

Grange Observatory

**ASTRONOMICAL ALMANAC
FOR YEAR 2018**

Introduction to Reports Generated by Astronomy Lab 2

In all reports, times and dates are in standard time (not daylight savings time or summer time). Times are in 24 hour format.

Abbreviations used in reports:

AU	Astronomical Units
D	Degrees
DEC	Declination
DIST	Distance
DSO	December Solstice
E	East
FM	Full Moon
FQ	First Quarter Moon
H	Hours
ILL FR,	
ILLUM FRAC	Illuminated Fraction
JSO	June Solstice
KM	Kilometers
LE	Lunar Eclipse
LQ	Last Quarter Moon
M	Minutes
MEQ	March Equinox
MR	Moon Rise
MS	Moon Set
N	North
NM	New Moon
RA	Right Ascension
S	South, Seconds
SE	Solar Eclipse
SEQ	September Equinox
SR	Sunrise
SS	Sunset
UT	Universal Time
W	West
ZHR	Zenithal Hourly Rate

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
 Local Time = UT + 1.00 hours Elevation: 470 meters

Calendar Report for 01/01/2018 to 31/12/2018

January 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
	SR: 08:10	SR: 08:10	SR: 08:10	SR: 08:10	SR: 08:10	SR: 08:10
	SS: 17:00	SS: 17:01	SS: 17:02	SS: 17:03	SS: 17:04	SS: 17:05
	MR: 16:43	MR: 17:48	MR: 18:59	MR: 20:13	MR: 21:26	MR: 22:37
	MS: 07:06	MS: 08:11	MS: 09:08	MS: 09:56	MS: 10:36	MS: 11:10
		FM: 03:25				
7	8	9	10	11	12	13
SR: 08:10	SR: 08:10	SR: 08:09	SR: 08:09	SR: 08:09	SR: 08:08	SR: 08:08
SS: 17:06	SS: 17:07	SS: 17:08	SS: 17:09	SS: 17:10	SS: 17:12	SS: 17:13
MR: 23:45	MR: None	MR: 00:50	MR: 01:53	MR: 02:55	MR: 03:55	MR: 04:53
MS: 11:41	MS: 12:09	MS: 12:36	MS: 13:04	MS: 13:33	MS: 14:05	MS: 14:40
	LQ: 23:27					
14	15	16	17	18	19	20
SR: 08:07	SR: 08:07	SR: 08:06	SR: 08:05	SR: 08:05	SR: 08:04	SR: 08:03
SS: 17:14	SS: 17:15	SS: 17:17	SS: 17:18	SS: 17:19	SS: 17:21	SS: 17:22
MR: 05:48	MR: 06:40	MR: 07:28	MR: 08:11	MR: 08:49	MR: 09:23	MR: 09:54
MS: 15:20	MS: 16:06	MS: 16:56	MS: 17:50	MS: 18:48	MS: 19:48	MS: 20:50
			NM: 03:18			
21	22	23	24	25	26	27
SR: 08:03	SR: 08:02	SR: 08:01	SR: 08:00	SR: 07:59	SR: 07:58	SR: 07:57
SS: 17:23	SS: 17:25	SS: 17:26	SS: 17:27	SS: 17:29	SS: 17:30	SS: 17:32
MR: 10:22	MR: 10:50	MR: 11:17	MR: 11:46	MR: 12:17	MR: 12:52	MR: 13:34
MS: 21:53	MS: 22:57	MS: None	MS: 00:02	MS: 01:10	MS: 02:20	MS: 03:31
			FQ: 23:21			
28	29	30	31			
SR: 07:56	SR: 07:55	SR: 07:54	SR: 07:53			
SS: 17:33	SS: 17:34	SS: 17:36	SS: 17:37			
MR: 14:24	MR: 15:23	MR: 16:31	MR: 17:44			
MS: 04:41	MS: 05:49	MS: 06:50	MS: 07:42			
			FM: 14:28			
			LE: 14:33			

March 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
				SR: 07:10	SR: 07:08	SR: 07:06
				SS: 18:18	SS: 18:20	SS: 18:21
				MR: 17:46	MR: 19:00	MR: 20:11
				MS: 06:58	MS: 07:33	MS: 08:05
					FM: 01:52	
4	5	6	7	8	9	10
SR: 07:04	SR: 07:03	SR: 07:01	SR: 06:59	SR: 06:57	SR: 06:55	SR: 06:54
SS: 18:23	SS: 18:24	SS: 18:25	SS: 18:27	SS: 18:28	SS: 18:29	SS: 18:31
MR: 21:20	MR: 22:27	MR: 23:31	MR: None	MR: 00:33	MR: 01:32	MR: 02:27
MS: 08:34	MS: 09:03	MS: 09:33	MS: 10:04	MS: 10:37	MS: 11:14	MS: 11:56
					LQ: 12:23	
11	12	13	14	15	16	17
SR: 06:52	SR: 06:50	SR: 06:48	SR: 06:46	SR: 06:44	SR: 06:42	SR: 06:41
SS: 18:32	SS: 18:33	SS: 18:35	SS: 18:36	SS: 18:37	SS: 18:38	SS: 18:40
MR: 03:18	MR: 04:05	MR: 04:46	MR: 05:23	MR: 05:57	MR: 06:27	MR: 06:56
MS: 12:43	MS: 13:34	MS: 14:30	MS: 15:29	MS: 16:30	MS: 17:34	MS: 18:39
						NM: 14:14
18	19	20	21	22	23	24
SR: 06:39	SR: 06:37	SR: 06:35	SR: 06:33	SR: 06:31	SR: 06:29	SR: 06:27
SS: 18:41	SS: 18:42	SS: 18:44	SS: 18:45	SS: 18:46	SS: 18:48	SS: 18:49
MR: 07:24	MR: 07:52	MR: 08:21	MR: 08:54	MR: 09:30	MR: 10:13	MR: 11:03
MS: 19:45	MS: 20:53	MS: 22:02	MS: 23:12	MS: None	MS: 00:21	MS: 01:27
						FQ: 16:36
		MEQ:17:14				
25	26	27	28	29	30	31
SR: 06:26	SR: 06:24	SR: 06:22	SR: 06:20	SR: 06:18	SR: 06:16	SR: 06:14
SS: 18:50	SS: 18:51	SS: 18:53	SS: 18:54	SS: 18:55	SS: 18:57	SS: 18:58
MR: 12:00	MR: 13:05	MR: 14:14	MR: 15:26	MR: 16:38	MR: 17:50	MR: 18:59
MS: 02:29	MS: 03:25	MS: 04:13	MS: 04:54	MS: 05:30	MS: 06:02	MS: 06:32
						FM: 13:38

April 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
SR: 06:12	SR: 06:11	SR: 06:09	SR: 06:07	SR: 06:05	SR: 06:03	SR: 06:01
SS: 18:59	SS: 19:00	SS: 19:02	SS: 19:03	SS: 19:04	SS: 19:05	SS: 19:07
MR: 20:08	MR: 21:14	MR: 22:18	MR: 23:20	MR: None	MR: 00:17	MR: 01:11
MS: 07:01	MS: 07:30	MS: 08:00	MS: 08:33	MS: 09:09	MS: 09:49	MS: 10:34
8	9	10	11	12	13	14
SR: 05:59	SR: 05:58	SR: 05:56	SR: 05:54	SR: 05:52	SR: 05:50	SR: 05:49
SS: 19:08	SS: 19:09	SS: 19:11	SS: 19:12	SS: 19:13	SS: 19:14	SS: 19:16
MR: 02:00	MR: 02:43	MR: 03:22	MR: 03:56	MR: 04:27	MR: 04:56	MR: 05:24
MS: 11:24	MS: 12:18	MS: 13:15	MS: 14:15	MS: 15:18	MS: 16:23	MS: 17:29
LQ: 08:21						
15	16	17	18	19	20	21
SR: 05:47	SR: 05:45	SR: 05:43	SR: 05:42	SR: 05:40	SR: 05:38	SR: 05:37
SS: 19:17	SS: 19:18	SS: 19:19	SS: 19:21	SS: 19:22	SS: 19:23	SS: 19:25
MR: 05:52	MR: 06:21	MR: 06:53	MR: 07:28	MR: 08:10	MR: 08:58	MR: 09:54
MS: 18:37	MS: 19:47	MS: 20:59	MS: 22:11	MS: 23:20	MS: None	MS: 00:25
	NM: 03:00					
22	23	24	25	26	27	28
SR: 05:35	SR: 05:33	SR: 05:32	SR: 05:30	SR: 05:28	SR: 05:27	SR: 05:25
SS: 19:26	SS: 19:27	SS: 19:28	SS: 19:30	SS: 19:31	SS: 19:32	SS: 19:33
MR: 10:57	MR: 12:04	MR: 13:15	MR: 14:25	MR: 15:35	MR: 16:44	MR: 17:52
MS: 01:23	MS: 02:13	MS: 02:56	MS: 03:32	MS: 04:04	MS: 04:34	MS: 05:02
FQ: 22:47						
29	30					
SR: 05:24	SR: 05:22					
SS: 19:35	SS: 19:36					
MR: 18:58	MR: 20:03					
MS: 05:30	MS: 05:59					
	FM: 01:59					

June 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
					SR: 04:48	SR: 04:47
					SS: 20:11	SS: 20:12
					MR: 22:36	MR: 23:19
					MS: 07:07	MS: 07:58
3	4	5	6	7	8	9
SR: 04:47	SR: 04:46	SR: 04:46	SR: 04:45	SR: 04:45	SR: 04:45	SR: 04:44
SS: 20:13	SS: 20:14	SS: 20:15	SS: 20:15	SS: 20:16	SS: 20:17	SS: 20:17
MR: 23:56	MR: None	MR: 00:29	MR: 00:59	MR: 01:26	MR: 01:53	MR: 02:20
MS: 08:52	MS: 09:50	MS: 10:49	MS: 11:51	MS: 12:53	MS: 13:58	MS: 15:05
			LQ: 19:34			
10	11	12	13	14	15	16
SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:44
SS: 20:18	SS: 20:19	SS: 20:19	SS: 20:20	SS: 20:20	SS: 20:20	SS: 20:21
MR: 02:48	MR: 03:19	MR: 03:55	MR: 04:37	MR: 05:29	MR: 06:29	MR: 07:37
MS: 16:14	MS: 17:27	MS: 18:40	MS: 19:53	MS: 21:02	MS: 22:02	MS: 22:53
			NM: 20:45			
17	18	19	20	21	22	23
SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:44	SR: 04:45
SS: 20:21	SS: 20:22	SS: 20:22	SS: 20:22	SS: 20:22	SS: 20:23	SS: 20:23
MR: 08:50	MR: 10:03	MR: 11:16	MR: 12:26	MR: 13:34	MR: 14:40	MR: 15:45
MS: 23:36	MS: None	MS: 00:12	MS: 00:43	MS: 01:12	MS: 01:39	MS: 02:06
			FQ: 11:53			
				JSO:11:07		
24	25	26	27	28	29	30
SR: 04:45	SR: 04:45	SR: 04:46	SR: 04:46	SR: 04:46	SR: 04:47	SR: 04:47
SS: 20:23	SS: 20:23	SS: 20:23	SS: 20:23	SS: 20:23	SS: 20:23	SS: 20:23
MR: 16:48	MR: 17:49	MR: 18:48	MR: 19:43	MR: 20:33	MR: 21:18	MR: 21:57
MS: 02:35	MS: 03:06	MS: 03:40	MS: 04:19	MS: 05:03	MS: 05:52	MS: 06:45
				FM: 05:55		

July 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
SR: 04:48	SR: 04:49	SR: 04:49	SR: 04:50	SR: 04:50	SR: 04:51	SR: 04:52
SS: 20:22	SS: 20:22	SS: 20:22	SS: 20:22	SS: 20:21	SS: 20:21	SS: 20:21
MR: 22:31	MR: 23:02	MR: 23:30	MR: 23:56	MR: None	MR: 00:22	MR: 00:48
MS: 07:42	MS: 08:40	MS: 09:41	MS: 10:42	MS: 11:44	MS: 12:49	MS: 13:55
					LQ: 08:53	
8	9	10	11	12	13	14
SR: 04:53	SR: 04:53	SR: 04:54	SR: 04:55	SR: 04:56	SR: 04:57	SR: 04:57
SS: 20:20	SS: 20:20	SS: 20:19	SS: 20:19	SS: 20:18	SS: 20:17	SS: 20:17
MR: 01:17	MR: 01:49	MR: 02:27	MR: 03:13	MR: 04:08	MR: 05:13	MR: 06:26
MS: 15:04	MS: 16:15	MS: 17:28	MS: 18:39	MS: 19:44	MS: 20:41	MS: 21:29
					NM: 03:50	
					SE: 04:05	
15	16	17	18	19	20	21
SR: 04:58	SR: 04:59	SR: 05:00	SR: 05:01	SR: 05:02	SR: 05:03	SR: 05:04
SS: 20:16	SS: 20:15	SS: 20:14	SS: 20:14	SS: 20:13	SS: 20:12	SS: 20:11
MR: 07:42	MR: 08:57	MR: 10:11	MR: 11:22	MR: 12:31	MR: 13:37	MR: 14:41
MS: 22:09	MS: 22:44	MS: 23:14	MS: 23:42	MS: None	MS: 00:10	MS: 00:38
				FQ: 20:54		
22	23	24	25	26	27	28
SR: 05:05	SR: 05:06	SR: 05:07	SR: 05:08	SR: 05:09	SR: 05:11	SR: 05:12
SS: 20:10	SS: 20:09	SS: 20:08	SS: 20:07	SS: 20:06	SS: 20:05	SS: 20:04
MR: 15:43	MR: 16:42	MR: 17:38	MR: 18:30	MR: 19:16	MR: 19:57	MR: 20:33
MS: 01:09	MS: 01:42	MS: 02:19	MS: 03:01	MS: 03:48	MS: 04:40	MS: 05:35
					FM: 21:22	
					LE: 21:23	
29	30	31				
SR: 05:13	SR: 05:14	SR: 05:15				
SS: 20:02	SS: 20:01	SS: 20:00				
MR: 21:05	MR: 21:34	MR: 22:00				
MS: 06:34	MS: 07:34	MS: 08:35				

August 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
			SR: 05:16	SR: 05:17	SR: 05:18	SR: 05:20
			SS: 19:59	SS: 19:57	SS: 19:56	SS: 19:55
			MR: 22:26	MR: 22:51	MR: 23:18	MR: 23:48
			MS: 09:36	MS: 10:39	MS: 11:43	MS: 12:50
						LQ: 19:20
5	6	7	8	9	10	11
SR: 05:21	SR: 05:22	SR: 05:23	SR: 05:24	SR: 05:25	SR: 05:27	SR: 05:28
SS: 19:53	SS: 19:52	SS: 19:51	SS: 19:49	SS: 19:48	SS: 19:46	SS: 19:45
MR: None	MR: 00:22	MR: 01:03	MR: 01:52	MR: 02:51	MR: 03:59	MR: 05:14
MS: 13:58	MS: 15:08	MS: 16:17	MS: 17:24	MS: 18:24	MS: 19:17	MS: 20:01
						NM: 10:59
						SE: 10:46
12	13	14	15	16	17	18
SR: 05:29	SR: 05:30	SR: 05:31	SR: 05:33	SR: 05:34	SR: 05:35	SR: 05:36
SS: 19:43	SS: 19:42	SS: 19:40	SS: 19:38	SS: 19:37	SS: 19:35	SS: 19:34
MR: 06:31	MR: 07:48	MR: 09:02	MR: 10:14	MR: 11:23	MR: 12:30	MR: 13:34
MS: 20:39	MS: 21:12	MS: 21:42	MS: 22:11	MS: 22:40	MS: 23:10	MS: 23:42
						FQ: 08:50
19	20	21	22	23	24	25
SR: 05:37	SR: 05:39	SR: 05:40	SR: 05:41	SR: 05:42	SR: 05:43	SR: 05:45
SS: 19:32	SS: 19:30	SS: 19:29	SS: 19:27	SS: 19:25	SS: 19:23	SS: 19:22
MR: 14:35	MR: 15:33	MR: 16:26	MR: 17:14	MR: 17:57	MR: 18:34	MR: 19:08
MS: None	MS: 00:18	MS: 00:59	MS: 01:44	MS: 02:34	MS: 03:29	MS: 04:27
26	27	28	29	30	31	
SR: 05:46	SR: 05:47	SR: 05:48	SR: 05:49	SR: 05:51	SR: 05:52	
SS: 19:20	SS: 19:18	SS: 19:16	SS: 19:15	SS: 19:13	SS: 19:11	
MR: 19:37	MR: 20:04	MR: 20:30	MR: 20:56	MR: 21:22	MR: 21:50	
MS: 05:26	MS: 06:28	MS: 07:30	MS: 08:32	MS: 09:36	MS: 10:41	
FM: 12:58						

September 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 SR: 05:53 SS: 19:09 MR: 22:22 MS: 11:48
2 SR: 05:54 SS: 19:07 MR: 22:59 MS: 12:56	3 SR: 05:55 SS: 19:05 MR: 23:43 MS: 14:04 LQ: 03:39	4 SR: 05:57 SS: 19:04 MR: None MS: 15:10	5 SR: 05:58 SS: 19:02 MR: 00:36 MS: 16:11	6 SR: 05:59 SS: 19:00 MR: 01:38 MS: 17:05	7 SR: 06:00 SS: 18:58 MR: 02:48 MS: 17:52	8 SR: 06:01 SS: 18:56 MR: 04:03 MS: 18:32
9 SR: 06:03 SS: 18:54 MR: 05:20 MS: 19:07 NM: 19:03	10 SR: 06:04 SS: 18:52 MR: 06:36 MS: 19:39	11 SR: 06:05 SS: 18:50 MR: 07:51 MS: 20:08	12 SR: 06:06 SS: 18:48 MR: 09:03 MS: 20:38	13 SR: 06:07 SS: 18:47 MR: 10:13 MS: 21:08	14 SR: 06:09 SS: 18:45 MR: 11:20 MS: 21:40	15 SR: 06:10 SS: 18:43 MR: 12:24 MS: 22:15
16 SR: 06:11 SS: 18:41 MR: 13:24 MS: 22:54	17 SR: 06:12 SS: 18:39 MR: 14:20 MS: 23:39 FQ: 00:16	18 SR: 06:13 SS: 18:37 MR: 15:10 MS: None	19 SR: 06:15 SS: 18:35 MR: 15:55 MS: 00:27	20 SR: 06:16 SS: 18:33 MR: 16:34 MS: 01:21	21 SR: 06:17 SS: 18:31 MR: 17:09 MS: 02:17	22 SR: 06:18 SS: 18:29 MR: 17:39 MS: 03:17
23 SR: 06:19 SS: 18:27 MR: 18:07 MS: 04:18 SEQ: 02:53	24 SR: 06:21 SS: 18:26 MR: 18:34 MS: 05:20	25 SR: 06:22 SS: 18:24 MR: 18:59 MS: 06:23 FM: 03:55	26 SR: 06:23 SS: 18:22 MR: 19:26 MS: 07:28	27 SR: 06:24 SS: 18:20 MR: 19:53 MS: 08:34	28 SR: 06:26 SS: 18:18 MR: 20:24 MS: 09:41	29 SR: 06:27 SS: 18:16 MR: 20:59 MS: 10:49
30 SR: 06:28 SS: 18:14 MR: 21:40 MS: 11:57						

October 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
	SR: 06:29	SR: 06:30	SR: 06:32	SR: 06:33	SR: 06:34	SR: 06:35
	SS: 18:12	SS: 18:10	SS: 18:09	SS: 18:07	SS: 18:05	SS: 18:03
	MR: 22:29	MR: 23:27	MR: None	MR: 00:32	MR: 01:44	MR: 02:58
	MS: 13:03	MS: 14:04	MS: 14:59	MS: 15:47	MS: 16:28	MS: 17:04
		LQ: 10:47				
7	8	9	10	11	12	13
SR: 06:37	SR: 06:38	SR: 06:39	SR: 06:41	SR: 06:42	SR: 06:43	SR: 06:44
SS: 18:01	SS: 17:59	SS: 17:57	SS: 17:56	SS: 17:54	SS: 17:52	SS: 17:50
MR: 04:13	MR: 05:27	MR: 06:40	MR: 07:51	MR: 09:01	MR: 10:08	MR: 11:12
MS: 17:36	MS: 18:06	MS: 18:35	MS: 19:04	MS: 19:36	MS: 20:10	MS: 20:48
		NM: 04:48				
14	15	16	17	18	19	20
SR: 06:46	SR: 06:47	SR: 06:48	SR: 06:50	SR: 06:51	SR: 06:52	SR: 06:54
SS: 17:49	SS: 17:47	SS: 17:45	SS: 17:43	SS: 17:42	SS: 17:40	SS: 17:38
MR: 12:11	MR: 13:04	MR: 13:51	MR: 14:33	MR: 15:09	MR: 15:41	MR: 16:09
MS: 21:31	MS: 22:18	MS: 23:10	MS: None	MS: 00:06	MS: 01:04	MS: 02:05
		FQ: 19:02				
21	22	23	24	25	26	27
SR: 06:55	SR: 06:56	SR: 06:58	SR: 06:59	SR: 07:00	SR: 07:02	SR: 07:03
SS: 17:37	SS: 17:35	SS: 17:33	SS: 17:32	SS: 17:30	SS: 17:29	SS: 17:27
MR: 16:36	MR: 17:02	MR: 17:27	MR: 17:55	MR: 18:24	MR: 18:58	MR: 19:38
MS: 03:07	MS: 04:10	MS: 05:14	MS: 06:21	MS: 07:29	MS: 08:38	MS: 09:48
			FM: 17:48			
28	29	30	31			
SR: 07:04	SR: 07:06	SR: 07:07	SR: 07:09			
SS: 17:25	SS: 17:24	SS: 17:22	SS: 17:21			
MR: 20:25	MR: 21:21	MR: 22:24	MR: 23:32			
MS: 10:57	MS: 12:01	MS: 12:58	MS: 13:47			
			LQ: 17:42			

November 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
				SR: 07:10	SR: 07:11	SR: 07:13
				SS: 17:20	SS: 17:18	SS: 17:17
				MR: None	MR: 00:44	MR: 01:57
				MS: 14:30	MS: 15:06	MS: 15:38
4	5	6	7	8	9	10
SR: 07:14	SR: 07:15	SR: 07:17	SR: 07:18	SR: 07:20	SR: 07:21	SR: 07:22
SS: 17:15	SS: 17:14	SS: 17:13	SS: 17:11	SS: 17:10	SS: 17:09	SS: 17:08
MR: 03:10	MR: 04:21	MR: 05:32	MR: 06:42	MR: 07:50	MR: 08:56	MR: 09:58
MS: 16:07	MS: 16:35	MS: 17:03	MS: 17:33	MS: 18:05	MS: 18:41	MS: 19:22
			NM: 17:03			
11	12	13	14	15	16	17
SR: 07:24	SR: 07:25	SR: 07:26	SR: 07:28	SR: 07:29	SR: 07:31	SR: 07:32
SS: 17:07	SS: 17:06	SS: 17:04	SS: 17:03	SS: 17:02	SS: 17:01	SS: 17:00
MR: 10:55	MR: 11:46	MR: 12:30	MR: 13:08	MR: 13:42	MR: 14:11	MR: 14:38
MS: 20:08	MS: 20:59	MS: 21:54	MS: 22:51	MS: 23:51	MS: None	MS: 00:51
				FQ: 15:54		
18	19	20	21	22	23	24
SR: 07:33	SR: 07:35	SR: 07:36	SR: 07:37	SR: 07:39	SR: 07:40	SR: 07:41
SS: 16:59	SS: 16:59	SS: 16:58	SS: 16:57	SS: 16:56	SS: 16:55	SS: 16:55
MR: 15:03	MR: 15:28	MR: 15:54	MR: 16:23	MR: 16:55	MR: 17:32	MR: 18:18
MS: 01:53	MS: 02:57	MS: 04:02	MS: 05:09	MS: 06:19	MS: 07:31	MS: 08:42
					FM: 06:41	
25	26	27	28	29	30	
SR: 07:42	SR: 07:44	SR: 07:45	SR: 07:46	SR: 07:47	SR: 07:48	
SS: 16:54	SS: 16:53	SS: 16:53	SS: 16:52	SS: 16:52	SS: 16:51	
MR: 19:11	MR: 20:13	MR: 21:22	MR: 22:34	MR: 23:47	MR: None	
MS: 09:51	MS: 10:53	MS: 11:46	MS: 12:32	MS: 13:10	MS: 13:42	
					LQ: 01:21	

December 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 SR: 07:50 SS: 16:51 MR: 01:00 MS: 14:11
2 SR: 07:51 SS: 16:51 MR: 02:10 MS: 14:39	3 SR: 07:52 SS: 16:50 MR: 03:20 MS: 15:06	4 SR: 07:53 SS: 16:50 MR: 04:28 MS: 15:34	5 SR: 07:54 SS: 16:50 MR: 05:36 MS: 16:04	6 SR: 07:55 SS: 16:50 MR: 06:42 MS: 16:38	7 SR: 07:56 SS: 16:49 MR: 07:46 MS: 17:17 NM: 08:22	8 SR: 07:57 SS: 16:49 MR: 08:45 MS: 18:00
9 SR: 07:58 SS: 16:49 MR: 09:39 MS: 18:49	10 SR: 07:59 SS: 16:49 MR: 10:26 MS: 19:43	11 SR: 08:00 SS: 16:49 MR: 11:07 MS: 20:39	12 SR: 08:01 SS: 16:49 MR: 11:42 MS: 21:38	13 SR: 08:02 SS: 16:49 MR: 12:13 MS: 22:38	14 SR: 08:02 SS: 16:50 MR: 12:40 MS: 23:39	15 SR: 08:03 SS: 16:50 MR: 13:06 MS: None FQ: 12:50
16 SR: 08:04 SS: 16:50 MR: 13:30 MS: 00:40	17 SR: 08:05 SS: 16:50 MR: 13:55 MS: 01:43	18 SR: 08:05 SS: 16:51 MR: 14:21 MS: 02:48	19 SR: 08:06 SS: 16:51 MR: 14:50 MS: 03:56	20 SR: 08:06 SS: 16:52 MR: 15:25 MS: 05:06	21 SR: 08:07 SS: 16:52 MR: 16:06 MS: 06:18 DSO:23:24	22 SR: 08:08 SS: 16:52 MR: 16:56 MS: 07:29 FM: 18:50
23 SR: 08:08 SS: 16:53 MR: 17:56 MS: 08:37	24 SR: 08:08 SS: 16:54 MR: 19:04 MS: 09:37	25 SR: 08:09 SS: 16:54 MR: 20:18 MS: 10:27	26 SR: 08:09 SS: 16:55 MR: 21:34 MS: 11:10	27 SR: 08:09 SS: 16:56 MR: 22:49 MS: 11:45	28 SR: 08:10 SS: 16:56 MR: None MS: 12:16	29 SR: 08:10 SS: 16:57 MR: 00:01 MS: 12:44 LQ: 10:37
30 SR: 08:10 SS: 16:58 MR: 01:12 MS: 13:11	31 SR: 08:10 SS: 16:59 MR: 02:20 MS: 13:39					

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Seasons Report for 2018

MEQ: 20/03/2018 17:14	Winter Length:	88.98 days
JSO: 21/06/2018 11:07	Spring Length:	92.75 days
SEQ: 23/09/2018 02:53	Summer Length:	93.66 days
DSO: 21/12/2018 23:24	Autumn Length:	89.85 days

Dates of Easter Report for 2018

01/04/2018

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Lunar Eclipse Report for 2018

Lunar eclipse on 31/01/2018

Moon rise: 17:44
Moon set: 07:42
Magnitude: 1.32
Partial phase begins: 12:52
Total phase begins: 13:55
Time of maximum eclipse: 14:33
Total phase ends: 15:11
Partial phase ends: 16:14

Lunar eclipse on 27/07/2018

Moon rise: 19:57
Moon set: 04:40
Magnitude: 1.61
Partial phase begins: 19:26
Total phase begins: 20:32
Time of maximum eclipse: 21:23
Total phase ends: 22:15
Partial phase ends: 23:20

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Solar Eclipse Report for 2018

Solar eclipse on 15/02/2018
Sun rise: 07:33
Sun set: 17:59
Time of maximum eclipse: 21:53
Eclipse is partial, maximum magnitude = 0.60
Eclipse is visible in the southern hemisphere

Solar eclipse on 13/07/2018
Sun rise: 04:57
Sun set: 20:17
Time of maximum eclipse: 04:05
Eclipse is partial, maximum magnitude = 0.34
Eclipse is visible in the southern hemisphere

Solar eclipse on 11/08/2018
Sun rise: 05:28
Sun set: 19:45
Time of maximum eclipse: 10:46
Eclipse is partial, maximum magnitude = 0.73
Eclipse is visible in the northern hemisphere

The time of maximum eclipse (above) does not necessarily specify when the eclipse will be maximal when viewed from the specified location.

To see how the eclipse will look at the specified location, run a Planetarium movie of the eclipse.

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
 Local Time = UT + 1.00 hours Elevation: 470 meters

Planet View Info Report for 01/01/2018 to 31/12/2018

Mercury

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	06:24	15:30	17h08m24s	-20°53'30"	22°38'21"	0.617	0.99888
08/01/2018	06:38	15:30	17h42m00s	-22°22'48"	21°49'19"	0.756	1.13064
15/01/2018	06:56	15:39	18h22m33s	-23°19'06"	19°35'53"	0.841	1.23497
22/01/2018	07:13	15:56	19h06m46s	-23°22'57"	16°38'13"	0.898	1.31292
29/01/2018	07:26	16:20	19h53m00s	-22°25'06"	13°08'43"	0.938	1.36656
05/02/2018	07:36	16:51	20h40m23s	-20°20'37"	9°09'07"	0.969	1.39662
12/02/2018	07:41	17:27	21h28m25s	-17°06'42"	4°42'04"	0.991	1.40126
19/02/2018	07:42	18:08	22h16m50s	-12°42'56"	2°15'24"	0.997	1.37484
26/02/2018	07:39	18:52	23h05m12s	-7°14'32"	7°22'01"	0.966	1.30682
05/03/2018	07:33	19:36	23h51m41s	-1°04'08"	13°18'53"	0.846	1.18446
12/03/2018	07:21	20:09	0h30m55s	4°47'47"	17°40'58"	0.602	1.00943
19/03/2018	07:00	20:18	0h53m59s	8°46'48"	17°41'57"	0.304	0.81966
26/03/2018	06:29	19:50	0h54m51s	9°35'42"	11°34'12"	0.081	0.67008
02/04/2018	05:56	18:55	0h38m45s	7°12'21"	2°49'54"	0.004	0.59523
09/04/2018	05:27	17:58	0h22m21s	3°36'30"	12°34'48"	0.066	0.59734
16/04/2018	05:05	17:19	0h18m44s	1°14'25"	21°10'53"	0.193	0.65417
23/04/2018	04:50	17:03	0h29m26s	0°55'49"	25°45'09"	0.324	0.74122
30/04/2018	04:38	17:05	0h51m12s	2°26'06"	27°01'18"	0.442	0.84355
07/05/2018	04:29	17:20	1h21m13s	5°19'14"	25°48'10"	0.551	0.95375
14/05/2018	04:22	17:47	1h58m15s	9°12'19"	22°34'54"	0.663	1.06708
21/05/2018	04:19	18:24	2h42m31s	13°43'37"	17°33'03"	0.785	1.17695
28/05/2018	04:23	19:12	3h35m08s	18°24'22"	10°46'17"	0.911	1.26938
04/06/2018	04:37	20:07	4h36m30s	22°26'38"	2°36'14"	0.994	1.31926
11/06/2018	05:03	20:57	5h42m49s	24°48'02"	6°13'20"	0.968	1.30347
18/06/2018	05:39	21:32	6h46m26s	24°57'13"	13°55'00"	0.852	1.22840
25/06/2018	06:16	21:48	7h41m41s	23°16'06"	19°54'36"	0.717	1.12198
02/07/2018	06:48	21:50	8h26m52s	20°26'31"	24°01'23"	0.592	1.00634
09/07/2018	07:11	21:40	9h01m47s	17°06'42"	26°09'50"	0.478	0.89252
16/07/2018	07:22	21:20	9h25m56s	13°50'13"	26°02'26"	0.363	0.78613
23/07/2018	07:17	20:52	9h37m46s	11°12'18"	23°04'09"	0.240	0.69291
30/07/2018	06:51	20:15	9h35m09s	9°53'55"	16°34'22"	0.115	0.62344
06/08/2018	06:05	19:34	9h18m59s	10°29'02"	7°16'31"	0.023	0.59647
13/08/2018	05:08	18:58	8h59m22s	12°39'36"	7°50'24"	0.032	0.63451
20/08/2018	04:25	18:36	8h53m18s	14°57'29"	15°34'08"	0.179	0.74754
27/08/2018	04:12	18:31	9h10m50s	15°48'18"	18°18'56"	0.438	0.91990
03/09/2018	04:30	18:36	9h49m21s	14°17'14"	15°48'23"	0.725	1.10894
10/09/2018	05:09	18:40	10h38m13s	10°29'12"	10°12'26"	0.918	1.26250
17/09/2018	05:52	18:40	11h27m44s	5°21'33"	3°58'36"	0.991	1.35707
24/09/2018	06:33	18:37	12h14m15s	-0°09'41"	2°44'30"	0.996	1.40018
01/10/2018	07:11	18:31	12h57m45s	-5°33'06"	7°41'35"	0.976	1.40558
08/10/2018	07:46	18:24	13h39m14s	-10°33'25"	12°10'09"	0.944	1.38239
15/10/2018	08:18	18:17	14h19m32s	-15°01'47"	16°02'14"	0.903	1.33488
22/10/2018	08:47	18:12	14h59m03s	-18°51'00"	19°18'08"	0.851	1.26416
29/10/2018	09:12	18:08	15h37m25s	-21°52'58"	21°50'47"	0.778	1.16949
05/11/2018	09:30	18:05	16h12m40s	-23°57'15"	23°14'59"	0.667	1.04981
12/11/2018	09:33	17:59	16h39m29s	-24°48'42"	22°23'02"	0.490	0.90785
19/11/2018	09:06	17:40	16h46m10s	-24°01'15"	16°40'12"	0.228	0.76334
26/11/2018	07:56	17:01	16h20m45s	-21°01'28"	3°18'22"	0.008	0.67951
03/12/2018	06:41	16:18	15h47m52s	-17°34'12"	12°18'49"	0.131	0.73309
10/12/2018	06:11	15:52	15h45m40s	-17°06'39"	19°59'20"	0.440	0.88503
17/12/2018	06:16	15:41	16h09m09s	-18°53'14"	21°11'48"	0.671	1.04689
24/12/2018	06:35	15:39	16h45m05s	-21°08'07"	19°34'17"	0.806	1.18170
31/12/2018	06:59	15:45	17h26m59s	-22°58'04"	16°50'07"	0.885	1.28406

Venus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	08:07	16:47	18h37m16s	-23°37'44"	2°01'55"	0.999	1.70917
08/01/2018	08:15	17:01	19h15m34s	-23°01'41"	0°47'06"	1.000	1.71095
15/01/2018	08:19	17:18	19h53m21s	-21°51'00"	1°40'06"	1.000	1.71082
22/01/2018	08:19	17:36	20h30m21s	-20°08'05"	3°15'02"	0.999	1.70872
29/01/2018	08:17	17:55	21h06m23s	-17°56'19"	4°53'37"	0.997	1.70466
05/02/2018	08:13	18:14	21h41m23s	-15°19'38"	6°33'05"	0.994	1.69869
12/02/2018	08:06	18:33	22h15m25s	-12°22'18"	8°12'53"	0.991	1.69077
19/02/2018	07:58	18:53	22h48m35s	-9°08'44"	9°52'56"	0.986	1.68077
26/02/2018	07:49	19:11	23h21m02s	-5°43'24"	11°33'24"	0.981	1.66863
05/03/2018	07:39	19:30	23h53m00s	-2°10'41"	13°14'16"	0.975	1.65436
12/03/2018	07:28	19:49	0h24m44s	1°25'13"	14°55'28"	0.968	1.63792
19/03/2018	07:18	20:07	0h56m26s	5°00'06"	16°37'01"	0.960	1.61917
26/03/2018	07:08	20:26	1h28m23s	8°29'44"	18°19'01"	0.951	1.59800
02/04/2018	06:59	20:45	2h00m46s	11°49'50"	20°01'24"	0.940	1.57441
09/04/2018	06:51	21:04	2h33m47s	14°56'11"	21°43'56"	0.929	1.54840
16/04/2018	06:44	21:24	3h07m36s	17°44'34"	23°26'28"	0.916	1.51990
23/04/2018	06:39	21:42	3h42m16s	20°10'46"	25°08'56"	0.902	1.48882
30/04/2018	06:37	22:00	4h17m46s	22°10'45"	26°51'07"	0.887	1.45521
07/05/2018	06:38	22:17	4h53m59s	23°41'05"	28°32'34"	0.871	1.41915
14/05/2018	06:42	22:31	5h30m44s	24°38'58"	30°12'55"	0.853	1.38069
21/05/2018	06:49	22:42	6h07m41s	25°02'36"	31°51'56"	0.834	1.33983
28/05/2018	06:59	22:50	6h44m28s	24°51'24"	33°29'13"	0.814	1.29669
04/06/2018	07:12	22:54	7h20m44s	24°06'03"	35°04'06"	0.793	1.25145
11/06/2018	07:27	22:54	7h56m09s	22°48'20"	36°36'00"	0.770	1.20430
18/06/2018	07:43	22:51	8h30m30s	21°01'03"	38°04'27"	0.747	1.15532
25/06/2018	08:00	22:45	9h03m35s	18°47'43"	39°28'49"	0.722	1.10467
02/07/2018	08:16	22:37	9h35m20s	16°12'17"	40°48'09"	0.696	1.05260
09/07/2018	08:32	22:27	10h05m46s	13°18'45"	42°01'26"	0.669	0.99938
16/07/2018	08:47	22:15	10h34m58s	10°11'07"	43°07'44"	0.640	0.94515
23/07/2018	09:01	22:01	11h02m58s	6°53'24"	44°05'50"	0.611	0.89008
30/07/2018	09:14	21:46	11h29m52s	3°29'30"	44°53'56"	0.579	0.83443
06/08/2018	09:26	21:31	11h55m44s	0°03'05"	45°29'49"	0.546	0.77850
13/08/2018	09:37	21:14	12h20m35s	-3°22'22"	45°51'04"	0.512	0.72251
20/08/2018	09:47	20:57	12h44m23s	-6°43'16"	45°54'25"	0.474	0.66666
27/08/2018	09:55	20:38	13h06m56s	-9°55'53"	45°35'04"	0.434	0.61127
03/09/2018	10:01	20:19	13h27m58s	-12°56'27"	44°46'42"	0.391	0.55682
10/09/2018	10:05	19:58	13h46m58s	-15°41'06"	43°21'22"	0.343	0.50378
17/09/2018	10:04	19:35	14h03m14s	-18°05'07"	41°08'16"	0.291	0.45274
24/09/2018	09:58	19:11	14h15m37s	-20°02'18"	37°52'27"	0.234	0.40462
01/10/2018	09:44	18:43	14h22m47s	-21°24'10"	33°15'49"	0.172	0.36084
08/10/2018	09:19	18:13	14h23m26s	-21°59'21"	27°01'00"	0.110	0.32325
15/10/2018	08:42	17:41	14h16m55s	-21°34'10"	19°01'54"	0.053	0.29422
22/10/2018	07:54	17:09	14h04m22s	-19°59'55"	10°03'45"	0.015	0.27651
29/10/2018	07:00	16:39	13h49m31s	-17°28'03"	6°57'55"	0.007	0.27246
05/11/2018	06:08	16:13	13h37m23s	-14°36'27"	15°12'32"	0.034	0.28259
12/11/2018	05:24	15:50	13h31m29s	-12°09'03"	24°00'57"	0.085	0.30533
19/11/2018	04:52	15:31	13h32m53s	-10°32'10"	31°14'09"	0.148	0.33805
26/11/2018	04:29	15:15	13h40m58s	-9°51'18"	36°41'37"	0.213	0.37809
03/12/2018	04:16	15:00	13h54m34s	-9°59'42"	40°37'31"	0.274	0.42318
10/12/2018	04:10	14:48	14h12m29s	-10°45'59"	43°21'15"	0.330	0.47159
17/12/2018	04:09	14:36	14h33m45s	-11°58'42"	45°09'46"	0.381	0.52219
24/12/2018	04:12	14:26	14h57m45s	-13°27'50"	46°15'49"	0.426	0.57424
31/12/2018	04:18	14:18	15h24m04s	-15°04'39"	46°49'06"	0.468	0.62711

Mars

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	03:37	13:36	14h47m57s	-15°13'43"	56°20'39"	0.932	1.95578
08/01/2018	03:33	13:20	15h05m17s	-16°31'04"	59°06'56"	0.927	1.89375
15/01/2018	03:28	13:04	15h22m46s	-17°42'51"	61°54'04"	0.922	1.83023
22/01/2018	03:23	12:49	15h40m25s	-18°48'35"	64°42'00"	0.917	1.76542
29/01/2018	03:18	12:35	15h58m11s	-19°47'54"	67°30'31"	0.912	1.69963
05/02/2018	03:13	12:21	16h16m04s	-20°40'33"	70°19'31"	0.907	1.63310
12/02/2018	03:07	12:07	16h34m02s	-21°26'17"	73°09'16"	0.902	1.56598
19/02/2018	03:00	11:55	16h52m02s	-22°04'54"	76°00'02"	0.898	1.49847
26/02/2018	02:53	11:42	17h10m00s	-22°36'20"	78°51'47"	0.894	1.43089
05/03/2018	02:46	11:31	17h27m54s	-23°00'39"	81°44'32"	0.890	1.36347
12/03/2018	02:37	11:19	17h45m41s	-23°17'59"	84°38'49"	0.886	1.29636
19/03/2018	02:28	11:08	18h03m16s	-23°28'36"	87°35'19"	0.883	1.22975
26/03/2018	02:18	10:58	18h20m34s	-23°32'55"	90°34'27"	0.881	1.16392
02/04/2018	02:08	10:47	18h37m32s	-23°31'28"	93°36'35"	0.879	1.09911
09/04/2018	01:56	10:37	18h54m04s	-23°24'54"	96°42'43"	0.879	1.03545
16/04/2018	01:43	10:26	19h10m05s	-23°14'05"	99°54'14"	0.879	0.97309
23/04/2018	01:30	10:15	19h25m27s	-23°00'00"	103°12'25"	0.880	0.91230
30/04/2018	01:16	10:04	19h40m07s	-22°43'48"	106°38'23"	0.882	0.85333
07/05/2018	01:01	09:51	19h53m56s	-22°26'43"	110°13'59"	0.885	0.79631
14/05/2018	00:44	09:38	20h06m45s	-22°10'18"	114°01'59"	0.890	0.74142
21/05/2018	00:27	09:23	20h18m24s	-21°56'13"	118°05'06"	0.897	0.68898
28/05/2018	00:09	09:06	20h28m42s	-21°46'08"	122°25'52"	0.905	0.63930
04/06/2018	23:47	08:48	20h37m27s	-21°41'50"	127°07'34"	0.915	0.59263
11/06/2018	23:27	08:27	20h44m23s	-21°45'11"	132°14'33"	0.927	0.54930
18/06/2018	23:05	08:03	20h49m13s	-21°57'46"	137°50'45"	0.940	0.50982
25/06/2018	22:41	07:36	20h51m44s	-22°20'21"	143°58'24"	0.954	0.47475
02/07/2018	22:17	07:06	20h51m46s	-22°52'46"	150°38'09"	0.968	0.44461
09/07/2018	21:50	06:32	20h49m12s	-23°33'35"	157°47'26"	0.981	0.41997
16/07/2018	21:21	05:55	20h44m13s	-24°19'25"	165°12'15"	0.991	0.40153
23/07/2018	20:51	05:17	20h37m21s	-25°04'57"	171°50'16"	0.997	0.38981
30/07/2018	20:19	04:38	20h29m29s	-25°44'27"	172°37'32"	0.998	0.38503
06/08/2018	19:46	04:00	20h21m39s	-26°13'10"	166°22'18"	0.993	0.38716
13/08/2018	19:13	03:24	20h14m56s	-26°28'00"	158°49'14"	0.982	0.39599
20/08/2018	18:41	02:52	20h10m17s	-26°28'01"	151°24'32"	0.969	0.41099
27/08/2018	18:11	02:24	20h08m19s	-26°14'14"	144°28'45"	0.953	0.43139
03/09/2018	17:42	02:00	20h09m08s	-25°48'31"	138°07'18"	0.937	0.45647
10/09/2018	17:15	01:39	20h12m43s	-25°12'28"	132°20'39"	0.921	0.48566
17/09/2018	16:49	01:22	20h18m52s	-24°27'14"	127°07'25"	0.907	0.51839
24/09/2018	16:26	01:07	20h27m14s	-23°33'44"	122°24'11"	0.895	0.55410
01/10/2018	16:03	00:55	20h37m26s	-22°32'37"	118°06'14"	0.885	0.59242
08/10/2018	15:41	00:45	20h49m10s	-21°24'11"	114°09'33"	0.876	0.63315
15/10/2018	15:21	00:37	21h02m08s	-20°08'33"	110°31'10"	0.870	0.67606
22/10/2018	15:01	00:30	21h16m06s	-18°46'02"	107°08'11"	0.865	0.72090
29/10/2018	14:41	00:24	21h30m48s	-17°17'05"	103°57'26"	0.861	0.76753
05/11/2018	14:21	00:19	21h46m05s	-15°42'05"	100°56'24"	0.859	0.81591
12/11/2018	14:02	00:14	22h01m48s	-14°01'26"	98°03'35"	0.858	0.86595
19/11/2018	13:43	00:10	22h17m52s	-12°15'44"	95°17'40"	0.858	0.91746
26/11/2018	13:24	00:07	22h34m11s	-10°25'41"	92°37'04"	0.859	0.97035
03/12/2018	13:05	00:04	22h50m39s	-8°32'02"	90°00'23"	0.860	1.02460
10/12/2018	12:46	00:01	23h07m17s	-6°35'23"	87°27'01"	0.863	1.08011
17/12/2018	12:27	23:57	23h24m02s	-4°36'27"	84°56'33"	0.865	1.13670
24/12/2018	12:08	23:55	23h40m53s	-2°36'08"	82°28'17"	0.869	1.19423
31/12/2018	11:50	23:52	23h57m49s	-0°35'11"	80°01'30"	0.873	1.25263

Jupiter

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	03:51	13:43	14h59m08s	-15°53'05"	53°34'50"	0.995	5.95705
08/01/2018	03:29	13:19	15h03m42s	-16°11'32"	59°34'17"	0.994	5.86159
15/01/2018	03:07	12:54	15h07m56s	-16°28'06"	65°39'05"	0.993	5.76017
22/01/2018	02:45	12:30	15h11m47s	-16°42'39"	71°49'34"	0.993	5.65381
29/01/2018	02:21	12:05	15h15m12s	-16°55'08"	78°05'53"	0.992	5.54375
05/02/2018	01:58	11:39	15h18m09s	-17°05'31"	84°28'25"	0.992	5.43121
12/02/2018	01:33	11:13	15h20m35s	-17°13'43"	90°57'49"	0.992	5.31744
19/02/2018	01:08	10:47	15h22m28s	-17°19'42"	97°34'27"	0.992	5.20385
26/02/2018	00:42	10:21	15h23m47s	-17°23'25"	104°18'21"	0.992	5.09203
05/03/2018	00:15	09:54	15h24m29s	-17°24'53"	111°09'38"	0.993	4.98351
12/03/2018	23:44	09:26	15h24m34s	-17°24'05"	118°08'41"	0.993	4.87979
19/03/2018	23:15	08:58	15h24m01s	-17°21'02"	125°15'32"	0.994	4.78248
26/03/2018	22:46	08:30	15h22m51s	-17°15'47"	132°29'42"	0.995	4.69325
02/04/2018	22:16	08:01	15h21m07s	-17°08'28"	139°50'30"	0.996	4.61358
09/04/2018	21:46	07:32	15h18m51s	-16°59'14"	147°17'28"	0.997	4.54480
16/04/2018	21:15	07:03	15h16m07s	-16°48'17"	154°49'44"	0.998	4.48819
23/04/2018	20:43	06:33	15h13m01s	-16°35'54"	162°25'37"	0.999	4.44489
30/04/2018	20:11	06:03	15h09m38s	-16°22'29"	170°02'33"	1.000	4.41566
07/05/2018	19:39	05:33	15h06m06s	-16°08'27"	177°27'08"	1.000	4.40092
14/05/2018	19:07	05:03	15h02m31s	-15°54'15"	174°24'29"	1.000	4.40095
21/05/2018	18:35	04:33	14h59m02s	-15°40'24"	166°52'29"	1.000	4.41570
28/05/2018	18:03	04:04	14h55m44s	-15°27'25"	159°21'05"	0.999	4.44469
04/06/2018	17:32	03:34	14h52m46s	-15°15'45"	151°54'33"	0.998	4.48716
11/06/2018	17:01	03:05	14h50m10s	-15°05'50"	144°34'15"	0.997	4.54221
18/06/2018	16:31	02:36	14h48m02s	-14°58'02"	137°21'24"	0.996	4.60877
25/06/2018	16:01	02:07	14h46m26s	-14°52'37"	130°17'03"	0.995	4.68546
02/07/2018	15:33	01:39	14h45m23s	-14°49'44"	123°21'30"	0.994	4.77081
09/07/2018	15:05	01:11	14h44m55s	-14°49'30"	116°34'36"	0.993	4.86345
16/07/2018	14:38	00:43	14h45m02s	-14°51'56"	109°56'19"	0.992	4.96194
23/07/2018	14:11	00:16	14h45m43s	-14°56'59"	103°26'41"	0.992	5.06473
30/07/2018	13:46	23:45	14h46m59s	-15°04'32"	97°05'19"	0.991	5.17034
06/08/2018	13:21	23:19	14h48m47s	-15°14'26"	90°51'24"	0.991	5.27748
13/08/2018	12:56	22:53	14h51m06s	-15°26'30"	84°44'19"	0.991	5.38485
20/08/2018	12:33	22:27	14h53m56s	-15°40'32"	78°43'43"	0.991	5.49114
27/08/2018	12:10	22:02	14h57m12s	-15°56'18"	72°49'01"	0.992	5.59512
03/09/2018	11:47	21:36	15h00m55s	-16°13'33"	66°59'22"	0.993	5.69578
10/09/2018	11:25	21:12	15h05m02s	-16°32'04"	61°13'58"	0.993	5.79214
17/09/2018	11:04	20:47	15h09m31s	-16°51'38"	55°32'25"	0.994	5.88316
24/09/2018	10:42	20:23	15h14m21s	-17°11'59"	49°54'18"	0.995	5.96793
01/10/2018	10:22	19:59	15h19m28s	-17°32'53"	44°18'51"	0.996	6.04577
08/10/2018	10:01	19:35	15h24m53s	-17°54'09"	38°45'23"	0.997	6.11596
15/10/2018	09:41	19:12	15h30m33s	-18°15'33"	33°13'31"	0.997	6.17777
22/10/2018	09:21	18:48	15h36m25s	-18°36'54"	27°43'01"	0.998	6.23062
29/10/2018	09:01	18:25	15h42m29s	-18°57'58"	22°13'22"	0.999	6.27409
05/11/2018	08:41	18:02	15h48m43s	-19°18'38"	16°44'00"	0.999	6.30780
12/11/2018	08:22	17:40	15h55m04s	-19°38'42"	11°14'42"	1.000	6.33131
19/11/2018	08:02	17:17	16h01m32s	-19°58'03"	5°45'52"	1.000	6.34436
26/11/2018	07:43	16:54	16h08m03s	-20°16'31"	0°41'33"	1.000	6.34688
03/12/2018	07:23	16:32	16h14m36s	-20°34'01"	5°20'53"	1.000	6.33879
10/12/2018	07:03	16:10	16h21m10s	-20°50'27"	10°52'39"	1.000	6.32002
17/12/2018	06:44	15:47	16h27m41s	-21°05'43"	16°26'44"	0.999	6.29065
24/12/2018	06:24	15:25	16h34m08s	-21°19'47"	22°02'42"	0.999	6.25098
31/12/2018	06:04	15:03	16h40m29s	-21°32'36"	27°40'55"	0.998	6.20130

Saturn

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	07:29	16:18	18h05m42s	-22°31'31"	9°14'01"	1.000	11.05342
08/01/2018	07:05	15:54	18h09m14s	-22°31'13"	15°32'05"	1.000	11.02819
15/01/2018	06:40	15:30	18h12m41s	-22°30'35"	21°51'48"	1.000	10.99056
22/01/2018	06:16	15:06	18h16m02s	-22°29'40"	28°12'49"	0.999	10.94089
29/01/2018	05:52	14:41	18h19m15s	-22°28'28"	34°34'58"	0.999	10.87982
05/02/2018	05:27	14:17	18h22m19s	-22°27'04"	40°58'28"	0.999	10.80813
12/02/2018	05:02	13:53	18h25m12s	-22°25'29"	47°23'41"	0.999	10.72661
19/02/2018	04:37	13:28	18h27m53s	-22°23'49"	53°50'50"	0.998	10.63616
26/02/2018	04:12	13:03	18h30m19s	-22°22'07"	60°19'52"	0.998	10.53797
05/03/2018	03:47	12:38	18h32m30s	-22°20'26"	66°50'56"	0.998	10.43331
12/03/2018	03:21	12:12	18h34m24s	-22°18'50"	73°24'28"	0.998	10.32341
19/03/2018	02:55	11:46	18h36m01s	-22°17'24"	80°00'45"	0.998	10.20965
26/03/2018	02:28	11:20	18h37m18s	-22°16'10"	86°39'45"	0.998	10.09357
02/04/2018	02:02	10:54	18h38m16s	-22°15'11"	93°21'29"	0.998	9.97677
09/04/2018	01:35	10:27	18h38m53s	-22°14'31"	100°06'18"	0.998	9.86077
16/04/2018	01:07	10:00	18h39m09s	-22°14'10"	106°54'29"	0.998	9.74713
23/04/2018	00:40	09:32	18h39m05s	-22°14'10"	113°45'53"	0.998	9.63756
30/04/2018	00:12	09:04	18h38m40s	-22°14'31"	120°40'16"	0.998	9.53369
07/05/2018	23:40	08:36	18h37m56s	-22°15'12"	127°37'44"	0.998	9.43699
14/05/2018	23:11	08:07	18h36m52s	-22°16'12"	134°38'24"	0.999	9.34890
21/05/2018	22:42	07:38	18h35m32s	-22°17'29"	141°41'51"	0.999	9.27089
28/05/2018	22:13	07:09	18h33m56s	-22°19'00"	148°47'33"	0.999	9.20422
04/06/2018	21:44	06:39	18h32m07s	-22°20'42"	155°55'09"	1.000	9.14987
11/06/2018	21:15	06:10	18h30m07s	-22°22'32"	163°04'23"	1.000	9.10873
18/06/2018	20:45	05:40	18h28m00s	-22°24'26"	170°14'19"	1.000	9.08155
25/06/2018	20:16	05:10	18h25m48s	-22°26'22"	177°19'24"	1.000	9.06881
02/07/2018	19:46	04:40	18h23m35s	-22°28'16"	175°16'17"	1.000	9.07059
09/07/2018	19:17	04:10	18h21m24s	-22°30'07"	168°08'24"	1.000	9.08688
16/07/2018	18:47	03:40	18h19m18s	-22°31'54"	160°59'21"	1.000	9.11746
23/07/2018	18:18	03:11	18h17m21s	-22°33'35"	153°51'43"	1.000	9.16180
30/07/2018	17:49	02:41	18h15m35s	-22°35'10"	146°46'17"	0.999	9.21906
06/08/2018	17:20	02:12	18h14m02s	-22°36'38"	139°43'12"	0.999	9.28831
13/08/2018	16:51	01:43	18h12m46s	-22°38'02"	132°42'47"	0.999	9.36852
20/08/2018	16:23	01:15	18h11m47s	-22°39'19"	125°45'32"	0.998	9.45838
27/08/2018	15:55	00:46	18h11m07s	-22°40'31"	118°51'45"	0.998	9.55640
03/09/2018	15:27	00:18	18h10m47s	-22°41'38"	112°01'17"	0.998	9.66115
10/09/2018	15:00	23:47	18h10m47s	-22°42'40"	105°13'59"	0.998	9.77116
17/09/2018	14:33	23:20	18h11m09s	-22°43'36"	98°30'01"	0.998	9.88480
24/09/2018	14:06	22:53	18h11m51s	-22°44'25"	91°49'27"	0.998	10.00041
01/10/2018	13:40	22:26	18h12m53s	-22°45'06"	85°11'57"	0.998	10.11644
08/10/2018	13:13	22:00	18h14m15s	-22°45'37"	78°37'07"	0.998	10.23142
15/10/2018	12:48	21:34	18h15m55s	-22°45'57"	72°04'52"	0.998	10.34380
22/10/2018	12:22	21:09	18h17m53s	-22°46'03"	65°35'13"	0.998	10.45204
29/10/2018	11:57	20:44	18h20m08s	-22°45'53"	59°07'47"	0.998	10.55484
05/11/2018	11:32	20:19	18h22m37s	-22°45'26"	52°42'07"	0.998	10.65100
12/11/2018	11:07	19:54	18h25m21s	-22°44'39"	46°18'01"	0.999	10.73926
19/11/2018	10:42	19:29	18h28m16s	-22°43'31"	39°55'28"	0.999	10.81849
26/11/2018	10:18	19:05	18h31m22s	-22°42'01"	33°34'16"	0.999	10.88781
03/12/2018	09:53	18:41	18h34m37s	-22°40'07"	27°13'56"	0.999	10.94643
10/12/2018	09:29	18:17	18h37m59s	-22°37'48"	20°54'15"	1.000	10.99361
17/12/2018	09:04	17:53	18h41m27s	-22°35'06"	14°35'17"	1.000	11.02871
24/12/2018	08:40	17:29	18h44m58s	-22°32'01"	8°17'05"	1.000	11.05140
31/12/2018	08:16	17:06	18h48m32s	-22°28'33"	2°01'19"	1.000	11.06146

Uranus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	12:39	02:01	1h31m53s	8°59'14"	104°03'15"	0.999	19.64282
08/01/2018	12:12	01:33	1h31m55s	8°59'43"	96°56'03"	0.999	19.76105
15/01/2018	11:44	01:06	1h32m07s	9°01'08"	89°51'22"	0.999	19.88112
22/01/2018	11:17	00:39	1h32m28s	9°03'28"	82°49'29"	0.999	20.00117
29/01/2018	10:50	00:12	1h32m59s	9°06'43"	75°50'48"	0.999	20.11936
05/02/2018	10:22	23:42	1h33m39s	9°10'48"	68°55'20"	0.999	20.23399
12/02/2018	09:55	23:15	1h34m27s	9°15'41"	62°02'54"	1.000	20.34353
19/02/2018	09:28	22:49	1h35m23s	9°21'19"	55°13'31"	1.000	20.44642
26/02/2018	09:02	22:23	1h36m26s	9°27'36"	48°27'26"	1.000	20.54119
05/03/2018	08:35	21:57	1h37m36s	9°34'29"	41°44'34"	1.000	20.62667
12/03/2018	08:08	21:32	1h38m51s	9°41'52"	35°04'35"	1.000	20.70184
19/03/2018	07:41	21:06	1h40m11s	9°49'40"	28°27'18"	1.000	20.76571
26/03/2018	07:14	20:40	1h41m35s	9°57'48"	21°52'47"	1.000	20.81748
02/04/2018	06:48	20:15	1h43m03s	10°06'11"	15°20'58"	1.000	20.85661
09/04/2018	06:21	19:50	1h44m33s	10°14'43"	8°51'34"	1.000	20.88274
16/04/2018	05:55	19:24	1h46m04s	10°23'20"	2°26'03"	1.000	20.89558
23/04/2018	05:28	18:59	1h47m35s	10°31'55"	4°05'44"	1.000	20.89496
30/04/2018	05:01	18:33	1h49m06s	10°40'25"	10°29'14"	1.000	20.88104
07/05/2018	04:35	18:08	1h50m36s	10°48'44"	16°52'34"	1.000	20.85410
14/05/2018	04:08	17:42	1h52m03s	10°56'47"	23°15'31"	1.000	20.81445
21/05/2018	03:41	17:17	1h53m28s	11°04'31"	29°38'09"	1.000	20.76257
28/05/2018	03:15	16:51	1h54m49s	11°11'50"	36°00'35"	1.000	20.69919
04/06/2018	02:48	16:25	1h56m05s	11°18'41"	42°23'14"	1.000	20.62516
11/06/2018	02:21	15:59	1h57m15s	11°25'00"	48°46'43"	1.000	20.54132
18/06/2018	01:54	15:33	1h58m20s	11°30'44"	55°11'17"	1.000	20.44866
25/06/2018	01:27	15:07	1h59m18s	11°35'49"	61°37'03"	0.999	20.34841
02/07/2018	01:00	14:41	2h00m08s	11°40'13"	68°04'21"	0.999	20.24186
09/07/2018	00:33	14:14	2h00m50s	11°43'53"	74°33'47"	0.999	20.13026
16/07/2018	00:06	13:47	2h01m24s	11°46'48"	81°05'40"	0.999	20.01501
23/07/2018	23:35	13:20	2h01m50s	11°48'54"	87°40'00"	0.999	19.89768
30/07/2018	23:08	12:53	2h02m06s	11°50'11"	94°17'00"	0.999	19.77985
06/08/2018	22:40	12:26	2h02m13s	11°50'40"	100°57'06"	0.999	19.66301
13/08/2018	22:13	11:58	2h02m11s	11°50'19"	107°40'36"	0.999	19.54877
20/08/2018	21:45	11:30	2h01m59s	11°49'08"	114°27'24"	0.999	19.43882
27/08/2018	21:17	11:02	2h01m39s	11°47'11"	121°17'25"	1.000	19.33477
03/09/2018	20:49	10:34	2h01m10s	11°44'28"	128°10'55"	1.000	19.23808
10/09/2018	20:22	10:06	2h00m33s	11°41'03"	135°08'04"	1.000	19.15024
17/09/2018	19:54	09:37	1h59m49s	11°36'59"	142°08'35"	1.000	19.07270
24/09/2018	19:25	09:09	1h58m58s	11°32'21"	149°12'05"	1.000	19.00675
01/10/2018	18:57	08:40	1h58m02s	11°27'14"	156°18'33"	1.000	18.95339
08/10/2018	18:29	08:11	1h57m02s	11°21'45"	163°27'54"	1.000	18.91355
15/10/2018	18:01	07:42	1h55m58s	11°15'58"	170°39'32"	1.000	18.88805
22/10/2018	17:33	07:13	1h54m53s	11°10'03"	177°50'08"	1.000	18.87738
29/10/2018	17:05	06:44	1h53m47s	11°04'06"	174°48'00"	1.000	18.88169
05/11/2018	16:37	06:15	1h52m42s	10°58'15"	167°31'57"	1.000	18.90101
12/11/2018	16:08	05:46	1h51m40s	10°52'38"	160°14'08"	1.000	18.93518
19/11/2018	15:40	05:17	1h50m41s	10°47'22"	152°55'54"	1.000	18.98364
26/11/2018	15:12	04:48	1h49m48s	10°42'34"	145°37'49"	1.000	19.04555
03/12/2018	14:44	04:20	1h49m00s	10°38'21"	138°20'05"	1.000	19.11995
10/12/2018	14:16	03:51	1h48m20s	10°34'47"	131°03'07"	1.000	19.20573
17/12/2018	13:48	03:23	1h47m47s	10°32'00"	123°47'36"	1.000	19.30144
24/12/2018	13:21	02:55	1h47m23s	10°30'01"	116°34'00"	1.000	19.40545
31/12/2018	12:53	02:27	1h47m09s	10°28'54"	109°22'24"	0.999	19.51615

Neptune

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	11:11	22:11	22h54m40s	-7°56'12"	61°24'18"	1.000	30.40314
08/01/2018	10:44	21:45	22h55m17s	-7°52'21"	54°26'16"	1.000	30.50606
15/01/2018	10:17	21:18	22h55m58s	-7°48'00"	47°29'30"	1.000	30.60061
22/01/2018	09:50	20:52	22h56m44s	-7°43'14"	40°34'12"	1.000	30.68536
29/01/2018	09:23	20:25	22h57m33s	-7°38'04"	33°40'42"	1.000	30.75911
05/02/2018	08:56	19:59	22h58m26s	-7°32'36"	26°48'58"	1.000	30.82093
12/02/2018	08:29	19:33	22h59m22s	-7°26'52"	19°58'52"	1.000	30.87006
19/02/2018	08:02	19:07	23h00m19s	-7°20'57"	13°10'35"	1.000	30.90577
26/02/2018	07:35	18:41	23h01m18s	-7°14'55"	6°25'23"	1.000	30.92761
05/03/2018	07:08	18:15	23h02m17s	-7°08'50"	0°59'27"	1.000	30.93545
12/03/2018	06:41	17:48	23h03m16s	-7°02'46"	7°11'30"	1.000	30.92926
19/03/2018	06:14	17:22	23h04m15s	-6°56'47"	13°52'44"	1.000	30.90912
26/03/2018	05:47	16:56	23h05m12s	-6°50'57"	20°33'42"	1.000	30.87536
02/04/2018	05:20	16:30	23h06m08s	-6°45'21"	27°13'38"	1.000	30.82859
09/04/2018	04:53	16:04	23h07m01s	-6°40'02"	33°52'46"	1.000	30.76950
16/04/2018	04:26	15:37	23h07m50s	-6°35'02"	40°31'20"	1.000	30.69885
23/04/2018	03:59	15:11	23h08m37s	-6°30'27"	47°09'18"	1.000	30.61764
30/04/2018	03:32	14:44	23h09m19s	-6°26'18"	53°46'40"	1.000	30.52707
07/05/2018	03:04	14:18	23h09m56s	-6°22'38"	60°23'48"	1.000	30.42838
14/05/2018	02:37	13:51	23h10m29s	-6°19'30"	67°01'07"	1.000	30.32282
21/05/2018	02:10	13:24	23h10m56s	-6°16'56"	73°38'41"	1.000	30.21183
28/05/2018	01:43	12:57	23h11m18s	-6°14'57"	80°16'27"	1.000	30.09700
04/06/2018	01:15	12:30	23h11m34s	-6°13'34"	86°54'45"	1.000	29.97987
11/06/2018	00:48	12:02	23h11m44s	-6°12'49"	93°34'00"	1.000	29.86194
18/06/2018	00:20	11:35	23h11m49s	-6°12'40"	100°14'21"	1.000	29.74484
25/06/2018	23:49	11:07	23h11m47s	-6°13'10"	106°55'40"	1.000	29.63028
02/07/2018	23:21	10:40	23h11m39s	-6°14'15"	113°38'09"	1.000	29.51982
09/07/2018	22:54	10:12	23h11m26s	-6°15'55"	120°22'11"	1.000	29.41493
16/07/2018	22:26	09:44	23h11m08s	-6°18'08"	127°07'54"	1.000	29.31713
23/07/2018	21:58	09:16	23h10m44s	-6°20'52"	133°55'08"	1.000	29.22793
30/07/2018	21:31	08:47	23h10m16s	-6°24'04"	140°43'50"	1.000	29.14858
06/08/2018	21:03	08:19	23h09m44s	-6°27'40"	147°34'18"	1.000	29.08021
13/08/2018	20:35	07:51	23h09m08s	-6°31'36"	154°26'36"	1.000	29.02390
20/08/2018	20:07	07:22	23h08m30s	-6°35'48"	161°20'23"	1.000	28.98062
27/08/2018	19:39	06:54	23h07m49s	-6°40'12"	168°15'07"	1.000	28.95102
03/09/2018	19:11	06:25	23h07m07s	-6°44'43"	175°08'44"	1.000	28.93553
10/09/2018	18:43	05:57	23h06m24s	-6°49'15"	177°33'11"	1.000	28.93453
17/09/2018	18:15	05:28	23h05m41s	-6°53'44"	170°42'21"	1.000	28.94817
24/09/2018	17:47	05:00	23h05m00s	-6°58'04"	163°42'16"	1.000	28.97626
01/10/2018	17:20	04:31	23h04m20s	-7°02'11"	156°40'17"	1.000	29.01836
08/10/2018	16:52	04:03	23h03m43s	-7°06'00"	149°36'55"	1.000	29.07399
15/10/2018	16:24	03:35	23h03m09s	-7°09'26"	142°32'36"	1.000	29.14239
22/10/2018	15:56	03:06	23h02m39s	-7°12'26"	135°27'50"	1.000	29.22250
29/10/2018	15:28	02:38	23h02m14s	-7°14'56"	128°22'46"	1.000	29.31309
05/11/2018	15:01	02:10	23h01m53s	-7°16'52"	121°17'19"	1.000	29.41288
12/11/2018	14:33	01:42	23h01m39s	-7°18'13"	114°11'46"	1.000	29.52042
19/11/2018	14:05	01:15	23h01m30s	-7°18'57"	107°06'33"	1.000	29.63399
26/11/2018	13:38	00:47	23h01m27s	-7°19'02"	100°01'52"	1.000	29.75186
03/12/2018	13:10	00:20	23h01m31s	-7°18'28"	92°57'39"	1.000	29.87233
10/12/2018	12:43	23:48	23h01m41s	-7°17'15"	85°54'02"	1.000	29.99362
17/12/2018	12:15	23:21	23h01m57s	-7°15'23"	78°51'26"	1.000	30.11382
24/12/2018	11:48	22:54	23h02m20s	-7°12'53"	71°50'07"	1.000	30.23114
31/12/2018	11:21	22:28	23h02m48s	-7°09'48"	64°49'57"	1.000	30.34394

Pluto

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
01/01/2018	08:39	17:37	19h21m04s	-21°40'11"	8°16'59"	1.000	34.44890
08/01/2018	08:13	17:11	19h22m05s	-21°38'51"	1°26'43"	1.000	34.46369
15/01/2018	07:46	16:44	19h23m06s	-21°37'29"	5°32'07"	1.000	34.46411
22/01/2018	07:19	16:18	19h24m07s	-21°36'06"	12°25'05"	1.000	34.45015
29/01/2018	06:53	15:52	19h25m07s	-21°34'43"	19°18'03"	1.000	34.42213
05/02/2018	06:26	15:25	19h26m04s	-21°33'23"	26°10'42"	1.000	34.38061
12/02/2018	05:59	14:59	19h26m59s	-21°32'07"	33°03'13"	1.000	34.32622
19/02/2018	05:33	14:32	19h27m50s	-21°30'56"	39°55'32"	1.000	34.25975
26/02/2018	05:06	14:05	19h28m38s	-21°29'51"	46°47'22"	1.000	34.18227
05/03/2018	04:39	13:39	19h29m21s	-21°28'55"	53°38'43"	1.000	34.09505
12/03/2018	04:12	13:12	19h30m00s	-21°28'09"	60°29'49"	1.000	33.99936
19/03/2018	03:45	12:45	19h30m33s	-21°27'33"	67°20'45"	1.000	33.89656
26/03/2018	03:18	12:18	19h31m01s	-21°27'09"	74°11'20"	1.000	33.78826
02/04/2018	02:51	11:51	19h31m22s	-21°26'58"	81°01'26"	1.000	33.67614
09/04/2018	02:23	11:23	19h31m38s	-21°27'00"	87°51'22"	1.000	33.56179
16/04/2018	01:56	10:56	19h31m47s	-21°27'16"	94°41'19"	1.000	33.44685
23/04/2018	01:29	10:28	19h31m50s	-21°27'45"	101°31'06"	1.000	33.33308
30/04/2018	01:01	10:01	19h31m47s	-21°28'29"	108°20'35"	1.000	33.22223
07/05/2018	00:33	09:33	19h31m38s	-21°29'25"	115°10'01"	1.000	33.11585
14/05/2018	00:06	09:05	19h31m24s	-21°30'35"	121°59'39"	1.000	33.01547
21/05/2018	23:34	08:37	19h31m03s	-21°31'57"	128°49'23"	1.000	32.92267
28/05/2018	23:06	08:09	19h30m38s	-21°33'30"	135°38'59"	1.000	32.83886
04/06/2018	22:38	07:41	19h30m08s	-21°35'13"	142°28'38"	1.000	32.76522
11/06/2018	22:10	07:13	19h29m35s	-21°37'05"	149°18'35"	1.000	32.70283
18/06/2018	21:42	06:44	19h28m58s	-21°39'04"	156°08'49"	1.000	32.65275
25/06/2018	21:14	06:16	19h28m18s	-21°41'08"	162°59'02"	1.000	32.61577
02/07/2018	20:46	05:48	19h27m36s	-21°43'16"	169°49'17"	1.000	32.59240
09/07/2018	20:18	05:19	19h26m53s	-21°45'27"	176°39'44"	1.000	32.58305
16/07/2018	19:50	04:51	19h26m10s	-21°47'37"	176°28'50"	1.000	32.58800
23/07/2018	19:22	04:22	19h25m27s	-21°49'47"	169°37'58"	1.000	32.60727
30/07/2018	18:54	03:54	19h24m45s	-21°51'53"	162°46'59"	1.000	32.64057
06/08/2018	18:26	03:26	19h24m06s	-21°53'55"	155°55'43"	1.000	32.68749
13/08/2018	17:58	02:57	19h23m28s	-21°55'52"	149°04'05"	1.000	32.74753
20/08/2018	17:30	02:29	19h22m54s	-21°57'41"	142°12'20"	1.000	32.81990
27/08/2018	17:02	02:01	19h22m25s	-21°59'21"	135°20'38"	1.000	32.90354
03/09/2018	16:35	01:33	19h21m59s	-22°00'53"	128°28'43"	1.000	32.99734
10/09/2018	16:07	01:05	19h21m39s	-22°02'14"	121°36'27"	1.000	33.10011
17/09/2018	15:39	00:37	19h21m25s	-22°03'23"	114°43'59"	1.000	33.21044
24/09/2018	15:12	00:09	19h21m16s	-22°04'22"	107°51'33"	1.000	33.32672
01/10/2018	14:44	23:38	19h21m13s	-22°05'08"	100°58'58"	1.000	33.44738
08/10/2018	14:17	23:10	19h21m16s	-22°05'41"	94°06'00"	1.000	33.57084
15/10/2018	13:49	22:43	19h21m26s	-22°06'03"	87°12'46"	1.000	33.69535
22/10/2018	13:22	22:16	19h21m42s	-22°06'11"	80°19'31"	1.000	33.81910
29/10/2018	12:55	21:48	19h22m04s	-22°06'08"	73°26'10"	1.000	33.94042
05/11/2018	12:28	21:21	19h22m32s	-22°05'52"	66°32'28"	1.000	34.05770
12/11/2018	12:01	20:55	19h23m06s	-22°05'24"	59°38'29"	1.000	34.16927
19/11/2018	11:34	20:28	19h23m45s	-22°04'46"	52°44'29"	1.000	34.27351
26/11/2018	11:07	20:01	19h24m28s	-22°03'56"	45°50'30"	1.000	34.36901
03/12/2018	10:40	19:34	19h25m16s	-22°02'58"	38°56'18"	1.000	34.45454
10/12/2018	10:14	19:08	19h26m08s	-22°01'50"	32°01'54"	1.000	34.52886
17/12/2018	09:47	18:41	19h27m03s	-22°00'35"	25°07'35"	1.000	34.59091
24/12/2018	09:20	18:15	19h28m01s	-21°59'13"	18°13'28"	1.000	34.63990
31/12/2018	08:54	17:48	19h29m00s	-21°57'47"	11°19'25"	1.000	34.67528

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Planet Apsides Report for 2018

Earth

03/01/2018	Perihelion	Distance from Sun:	0.98 AU
05/07/2018	Aphelion	Distance from Sun:	1.02 AU

Mercury

10/03/2018	Perihelion	Distance from Sun:	0.31 AU
06/06/2018	Perihelion	Distance from Sun:	0.31 AU
02/09/2018	Perihelion	Distance from Sun:	0.31 AU
29/11/2018	Perihelion	Distance from Sun:	0.31 AU
25/01/2018	Aphelion	Distance from Sun:	0.47 AU
23/04/2018	Aphelion	Distance from Sun:	0.47 AU
20/07/2018	Aphelion	Distance from Sun:	0.47 AU
16/10/2018	Aphelion	Distance from Sun:	0.47 AU

Venus

16/05/2018	Perihelion	Distance from Sun:	0.72 AU
26/12/2018	Perihelion	Distance from Sun:	0.72 AU
23/01/2018	Aphelion	Distance from Sun:	0.73 AU
05/09/2018	Aphelion	Distance from Sun:	0.73 AU

Mars

16/09/2018	Perihelion	Distance from Sun:	1.38 AU
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Jupiter

No Apsis

Saturn

03/04/2018	Aphelion	Distance from Sun:	10.08 AU
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Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Planet Conjunction/Opposition Report for 01/01/2018 to 31/12/2018

Mercury

Date	Hour	Event
18/02/2018	0	Superior Conjunction
02/04/2018	0	Inferior Conjunction
06/06/2018	3	Superior Conjunction
09/08/2018	3	Inferior Conjunction
21/09/2018	3	Superior Conjunction
27/11/2018	9	Inferior Conjunction

Venus

Date	Hour	Event
09/01/2018	6	Superior Conjunction
27/10/2018	0	Inferior Conjunction

Mars

Date	Hour	Event
27/07/2018	6	Opposition

Jupiter

Date	Hour	Event
26/11/2018	7	Conjunction
09/05/2018	1	Opposition

Saturn

Date	Hour	Event
27/06/2018	12	Opposition

Uranus

Date	Hour	Event
19/04/2018	0	Conjunction
24/10/2018	1	Opposition

Neptune

Date	Hour	Event
05/03/2018	0	Conjunction
08/09/2018	0	Opposition

Pluto

Date	Hour	Event
09/01/2018	10	Conjunction
12/07/2018	10	Opposition

Planet Data Report

Planet	Mean Dist From Sun (AU)	Period of Revolution	Inclination	Equatorial Diameter (km)
Mercury	0.39	88 days	7°	4880
Venus	0.72	224.7 days	3.4°	12100
Earth	1.00	365.24 days	0°	12756
Mars	1.52	687 days	1.9°	6794
Jupiter	5.20	11.86 years	1.3°	143200
Saturn	9.54	29.46 years	2.5°	120000
Uranus	19.18	84 years	0.8°	52290
Neptune	30.06	165 years	1.8°	50450
Pluto	39.44	248 years	17.2°	2200-2300

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Moon Apsides Report for 01/01/2018 to 31/12/2018

Date	Hour	Apsis	Distance (km)	Diameter
01/01/2018	23	Perigee	356584	0.5585°
15/01/2018	3	Apogee	406466	0.4900°
30/01/2018	11	Perigee	358986	0.5548°
11/02/2018	15	Apogee	405712	0.4909°
27/02/2018	16	Perigee	363912	0.5473°
11/03/2018	10	Apogee	404693	0.4921°
26/03/2018	19	Perigee	369114	0.5396°
08/04/2018	7	Apogee	404140	0.4928°
20/04/2018	16	Perigee	368718	0.5401°
06/05/2018	1	Apogee	404456	0.4924°
17/05/2018	22	Perigee	363777	0.5475°
02/06/2018	18	Apogee	405334	0.4913°
15/06/2018	1	Perigee	359507	0.5540°
30/06/2018	4	Apogee	406047	0.4905°
13/07/2018	9	Perigee	357438	0.5572°
27/07/2018	6	Apogee	406199	0.4903°
10/08/2018	19	Perigee	358082	0.5562°
23/08/2018	12	Apogee	405762	0.4908°
08/09/2018	2	Perigee	361351	0.5511°
20/09/2018	2	Apogee	404876	0.4919°
06/10/2018	0	Perigee	366399	0.5436°
17/10/2018	20	Apogee	404215	0.4927°
31/10/2018	21	Perigee	370226	0.5379°
14/11/2018	17	Apogee	404345	0.4925°
26/11/2018	13	Perigee	366606	0.5432°
12/12/2018	13	Apogee	405181	0.4915°
24/12/2018	11	Perigee	361050	0.5516°

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Moon Nodes Report for 01/01/2018 to 31/12/2018

Date	Time	Node	Illuminated Fraction
04/01/2018	08:47	Ascending	0.92
18/01/2018	15:27	Descending	0.02
31/01/2018	19:45	Ascending	1.00
14/02/2018	22:10	Descending	0.01
28/02/2018	06:02	Ascending	0.96
14/03/2018	04:47	Descending	0.11
27/03/2018	11:55	Ascending	0.81
10/04/2018	09:08	Descending	0.31
23/04/2018	13:19	Ascending	0.57
07/05/2018	11:23	Descending	0.56
20/05/2018	14:12	Ascending	0.33
03/06/2018	13:38	Descending	0.79
16/06/2018	18:49	Ascending	0.13
30/06/2018	17:43	Descending	0.94
14/07/2018	03:49	Ascending	0.02
27/07/2018	23:39	Descending	1.00
10/08/2018	14:39	Ascending	0.01
24/08/2018	05:50	Descending	0.95
06/09/2018	23:41	Ascending	0.11
20/09/2018	10:29	Descending	0.81
04/10/2018	04:09	Ascending	0.30
17/10/2018	13:02	Descending	0.58
31/10/2018	04:45	Ascending	0.56
13/11/2018	15:03	Descending	0.32
27/11/2018	06:17	Ascending	0.80
10/12/2018	18:56	Descending	0.11
24/12/2018	12:53	Ascending	0.95

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
Local Time = UT + 1.00 hours Elevation: 470 meters

Meteor Showers Report for 01/01/2018 to 31/12/2018

Date	Meteor Shower	ZHR	RA	DEC	Illum. Frac.	Longitude
04/01/2018	Quadrantids	80	15h28m	50°	0.94	283°
12/04/2018	Virginids	5	14h04m	-9°	0.17	22°
23/04/2018	Lyrids	12	18h08m	32°	0.52	33°
29/04/2018	alpha-Scorpiids	5	16h32m	-24°	0.99	38°
06/05/2018	eta-Aquarids	35	22h20m	-1°	0.69	45°
13/05/2018	alpha-Scorpiids	5	16h04m	-24°	0.08	52°
10/06/2018	Ophiuchids	5	17h56m	-23°	0.19	79°
21/06/2018	Ophiuchids	5	17h20m	-20°	0.57	89°
08/07/2018	Capricornids	5			0.32	106°
16/07/2018	Capricornids	5	20h44m	-15°	0.12	113°
21/07/2018	alpha-Cygnids	5	21h00m	48°	0.63	118°
26/07/2018	Capricornids	5	21h00m	-15°	0.97	123°
29/07/2018	delta-Aquarids	20	22h36m	-17°	0.99	126°
01/08/2018	Piscis Australids	5	22h40m	-30°	0.85	128°
03/08/2018	alpha-Capricornids	5	20h36m	-10°	0.68	130°
07/08/2018	iota-Aquarids	8	22h10m	-15°	0.26	134°
13/08/2018	Perseids	75	3h04m	58°	0.04	140°
21/08/2018	alpha-Cygnids	5	21h00m	48°	0.75	148°
09/09/2018	Piscids	10	0h36m	7°	0.01	166°
21/09/2018	Piscids	5	0h24m	0°	0.85	178°
14/10/2018	Piscids	??	1h44m	14°	0.25	200°
23/10/2018	Orionids	25	6h24m	15°	0.97	209°
04/11/2018	Taurids	8	3h44m	14°	0.16	221°
18/11/2018	Leonids	10	10h08m	22°	0.72	235°
09/12/2018	Puppids-Velids	15	9h00m	-48°	0.03	257°
14/12/2018	Geminids	75	7h28m	32°	0.36	262°
23/12/2018	Ursids	5	14h28m	78°	1.00	271°
26/12/2018	Puppids-Velids	15	9h20m	-65°	0.85	274°

Grange Obs. Latitude: 45°08'32" N Longitude: 7°08'26" E
 Local Time = UT + 1.00 hours Elevation: 470 meters

Twilight Report for 01/01/2018 to 31/12/2018

Date	Sun		Astronomical		Nautical		Civil	
	Rise	Set	Begin	End	Begin	End	Begin	End
01/01/2018	08:10	17:00	06:18	18:52	06:54	18:16	07:31	17:39
08/01/2018	08:10	17:07	06:18	18:58	06:54	18:23	07:31	17:46
15/01/2018	08:07	17:15	06:17	19:05	06:52	18:30	07:28	17:54
22/01/2018	08:02	17:25	06:14	19:13	06:48	18:38	07:24	18:02
29/01/2018	07:55	17:34	06:08	19:21	06:43	18:47	07:18	18:11
05/02/2018	07:47	17:45	06:02	19:30	06:36	18:55	07:11	18:21
12/02/2018	07:37	17:55	05:53	19:39	06:27	19:04	07:02	18:30
19/02/2018	07:27	18:05	05:44	19:48	06:18	19:14	06:52	18:39
26/02/2018	07:15	18:14	05:33	19:57	06:07	19:23	06:41	18:49
05/03/2018	07:03	18:24	05:20	20:06	05:55	19:32	06:29	18:58
12/03/2018	06:50	18:33	05:07	20:16	05:42	19:41	06:16	19:07
19/03/2018	06:37	18:42	04:53	20:26	05:29	19:51	06:03	19:16
26/03/2018	06:24	18:51	04:39	20:36	05:15	20:00	05:50	19:26
02/04/2018	06:11	19:00	04:24	20:47	05:01	20:10	05:36	19:35
09/04/2018	05:58	19:09	04:08	20:59	04:46	20:21	05:23	19:44
16/04/2018	05:45	19:18	03:52	21:11	04:32	20:31	05:10	19:54
23/04/2018	05:33	19:27	03:36	21:24	04:18	20:42	04:57	20:04
30/04/2018	05:22	19:36	03:20	21:38	04:05	20:53	04:45	20:13
07/05/2018	05:12	19:45	03:05	21:52	03:52	21:05	04:34	20:23
14/05/2018	05:03	19:53	02:50	22:06	03:41	21:16	04:24	20:32
21/05/2018	04:56	20:01	02:36	22:21	03:30	21:26	04:15	20:41
28/05/2018	04:50	20:08	02:24	22:34	03:22	21:36	04:09	20:49
04/06/2018	04:46	20:14	02:13	22:46	03:16	21:44	04:04	20:56
11/06/2018	04:44	20:19	02:07	22:56	03:12	21:51	04:01	21:01
18/06/2018	04:44	20:22	02:04	23:01	03:11	21:55	04:00	21:05
25/06/2018	04:45	20:23	02:06	23:02	03:12	21:56	04:02	21:06
02/07/2018	04:49	20:22	02:12	22:59	03:16	21:54	04:06	21:05
09/07/2018	04:53	20:20	02:22	22:51	03:23	21:50	04:11	21:02
16/07/2018	04:59	20:15	02:34	22:41	03:31	21:43	04:18	20:57
23/07/2018	05:06	20:09	02:47	22:28	03:41	21:34	04:26	20:49
30/07/2018	05:14	20:01	03:01	22:14	03:51	21:24	04:35	20:40
06/08/2018	05:22	19:52	03:15	21:59	04:02	21:12	04:44	20:30
13/08/2018	05:30	19:42	03:29	21:43	04:13	20:59	04:53	20:19
20/08/2018	05:39	19:30	03:42	21:27	04:24	20:45	05:02	20:07
27/08/2018	05:47	19:18	03:54	21:11	04:34	20:31	05:11	19:54
03/09/2018	05:55	19:05	04:06	20:55	04:44	20:17	05:20	19:40
10/09/2018	06:04	18:52	04:17	20:39	04:54	20:02	05:29	19:27
17/09/2018	06:12	18:39	04:27	20:24	05:03	19:48	05:38	19:13
24/09/2018	06:21	18:26	04:37	20:09	05:12	19:34	05:47	19:00
01/10/2018	06:29	18:12	04:47	19:55	05:21	19:20	05:55	18:46
08/10/2018	06:38	17:59	04:56	19:42	05:30	19:07	06:04	18:33
15/10/2018	06:47	17:47	05:05	19:29	05:39	18:55	06:13	18:21
22/10/2018	06:56	17:35	05:13	19:18	05:47	18:44	06:21	18:10
29/10/2018	07:06	17:24	05:22	19:08	05:56	18:34	06:30	17:59
05/11/2018	07:15	17:14	05:30	18:59	06:05	18:25	06:39	17:50
12/11/2018	07:25	17:06	05:39	18:52	06:13	18:18	06:48	17:42
19/11/2018	07:35	16:59	05:47	18:47	06:21	18:12	06:57	17:36
26/11/2018	07:44	16:53	05:54	18:43	06:29	18:08	07:05	17:32
03/12/2018	07:52	16:50	06:01	18:41	06:36	18:06	07:13	17:29
10/12/2018	07:59	16:49	06:07	18:41	06:43	18:06	07:20	17:28
17/12/2018	08:05	16:50	06:12	18:43	06:48	18:07	07:25	17:30
24/12/2018	08:08	16:54	06:16	18:46	06:52	18:10	07:29	17:33
31/12/2018	08:10	16:59	06:18	18:51	06:54	18:15	07:31	17:38