	10.7	85	w	2422805	2422815	10.8
22	w	2419368	2419379	10.5	86	n	2422871	2422876	11.0
23	n	2419452	2419458	10.8	87	w	2422965	2422977	10.6
24	w	2419501	2419512	10.9	88	n	2423030	2423034	10.9
27	w	2419674	2419685	10.8	89	n	2423077	2423082	10.9
28	n	2419724	2419728	11.2	90	w	2423118	2423129	10.8
29	n	2419753	2419756	11.6	91	n	2423171	2423175	10.9
30	n	2419789	2419794	11.0	92	w	2423233	2423242	10.9
31	n	2419820	2419824	10.9	93	n	2423287	2423291	11.1
32	w	2419861	2419870	10.9	94	n	2423324	2423328	11.1
33	n	2419914	2419918	11.3	95	w	2423365	2423376	10.8
35	n	2420012	2420016	10.9	96	n	2423402	2423405	11.4
36	w	2420063	2420075	10.7	97	n	2423455	2423460	10.9
38	n	2420144	2420150	10.8	98	w	2423520	2423531	10.7
39	n	2420199	2420205	11.2	99	-	-------	2423584	-
40	n	2420242	2420247	11.1	100	n	2423624	2423630	11.0
42	w	2420322	2420333	10.7	101	w	2423675	2423686	10.6
43	n	2420381	2420388	10.3	102	n	2423737	2423741	10.9
44	w	2420455	2420466	10.9	103	n	2423774	2423778	11.0
45	n	2420522	2420527	11.4	104	w	2423844	2423856	10.7
46	n	2420579	2420784	10.9	106	n	2424018	2424023	11.0
47	n	2420626	2420631	10.7	107	w	2424128	2424140	10.5
48	n	2420658	2420662	11.2	108	n	2424229	2424236	10.8
49	w	2420707	2420718	10.8	109	w	2424315	2424326	10.5
50	n	2420763	2420769	10.8	110	n	2424374	2424378	10.9
51	n	2420820	2420826	10.9	111	n	2424420	2424424	10.9
52	w	2420892	2420903	10.6	112	w	2424472	2424483	10.7
53	n	2420963	2420967	10.8	113	n	2424516	2424520	11.0
54	w	2421005	2421019	10.9	114	n	2424552	2424557	10.9
55	n	2421053	2421054	-	115	n	2424601	2424605	10.9
56	w	2421116	2421128	10.7	116	w	2424657	2424666	10.8
57	n	2421171	2421174	10.8	117	-	2424732	2424739	10.8
58	n	2421213	2421218	10.9	118	n	2424771	2424776	11.0
59	w	2421269	2421280	10.7	119	n	2424816	2424821	10.7
60	n	2421318	2421321	11.1	120	w	2424865	2424876	10.6
61	n	2421374	2421379	10.9	121	n	2424936	2424940	10.7
62	w	2421448	2421461	10.7	122	w	2425015	2425025	10.7
63	n	2421530	2421537	10.8	123	w	2425108	2425116	10.9
64	w	2421600	2421611	10.7	124	n	2425169	2425174	10.8
65	n	2421680	2421686	10.7	125	w	2425227	2425235	10.7

TABLE I (cont'd)

Outbursts of SS Aurigae

n	type	JD (12^mA)	JD (12^mD)	m	n	type	JD (12^mA)	JD (12^mD)	m
126	w	2425294	2425305	10.8	192	w	2428487	2428498	10.9
128	n	2425500	2425505	10.8	193	n	2428557	2428561	11.0
129	w	2425561	2425571	10.8	194	n	2428637	2428643	10.7
130	n	2425608	2425609	12.0	196	w	2428744	2428752	11.0
131	n	2425615	2425615	12.0	197	n	2428820	2428825	10.8
132	n	2425638	2425638	12.3	198	w	2428878	2428888	10.5
133	n	2425651	2425651	12.7	199	n	2428923	2428927	10.9
134	n	2425666	2425671	11.0	200	n	2428969	2428973	-
135	w	2425727	2425737	10.9	201	w	2429025	2429035	11.0
137	n	2425831	2425834	10.8	204	n	2429159	2429162	11.0
138	n	2425889	2425905	11.0	205	w	2429205	2429215	10.7
139	w	2425968	2425978	10.8	206	n	2429254	2429257	11.0
140	n	2426028	2426031	11.0	207	w	2429311	2429321	10.7
141	n	2426078	2426083	11.0	208	w	2429422	2429431	10.7
142	w	2426158	2426168	10.8	209	n	2429490	2429495	11.0
143	n	2426237	2426241	10.9	210	w	2429551	2429561	10.7
144	n	2426267	2426270	11.5	211	n	2429620	2429626	10.7
145	n	2426298	2426301	11.4	212	w	2429691	2429701	10.6
146	n	2426317	2426322	11.4	213	n	2429735	2429738	11.2
147	n	2426352	2416355	10.9	214	-	2429787	-------	-
148	n	2426391	2426394	11.2	215	-	-------	2429842	-
149	w	2426452	2426463	11.0	216	w	2429945	2429954	10.8
151	n	2426591	2426594	11.5	217	w	2430002	2430012	-
152	n	2426622	2426623	11.3	218	w	2430078	2430089	10.6
153	w	2426677	2426687	10.9	219	-	2430138	-------	-
154	n	2426713	2426715	11.4	220	-	2430216	-------	10.4
155	n	2426751	2426756	11.0	221	w	2430284	2430293	10.6
156	w	2426841	2426751	10.9	223	w	2430412	2430423	10.4
158	n	2426928	2426933	10.6	224	n	2430478	2430482	10.7
159	n	2426979	2426983	10.7	226	w	2430612	2430626	10.5
160	n	2427026	2427032	10.8	227	w	2430702	2430713	10.7
161	n	2427059	2427063	11.0	228	w	2430775	2430788	10.7
162	n	2427093	2427097	11.0	231	w	2430990	2431001	10.5
163	n	2427119	2427124	11.0	232	n	2431065	2431069	10.8
164	n	2427155	2427159	11.1	233	w	2431122	2431133	10.5
165	n	2427181	2427184	11.3	234	n	2431189	2431195	10.7
166	n	2427215	2427219	11.1	235	w	2431286	2431296	10.6
167	n	2427269	2427274	11.0	236	-	-------	2431377	-
168	w	2427320	2427329	10.9	237	w	2431434	2431445	10.5
169	n	2427360	2427364	11.2	238	n	2431470	2431475	-
170	n	2427411	2427415	11.1	239	n	2431524	2431530	10.6
171	n	2427441	2427444	11.2	242	n	2431746	2431751	11.1
172	n	2427492	2427496	-	243	w	2431820	2431832	10.4
173	n	2427520	2427523	11.4	245	w	2431954	2431966	10.6
174	n	2427570	2427574	10.9	246	-	2432035	-------	10.7
176	n	2427662	2427668	10.9	247	w	2432116	2432127	10.7
177	w	2427720	2427731	10.8	248	w	2432215	2432228	10.5
178	n	2427773	2427776	11.0	249	n	2432283	2432287	10.8
179	n	2427813	2427816	11.1	251	-	2432437	2432441	11.2
180	w	2427870	2427880	10.8	253	w	2432527	2432539	10.6
181	n	2427928	2427933	11.0	254	w	2432633	2432646	10.6
182	n	2427958	2427963	10.9	257	-	2432823	2432829	10.5
183	w	2428000	2428008	11.2	258	w	2432908	2432918	10.5
184	n	2428070	2428075	11.1	259	w	2433004	2433015	10.8
185	w	2428126	2428138	10.9	260	-	2433064	-------	11.4
186	n	2428190	2428194	11.0	261	n	2433123	2433148	11.3
187	n	2428239	2428244	11.2	262	w	2433210	2433218	10.4
188	n	2428286	2428292	11.3	263	w	2433272	2433284	10.6
191	?	-------	2428428	-	264	n	2433345	2433351	10.5

TABLE I (cont'd)

Outbursts of SS Aurigae

n	type	JD (12^mA)	JD (12^mD)	m	n	type	JD (12^mA)	JD (12^mD)	m
265	w	2433409	2433419	10.8	335	n	2437436	2437436	11.2
267	-	-------	2433508	-	337	w	2437554	2437562	10.7
268	n	2433545	2433549	10.6	338	n	2437604	2437607	10.3
270	w	2433621	2433632	10.4	339	n	2437636	2437639	10.8
271	n	2433677	2433682	11.0	340	n	2437664	2437669	10.8
272	n	2433711	2433714	10.5	341	n	2437690	2437694	11.1
273	n	2433752	2433754	10.5	342	w	2437739	2437749	10.8
276	w	2433891	2433902	10.8	343	n	2437791	2437795	10.9
277	n	2433941	2433945	11.2	345	w	2437900	2437909	10.7
278	n	2433989	2433990	10.5	346	n	2437959	2437963	11.3
279	n	2434033	2430438	10.8	347	n	2438003	2438008	11.3
280	w	2434089	2434099	10.7	348	w	2438060	2438068	10.6
281	n	2434137	2434142	11.0	349	n	2438143	2438147	10.9
283	n	2434217	2434220	11.2	351	w?	2438272	-------	10.8
284	w	2434267	2434278	10.7	353	n	2438403	2438407	10.7
285	n	2434342	2434348	10.8	354	n	2438456	2438460	10.7
286	n	2434381	2434385	10.7	355	w	2438512	2438520	10.7
287	n	2434417	2434421	11.0	357	-	2438655	-------	10.8
288	w	2434490	2434500	10.5	358	n	2438699	2438705	10.9
290	-	2434619	2434621	11.5	359	n	2438732	2438737	10.8
291	w	2434685	2434696	10.6	360	w	2438781	2438789	10.5
292	n	2434765	2434768	11.0	361	n	2438821	2438825	10.5
293	w	2434809	2434820	10.8	362	n	2438871	2438875	11.0
294	n	2434852	2434856	10.9	364	n	2438998	2439002	11.5
295	n	2434887	2434888	11.5	365	n?	2439037	-------	10.9
296	-	-------	-------	10.7	366	n	2439068	2439072	11.1
297	n	2435013	2435017	10.8	367	n	2439091	2439095	10.9
298	n	2435088	2435094	10.9	368	n	2439129	2439133	10.8
299	n	2435156	2435160	10.5	369	n	2439156	2439159	10.4
300	w	2435232	2435243	10.6	370	n	2439190	2439194	11.0
302	-	2435353	-------	11.3	371	n	2439236	2439241	10.7
303	w	2435440	2435451	10.8	372	n	2439321	2439324	11.3
304	n	2435498	2435503	10.5	373	n	2439355	2439355	11.6
305	w	2435548	2435561	10.6	374	n	2439417	2439422	11.2
308	w	2435731	2435741	10.9	375	n	2439452	2439456	11.3
309	n	2435774	2435778	10.5	376	n	2439486	2439490	11.3
310	w	2435852	2435864	10.6	377	n	2439509	2439512	11.4
311	n	2435922	2435927	10.5	378	n	2439528	2439532	11.0
312	-	2435985	-------	11.0	379	n	2439551	2439554	10.8
313	?	2436044	2436046	11.8	380	n	2439578	2439581	11.2
314	w	2436135	2436145	10.5	381	n	2439602	2439606	11.6
315	n	2436181	2436188	11.2	382	n	2439630	2439635	11.5
316	n	2436236	2436240	11.7	383	-	2439677	-------	12.1
317	w	2436298	2436310	10.6	384	n	2439742	2439745	11.7
318	?	2436361	2436360	12.0	385	n	2439763	2439767	11.4
319	?	2436427	2436429	11.1	386	n	2439789	2439791	11.5
321	w	2436536	2436547	10.5	387	n	2439851	2439855	11.2
322	n	2436627	2436633	10.6	388	n	2439885	2439888	11.0
323	?	-------	-------	10.5	389	n	2439910	2439913	10.8
324	?	-------	2436787	10.8	390	n	2439934	2439940	10.6
325	n	2436824	2436828	11.3	391	-	2439994	2439997	11.3
326	w	2436878	2436885	10.7	392	n	2440108	-------	11.7
327	n	2436969	2436974	11.1	393	n	2440144	2440147	10.8
328	w	2437033	2437043	10.8	394	n	2440183	2440187	10.2
330	n?	-------	-------	-	395	n	2440210	2440213	10.8
331	w	2437208	2437218	11.3	396	n	2440236	2440240	11.4
332	n	2437272	2437276	11.1	397	n	2440257	2440259	11.2
333	w	2437350	2437359	10.6	398	n	2440287	2440289	11.2
334	n	2437394	2437399	10.9	399	-	-------	2440430	10.8

TABLE I (cont'd)

Outbursts of SS Aurigae

n	type	JD (12^mA)	JD (12^mD)	m	n	type	JD (12^mA)	JD (12^mD)	m
400	n	2440470	2440474	11.2	448	n	2443140	2443143	10.8
401	n	2440514	2440520	10.8	449	n	2443185	2443189	10.8
402	n	2440569	2440574	10.6	450	w	2443238	2443248	10.7
403	w	2440678	2440688	10.5	451	n	2443289	2443291	11.0
404	n	2440765		12.5	452	w	2443363	2443370	11.1
405	n	2440792	2440796	11.2	453	n	2443393	2443395	11.2
406	n	2440827	2440831	11.2	454	w	2443427	2443437	10.7
407	-	2440866	-------	12.5	455	w	2443528	2443536	10.6
408	-	2440887	-------	12.1	456	n	2443603	2443607	10.8
409	-	2440907	-------	12.2	457	n	2443652	2443658	10.8
410	n	2440939	2440941	10.7	458	?	-------	2443723	11.0
411	n	2440980	2440982	11.7	459	n	2443774	2443779	10.9
412	-	2441007	-------	12.0	460	w	2443829	2443836	10.8
413	-	2441048	-------	12.5	461	n	2443887	2443889	11.2
414	-	2441072	-------	12.6	462	n	2443925	2443928	10.9
415	n	2441137	-------	12.1	463	n	2443957	2443962	11.0
416	n	2441207	2441211	11.5	464	w	2443996	2444006	10.9
417	n	2441266	2441268	11.7	465	w	2444137	2444147	10.4
418	-	2441329	-------	12.8	466	w	2444250	2444261	10.5
419	-	2441363	-------	12.3	467	n	2444326	2444330	10.9
420	w	2441388	2441401	10.5	468	n	2444371	2444374	10.8
421	-	2441465	-------	12.1	469	n	2444467	2444470	11.0
422	-	2441525	-------	11.6	470	n	2444502	2444505	11.0
423	n	2441589	2441595	11.0	471	n	2444534	2444538	11.1
424	-	2441660	-------	12.5	472	w	2444627	2444638	10.4
425	w	2441704	2441713	10.7	473	n	2444684	2444687	10.8
426	n	2441757	2441761	11.2	474	n	2444714	2444716	11.0
427	n	2441817	2441822	11.0	475	?	-------	2444816	11.2
428	w	2441929	2441939	10.6	476	n	2444854	2444857	10.9
429	n?	2441989	-------	12.4	477	w	2444897	2444907	10.7
430	-	2442019	-------	12.1	478	w	2445010	2445021	10.5
431	w	2442069	2442079	10.7	479	n	2445059	2445063	11.0
432	n	2442133	2442137	10.9	480	n	2445097	2445098	11.0
433	-	2442273	2442274	11.0	481	n	2445194	2445198	11.0
434	n?	2442325	2442325	11.7	482	n	2445226	2445230	11.0
435	w	2442382	2442391	10.7	483	n	2445261	2445266	10.9
436	n	2442433	2442436	11.2	484	n	2445293	2445298	10.8
437	n	2442495	2442499	10.6	485	w	2445348	2445360	10.6
438	n	2442537	2442541	11.0	486	n	2445395	2445399	10.9
439	-	2442641	-------	10.6	487	n	2445420	2445424	11.1
440	n	2442718	2442722	10.8	488	n	2445453	2445457	11.1
441	n	2442758	2442762	10.9	489	-	-------	-------	12.7
442	w	2442809	2442817	10.7	490	w	2445589	2445597	10.9
443	n	2442876	2442880	10.9	491	n	-------	-------	12.7
444	w?	2442925	2442935	10.9	492	n	-------	-------	12.9
445	-	2442983	2442985	11.2	493	n	-------	-------	12.4
446	n	2443035	2443039	10.8	494	n	2445668	2445669	11.8
447	w	2443081	2443090	10.7					

TABLE II

Correlation Analysis of Maxima of SS Aurigae

Relationship	Correlation Coefficient					
	All Maxima		Narrow Maxima		Wide Maxima	
	Width at 12^m	Magn. (max)	Width at 12^m	Magn. (max)	Width at 12^m	Magn. (max)
Length (days) of preceding min	0.43		0.18		0.01	
Length (days) of following min	0.25		0.17		0.04	
Length ($\log_{10}$) of preceding min		-0.38		-0.22		-0.47
Length ($\log_{10}$) of following min		-0.30		-0.21		-0.07
Width at 12^m		-0.55		-0.38		-0.22

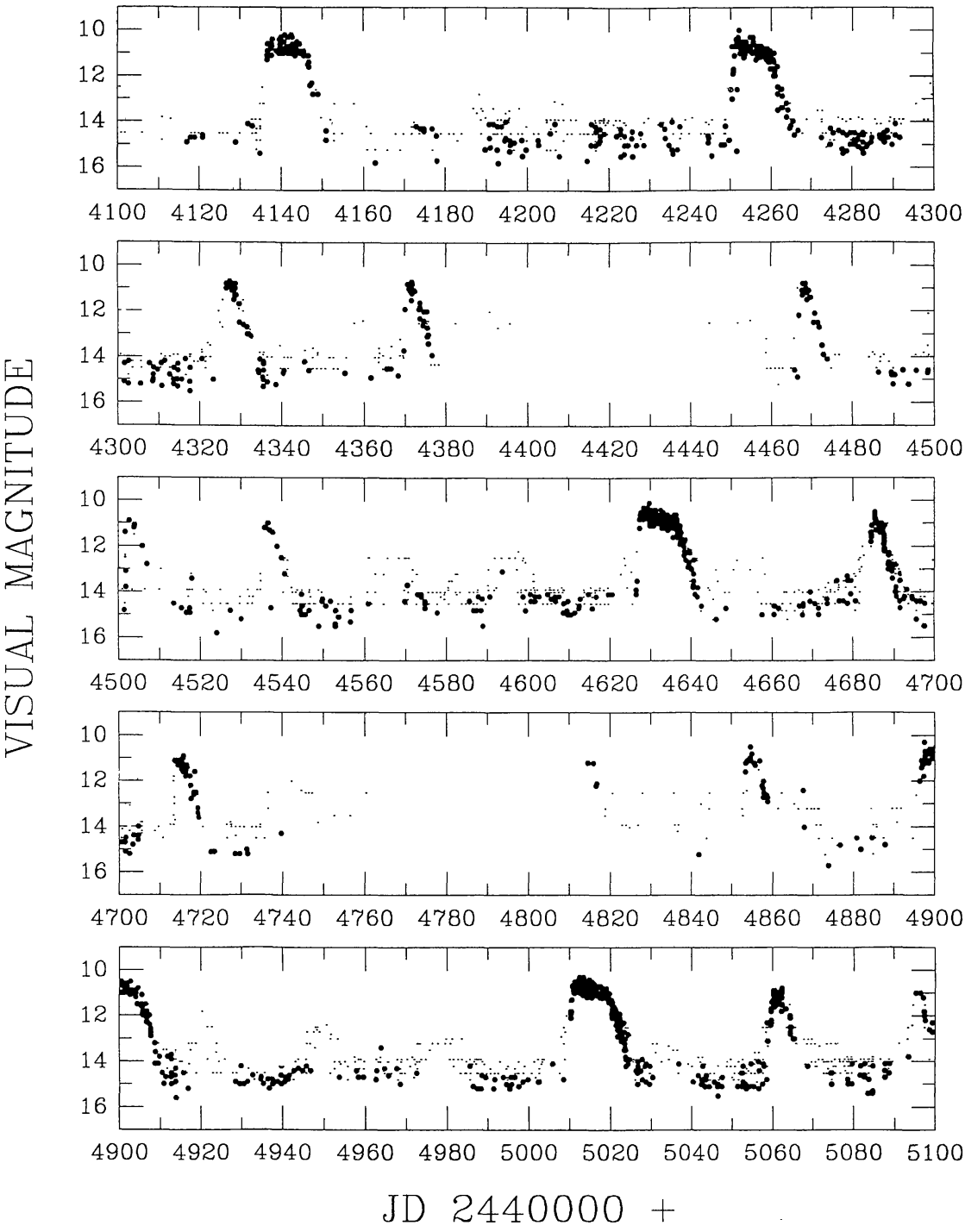

Figure 1. AAVSO light curve of SS Aurigae, August 1979 to May 1982 (JD 2444100 to 2445100). Large dots are positive observations; small dots are "fainter-than" observations (variable not visible at this limiting magnitude).

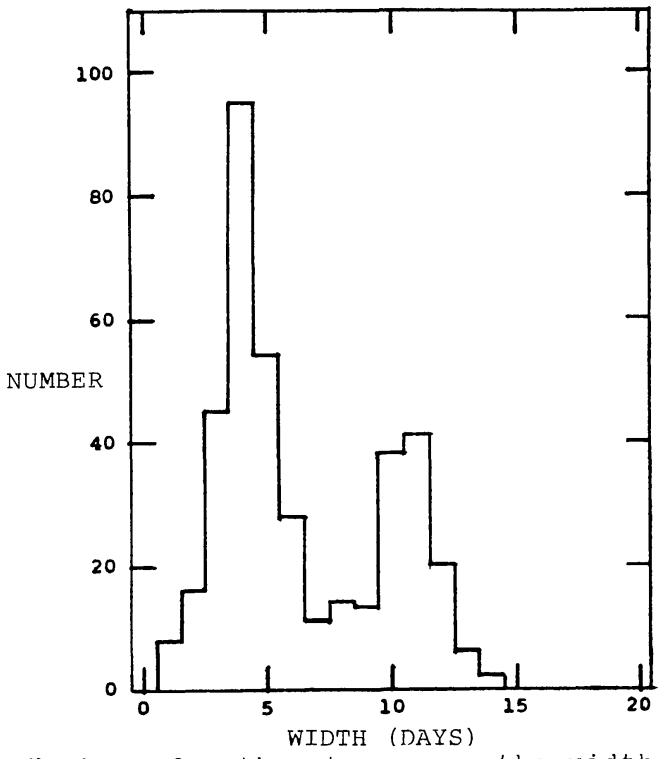

Figure 2. Number of outbursts versus the width of outburst for SS Aurigae.

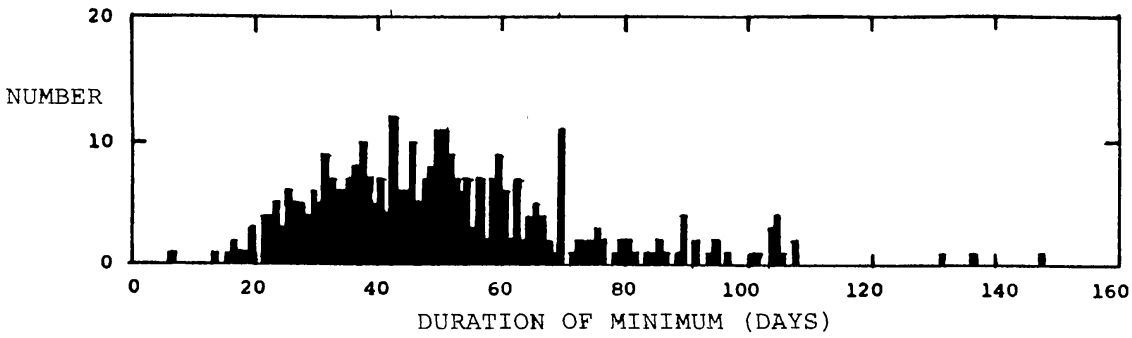

Figure 3. Frequency distribution of the periods of quiescent time of SS Aurigae, when the variable is fainter than 12^m.

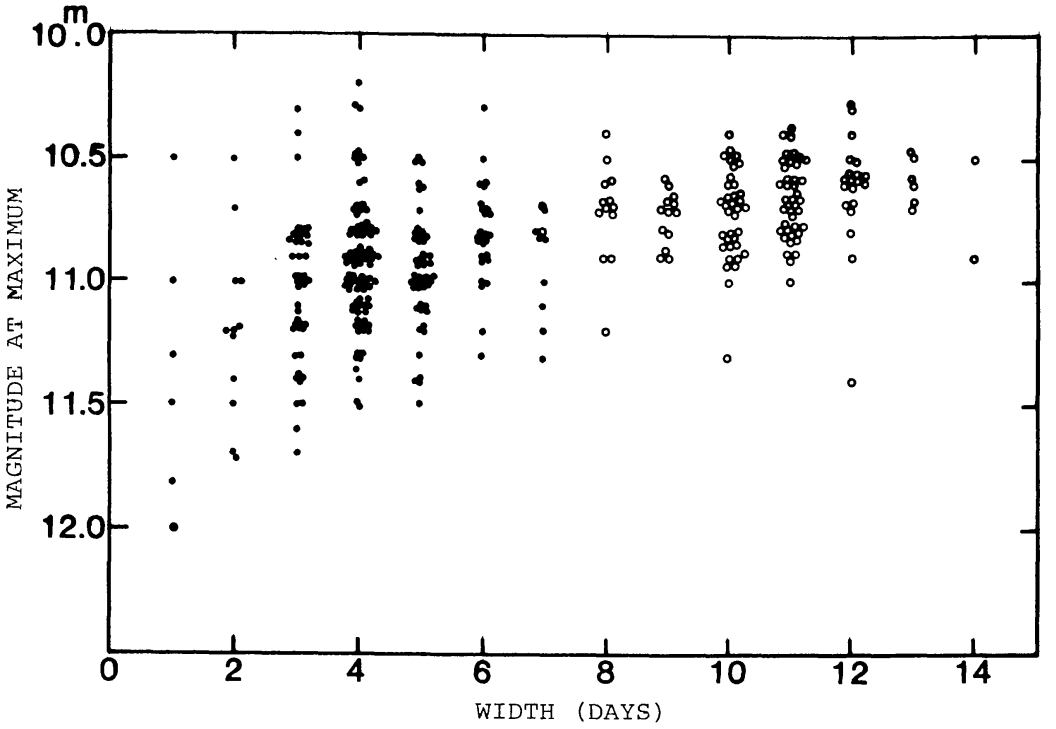

Figure 4. Magnitude at maximum versus width of the outburst for SS Aurigae. Open circles are wide maxima; solid circles are narrow maxima.

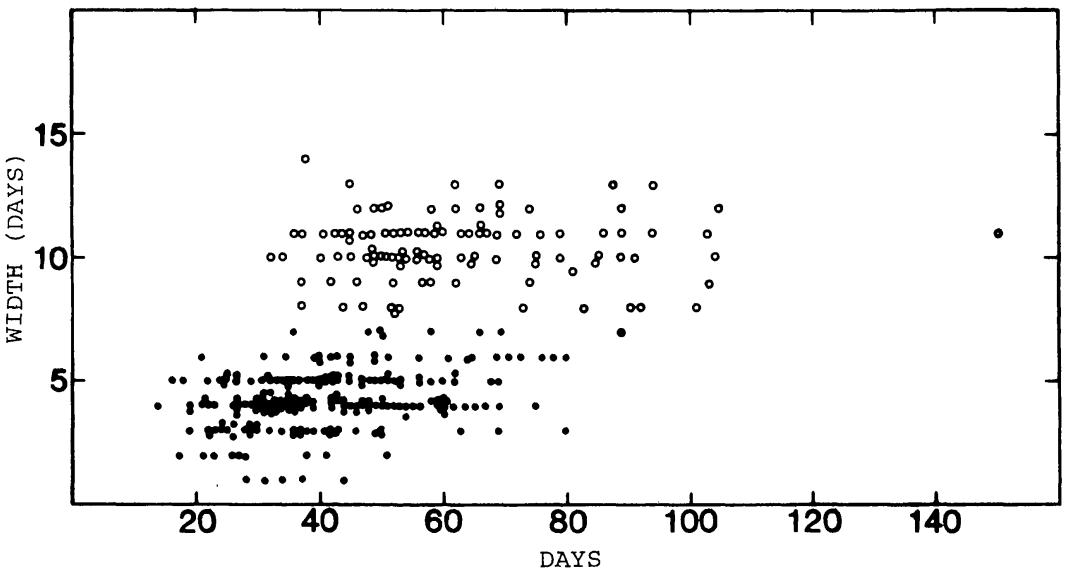

Figure 5. Width of the outburst versus length of the preceding minimum for SS Aurigae. Open circles are wide maxima; solid circles are narrow maxima.

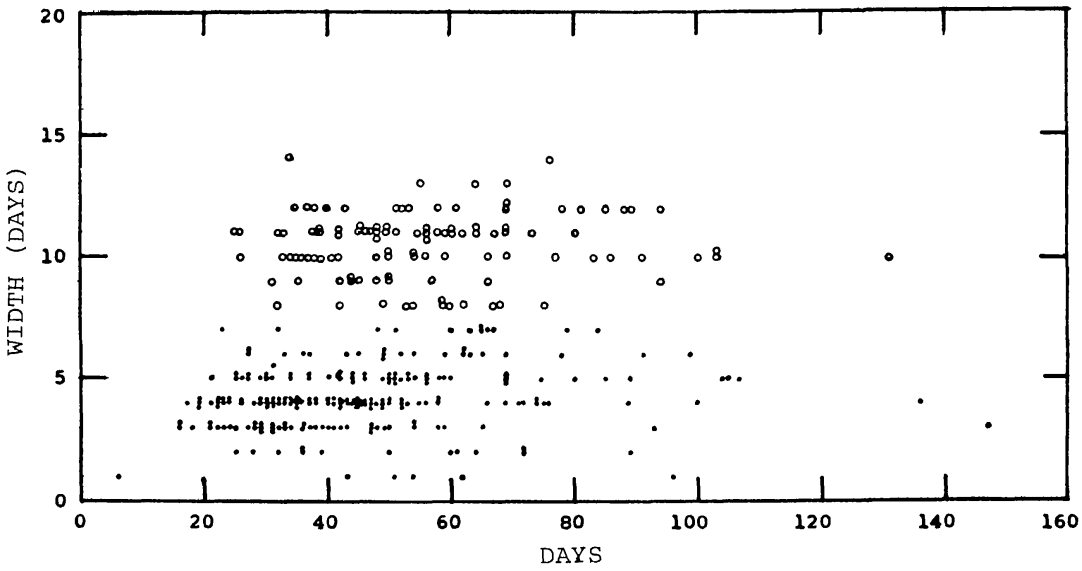

Figure 6. Width of the outburst versus length of the following minimum for SS Aurigae. Open circles are wide maxima; solid circles are narrow maxima.