

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

Calendar Report for 1/ 1/2021 to 12/31/2021

January 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 SR: 7:49 SS: 17:10 MR: 19:53 MS: 9:59	2 SR: 7:49 SS: 17:11 MR: 21:02 MS: 10:36
3 SR: 7:50 SS: 17:12 MR: 22:11 MS: 11:08	4 SR: 7:50 SS: 17:13 MR: 23:21 MS: 11:37	5 SR: 7:49 SS: 17:14 MR: None MS: 12:05	6 SR: 7:49 SS: 17:15 MR: 0:31 MS: 12:32 LQ: 2:39	7 SR: 7:49 SS: 17:16 MR: 1:42 MS: 13:01	8 SR: 7:49 SS: 17:17 MR: 2:55 MS: 13:33	9 SR: 7:49 SS: 17:18 MR: 4:09 MS: 14:11
10 SR: 7:49 SS: 17:19 MR: 5:23 MS: 14:56	11 SR: 7:49 SS: 17:20 MR: 6:33 MS: 15:50	12 SR: 7:48 SS: 17:21 MR: 7:36 MS: 16:52 NM: 22:03	13 SR: 7:48 SS: 17:22 MR: 8:30 MS: 17:59	14 SR: 7:48 SS: 17:23 MR: 9:14 MS: 19:08	15 SR: 7:47 SS: 17:24 MR: 9:50 MS: 20:15	16 SR: 7:47 SS: 17:25 MR: 10:20 MS: 21:20
17 SR: 7:46 SS: 17:27 MR: 10:46 MS: 22:22	18 SR: 7:46 SS: 17:28 MR: 11:10 MS: 23:22	19 SR: 7:45 SS: 17:29 MR: 11:32 MS: None	20 SR: 7:45 SS: 17:30 MR: 11:55 MS: 0:21 FQ: 14:04	21 SR: 7:44 SS: 17:31 MR: 12:20 MS: 1:20	22 SR: 7:43 SS: 17:32 MR: 12:47 MS: 2:19	23 SR: 7:43 SS: 17:34 MR: 13:18 MS: 3:20
24 SR: 7:42 SS: 17:35 MR: 13:55 MS: 4:20	25 SR: 7:41 SS: 17:36 MR: 14:40 MS: 5:20	26 SR: 7:40 SS: 17:37 MR: 15:32 MS: 6:17	27 SR: 7:40 SS: 17:38 MR: 16:33 MS: 7:09	28 SR: 7:39 SS: 17:40 MR: 17:39 MS: 7:55 FM: 12:19	29 SR: 7:38 SS: 17:41 MR: 18:49 MS: 8:35	30 SR: 7:37 SS: 17:42 MR: 20:00 MS: 9:09
31 SR: 7:36 SS: 17:43 MR: 21:11 MS: 9:40						

February 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 SR: 7:35 SS: 17:45 MR: 22:22 MS: 10:08	2 SR: 7:34 SS: 17:46 MR: 23:34 MS: 10:35	3 SR: 7:33 SS: 17:47 MR: None MS: 11:04	4 SR: 7:32 SS: 17:48 MR: 0:46 MS: 11:35 LQ: 10:39	5 SR: 7:31 SS: 17:49 MR: 1:58 MS: 12:10	6 SR: 7:30 SS: 17:51 MR: 3:11 MS: 12:51
7 SR: 7:29 SS: 17:52 MR: 4:21 MS: 13:40	8 SR: 7:28 SS: 17:53 MR: 5:25 MS: 14:38	9 SR: 7:26 SS: 17:54 MR: 6:21 MS: 15:42	10 SR: 7:25 SS: 17:56 MR: 7:08 MS: 16:49	11 SR: 7:24 SS: 17:57 MR: 7:46 MS: 17:57 NM: 12:08	12 SR: 7:23 SS: 17:58 MR: 8:18 MS: 19:03	13 SR: 7:22 SS: 17:59 MR: 8:46 MS: 20:07
14 SR: 7:20 SS: 18:00 MR: 9:11 MS: 21:08	15 SR: 7:19 SS: 18:02 MR: 9:34 MS: 22:09	16 SR: 7:18 SS: 18:03 MR: 9:57 MS: 23:08	17 SR: 7:16 SS: 18:04 MR: 10:21 MS: None	18 SR: 7:15 SS: 18:05 MR: 10:46 MS: 0:07	19 SR: 7:14 SS: 18:06 MR: 11:15 MS: 1:07 FQ: 11:49	20 SR: 7:12 SS: 18:07 MR: 11:50 MS: 2:07
21 SR: 7:11 SS: 18:09 MR: 12:30 MS: 3:07	22 SR: 7:09 SS: 18:10 MR: 13:19 MS: 4:05	23 SR: 7:08 SS: 18:11 MR: 14:15 MS: 4:59	24 SR: 7:07 SS: 18:12 MR: 15:19 MS: 5:47	25 SR: 7:05 SS: 18:13 MR: 16:28 MS: 6:29	26 SR: 7:04 SS: 18:14 MR: 17:41 MS: 7:06	27 SR: 7:02 SS: 18:16 MR: 18:54 MS: 7:38 FM: 1:20
28 SR: 7:01 SS: 18:17 MR: 20:07 MS: 8:08						

March 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 SR: 6:59 SS: 18:18 MR: 21:21 MS: 8:37	2 SR: 6:58 SS: 18:19 MR: 22:35 MS: 9:05	3 SR: 6:56 SS: 18:20 MR: 23:49 MS: 9:36	4 SR: 6:54 SS: 18:21 MR: None MS: 10:10	5 SR: 6:53 SS: 18:22 MR: 1:03 MS: 10:50 LQ: 18:32	6 SR: 6:51 SS: 18:23 MR: 2:14 MS: 11:36
7 SR: 6:50 SS: 18:24 MR: 3:20 MS: 12:31	8 SR: 6:48 SS: 18:26 MR: 4:17 MS: 13:32	9 SR: 6:47 SS: 18:27 MR: 5:06 MS: 14:37	10 SR: 6:45 SS: 18:28 MR: 5:46 MS: 15:44	11 SR: 6:43 SS: 18:29 MR: 6:19 MS: 16:50	12 SR: 6:42 SS: 18:30 MR: 6:48 MS: 17:54	13 SR: 6:40 SS: 18:31 MR: 7:13 MS: 18:56 NM: 3:24
14 SR: 6:39 SS: 18:32 MR: 7:36 MS: 19:57	15 SR: 6:37 SS: 18:33 MR: 7:59 MS: 20:57	16 SR: 6:35 SS: 18:34 MR: 8:22 MS: 21:57	17 SR: 6:34 SS: 18:35 MR: 8:47 MS: 22:56	18 SR: 6:32 SS: 18:36 MR: 9:14 MS: 23:57	19 SR: 6:30 SS: 18:37 MR: 9:46 MS: None	20 SR: 6:29 SS: 18:38 MR: 10:23 MS: 0:56 MEQ: 2:38
21 SR: 6:27 SS: 18:40 MR: 11:08 MS: 1:54 FQ: 7:42	22 SR: 6:25 SS: 18:41 MR: 12:00 MS: 2:49	23 SR: 6:24 SS: 18:42 MR: 12:59 MS: 3:39	24 SR: 6:22 SS: 18:43 MR: 14:05 MS: 4:22	25 SR: 6:20 SS: 18:44 MR: 15:16 MS: 5:01	26 SR: 6:19 SS: 18:45 MR: 16:28 MS: 5:35	27 SR: 6:17 SS: 18:46 MR: 17:42 MS: 6:05
28 SR: 6:16 SS: 18:47 MR: 18:58 MS: 6:34 FM: 11:50	29 SR: 6:14 SS: 18:48 MR: 20:14 MS: 7:03	30 SR: 6:12 SS: 18:49 MR: 21:31 MS: 7:33	31 SR: 6:11 SS: 18:50 MR: 22:48 MS: 8:07			

April 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
				SR: 6:09	SR: 6:07	SR: 6:06
				SS: 18:51	SS: 18:52	SS: 18:53
				MR: None	MR: 0:04	MR: 1:13
				MS: 8:46	MS: 9:31	MS: 10:24
4	5	6	7	8	9	10
SR: 6:04	SR: 6:03	SR: 6:01	SR: 5:59	SR: 5:58	SR: 5:56	SR: 5:55
SS: 18:54	SS: 18:55	SS: 18:56	SS: 18:57	SS: 18:58	SS: 18:59	SS: 19:00
MR: 2:15	MR: 3:06	MR: 3:48	MR: 4:23	MR: 4:52	MR: 5:18	MR: 5:41
MS: 11:25	MS: 12:30	MS: 13:36	MS: 14:42	MS: 15:46	MS: 16:48	MS: 17:48
LQ: 3:04						
11	12	13	14	15	16	17
SR: 5:53	SR: 5:51	SR: 5:50	SR: 5:48	SR: 5:47	SR: 5:45	SR: 5:44
SS: 19:01	SS: 19:02	SS: 19:03	SS: 19:04	SS: 19:06	SS: 19:07	SS: 19:08
MR: 6:03	MR: 6:26	MR: 6:50	MR: 7:16	MR: 7:46	MR: 8:21	MR: 9:02
MS: 18:48	MS: 19:48	MS: 20:48	MS: 21:48	MS: 22:48	MS: 23:47	MS: None
NM: 19:33						
18	19	20	21	22	23	24
SR: 5:42	SR: 5:41	SR: 5:39	SR: 5:38	SR: 5:37	SR: 5:35	SR: 5:34
SS: 19:09	SS: 19:10	SS: 19:11	SS: 19:12	SS: 19:13	SS: 19:14	SS: 19:15
MR: 9:50	MR: 10:46	MR: 11:48	MR: 12:54	MR: 14:04	MR: 15:16	MR: 16:30
MS: 0:42	MS: 1:33	MS: 2:18	MS: 2:58	MS: 3:32	MS: 4:03	MS: 4:32
		FQ: 0:00				
25	26	27	28	29	30	
SR: 5:32	SR: 5:31	SR: 5:30	SR: 5:28	SR: 5:27	SR: 5:26	
SS: 19:16	SS: 19:17	SS: 19:18	SS: 19:19	SS: 19:20	SS: 19:21	
MR: 17:45	MR: 19:03	MR: 20:22	MR: 21:42	MR: 22:58	MR: None	
MS: 5:00	MS: 5:29	MS: 6:01	MS: 6:38	MS: 7:21	MS: 8:13	
	FM: 20:33					

May 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 SR: 5:24 SS: 19:22 MR: 0:05 MS: 9:13
2 SR: 5:23 SS: 19:23 MR: 1:02 MS: 10:19	3 SR: 5:22 SS: 19:24 MR: 1:49 MS: 11:27 LQ: 12:52	4 SR: 5:21 SS: 19:25 MR: 2:26 MS: 12:34	5 SR: 5:20 SS: 19:26 MR: 2:57 MS: 13:39	6 SR: 5:18 SS: 19:27 MR: 3:23 MS: 14:41	7 SR: 5:17 SS: 19:28 MR: 3:47 MS: 15:42	8 SR: 5:16 SS: 19:29 MR: 4:09 MS: 16:42
9 SR: 5:15 SS: 19:30 MR: 4:31 MS: 17:41	10 SR: 5:14 SS: 19:31 MR: 4:54 MS: 18:41	11 SR: 5:13 SS: 19:32 MR: 5:19 MS: 19:41 NM: 12:02	12 SR: 5:12 SS: 19:33 MR: 5:48 MS: 20:41	13 SR: 5:11 SS: 19:34 MR: 6:21 MS: 21:41	14 SR: 5:10 SS: 19:35 MR: 7:00 MS: 22:37	15 SR: 5:09 SS: 19:36 MR: 7:45 MS: 23:30
16 SR: 5:08 SS: 19:37 MR: 8:38 MS: None	17 SR: 5:07 SS: 19:38 MR: 9:37 MS: 0:16	18 SR: 5:06 SS: 19:39 MR: 10:41 MS: 0:57	19 SR: 5:06 SS: 19:40 MR: 11:48 MS: 1:32 FQ: 12:13	20 SR: 5:05 SS: 19:41 MR: 12:57 MS: 2:03	21 SR: 5:04 SS: 19:42 MR: 14:07 MS: 2:31	22 SR: 5:03 SS: 19:43 MR: 15:19 MS: 2:59
23 SR: 5:02 SS: 19:43 MR: 16:34 MS: 3:26	24 SR: 5:02 SS: 19:44 MR: 17:52 MS: 3:55	25 SR: 5:01 SS: 19:45 MR: 19:12 MS: 4:29	26 SR: 5:01 SS: 19:46 MR: 20:31 MS: 5:09 FM: 4:15 LE: 4:22	27 SR: 5:00 SS: 19:47 MR: 21:45 MS: 5:57	28 SR: 4:59 SS: 19:48 MR: 22:50 MS: 6:55	29 SR: 4:59 SS: 19:48 MR: 23:43 MS: 8:00
30 SR: 4:58 SS: 19:49 MR: None MS: 9:10	31 SR: 4:58 SS: 19:50 MR: 0:25 MS: 10:20					

July 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
				SR: 4:59	SR: 5:00	SR: 5:00
				SS: 20:00	SS: 20:00	SS: 20:00
				MR: 0:18	MR: 0:41	MR: 1:03
				MS: 12:25	MS: 13:26	MS: 14:25
				LQ: 14:13		
4	5	6	7	8	9	10
SR: 5:01	SR: 5:02	SR: 5:02	SR: 5:03	SR: 5:03	SR: 5:04	SR: 5:05
SS: 20:00	SS: 19:59	SS: 19:59	SS: 19:59	SS: 19:58	SS: 19:58	SS: 19:58
MR: 1:27	MR: 1:53	MR: 2:23	MR: 2:58	MR: 3:39	MR: 4:28	MR: 5:24
MS: 15:25	MS: 16:25	MS: 17:26	MS: 18:25	MS: 19:21	MS: 20:12	MS: 20:57
					NM: 18:18	
11	12	13	14	15	16	17
SR: 5:06	SR: 5:06	SR: 5:07	SR: 5:08	SR: 5:09	SR: 5:09	SR: 5:10
SS: 19:57	SS: 19:57	SS: 19:56	SS: 19:56	SS: 19:55	SS: 19:54	SS: 19:54
MR: 6:26	MR: 7:31	MR: 8:38	MR: 9:46	MR: 10:54	MR: 12:03	MR: 13:14
MS: 21:35	MS: 22:09	MS: 22:38	MS: 23:05	MS: 23:30	MS: 23:56	MS: None
						FQ: 3:12
18	19	20	21	22	23	24
SR: 5:11	SR: 5:12	SR: 5:13	SR: 5:13	SR: 5:14	SR: 5:15	SR: 5:16
SS: 19:53	SS: 19:52	SS: 19:52	SS: 19:51	SS: 19:50	SS: 19:49	SS: 19:48
MR: 14:27	MR: 15:42	MR: 16:58	MR: 18:09	MR: 19:13	MR: 20:07	MR: 20:50
MS: 0:24	MS: 0:57	MS: 1:35	MS: 2:22	MS: 3:18	MS: 4:24	MS: 5:36
					FM: 19:37	
25	26	27	28	29	30	31
SR: 5:17	SR: 5:18	SR: 5:19	SR: 5:20	SR: 5:21	SR: 5:22	SR: 5:22
SS: 19:47	SS: 19:46	SS: 19:46	SS: 19:45	SS: 19:44	SS: 19:43	SS: 19:41
MR: 21:25	MR: 21:54	MR: 22:20	MR: 22:43	MR: 23:06	MR: 23:29	MR: 23:54
MS: 6:49	MS: 8:00	MS: 9:07	MS: 10:11	MS: 11:13	MS: 12:14	MS: 13:15
						LQ: 6:18

August 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 SR: 5:23 SS: 19:40 MR: None MS: 14:15	2 SR: 5:24 SS: 19:39 MR: 0:22 MS: 15:16	3 SR: 5:25 SS: 19:38 MR: 0:55 MS: 16:15	4 SR: 5:26 SS: 19:37 MR: 1:34 MS: 17:13	5 SR: 5:27 SS: 19:36 MR: 2:20 MS: 18:06	6 SR: 5:28 SS: 19:35 MR: 3:14 MS: 18:53	7 SR: 5:29 SS: 19:33 MR: 4:15 MS: 19:34
8 SR: 5:30 SS: 19:32 MR: 5:20 MS: 20:10 NM: 6:51	9 SR: 5:31 SS: 19:31 MR: 6:28 MS: 20:41	10 SR: 5:32 SS: 19:30 MR: 7:37 MS: 21:08	11 SR: 5:33 SS: 19:28 MR: 8:46 MS: 21:34	12 SR: 5:34 SS: 19:27 MR: 9:55 MS: 22:00	13 SR: 5:35 SS: 19:26 MR: 11:05 MS: 22:27	14 SR: 5:36 SS: 19:24 MR: 12:17 MS: 22:58
15 SR: 5:37 SS: 19:23 MR: 13:31 MS: 23:33 FQ: 8:21	16 SR: 5:38 SS: 19:22 MR: 14:45 MS: None	17 SR: 5:39 SS: 19:20 MR: 15:56 MS: 0:15	18 SR: 5:40 SS: 19:19 MR: 17:02 MS: 1:07	19 SR: 5:41 SS: 19:17 MR: 17:58 MS: 2:08	20 SR: 5:42 SS: 19:16 MR: 18:44 MS: 3:17	21 SR: 5:43 SS: 19:14 MR: 19:22 MS: 4:28
22 SR: 5:44 SS: 19:13 MR: 19:53 MS: 5:40 FM: 5:02	23 SR: 5:45 SS: 19:11 MR: 20:20 MS: 6:49	24 SR: 5:46 SS: 19:10 MR: 20:44 MS: 7:55	25 SR: 5:47 SS: 19:08 MR: 21:07 MS: 8:59	26 SR: 5:48 SS: 19:07 MR: 21:30 MS: 10:01	27 SR: 5:49 SS: 19:05 MR: 21:54 MS: 11:02	28 SR: 5:50 SS: 19:04 MR: 22:21 MS: 12:03
29 SR: 5:51 SS: 19:02 MR: 22:52 MS: 13:04	30 SR: 5:52 SS: 19:00 MR: 23:28 MS: 14:04 LQ: 0:15	31 SR: 5:53 SS: 18:59 MR: None MS: 15:03				

October 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
					SR: 6:23	SR: 6:24
					SS: 18:07	SS: 18:06
					MR: 0:46	MR: 1:51
					MS: 16:04	MS: 16:38
3	4	5	6	7	8	9
SR: 6:25	SR: 6:26	SR: 6:27	SR: 6:28	SR: 6:29	SR: 6:30	SR: 6:31
SS: 18:04	SS: 18:03	SS: 18:01	SS: 17:59	SS: 17:58	SS: 17:56	SS: 17:55
MR: 3:00	MR: 4:10	MR: 5:21	MR: 6:34	MR: 7:49	MR: 9:05	MR: 10:23
MS: 17:09	MS: 17:36	MS: 18:03	MS: 18:30	MS: 18:59	MS: 19:31	MS: 20:10
			NM: 4:06			
10	11	12	13	14	15	16
SR: 6:32	SR: 6:33	SR: 6:34	SR: 6:35	SR: 6:36	SR: 6:37	SR: 6:38
SS: 17:53	SS: 17:51	SS: 17:50	SS: 17:48	SS: 17:47	SS: 17:45	SS: 17:44
MR: 11:39	MR: 12:50	MR: 13:51	MR: 14:42	MR: 15:24	MR: 15:57	MR: 16:25
MS: 20:57	MS: 21:52	MS: 22:56	MS: None	MS: 0:05	MS: 1:15	MS: 2:23
		FQ: 20:28				
17	18	19	20	21	22	23
SR: 6:39	SR: 6:41	SR: 6:42	SR: 6:43	SR: 6:44	SR: 6:45	SR: 6:46
SS: 17:42	SS: 17:41	SS: 17:39	SS: 17:38	SS: 17:36	SS: 17:35	SS: 17:34
MR: 16:50	MR: 17:13	MR: 17:35	MR: 17:58	MR: 18:23	MR: 18:50	MR: 19:22
MS: 3:30	MS: 4:34	MS: 5:37	MS: 6:38	MS: 7:40	MS: 8:42	MS: 9:43
			FM: 7:58			
24	25	26	27	28	29	30
SR: 6:47	SR: 6:48	SR: 6:49	SR: 6:51	SR: 6:52	SR: 6:53	SR: 6:54
SS: 17:32	SS: 17:31	SS: 17:30	SS: 17:28	SS: 17:27	SS: 17:26	SS: 17:25
MR: 19:59	MR: 20:43	MR: 21:34	MR: 22:32	MR: 23:34	MR: None	MR: 0:40
MS: 10:43	MS: 11:41	MS: 12:33	MS: 13:20	MS: 14:01	MS: 14:36	MS: 15:07
				LQ: 13:07		
31						
SR: 6:55						
SS: 17:23						
MR: 1:47						
MS: 15:35						

November 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 SR: 6:56 SS: 17:22 MR: 2:57 MS: 16:01	2 SR: 6:58 SS: 17:21 MR: 4:08 MS: 16:27	3 SR: 6:59 SS: 17:20 MR: 5:22 MS: 16:55	4 SR: 7:00 SS: 17:19 MR: 6:39 MS: 17:26 NM: 14:15	5 SR: 7:01 SS: 17:18 MR: 7:58 MS: 18:03	6 SR: 7:02 SS: 17:16 MR: 9:18 MS: 18:47
7 SR: 7:03 SS: 17:15 MR: 10:34 MS: 19:41	8 SR: 7:05 SS: 17:14 MR: 11:42 MS: 20:44	9 SR: 7:06 SS: 17:13 MR: 12:39 MS: 21:54	10 SR: 7:07 SS: 17:12 MR: 13:25 MS: 23:05	11 SR: 7:08 SS: 17:12 MR: 14:01 MS: None FQ: 5:48	12 SR: 7:09 SS: 17:11 MR: 14:30 MS: 0:15	13 SR: 7:10 SS: 17:10 MR: 14:56 MS: 1:22
14 SR: 7:12 SS: 17:09 MR: 15:19 MS: 2:27	15 SR: 7:13 SS: 17:08 MR: 15:41 MS: 3:29	16 SR: 7:14 SS: 17:07 MR: 16:03 MS: 4:30	17 SR: 7:15 SS: 17:07 MR: 16:27 MS: 5:31	18 SR: 7:16 SS: 17:06 MR: 16:53 MS: 6:33	19 SR: 7:17 SS: 17:05 MR: 17:23 MS: 7:34 FM: 2:00 LE: 2:05	20 SR: 7:18 SS: 17:04 MR: 17:58 MS: 8:35
21 SR: 7:20 SS: 17:04 MR: 18:40 MS: 9:34	22 SR: 7:21 SS: 17:03 MR: 19:28 MS: 10:28	23 SR: 7:22 SS: 17:03 MR: 20:23 MS: 11:17	24 SR: 7:23 SS: 17:02 MR: 21:23 MS: 12:00	25 SR: 7:24 SS: 17:02 MR: 22:26 MS: 12:36	26 SR: 7:25 SS: 17:01 MR: 23:31 MS: 13:08	27 SR: 7:26 SS: 17:01 MR: None MS: 13:36 LQ: 5:30
28 SR: 7:27 SS: 17:01 MR: 0:38 MS: 14:01	29 SR: 7:28 SS: 17:00 MR: 1:46 MS: 14:26	30 SR: 7:29 SS: 17:00 MR: 2:56 MS: 14:52				

December 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
			SR: 7:30	SR: 7:31	SR: 7:32	SR: 7:33
			SS: 17:00	SS: 16:59	SS: 16:59	SS: 16:59
			MR: 4:09	MR: 5:26	MR: 6:46	MR: 8:06
			MS: 15:21	MS: 15:53	MS: 16:33	MS: 17:23
						NM: 0:45
						SE: 0:32
5	6	7	8	9	10	11
SR: 7:34	SR: 7:35	SR: 7:36	SR: 7:37	SR: 7:38	SR: 7:39	SR: 7:39
SS: 16:59	SS: 16:59	SS: 16:59	SS: 16:59	SS: 16:59	SS: 16:59	SS: 16:59
MR: 9:21	MR: 10:26	MR: 11:19	MR: 12:00	MR: 12:33	MR: 13:00	MR: 13:24
MS: 18:24	MS: 19:33	MS: 20:47	MS: 22:01	MS: 23:11	MS: None	MS: 0:18
					FQ: 18:38	
12	13	14	15	16	17	18
SR: 7:40	SR: 7:41	SR: 7:42	SR: 7:42	SR: 7:43	SR: 7:44	SR: 7:44
SS: 16:59	SS: 17:00	SS: 17:00	SS: 17:00	SS: 17:00	SS: 17:01	SS: 17:01
MR: 13:47	MR: 14:09	MR: 14:31	MR: 14:56	MR: 15:25	MR: 15:58	MR: 16:38
MS: 1:22	MS: 2:24	MS: 3:25	MS: 4:25	MS: 5:27	MS: 6:27	MS: 7:27
						FM: 21:38
19	20	21	22	23	24	25
SR: 7:45	SR: 7:45	SR: 7:46	SR: 7:46	SR: 7:47	SR: 7:47	SR: 7:48
SS: 17:02	SS: 17:02	SS: 17:03	SS: 17:03	SS: 17:04	SS: 17:04	SS: 17:05
MR: 17:24	MR: 18:17	MR: 19:16	MR: 20:18	MR: 21:22	MR: 22:27	MR: 23:32
MS: 8:23	MS: 9:14	MS: 9:59	MS: 10:37	MS: 11:10	MS: 11:39	MS: 12:04
		DSO: 8:56				
26	27	28	29	30	31	
SR: 7:48	SR: 7:48	SR: 7:49	SR: 7:49	SR: 7:49	SR: 7:49	
SS: 17:05	SS: 17:06	SS: 17:07	SS: 17:08	SS: 17:08	SS: 17:09	
MR: None	MR: 0:39	MR: 1:48	MR: 3:00	MR: 4:16	MR: 5:35	
MS: 12:29	MS: 12:53	MS: 13:19	MS: 13:48	MS: 14:23	MS: 15:06	
LQ: 19:26						

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2021
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Seasons Report for 2021

MEQ: 3/20/2021 2:38	Winter Length: 88.98 days
JSO: 6/20/2021 20:31	Spring Length: 92.75 days
SEQ: 9/22/2021 12:20	Summer Length: 93.66 days
DSO: 12/21/2021 8:56	Autumn Length: 89.86 days

Dates of Easter Report for 2021

4/ 4/2021

Lunar Eclipse Report for 2021

Lunar eclipse on 5/26/2021
Moon rise: 20:31
Moon set: 5:09
Magnitude: 1.01
Partial phase begins: 2:49
Total phase begins: 4:14
Time of maximum eclipse: 4:22
Total phase ends: 4:30
Partial phase ends: 5:55

Lunar eclipse on 11/19/2021
Moon rise: 17:23
Moon set: 7:34
Magnitude: 0.98
Partial phase begins: 0:22
Time of maximum eclipse: 2:05
Partial phase ends: 3:49

Solar Eclipse Report for 2021

Solar eclipse on 6/10/2021
Sun rise: 4:55
Sun set: 19:56
Time of maximum eclipse: 3:44
Eclipse is annular
Eclipse is visible in the northern hemisphere

Solar eclipse on 12/ 4/2021
Sun rise: 7:33
Sun set: 16:59
Time of maximum eclipse: 0:32
Eclipse is total
Eclipse is visible in the southern 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.

Planet View Info Report for 1/ 1/2021 to 12/31/2021

Mercury

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	8:29	17:37	19h18m02s	-24°20'56"	7°15'10"	0.979	1.38955
1/ 8/2021	8:42	18:08	20h07m13s	-22°21'58"	11°27'46"	0.936	1.31061
1/15/2021	8:47	18:40	20h53m43s	-19°10'20"	15°32'42"	0.838	1.19002
1/22/2021	8:41	19:04	21h32m24s	-15°09'55"	18°21'02"	0.639	1.02406
1/29/2021	8:19	19:04	21h52m11s	-11°36'33"	16°59'00"	0.323	0.83334
2/ 5/2021	7:34	18:22	21h40m40s	-10°36'41"	8°07'07"	0.049	0.68577
2/12/2021	6:43	17:16	21h09m32s	-12°32'42"	8°17'25"	0.041	0.64935
2/19/2021	6:09	16:27	20h51m54s	-14°53'07"	19°28'00"	0.221	0.71016
2/26/2021	5:52	16:04	20h57m44s	-16°02'18"	25°19'59"	0.404	0.81218
3/ 5/2021	5:46	16:01	21h19m43s	-15°49'56"	27°13'06"	0.543	0.92102
3/12/2021	5:45	16:12	21h50m52s	-14°22'59"	26°39'42"	0.646	1.02384
3/19/2021	5:44	16:31	22h27m15s	-11°48'18"	24°28'56"	0.728	1.11687
3/26/2021	5:44	16:57	23h07m03s	-8°11'18"	21°01'54"	0.800	1.19890
4/ 2/2021	5:43	17:29	23h49m47s	-3°36'51"	16°24'33"	0.869	1.26789
4/ 9/2021	5:43	18:07	0h35m49s	1°49'04"	10°35'13"	0.938	1.31816
4/16/2021	5:44	18:52	1h26m02s	7°54'11"	3°33'30"	0.992	1.33716
4/23/2021	5:49	19:43	2h20m48s	14°08'45"	4°31'34"	0.984	1.30471
4/30/2021	5:57	20:33	3h17m35s	19°35'44"	12°21'55"	0.859	1.20689
5/ 7/2021	6:07	21:11	4h10m24s	23°18'02"	18°26'38"	0.654	1.06069
5/14/2021	6:14	21:31	4h53m25s	25°01'48"	21°38'49"	0.451	0.90268
5/21/2021	6:15	21:30	5h22m51s	25°06'57"	21°30'03"	0.280	0.75966
5/28/2021	6:05	21:07	5h36m12s	23°59'34"	17°40'43"	0.140	0.64631
6/ 4/2021	5:42	20:25	5h33m12s	22°04'57"	10°15'15"	0.040	0.57343
6/11/2021	5:08	19:34	5h19m05s	19°58'17"	3°07'35"	0.004	0.55059
6/18/2021	4:33	18:49	5h05m13s	18°31'14"	10°53'02"	0.046	0.58196
6/25/2021	4:04	18:21	5h02m20s	18°22'12"	17°54'44"	0.151	0.66301
7/ 2/2021	3:46	18:14	5h15m00s	19°26'59"	21°15'36"	0.297	0.78417
7/ 9/2021	3:41	18:24	5h43m46s	21°09'03"	20°55'41"	0.479	0.93423
7/16/2021	3:52	18:49	6h27m59s	22°34'49"	17°15'24"	0.692	1.09609
7/23/2021	4:23	19:19	7h25m00s	22°40'42"	10°51'44"	0.892	1.23878
7/30/2021	5:06	19:44	8h27m21s	20°42'59"	3°19'07"	0.991	1.32651
8/ 6/2021	5:53	19:58	9h26m20s	16°56'10"	5°07'38"	0.983	1.35018
8/13/2021	6:35	20:03	10h18m11s	12°07'57"	11°37'32"	0.927	1.32701
8/20/2021	7:11	20:01	11h03m13s	6°57'37"	17°03'03"	0.860	1.27522
8/27/2021	7:40	19:55	11h42m41s	1°49'17"	21°21'01"	0.792	1.20514
9/ 3/2021	8:03	19:45	12h17m31s	-3°01'26"	24°31'07"	0.718	1.12121
9/10/2021	8:20	19:32	12h47m47s	-7°20'53"	26°24'25"	0.632	1.02500
9/17/2021	8:28	19:16	13h12m07s	-10°51'20"	26°34'17"	0.521	0.91801
9/24/2021	8:22	18:54	13h26m54s	-13°02'02"	24°01'03"	0.369	0.80553
10/ 1/2021	7:50	18:25	13h25m42s	-12°55'45"	16°57'49"	0.173	0.70475
10/ 8/2021	6:47	17:48	13h04m47s	-9°29'38"	4°20'57"	0.012	0.65843
10/15/2021	5:41	17:16	12h41m31s	-4°34'49"	10°31'23"	0.092	0.72312
10/22/2021	5:13	16:58	12h43m27s	-2°54'47"	17°45'03"	0.407	0.89056
10/29/2021	5:22	16:51	13h10m18s	-5°09'34"	17°43'50"	0.703	1.08057
11/ 5/2021	5:48	16:48	13h48m39s	-9°13'29"	14°22'58"	0.872	1.23550
11/12/2021	6:19	16:47	14h30m56s	-13°36'09"	10°08'19"	0.952	1.34376
11/19/2021	6:50	16:48	15h14m48s	-17°36'51"	5°51'50"	0.987	1.41135
11/26/2021	7:21	16:53	15h59m54s	-20°57'36"	1°49'58"	0.999	1.44531
12/ 3/2021	7:50	17:02	16h46m21s	-23°28'04"	2°23'36"	0.998	1.44986
12/10/2021	8:17	17:16	17h34m05s	-25°00'02"	6°13'36"	0.986	1.42631
12/17/2021	8:39	17:36	18h22m43s	-25°25'59"	10°05'34"	0.960	1.37343

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
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12/24/2021	8:56	18:01	19h11m05s	-24°39'49"	13°54'38"	0.908	1.28743
12/31/2021	9:05	18:28	19h56m43s	-22°40'46"	17°20'24"	0.804	1.16276

Venus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	6:21	15:43	17h18m30s	-22°26'07"	20°22'24"	0.941	1.55990
1/ 8/2021	6:34	15:51	17h56m28s	-23°04'19"	18°43'50"	0.950	1.58398
1/15/2021	6:45	16:01	18h34m40s	-23°08'06"	17°05'13"	0.959	1.60616
1/22/2021	6:53	16:14	19h12m43s	-22°37'05"	15°26'27"	0.966	1.62644
1/29/2021	6:58	16:29	19h50m20s	-21°32'15"	13°47'25"	0.973	1.64490
2/ 5/2021	7:01	16:45	20h27m14s	-19°55'44"	12°08'10"	0.979	1.66155
2/12/2021	7:01	17:02	21h03m15s	-17°50'32"	10°28'46"	0.985	1.67632
2/19/2021	6:58	17:19	21h38m19s	-15°20'28"	8°49'10"	0.989	1.68913
2/26/2021	6:54	17:36	22h12m25s	-12°29'38"	7°09'20"	0.993	1.70000
3/ 5/2021	6:49	17:53	22h45m42s	-9°22'18"	5°29'40"	0.996	1.70894
3/12/2021	6:42	18:10	23h18m18s	-6°02'43"	3°51'23"	0.998	1.71584
3/19/2021	6:35	18:26	23h50m26s	-2°35'12"	2°19'05"	0.999	1.72056
3/26/2021	6:27	18:42	0h22m18s	0°56'03"	1°21'28"	1.000	1.72305
4/ 2/2021	6:19	18:59	0h54m09s	4°26'53"	2°06'54"	0.999	1.72329
4/ 9/2021	6:12	19:15	1h26m14s	7°53'13"	3°39'58"	0.998	1.72118
4/16/2021	6:05	19:32	1h58m46s	11°10'51"	5°22'41"	0.996	1.71654
4/23/2021	5:59	19:49	2h31m56s	14°15'32"	7°08'59"	0.992	1.70929
4/30/2021	5:55	20:06	3h05m54s	17°02'58"	8°57'16"	0.988	1.69943
5/ 7/2021	5:53	20:23	3h40m46s	19°29'00"	10°46'48"	0.983	1.68689
5/14/2021	5:53	20:39	4h16m32s	21°29'34"	12°37'13"	0.976	1.67158
5/21/2021	5:55	20:55	4h53m06s	23°00'59"	14°28'19"	0.968	1.65342
5/28/2021	6:01	21:08	5h30m17s	24°00'15"	16°19'50"	0.959	1.63246
6/ 4/2021	6:09	21:20	6h07m47s	24°25'20"	18°11'23"	0.949	1.60878
6/11/2021	6:20	21:28	6h45m18s	24°15'18"	20°02'39"	0.937	1.58237
6/18/2021	6:33	21:34	7h22m28s	23°30'29"	21°53'28"	0.925	1.55324
6/25/2021	6:48	21:37	7h58m59s	22°12'28"	23°43'35"	0.911	1.52151
7/ 2/2021	7:03	21:37	8h34m34s	20°23'50"	25°32'32"	0.896	1.48737
7/ 9/2021	7:20	21:34	9h09m09s	18°07'52"	27°20'01"	0.881	1.45092
7/16/2021	7:36	21:29	9h42m38s	15°28'26"	29°05'49"	0.864	1.41224
7/23/2021	7:52	21:23	10h15m05s	12°29'36"	30°49'42"	0.846	1.37150
7/30/2021	8:07	21:15	10h46m36s	9°15'30"	32°31'10"	0.827	1.32893
8/ 6/2021	8:23	21:06	11h17m21s	5°50'06"	34°09'53"	0.808	1.28471
8/13/2021	8:37	20:56	11h47m33s	2°17'22"	35°45'36"	0.788	1.23892
8/20/2021	8:52	20:46	12h17m23s	-1°18'47"	37°18'01"	0.767	1.19170
8/27/2021	9:06	20:36	12h47m03s	-4°54'31"	38°46'35"	0.745	1.14327
9/ 3/2021	9:21	20:26	13h16m47s	-8°26'10"	40°10'44"	0.722	1.09381
9/10/2021	9:35	20:16	13h46m46s	-11°50'00"	41°30'02"	0.699	1.04340
9/17/2021	9:50	20:07	14h17m09s	-15°02'10"	42°43'56"	0.674	0.99211
9/24/2021	10:04	19:59	14h48m01s	-17°58'50"	43°51'24"	0.649	0.94011
10/ 1/2021	10:19	19:53	15h19m25s	-20°36'18"	44°51'15"	0.622	0.88757
10/ 8/2021	10:32	19:48	15h51m18s	-22°51'09"	45°42'18"	0.594	0.83459
10/15/2021	10:45	19:45	16h23m30s	-24°40'15"	46°22'58"	0.564	0.78121
10/22/2021	10:55	19:44	16h55m40s	-26°01'09"	46°50'46"	0.532	0.72761
10/29/2021	11:03	19:44	17h27m23s	-26°52'23"	47°02'29"	0.498	0.67404
11/ 5/2021	11:07	19:46	17h58m06s	-27°13'48"	46°54'17"	0.461	0.62069
11/12/2021	11:08	19:48	18h27m07s	-27°06'31"	46°20'58"	0.420	0.56779
11/19/2021	11:03	19:49	18h53m39s	-26°33'11"	45°14'53"	0.376	0.51571
11/26/2021	10:54	19:49	19h16m44s	-25°37'46"	43°25'40"	0.326	0.46510
12/ 3/2021	10:39	19:44	19h35m22s	-24°25'18"	40°40'04"	0.271	0.41674
12/10/2021	10:18	19:35	19h48m18s	-23°01'42"	36°40'56"	0.210	0.37170

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
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12/17/2021	9:49	19:18	19h54m06s	-21°33'22"	31°07'23"	0.146	0.33157
12/24/2021	9:12	18:52	19h51m34s	-20°06'21"	23°41'45"	0.082	0.29873
12/31/2021	8:28	18:18	19h40m39s	-18°45'43"	14°29'24"	0.030	0.27601

Mars

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	12:38	2:05	1h40m20s	11°20'53"	106°34'26"	0.891	0.89851
1/ 8/2021	12:18	1:53	1h52m07s	12°34'47"	102°34'20"	0.887	0.96268
1/15/2021	11:58	1:43	2h04m48s	13°49'47"	98°46'08"	0.886	1.02839
1/22/2021	11:40	1:34	2h18m18s	15°04'47"	95°08'27"	0.885	1.09525
1/29/2021	11:22	1:25	2h32m31s	16°18'42"	91°39'44"	0.885	1.16292
2/ 5/2021	11:04	1:17	2h47m21s	17°30'31"	88°18'25"	0.887	1.23118
2/12/2021	10:48	1:10	3h02m47s	18°39'24"	85°03'33"	0.889	1.29983
2/19/2021	10:32	1:02	3h18m44s	19°44'33"	81°54'43"	0.891	1.36855
2/26/2021	10:16	0:55	3h35m11s	20°45'10"	78°51'15"	0.894	1.43706
3/ 5/2021	10:02	0:49	3h52m03s	21°40'28"	75°52'19"	0.898	1.50518
3/12/2021	9:48	0:42	4h09m20s	22°29'50"	72°57'25"	0.902	1.57276
3/19/2021	9:35	0:35	4h26m57s	23°12'43"	70°06'25"	0.906	1.63954
3/26/2021	9:23	0:28	4h44m53s	23°48'35"	67°19'05"	0.910	1.70525
4/ 2/2021	9:11	0:21	5h03m04s	24°16'56"	64°34'56"	0.915	1.76977
4/ 9/2021	9:01	0:13	5h21m28s	24°37'28"	61°53'34"	0.919	1.83298
4/16/2021	8:51	0:05	5h40m02s	24°49'52"	59°14'55"	0.924	1.89467
4/23/2021	8:42	23:55	5h58m42s	24°53'58"	56°38'56"	0.929	1.95462
4/30/2021	8:33	23:46	6h17m25s	24°49'38"	54°05'20"	0.934	2.01271
5/ 7/2021	8:25	23:36	6h36m09s	24°36'52"	51°33'43"	0.938	2.06890
5/14/2021	8:18	23:25	6h54m51s	24°15'42"	49°04'00"	0.943	2.12300
5/21/2021	8:11	23:14	7h13m28s	23°46'18"	46°36'12"	0.948	2.17483
5/28/2021	8:05	23:02	7h31m58s	23°08'52"	44°10'07"	0.952	2.22431
6/ 4/2021	7:59	22:49	7h50m18s	22°23'40"	41°45'25"	0.957	2.27140
6/11/2021	7:54	22:36	8h08m29s	21°31'01"	39°21'55"	0.961	2.31600
6/18/2021	7:48	22:22	8h26m29s	20°31'16"	36°59'39"	0.965	2.35793
6/25/2021	7:43	22:08	8h44m16s	19°24'52"	34°38'32"	0.969	2.39713
7/ 2/2021	7:38	21:53	9h01m51s	18°12'13"	32°18'15"	0.973	2.43360
7/ 9/2021	7:33	21:37	9h19m15s	16°53'44"	29°58'35"	0.976	2.46728
7/16/2021	7:28	21:21	9h36m27s	15°29'54"	27°39'34"	0.980	2.49801
7/23/2021	7:23	21:05	9h53m27s	14°01'12"	25°21'10"	0.983	2.52576
7/30/2021	7:18	20:49	10h10m19s	12°28'06"	23°03'10"	0.986	2.55055
8/ 6/2021	7:13	20:32	10h27m01s	10°51'04"	20°45'19"	0.988	2.57234
8/13/2021	7:08	20:15	10h43m38s	9°10'33"	18°27'38"	0.991	2.59103
8/20/2021	7:03	19:58	11h00m09s	7°27'06"	16°10'10"	0.993	2.60658
8/27/2021	6:58	19:41	11h16m36s	5°41'11"	13°52'48"	0.995	2.61905
9/ 3/2021	6:53	19:23	11h33m03s	3°53'15"	11°35'22"	0.996	2.62844
9/10/2021	6:48	19:06	11h49m31s	2°03'49"	9°17'50"	0.998	2.63468
9/17/2021	6:43	18:48	12h06m01s	0°13'25"	7°00'28"	0.999	2.63775
9/24/2021	6:39	18:31	12h22m37s	-1°37'24"	4°43'29"	0.999	2.63774
10/ 1/2021	6:34	18:14	12h39m20s	-3°28'08"	2°27'59"	1.000	2.63471
10/ 8/2021	6:30	17:57	12h56m14s	-5°18'14"	0°39'19"	1.000	2.62861
10/15/2021	6:25	17:40	13h13m20s	-7°07'05"	2°19'23"	1.000	2.61946
10/22/2021	6:21	17:24	13h30m40s	-8°54'01"	4°34'44"	0.999	2.60738
10/29/2021	6:18	17:08	13h48m16s	-10°38'27"	6°51'53"	0.999	2.59250
11/ 5/2021	6:14	16:52	14h06m12s	-12°19'42"	9°09'25"	0.998	2.57481
11/12/2021	6:11	16:37	14h24m29s	-13°57'02"	11°26'51"	0.996	2.55437
11/19/2021	6:07	16:22	14h43m08s	-15°29'41"	13°43'47"	0.995	2.53134
11/26/2021	6:04	16:08	15h02m10s	-16°56'55"	16°00'09"	0.993	2.50590
12/ 3/2021	6:02	15:55	15h21m38s	-18°17'57"	18°15'52"	0.990	2.47812

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 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2021
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12/10/2021	5:59	15:43	15h41m31s	-19°31'58"	20°30'42"	0.988	2.44806
12/17/2021	5:56	15:31	16h01m49s	-20°38'09"	22°44'17"	0.985	2.41596
12/24/2021	5:53	15:20	16h22m31s	-21°35'45"	24°56'27"	0.982	2.38202
12/31/2021	5:50	15:11	16h43m37s	-22°24'01"	27°07'09"	0.978	2.34636

Jupiter

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	9:10	18:51	20h20m40s	-20°01'01"	21°59'10"	0.999	5.99510
1/ 8/2021	8:48	18:32	20h27m20s	-19°38'51"	16°27'57"	0.999	6.02966
1/15/2021	8:25	18:12	20h34m04s	-19°15'27"	10°58'19"	1.000	6.05415
1/22/2021	8:03	17:53	20h40m51s	-18°50'57"	5°30'34"	1.000	6.06829
1/29/2021	7:41	17:34	20h47m38s	-18°25'28"	0°31'28"	1.000	6.07208
2/ 5/2021	7:18	17:15	20h54m23s	-17°59'10"	5°26'11"	1.000	6.06553
2/12/2021	6:55	16:56	21h01m04s	-17°32'10"	10°51'30"	1.000	6.04866
2/19/2021	6:33	16:37	21h07m40s	-17°04'40"	16°17'06"	0.999	6.02157
2/26/2021	6:10	16:17	21h14m09s	-16°36'50"	21°42'42"	0.999	5.98458
3/ 5/2021	5:47	15:58	21h20m29s	-16°08'54"	27°08'41"	0.998	5.93804
3/12/2021	5:24	15:38	21h26m39s	-15°41'01"	32°35'35"	0.997	5.88229
3/19/2021	5:00	15:18	21h32m36s	-15°13'28"	38°03'43"	0.996	5.81775
3/26/2021	4:37	14:58	21h38m20s	-14°46'28"	43°33'16"	0.995	5.74503
4/ 2/2021	4:13	14:38	21h43m48s	-14°20'14"	49°04'44"	0.994	5.66481
4/ 9/2021	3:49	14:17	21h48m58s	-13°55'01"	54°38'52"	0.993	5.57770
4/16/2021	3:25	13:55	21h53m49s	-13°31'06"	60°16'12"	0.993	5.48442
4/23/2021	3:01	13:34	21h58m19s	-13°08'45"	65°57'04"	0.992	5.38587
4/30/2021	2:36	13:11	22h02m26s	-12°48'12"	71°42'03"	0.991	5.28300
5/ 7/2021	2:11	12:49	22h06m09s	-12°29'43"	77°32'01"	0.990	5.17671
5/14/2021	1:46	12:25	22h09m24s	-12°13'34"	83°27'44"	0.990	5.06800
5/21/2021	1:20	12:01	22h12m10s	-12°00'02"	89°29'38"	0.990	4.95809
5/28/2021	0:54	11:36	22h14m26s	-11°49'19"	95°38'14"	0.990	4.84819
6/ 4/2021	0:28	11:11	22h16m10s	-11°41'38"	101°54'25"	0.990	4.73948
6/11/2021	0:01	10:45	22h17m19s	-11°37'09"	108°18'55"	0.991	4.63327
6/18/2021	23:30	10:18	22h17m53s	-11°36'02"	114°52'01"	0.992	4.53102
6/25/2021	23:03	9:50	22h17m51s	-11°38'17"	121°33'52"	0.993	4.43417
7/ 2/2021	22:35	9:22	22h17m13s	-11°43'54"	128°24'50"	0.994	4.34409
7/ 9/2021	22:07	8:52	22h16m00s	-11°52'46"	135°25'06"	0.995	4.26219
7/16/2021	21:38	8:22	22h14m13s	-12°04'40"	142°34'15"	0.996	4.18997
7/23/2021	21:09	7:51	22h11m56s	-12°19'14"	149°51'18"	0.997	4.12875
7/30/2021	20:40	7:20	22h09m12s	-12°36'00"	157°15'25"	0.998	4.07961
8/ 6/2021	20:10	6:48	22h06m06s	-12°54'26"	164°45'26"	0.999	4.04356
8/13/2021	19:41	6:16	22h02m44s	-13°13'52"	172°18'24"	1.000	4.02145
8/20/2021	19:11	5:44	21h59m14s	-13°33'35"	178°49'00"	1.000	4.01378
8/27/2021	18:41	5:12	21h55m42s	-13°52'52"	172°12'52"	1.000	4.02064
9/ 3/2021	18:11	4:40	21h52m18s	-14°11'05"	164°36'43"	0.999	4.04194
9/10/2021	17:41	4:08	21h49m08s	-14°27'36"	157°01'08"	0.998	4.07733
9/17/2021	17:12	3:37	21h46m19s	-14°41'52"	149°29'24"	0.997	4.12606
9/24/2021	16:43	3:06	21h43m56s	-14°53'29"	142°03'11"	0.996	4.18706
10/ 1/2021	16:14	2:37	21h42m06s	-15°02'10"	134°43'20"	0.995	4.25918
10/ 8/2021	15:46	2:08	21h40m50s	-15°07'43"	127°30'38"	0.994	4.34117
10/15/2021	15:18	1:39	21h40m12s	-15°09'59"	120°25'58"	0.993	4.43151
10/22/2021	14:50	1:12	21h40m13s	-15°08'59"	113°29'39"	0.992	4.52861
10/29/2021	14:23	0:45	21h40m52s	-15°04'43"	106°41'28"	0.991	4.63098
11/ 5/2021	13:57	0:20	21h42m08s	-14°57'16"	100°01'11"	0.990	4.73716
11/12/2021	13:30	23:51	21h44m01s	-14°46'42"	93°28'47"	0.990	4.84560
11/19/2021	13:04	23:27	21h46m29s	-14°33'10"	87°04'04"	0.990	4.95477
11/26/2021	12:39	23:04	21h49m28s	-14°16'49"	80°46'25"	0.990	5.06338

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2021
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12/ 3/2021	12:14	22:41	21h52m58s	-13°57'45"	74°35'13"	0.991	5.17019
12/10/2021	11:49	22:19	21h56m54s	-13°36'08"	68°30'12"	0.992	5.27395
12/17/2021	11:24	21:57	22h01m15s	-13°12'07"	62°31'08"	0.992	5.37346
12/24/2021	11:00	21:36	22h05m58s	-12°45'53"	56°37'27"	0.993	5.46780
12/31/2021	10:36	21:15	22h11m00s	-12°17'36"	50°48'31"	0.994	5.55608

Saturn

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	9:06	18:45	20h15m54s	-20°10'21"	20°51'34"	1.000	10.91748
1/ 8/2021	8:41	18:21	20h19m15s	-19°59'53"	14°32'03"	1.000	10.95252
1/15/2021	8:16	17:58	20h22m40s	-19°49'00"	8°13'36"	1.000	10.97512
1/22/2021	7:51	17:35	20h26m06s	-19°37'47"	1°57'50"	1.000	10.98499
1/29/2021	7:26	17:11	20h29m33s	-19°26'19"	4°22'54"	1.000	10.98209
2/ 5/2021	7:01	16:48	20h32m58s	-19°14'43"	10°38'39"	1.000	10.96653
2/12/2021	6:37	16:25	20h36m20s	-19°03'04"	16°54'49"	1.000	10.93843
2/19/2021	6:11	16:01	20h39m37s	-18°51'31"	23°11'01"	1.000	10.89808
2/26/2021	5:46	15:37	20h42m48s	-18°40'08"	29°27'15"	0.999	10.84604
3/ 5/2021	5:21	15:14	20h45m51s	-18°29'05"	35°43'53"	0.999	10.78296
3/12/2021	4:56	14:50	20h48m45s	-18°18'28"	42°01'23"	0.999	10.70949
3/19/2021	4:30	14:25	20h51m28s	-18°08'25"	48°19'56"	0.999	10.62647
3/26/2021	4:05	14:01	20h53m59s	-17°59'03"	54°39'35"	0.998	10.53495
4/ 2/2021	3:39	13:36	20h56m17s	-17°50'30"	61°00'43"	0.998	10.43604
4/ 9/2021	3:13	13:11	20h58m21s	-17°42'51"	67°23'51"	0.998	10.33085
4/16/2021	2:47	12:46	21h00m09s	-17°36'15"	73°49'20"	0.998	10.22061
4/23/2021	2:20	12:20	21h01m40s	-17°30'48"	80°17'11"	0.998	10.10676
4/30/2021	1:54	11:54	21h02m54s	-17°26'33"	86°47'40"	0.997	9.99076
5/ 7/2021	1:27	11:28	21h03m50s	-17°23'36"	93°21'20"	0.997	9.87400
5/14/2021	1:00	11:01	21h04m26s	-17°21'59"	99°58'30"	0.998	9.75797
5/21/2021	0:33	10:34	21h04m44s	-17°21'45"	106°39'07"	0.998	9.64433
5/28/2021	0:05	10:06	21h04m43s	-17°22'54"	113°23'14"	0.998	9.53466
6/ 4/2021	23:34	9:38	21h04m22s	-17°25'24"	120°11'10"	0.998	9.43040
6/11/2021	23:06	9:09	21h03m43s	-17°29'12"	127°03'06"	0.998	9.33308
6/18/2021	22:37	8:41	21h02m47s	-17°34'14"	133°58'45"	0.999	9.24424
6/25/2021	22:09	8:11	21h01m34s	-17°40'22"	140°57'47"	0.999	9.16526
7/ 2/2021	21:41	7:42	21h00m06s	-17°47'28"	148°00'08"	0.999	9.09729
7/ 9/2021	21:12	7:12	20h58m26s	-17°55'21"	155°05'40"	1.000	9.04145
7/16/2021	20:43	6:42	20h56m35s	-18°03'50"	162°13'45"	1.000	8.99876
7/23/2021	20:14	6:12	20h54m36s	-18°12'42"	169°23'22"	1.000	8.96994
7/30/2021	19:45	5:42	20h52m33s	-18°21'44"	176°31'36"	1.000	8.95539
8/ 6/2021	19:16	5:12	20h50m27s	-18°30'43"	176°05'18"	1.000	8.95542
8/13/2021	18:47	4:42	20h48m23s	-18°39'27"	168°54'50"	1.000	8.97013
8/20/2021	18:18	4:12	20h46m23s	-18°47'41"	161°42'20"	1.000	8.99924
8/27/2021	17:49	3:42	20h44m31s	-18°55'17"	154°30'25"	1.000	9.04219
9/ 3/2021	17:20	3:12	20h42m50s	-19°02'05"	147°19'33"	0.999	9.09832
9/10/2021	16:52	2:43	20h41m21s	-19°07'55"	140°10'20"	0.999	9.16675
9/17/2021	16:23	2:14	20h40m07s	-19°12'41"	133°03'31"	0.999	9.24633
9/24/2021	15:55	1:45	20h39m11s	-19°16'19"	125°59'29"	0.998	9.33568
10/ 1/2021	15:27	1:17	20h38m32s	-19°18'45"	118°58'13"	0.998	9.43344
10/ 8/2021	15:00	0:49	20h38m13s	-19°19'56"	111°59'51"	0.998	9.53816
10/15/2021	14:32	0:22	20h38m15s	-19°19'50"	105°04'49"	0.998	9.64817
10/22/2021	14:05	23:51	20h38m36s	-19°18'28"	98°13'14"	0.998	9.76176
10/29/2021	13:38	23:24	20h39m17s	-19°15'51"	91°24'53"	0.998	9.87736
11/ 5/2021	13:11	22:58	20h40m19s	-19°12'00"	84°39'34"	0.998	9.99337
11/12/2021	12:45	22:32	20h41m39s	-19°06'55"	77°57'26"	0.998	10.10810
11/19/2021	12:18	22:07	20h43m17s	-19°00'40"	71°18'33"	0.998	10.21996

11/26/2021	11:52	21:42	20h45m12s	-18°53'18"	64°42'35"	0.998	10.32752
12/ 3/2021	11:26	21:17	20h47m22s	-18°44'52"	58°09'12"	0.998	10.42944
12/10/2021	11:01	20:52	20h49m47s	-18°35'25"	51°38'23"	0.998	10.52435
12/17/2021	10:35	20:28	20h52m25s	-18°25'02"	45°10'13"	0.999	10.61101
12/24/2021	10:10	20:04	20h55m13s	-18°13'47"	38°44'23"	0.999	10.68845
12/31/2021	9:44	19:40	20h58m11s	-18°01'46"	32°20'32"	0.999	10.75578

Uranus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	13:08	2:49	2h18m27s	13°21'25"	116°00'16"	1.000	19.32325
1/ 8/2021	12:40	2:21	2h18m13s	13°20'26"	108°48'41"	0.999	19.43419
1/15/2021	12:12	1:54	2h18m08s	13°20'18"	101°39'36"	0.999	19.54999
1/22/2021	11:45	1:26	2h18m14s	13°21'00"	94°33'31"	0.999	19.66878
1/29/2021	11:18	0:59	2h18m29s	13°22'33"	87°30'46"	0.999	19.78867
2/ 5/2021	10:50	0:32	2h18m55s	13°24'54"	80°31'16"	0.999	19.90794
2/12/2021	10:23	0:06	2h19m30s	13°28'04"	73°34'57"	0.999	20.02489
2/19/2021	9:56	23:35	2h20m14s	13°31'58"	66°42'06"	0.999	20.13777
2/26/2021	9:29	23:09	2h21m06s	13°36'33"	59°52'54"	1.000	20.24496
3/ 5/2021	9:02	22:43	2h22m07s	13°41'47"	53°07'08"	1.000	20.34509
3/12/2021	8:36	22:17	2h23m15s	13°47'34"	46°24'31"	1.000	20.43688
3/19/2021	8:09	21:51	2h24m29s	13°53'51"	39°45'04"	1.000	20.51908
3/26/2021	7:42	21:25	2h25m49s	14°00'34"	33°08'50"	1.000	20.59063
4/ 2/2021	7:16	20:59	2h27m13s	14°07'36"	26°35'33"	1.000	20.65076
4/ 9/2021	6:49	20:34	2h28m42s	14°14'54"	20°04'46"	1.000	20.69881
4/16/2021	6:23	20:08	2h30m13s	14°22'23"	13°36'18"	1.000	20.73415
4/23/2021	5:56	19:43	2h31m47s	14°29'59"	7°10'18"	1.000	20.75641
4/30/2021	5:30	19:17	2h33m22s	14°37'36"	0°51'18"	1.000	20.76547
5/ 7/2021	5:04	18:52	2h34m57s	14°45'10"	5°38'42"	1.000	20.76129
5/14/2021	4:37	18:26	2h36m31s	14°52'37"	12°00'17"	1.000	20.74389
5/21/2021	4:11	18:01	2h38m04s	14°59'53"	18°21'19"	1.000	20.71352
5/28/2021	3:44	17:35	2h39m34s	15°06'54"	24°41'48"	1.000	20.67069
6/ 4/2021	3:18	17:10	2h41m01s	15°13'36"	31°02'17"	1.000	20.61593
6/11/2021	2:51	16:44	2h42m24s	15°19'55"	37°23'17"	1.000	20.54983
6/18/2021	2:25	16:18	2h43m42s	15°25'49"	43°44'55"	1.000	20.47320
6/25/2021	1:58	15:52	2h44m54s	15°31'14"	50°07'24"	1.000	20.38706
7/ 2/2021	1:31	15:26	2h46m00s	15°36'07"	56°31'17"	1.000	20.29247
7/ 9/2021	1:04	14:59	2h46m58s	15°40'26"	62°57'06"	0.999	20.19047
7/16/2021	0:37	14:33	2h47m49s	15°44'08"	69°25'03"	0.999	20.08234
7/23/2021	0:10	14:06	2h48m31s	15°47'11"	75°55'13"	0.999	19.96954
7/30/2021	23:39	13:40	2h49m05s	15°49'35"	82°28'01"	0.999	19.85348
8/ 6/2021	23:12	13:12	2h49m29s	15°51'16"	89°03'58"	0.999	19.73556
8/13/2021	22:45	12:45	2h49m43s	15°52'16"	95°43'13"	0.999	19.61740
8/20/2021	22:17	12:18	2h49m48s	15°52'32"	102°25'42"	0.999	19.50067
8/27/2021	21:50	11:50	2h49m44s	15°52'06"	109°11'36"	0.999	19.38698
9/ 3/2021	21:22	11:22	2h49m30s	15°50'58"	116°01'17"	0.999	19.27787
9/10/2021	20:54	10:54	2h49m06s	15°49'08"	122°54'50"	1.000	19.17499
9/17/2021	20:26	10:26	2h48m34s	15°46'40"	129°51'56"	1.000	19.07997
9/24/2021	19:58	9:58	2h47m53s	15°43'35"	136°52'29"	1.000	18.99426
10/ 1/2021	19:30	9:29	2h47m05s	15°39'58"	143°56'36"	1.000	18.91916
10/ 8/2021	19:02	9:00	2h46m11s	15°35'51"	151°04'11"	1.000	18.85596
10/15/2021	18:34	8:32	2h45m11s	15°31'19"	158°14'42"	1.000	18.80581
10/22/2021	18:05	8:03	2h44m06s	15°26'29"	165°27'41"	1.000	18.76955
10/29/2021	17:37	7:34	2h42m59s	15°21'25"	172°42'48"	1.000	18.74778
11/ 5/2021	17:09	7:05	2h41m51s	15°16'15"	179°34'38"	1.000	18.74100
11/12/2021	16:40	6:36	2h40m43s	15°11'04"	172°39'01"	1.000	18.74944

11/19/2021	16:12	6:07	2h39m36s	15°06'00"	165°19'30"	1.000	18.77296
11/26/2021	15:44	5:38	2h38m32s	15°01'09"	157°59'15"	1.000	18.81116
12/ 3/2021	15:16	5:09	2h37m32s	14°56'38"	150°38'44"	1.000	18.86350
12/10/2021	14:47	4:40	2h36m38s	14°52'34"	143°18'37"	1.000	18.92919
12/17/2021	14:19	4:12	2h35m51s	14°49'02"	135°59'41"	1.000	19.00706
12/24/2021	13:51	3:44	2h35m11s	14°46'06"	128°42'14"	1.000	19.09579
12/31/2021	13:24	3:15	2h34m40s	14°43'51"	121°26'29"	1.000	19.19398

Neptune

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	11:15	22:41	23h19m20s	-5°33'03"	67°42'01"	1.000	30.28648
1/ 8/2021	10:48	22:14	23h19m51s	-5°29'33"	60°42'37"	1.000	30.39587
1/15/2021	10:21	21:48	23h20m28s	-5°25'31"	53°44'37"	1.000	30.49818
1/22/2021	9:53	21:21	23h21m09s	-5°20'59"	46°48'20"	1.000	30.59186
1/29/2021	9:26	20:55	23h21m55s	-5°16'01"	39°54'00"	1.000	30.67562
2/ 5/2021	8:59	20:28	23h22m44s	-5°10'41"	33°01'27"	1.000	30.74840
2/12/2021	8:32	20:02	23h23m37s	-5°05'01"	26°10'37"	1.000	30.80920
2/19/2021	8:05	19:36	23h24m32s	-4°59'07"	19°21'45"	1.000	30.85715
2/26/2021	7:39	19:09	23h25m29s	-4°53'02"	12°35'21"	1.000	30.89168
3/ 5/2021	7:12	18:43	23h26m27s	-4°46'51"	5°52'53"	1.000	30.91247
3/12/2021	6:45	18:17	23h27m26s	-4°40'37"	1°25'54"	1.000	30.91928
3/19/2021	6:18	17:51	23h28m25s	-4°34'25"	7°44'15"	1.000	30.91200
3/26/2021	5:51	17:25	23h29m23s	-4°28'19"	14°23'14"	1.000	30.89087
4/ 2/2021	5:24	16:58	23h30m19s	-4°22'23"	21°02'09"	1.000	30.85631
4/ 9/2021	4:57	16:32	23h31m14s	-4°16'41"	27°40'28"	1.000	30.80881
4/16/2021	4:30	16:06	23h32m07s	-4°11'17"	34°18'06"	1.000	30.74898
4/23/2021	4:03	15:39	23h32m56s	-4°06'14"	40°54'55"	1.000	30.67773
4/30/2021	3:36	15:13	23h33m41s	-4°01'36"	47°31'04"	1.000	30.59612
5/ 7/2021	3:09	14:46	23h34m23s	-3°57'24"	54°07'02"	1.000	30.50521
5/14/2021	2:42	14:19	23h35m00s	-3°53'43"	60°43'04"	1.000	30.40616
5/21/2021	2:15	13:53	23h35m32s	-3°50'35"	67°19'08"	1.000	30.30039
5/28/2021	1:47	13:26	23h35m59s	-3°48'01"	73°55'20"	1.000	30.18936
6/ 4/2021	1:20	12:58	23h36m21s	-3°46'03"	80°32'10"	1.000	30.07452
6/11/2021	0:53	12:31	23h36m36s	-3°44'42"	87°09'56"	1.000	29.95734
6/18/2021	0:25	12:04	23h36m46s	-3°43'59"	93°48'39"	1.000	29.83948
6/25/2021	23:54	11:36	23h36m50s	-3°43'54"	100°28'20"	1.000	29.72262
7/ 2/2021	23:27	11:09	23h36m49s	-3°44'27"	107°09'19"	1.000	29.60827
7/ 9/2021	22:59	10:41	23h36m41s	-3°45'36"	113°51'59"	1.000	29.49799
7/16/2021	22:31	10:13	23h36m28s	-3°47'21"	120°36'18"	1.000	29.39340
7/23/2021	22:04	9:45	23h36m09s	-3°49'40"	127°22'07"	1.000	29.29605
7/30/2021	21:36	9:17	23h35m46s	-3°52'29"	134°09'40"	1.000	29.20726
8/ 6/2021	21:08	8:49	23h35m18s	-3°55'46"	140°59'14"	1.000	29.12831
8/13/2021	20:40	8:21	23h34m46s	-3°59'29"	147°50'43"	1.000	29.06048
8/20/2021	20:12	7:52	23h34m10s	-4°03'31"	154°43'48"	1.000	29.00486
8/27/2021	19:44	7:24	23h33m31s	-4°07'49"	161°38'21"	1.000	28.96223
9/ 3/2021	19:16	6:56	23h32m51s	-4°12'19"	168°34'07"	1.000	28.93328
9/10/2021	18:48	6:27	23h32m09s	-4°16'56"	175°27'30"	1.000	28.91861
9/17/2021	18:20	5:59	23h31m26s	-4°21'33"	177°07'51"	1.000	28.91854
9/24/2021	17:53	5:30	23h30m44s	-4°26'07"	170°16'50"	1.000	28.93305
10/ 1/2021	17:25	5:02	23h30m03s	-4°30'32"	163°15'27"	1.000	28.96199
10/ 8/2021	16:57	4:33	23h29m23s	-4°34'42"	156°11'42"	1.000	29.00509
10/15/2021	16:29	4:05	23h28m46s	-4°38'34"	149°06'46"	1.000	29.06174
10/22/2021	16:01	3:37	23h28m13s	-4°42'02"	142°01'08"	1.000	29.13106
10/29/2021	15:33	3:08	23h27m43s	-4°45'02"	134°54'52"	1.000	29.21201
11/ 5/2021	15:05	2:40	23h27m19s	-4°47'31"	127°48'03"	1.000	29.30349

11/12/2021	14:37	2:12	23h26m59s	-4°49'25"	120°41'08"	1.000	29.40410
11/19/2021	14:10	1:45	23h26m45s	-4°50'43"	113°34'33"	1.000	29.51224
11/26/2021	13:42	1:17	23h26m36s	-4°51'23"	106°28'19"	1.000	29.62628
12/ 3/2021	13:15	0:49	23h26m34s	-4°51'22"	99°22'28"	1.000	29.74458
12/10/2021	12:47	0:22	23h26m38s	-4°50'42"	92°17'19"	1.000	29.86532
12/17/2021	12:20	23:51	23h26m49s	-4°49'21"	85°13'19"	1.000	29.98660
12/24/2021	11:52	23:24	23h27m05s	-4°47'20"	78°10'32"	1.000	30.10662
12/31/2021	11:25	22:57	23h27m28s	-4°44'42"	71°08'52"	1.000	30.22370

Pluto

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2021	8:44	18:04	19h45m14s	-22°27'02"	13°27'28"	1.000	35.14774
1/ 8/2021	8:18	17:38	19h46m14s	-22°25'10"	6°36'44"	1.000	35.17348
1/15/2021	7:51	17:12	19h47m14s	-22°23'16"	1°16'44"	1.000	35.18489
1/22/2021	7:24	16:45	19h48m13s	-22°21'22"	7°23'48"	1.000	35.18184
1/29/2021	6:58	16:19	19h49m13s	-22°19'31"	14°13'59"	1.000	35.16455
2/ 5/2021	6:31	15:52	19h50m10s	-22°17'45"	21°05'41"	1.000	35.13339
2/12/2021	6:04	15:26	19h51m06s	-22°16'04"	27°57'36"	1.000	35.08881
2/19/2021	5:38	14:59	19h51m59s	-22°14'31"	34°49'15"	1.000	35.03151
2/26/2021	5:11	14:33	19h52m48s	-22°13'07"	41°40'20"	1.000	34.96247
3/ 5/2021	4:44	14:06	19h53m34s	-22°11'55"	48°30'58"	1.000	34.88281
3/12/2021	4:17	13:39	19h54m15s	-22°10'55"	55°21'21"	1.000	34.79364
3/19/2021	3:50	13:12	19h54m52s	-22°10'09"	62°11'24"	1.000	34.69631
3/26/2021	3:23	12:45	19h55m23s	-22°09'38"	69°00'54"	1.000	34.59237
4/ 2/2021	2:56	12:18	19h55m49s	-22°09'22"	75°49'56"	1.000	34.48338
4/ 9/2021	2:29	11:51	19h56m09s	-22°09'24"	82°38'51"	1.000	34.37086
4/16/2021	2:01	11:24	19h56m23s	-22°09'41"	89°27'39"	1.000	34.25647
4/23/2021	1:34	10:56	19h56m31s	-22°10'16"	96°16'07"	1.000	34.14201
4/30/2021	1:07	10:29	19h56m33s	-22°11'07"	103°04'20"	1.000	34.02914
5/ 7/2021	0:39	10:01	19h56m29s	-22°12'15"	109°52'35"	1.000	33.91944
5/14/2021	0:12	9:33	19h56m19s	-22°13'38"	116°41'01"	1.000	33.81454
5/21/2021	23:40	9:05	19h56m03s	-22°15'16"	123°29'25"	1.000	33.71608
5/28/2021	23:12	8:37	19h55m43s	-22°17'07"	130°17'42"	1.000	33.62550
6/ 4/2021	22:44	8:09	19h55m17s	-22°19'09"	137°06'11"	1.000	33.54407
6/11/2021	22:16	7:41	19h54m47s	-22°21'22"	143°55'00"	1.000	33.47304
6/18/2021	21:49	7:13	19h54m14s	-22°23'43"	150°43'53"	1.000	33.41358
6/25/2021	21:21	6:45	19h53m37s	-22°26'09"	157°32'34"	1.000	33.36657
7/ 2/2021	20:53	6:16	19h52m58s	-22°28'41"	164°20'53"	1.000	33.33269
7/ 9/2021	20:25	5:48	19h52m17s	-22°31'13"	171°07'30"	1.000	33.31253
7/16/2021	19:57	5:19	19h51m34s	-22°33'46"	177°32'27"	1.000	33.30654
7/23/2021	19:28	4:51	19h50m52s	-22°36'16"	174°48'01"	1.000	33.31485
7/30/2021	19:00	4:23	19h50m10s	-22°38'42"	168°05'20"	1.000	33.33734
8/ 6/2021	18:32	3:54	19h49m30s	-22°41'01"	161°16'03"	1.000	33.37383
8/13/2021	18:04	3:26	19h48m51s	-22°43'12"	154°25'09"	1.000	33.42395
8/20/2021	17:36	2:58	19h48m15s	-22°45'13"	147°33'39"	1.000	33.48702
8/27/2021	17:08	2:30	19h47m42s	-22°47'02"	140°41'46"	1.000	33.56213
9/ 3/2021	16:41	2:01	19h47m14s	-22°48'39"	133°49'19"	1.000	33.64835
9/10/2021	16:13	1:33	19h46m50s	-22°50'03"	126°56'22"	1.000	33.74458
9/17/2021	15:45	1:06	19h46m31s	-22°51'11"	120°03'14"	1.000	33.84946
9/24/2021	15:17	0:38	19h46m18s	-22°52'05"	113°09'58"	1.000	33.96148
10/ 1/2021	14:50	0:10	19h46m10s	-22°52'42"	106°16'20"	1.000	34.07917
10/ 8/2021	14:22	23:39	19h46m08s	-22°53'05"	99°22'16"	1.000	34.20097
10/15/2021	13:55	23:11	19h46m13s	-22°53'10"	92°28'02"	1.000	34.32510
10/22/2021	13:27	22:44	19h46m23s	-22°53'01"	85°33'47"	1.000	34.44980
10/29/2021	13:00	22:17	19h46m40s	-22°52'36"	78°39'18"	1.000	34.57339

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2021
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3/25/2021 23 Superior Conjunction

Mars

Date	Hour	Event
10/ 7/2021	21	Conjunction

Jupiter

Date	Hour	Event
1/28/2021	18	Conjunction
8/19/2021	17	Opposition

Saturn

Date	Hour	Event
1/23/2021	20	Conjunction
8/ 2/2021	0	Opposition

Uranus

Date	Hour	Event
4/30/2021	17	Conjunction
11/ 4/2021	17	Opposition

Neptune

Date	Hour	Event
3/10/2021	17	Conjunction
9/14/2021	3	Opposition

Pluto

Date	Hour	Event
1/14/2021	17	Conjunction
7/17/2021	17	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

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2021
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10/ 9/2021	12:34	Descending	0.13
10/23/2021	4:46	Ascending	0.94
11/ 5/2021	20:37	Descending	0.01
11/19/2021	10:58	Ascending	1.00
12/ 3/2021	7:57	Descending	0.02
12/16/2021	17:11	Ascending	0.95
12/30/2021	18:06	Descending	0.13

Meteor Showers Report for 1/ 1/2021 to 12/31/2021

Date	Meteor Shower	ZHR	RA	DEC	Illum. Frac.	Longitude
1/ 3/2021	Quadrantids	80	15h28m	50°	0.78	284°
4/11/2021	Virginids	5	14h04m	-9°	0.00	22°
4/21/2021	Lyrids	12	18h08m	32°	0.65	32°
4/27/2021	alpha-Scorpiids	5	16h32m	-24°	0.99	38°
5/ 5/2021	eta-Aquarids	35	22h20m	-1°	0.31	45°
5/12/2021	alpha-Scorpiids	5	16h04m	-24°	0.01	52°
6/ 9/2021	Ophiuchids	5	17h56m	-23°	0.01	79°
6/19/2021	Ophiuchids	5	17h20m	-20°	0.67	89°
7/ 7/2021	Capricornids	5			0.05	106°
7/15/2021	Capricornids	5	20h44m	-15°	0.31	113°
7/20/2021	alpha-Cygnids	5	21h00m	48°	0.85	118°
7/25/2021	Capricornids	5	21h00m	-15°	0.97	123°
7/28/2021	delta-Aquarids	20	22h36m	-17°	0.77	126°
7/30/2021	Piscis Australids	5	22h40m	-30°	0.58	128°
8/ 1/2021	alpha-Capricornids	5	20h36m	-10°	0.39	130°
8/ 6/2021	iota-Aquarids	8	22h10m	-15°	0.04	134°
8/12/2021	Perseids	75	3h04m	58°	0.19	140°
8/20/2021	alpha-Cygnids	5	21h00m	48°	0.96	148°
9/ 8/2021	Piscids	10	0h36m	7°	0.04	166°
9/20/2021	Piscids	5	0h24m	0°	1.00	178°
10/12/2021	Piscids	??	1h44m	14°	0.45	200°
10/21/2021	Orionids	25	6h24m	15°	0.99	209°
11/ 2/2021	Taurids	8	3h44m	14°	0.07	220°
11/17/2021	Leonids	10	10h08m	22°	0.97	236°
12/ 8/2021	Puppids-Velids	15	9h00m	-48°	0.26	257°
12/13/2021	Geminids	75	7h28m	32°	0.75	262°
12/22/2021	Ursids	5	14h28m	78°	0.89	271°
12/25/2021	Puppids-Velids	15	9h20m	-65°	0.65	274°

Twilight Report for 1/ 1/2021 to 12/31/2021

Date	Sun		Astronomical		Nautical		Civil	
	Rise	Set	Begin	End	Begin	End	Begin	End
1/ 1/2021	7:49	17:10	6:07	18:53	6:40	18:20	7:14	17:46
1/ 8/2021	7:49	17:17	6:07	18:59	6:40	18:26	7:14	17:52
1/15/2021	7:47	17:24	6:06	19:05	6:39	18:33	7:12	17:59
1/22/2021	7:43	17:32	6:04	19:12	6:36	18:40	7:09	18:07
1/29/2021	7:38	17:41	5:59	19:19	6:31	18:47	7:04	18:15
2/ 5/2021	7:31	17:49	5:54	19:27	6:25	18:55	6:58	18:23
2/12/2021	7:23	17:58	5:47	19:34	6:18	19:03	6:50	18:31
2/19/2021	7:14	18:06	5:38	19:42	6:10	19:10	6:41	18:39
2/26/2021	7:04	18:14	5:29	19:49	6:00	19:18	6:32	18:46
3/ 5/2021	6:53	18:22	5:18	19:57	5:50	19:25	6:21	18:54
3/12/2021	6:42	18:30	5:07	20:05	5:39	19:33	6:10	19:01

3/19/2021	6:30	18:37	4:55	20:13	5:27	19:41	5:59	19:09
3/26/2021	6:19	18:45	4:42	20:21	5:15	19:48	5:47	19:16
4/ 2/2021	6:07	18:52	4:29	20:30	5:03	19:56	5:35	19:24
4/ 9/2021	5:56	18:59	4:16	20:39	4:51	20:05	5:24	19:32
4/16/2021	5:45	19:07	4:03	20:49	4:39	20:13	5:13	19:39
4/23/2021	5:35	19:14	3:50	20:59	4:27	20:22	5:02	19:47
4/30/2021	5:26	19:21	3:37	21:10	4:16	20:31	4:52	19:55
5/ 7/2021	5:17	19:28	3:25	21:21	4:05	20:40	4:42	20:03
5/14/2021	5:10	19:35	3:14	21:31	3:56	20:49	4:34	20:11
5/21/2021	5:04	19:42	3:04	21:42	3:48	20:57	4:28	20:18
5/28/2021	4:59	19:48	2:56	21:51	3:42	21:05	4:22	20:25
6/ 4/2021	4:56	19:53	2:49	22:00	3:37	21:12	4:19	20:30
6/11/2021	4:55	19:57	2:46	22:06	3:35	21:17	4:17	20:35
6/18/2021	4:55	19:59	2:45	22:10	3:35	21:20	4:17	20:38
6/25/2021	4:57	20:01	2:47	22:11	3:36	21:21	4:19	20:39
7/ 2/2021	5:00	20:00	2:51	22:09	3:40	21:20	4:22	20:38
7/ 9/2021	5:04	19:58	2:58	22:04	3:45	21:17	4:27	20:36
7/16/2021	5:09	19:54	3:06	21:57	3:52	21:12	4:32	20:31
7/23/2021	5:15	19:49	3:16	21:48	4:00	21:05	4:39	20:25
7/30/2021	5:22	19:43	3:26	21:38	4:08	20:56	4:46	20:18
8/ 6/2021	5:28	19:35	3:37	21:26	4:17	20:46	4:54	20:09
8/13/2021	5:35	19:26	3:47	21:14	4:25	20:35	5:01	20:00
8/20/2021	5:42	19:16	3:57	21:01	4:34	20:24	5:09	19:49
8/27/2021	5:49	19:05	4:07	20:47	4:42	20:12	5:16	19:38
9/ 3/2021	5:55	18:54	4:16	20:34	4:50	19:59	5:23	19:26
9/10/2021	6:02	18:43	4:24	20:20	4:58	19:47	5:30	19:14
9/17/2021	6:09	18:31	4:32	20:07	5:05	19:34	5:37	19:02
9/24/2021	6:16	18:19	4:40	19:55	5:13	19:22	5:44	18:51
10/ 1/2021	6:23	18:07	4:48	19:42	5:20	19:10	5:51	18:39
10/ 8/2021	6:30	17:56	4:55	19:31	5:27	18:59	5:58	18:28
10/15/2021	6:37	17:45	5:02	19:20	5:34	18:49	6:05	18:17
10/22/2021	6:45	17:35	5:09	19:11	5:41	18:39	6:13	18:07
10/29/2021	6:53	17:26	5:17	19:02	5:48	18:30	6:20	17:58
11/ 5/2021	7:01	17:18	5:24	18:55	5:55	18:23	6:28	17:51
11/12/2021	7:09	17:11	5:31	18:49	6:03	18:17	6:35	17:44
11/19/2021	7:17	17:05	5:38	18:45	6:10	18:13	6:43	17:39
11/26/2021	7:25	17:01	5:44	18:42	6:17	18:10	6:50	17:36
12/ 3/2021	7:32	16:59	5:50	18:41	6:23	18:08	6:57	17:35
12/10/2021	7:39	16:59	5:56	18:42	6:29	18:09	7:03	17:35
12/17/2021	7:44	17:01	6:00	18:44	6:34	18:11	7:08	17:37
12/24/2021	7:47	17:04	6:04	18:47	6:37	18:14	7:11	17:40
12/31/2021	7:49	17:09	6:06	18:52	6:39	18:19	7:14	17:45