# 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 |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


Calendar Report for  1/ 1/2016 to 12/31/2016

January  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | 1<br>SR: 7:49<br>SS: 17:10<br>MR: None<br>MS: 12:01<br>LQ: 22:32 | 2<br>SR: 7:49<br>SS: 17:10<br>MR: 0:41<br>MS: 12:30 |
| 3<br>SR: 7:50<br>SS: 17:11<br>MR: 1:36<br>MS: 13:00 | 4<br>SR: 7:50<br>SS: 17:12<br>MR: 2:33<br>MS: 13:33 | 5<br>SR: 7:50<br>SS: 17:13<br>MR: 3:30<br>MS: 14:09 | 6<br>SR: 7:49<br>SS: 17:14<br>MR: 4:27<br>MS: 14:49 | 7<br>SR: 7:49<br>SS: 17:15<br>MR: 5:23<br>MS: 15:35 | 8<br>SR: 7:49<br>SS: 17:16<br>MR: 6:19<br>MS: 16:27 | 9<br>SR: 7:49<br>SS: 17:17<br>MR: 7:11<br>MS: 17:24<br>NM: 18:31 |
| 10<br>SR: 7:49<br>SS: 17:18<br>MR: 8:00<br>MS: 18:27 | 11<br>SR: 7:49<br>SS: 17:19<br>MR: 8:45<br>MS: 19:33 | 12<br>SR: 7:48<br>SS: 17:20<br>MR: 9:26<br>MS: 20:40 | 13<br>SR: 7:48<br>SS: 17:21<br>MR: 10:04<br>MS: 21:49 | 14<br>SR: 7:48<br>SS: 17:22<br>MR: 10:40<br>MS: 22:57 | 15<br>SR: 7:47<br>SS: 17:23<br>MR: 11:16<br>MS: None | 16<br>SR: 7:47<br>SS: 17:25<br>MR: 11:52<br>MS: 0:05<br>FQ: 16:27 |
| 17<br>SR: 7:47<br>SS: 17:26<br>MR: 12:30<br>MS: 1:13 | 18<br>SR: 7:46<br>SS: 17:27<br>MR: 13:11<br>MS: 2:20 | 19<br>SR: 7:46<br>SS: 17:28<br>MR: 13:56<br>MS: 3:26 | 20<br>SR: 7:45<br>SS: 17:29<br>MR: 14:46<br>MS: 4:29 | 21<br>SR: 7:44<br>SS: 17:30<br>MR: 15:40<br>MS: 5:28 | 22<br>SR: 7:44<br>SS: 17:31<br>MR: 16:37<br>MS: 6:21 | 23<br>SR: 7:43<br>SS: 17:33<br>MR: 17:37<br>MS: 7:08<br>FM: 18:46 |
| 24<br>SR: 7:42<br>SS: 17:34<br>MR: 18:37<br>MS: 7:50 | 25<br>SR: 7:42<br>SS: 17:35<br>MR: 19:37<br>MS: 8:28 | 26<br>SR: 7:41<br>SS: 17:36<br>MR: 20:35<br>MS: 9:01 | 27<br>SR: 7:40<br>SS: 17:37<br>MR: 21:33<br>MS: 9:32 | 28<br>SR: 7:39<br>SS: 17:39<br>MR: 22:29<br>MS: 10:02 | 29<br>SR: 7:39<br>SS: 17:40<br>MR: 23:25<br>MS: 10:31 | 30<br>SR: 7:38<br>SS: 17:41<br>MR: None<br>MS: 11:01 |
| 31<br>SR: 7:37<br>SS: 17:42<br>MR: 0:21<br>MS: 11:32<br>LQ: 20:29 | | | | | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


February  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | 1<br>SR: 7:36<br>SS: 17:44<br>MR: 1:17<br>MS: 12:06 | 2<br>SR: 7:35<br>SS: 17:45<br>MR: 2:13<br>MS: 12:43 | 3<br>SR: 7:34<br>SS: 17:46<br>MR: 3:09<br>MS: 13:26 | 4<br>SR: 7:33<br>SS: 17:47<br>MR: 4:04<br>MS: 14:14 | 5<br>SR: 7:32<br>SS: 17:48<br>MR: 4:58<br>MS: 15:08 | 6<br>SR: 7:31<br>SS: 17:50<br>MR: 5:49<br>MS: 16:09 |
| 7<br>SR: 7:30<br>SS: 17:51<br>MR: 6:36<br>MS: 17:14 | 8<br>SR: 7:29<br>SS: 17:52<br>MR: 7:20<br>MS: 18:22<br>NM: 7:40 | 9<br>SR: 7:27<br>SS: 17:53<br>MR: 8:01<br>MS: 19:32 | 10<br>SR: 7:26<br>SS: 17:55<br>MR: 8:39<br>MS: 20:43 | 11<br>SR: 7:25<br>SS: 17:56<br>MR: 9:16<br>MS: 21:54 | 12<br>SR: 7:24<br>SS: 17:57<br>MR: 9:53<br>MS: 23:04 | 13<br>SR: 7:23<br>SS: 17:58<br>MR: 10:32<br>MS: None |
| 14<br>SR: 7:21<br>SS: 17:59<br>MR: 11:12<br>MS: 0:12 | 15<br>SR: 7:20<br>SS: 18:01<br>MR: 11:56<br>MS: 1:19<br>FQ: 0:48 | 16<br>SR: 7:19<br>SS: 18:02<br>MR: 12:43<br>MS: 2:23 | 17<br>SR: 7:17<br>SS: 18:03<br>MR: 13:35<br>MS: 3:22 | 18<br>SR: 7:16<br>SS: 18:04<br>MR: 14:30<br>MS: 4:16 | 19<br>SR: 7:15<br>SS: 18:05<br>MR: 15:28<br>MS: 5:04 | 20<br>SR: 7:13<br>SS: 18:07<br>MR: 16:27<br>MS: 5:48 |
| 21<br>SR: 7:12<br>SS: 18:08<br>MR: 17:26<br>MS: 6:26 | 22<br>SR: 7:11<br>SS: 18:09<br>MR: 18:24<br>MS: 7:01<br>FM: 11:21 | 23<br>SR: 7:09<br>SS: 18:10<br>MR: 19:22<br>MS: 7:33 | 24<br>SR: 7:08<br>SS: 18:11<br>MR: 20:19<br>MS: 8:03 | 25<br>SR: 7:06<br>SS: 18:12<br>MR: 21:15<br>MS: 8:32 | 26<br>SR: 7:05<br>SS: 18:14<br>MR: 22:11<br>MS: 9:02 | 27<br>SR: 7:03<br>SS: 18:15<br>MR: 23:07<br>MS: 9:32 |
| 28<br>SR: 7:02<br>SS: 18:16<br>MR: None<br>MS: 10:05 | 29<br>SR: 7:00<br>SS: 18:17<br>MR: 0:02<br>MS: 10:40 | | | | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


March  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | 1<br>SR: 6:59<br>SS: 18:18<br>MR: 0:57<br>MS: 11:20<br>LQ: 16:13 | 2<br>SR: 6:57<br>SS: 18:19<br>MR: 1:52<br>MS: 12:04 | 3<br>SR: 6:56<br>SS: 18:20<br>MR: 2:45<br>MS: 12:54 | 4<br>SR: 6:54<br>SS: 18:21<br>MR: 3:36<br>MS: 13:50 | 5<br>SR: 6:53<br>SS: 18:23<br>MR: 4:24<br>MS: 14:52 |
| 6<br>SR: 6:51<br>SS: 18:24<br>MR: 5:10<br>MS: 15:58 | 7<br>SR: 6:49<br>SS: 18:25<br>MR: 5:52<br>MS: 17:08 | 8<br>SR: 6:48<br>SS: 18:26<br>MR: 6:32<br>MS: 18:20<br>NM: 18:56<br>SE: 18:59 | 9<br>SR: 6:46<br>SS: 18:27<br>MR: 7:10<br>MS: 19:32 | 10<br>SR: 6:45<br>SS: 18:28<br>MR: 7:49<br>MS: 20:45 | 11<br>SR: 6:43<br>SS: 18:29<br>MR: 8:28<br>MS: 21:57 | 12<br>SR: 6:41<br>SS: 18:30<br>MR: 9:09<br>MS: 23:07 |
| 13<br>SR: 6:40<br>SS: 18:31<br>MR: 9:53<br>MS: None | 14<br>SR: 6:38<br>SS: 18:32<br>MR: 10:40<br>MS: 0:14 | 15<br>SR: 6:37<br>SS: 18:33<br>MR: 11:32<br>MS: 1:16<br>FQ: 10:04 | 16<br>SR: 6:35<br>SS: 18:34<br>MR: 12:26<br>MS: 2:12 | 17<br>SR: 6:33<br>SS: 18:36<br>MR: 13:23<br>MS: 3:03 | 18<br>SR: 6:32<br>SS: 18:37<br>MR: 14:21<br>MS: 3:47 | 19<br>SR: 6:30<br>SS: 18:38<br>MR: 15:19<br>MS: 4:27<br>MEQ:21:27 |
| 20<br>SR: 6:28<br>SS: 18:39<br>MR: 16:17<br>MS: 5:02 | 21<br>SR: 6:27<br>SS: 18:40<br>MR: 17:15<br>MS: 5:34 | 22<br>SR: 6:25<br>SS: 18:41<br>MR: 18:11<br>MS: 6:05 | 23<br>SR: 6:23<br>SS: 18:42<br>MR: 19:08<br>MS: 6:34<br>FM: 5:02 | 24<br>SR: 6:22<br>SS: 18:43<br>MR: 20:04<br>MS: 7:04 | 25<br>SR: 6:20<br>SS: 18:44<br>MR: 20:59<br>MS: 7:34 | 26<br>SR: 6:18<br>SS: 18:45<br>MR: 21:55<br>MS: 8:06 |
| 27<br>SR: 6:17<br>SS: 18:46<br>MR: 22:50<br>MS: 8:40 | 28<br>SR: 6:15<br>SS: 18:47<br>MR: 23:44<br>MS: 9:17 | 29<br>SR: 6:14<br>SS: 18:48<br>MR: None<br>MS: 9:59 | 30<br>SR: 6:12<br>SS: 18:49<br>MR: 0:37<br>MS: 10:46 | 31<br>SR: 6:10<br>SS: 18:50<br>MR: 1:28<br>MS: 11:38<br>LQ: 8:19 | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


April  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | 1<br>SR: 6:09<br>SS: 18:51<br>MR: 2:16<br>MS: 12:35 | 2<br>SR: 6:07<br>SS: 18:52<br>MR: 3:01<br>MS: 13:38 |
| 3<br>SR: 6:05<br>SS: 18:53<br>MR: 3:43<br>MS: 14:44 | 4<br>SR: 6:04<br>SS: 18:54<br>MR: 4:23<br>MS: 15:53 | 5<br>SR: 6:02<br>SS: 18:55<br>MR: 5:02<br>MS: 17:05 | 6<br>SR: 6:01<br>SS: 18:56<br>MR: 5:40<br>MS: 18:18 | 7<br>SR: 5:59<br>SS: 18:57<br>MR: 6:19<br>MS: 19:32<br>NM: 4:25 | 8<br>SR: 5:57<br>SS: 18:58<br>MR: 7:00<br>MS: 20:46 | 9<br>SR: 5:56<br>SS: 19:00<br>MR: 7:44<br>MS: 21:57 |
| 10<br>SR: 5:54<br>SS: 19:01<br>MR: 8:31<br>MS: 23:04 | 11<br>SR: 5:53<br>SS: 19:02<br>MR: 9:23<br>MS: None | 12<br>SR: 5:51<br>SS: 19:03<br>MR: 10:18<br>MS: 0:05 | 13<br>SR: 5:50<br>SS: 19:04<br>MR: 11:16<br>MS: 0:59<br>FQ: 21:01 | 14<br>SR: 5:48<br>SS: 19:05<br>MR: 12:15<br>MS: 1:46 | 15<br>SR: 5:47<br>SS: 19:06<br>MR: 13:13<br>MS: 2:28 | 16<br>SR: 5:45<br>SS: 19:07<br>MR: 14:12<br>MS: 3:04 |
| 17<br>SR: 5:44<br>SS: 19:08<br>MR: 15:09<br>MS: 3:37 | 18<br>SR: 5:42<br>SS: 19:09<br>MR: 16:06<br>MS: 4:08 | 19<br>SR: 5:41<br>SS: 19:10<br>MR: 17:02<br>MS: 4:38 | 20<br>SR: 5:39<br>SS: 19:11<br>MR: 17:58<br>MS: 5:07 | 21<br>SR: 5:38<br>SS: 19:12<br>MR: 18:54<br>MS: 5:36<br>FM: 22:25 | 22<br>SR: 5:36<br>SS: 19:13<br>MR: 19:49<br>MS: 6:07 | 23<br>SR: 5:35<br>SS: 19:14<br>MR: 20:45<br>MS: 6:40 |
| 24<br>SR: 5:33<br>SS: 19:15<br>MR: 21:40<br>MS: 7:17 | 25<br>SR: 5:32<br>SS: 19:16<br>MR: 22:33<br>MS: 7:57 | 26<br>SR: 5:31<br>SS: 19:17<br>MR: 23:24<br>MS: 8:42 | 27<br>SR: 5:29<br>SS: 19:18<br>MR: None<br>MS: 9:32 | 28<br>SR: 5:28<br>SS: 19:19<br>MR: 0:12<br>MS: 10:26 | 29<br>SR: 5:27<br>SS: 19:20<br>MR: 0:57<br>MS: 11:25<br>LQ: 20:30 | 30<br>SR: 5:25<br>SS: 19:21<br>MR: 1:39<br>MS: 12:28 |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


May  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| SR: 5:24 | SR: 5:23 | SR: 5:22 | SR: 5:21 | SR: 5:19 | SR: 5:18 | SR: 5:17 |
| SS: 19:22 | SS: 19:23 | SS: 19:24 | SS: 19:25 | SS: 19:26 | SS: 19:27 | SS: 19:28 |
| MR: 2:19 | MR: 2:56 | MR: 3:33 | MR: 4:10 | MR: 4:50 | MR: 5:32 | MR: 6:18 |
| MS: 13:33 | MS: 14:42 | MS: 15:52 | MS: 17:05 | MS: 18:18 | MS: 19:32 | MS: 20:43 |
| | | | | | NM: 12:31 | |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| SR: 5:16 | SR: 5:15 | SR: 5:14 | SR: 5:13 | SR: 5:12 | SR: 5:11 | SR: 5:10 |
| SS: 19:29 | SS: 19:30 | SS: 19:31 | SS: 19:32 | SS: 19:33 | SS: 19:34 | SS: 19:35 |
| MR: 7:08 | MR: 8:04 | MR: 9:02 | MR: 10:03 | MR: 11:03 | MR: 12:03 | MR: 13:02 |
| MS: 21:49 | MS: 22:48 | MS: 23:40 | MS: None | MS: 0:26 | MS: 1:05 | MS: 1:40 |
| | | | | | FQ: 10:03 | |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| SR: 5:09 | SR: 5:08 | SR: 5:07 | SR: 5:06 | SR: 5:05 | SR: 5:05 | SR: 5:04 |
| SS: 19:36 | SS: 19:37 | SS: 19:38 | SS: 19:39 | SS: 19:40 | SS: 19:41 | SS: 19:42 |
| MR: 13:59 | MR: 14:56 | MR: 15:52 | MR: 16:47 | MR: 17:43 | MR: 18:39 | MR: 19:35 |
| MS: 2:11 | MS: 2:41 | MS: 3:10 | MS: 3:39 | MS: 4:09 | MS: 4:42 | MS: 5:17 |
| | | | | | | FM: 14:17 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| SR: 5:03 | SR: 5:02 | SR: 5:02 | SR: 5:01 | SR: 5:00 | SR: 5:00 | SR: 4:59 |
| SS: 19:43 | SS: 19:44 | SS: 19:44 | SS: 19:45 | SS: 19:46 | SS: 19:47 | SS: 19:48 |
| MR: 20:29 | MR: 21:22 | MR: 22:11 | MR: 22:57 | MR: 23:40 | MR: None | MR: 0:19 |
| MS: 5:56 | MS: 6:40 | MS: 7:28 | MS: 8:21 | MS: 9:18 | MS: 10:19 | MS: 11:23 |
| 29 | 30 | 31 | | | | |
| SR: 4:59 | SR: 4:58 | SR: 4:58 | | | | |
| SS: 19:49 | SS: 19:49 | SS: 19:50 | | | | |
| MR: 0:56 | MR: 1:32 | MR: 2:08 | | | | |
| MS: 12:28 | MS: 13:35 | MS: 14:45 | | | | |
| LQ: 5:14 | | | | | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


June  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | 1<br>SR: 4:57<br>SS: 19:51<br>MR: 2:44<br>MS: 15:55 | 2<br>SR: 4:57<br>SS: 19:51<br>MR: 3:23<br>MS: 17:07 | 3<br>SR: 4:57<br>SS: 19:52<br>MR: 4:06<br>MS: 18:19 | 4<br>SR: 4:56<br>SS: 19:53<br>MR: 4:53<br>MS: 19:28<br>NM: 20:02 |
| 5<br>SR: 4:56<br>SS: 19:53<br>MR: 5:46<br>MS: 20:31 | 6<br>SR: 4:56<br>SS: 19:54<br>MR: 6:44<br>MS: 21:29 | 7<br>SR: 4:55<br>SS: 19:55<br>MR: 7:45<br>MS: 22:19 | 8<br>SR: 4:55<br>SS: 19:55<br>MR: 8:48<br>MS: 23:02 | 9<br>SR: 4:55<br>SS: 19:56<br>MR: 9:50<br>MS: 23:39 | 10<br>SR: 4:55<br>SS: 19:56<br>MR: 10:50<br>MS: None | 11<br>SR: 4:55<br>SS: 19:57<br>MR: 11:49<br>MS: 0:13 |
| 12<br>SR: 4:55<br>SS: 19:57<br>MR: 12:47<br>MS: 0:44<br>FQ: 1:11 | 13<br>SR: 4:55<br>SS: 19:58<br>MR: 13:44<br>MS: 1:13 | 14<br>SR: 4:55<br>SS: 19:58<br>MR: 14:40<br>MS: 1:42 | 15<br>SR: 4:55<br>SS: 19:58<br>MR: 15:35<br>MS: 2:12 | 16<br>SR: 4:55<br>SS: 19:59<br>MR: 16:31<br>MS: 2:43 | 17<br>SR: 4:55<br>SS: 19:59<br>MR: 17:27<br>MS: 3:17 | 18<br>SR: 4:55<br>SS: 19:59<br>MR: 18:23<br>MS: 3:54 |
| 19<br>SR: 4:55<br>SS: 20:00<br>MR: 19:17<br>MS: 4:36 | 20<br>SR: 4:55<br>SS: 20:00<br>MR: 20:08<br>MS: 5:23<br>FM: 4:05<br>JSO:15:32 | 21<br>SR: 4:56<br>SS: 20:00<br>MR: 20:56<br>MS: 6:15 | 22<br>SR: 4:56<br>SS: 20:00<br>MR: 21:41<br>MS: 7:12 | 23<br>SR: 4:56<br>SS: 20:00<br>MR: 22:21<br>MS: 8:12 | 24<br>SR: 4:57<br>SS: 20:00<br>MR: 22:59<br>MS: 9:15 | 25<br>SR: 4:57<br>SS: 20:00<br>MR: 23:35<br>MS: 10:20 |
| 26<br>SR: 4:57<br>SS: 20:01<br>MR: None<br>MS: 11:26 | 27<br>SR: 4:58<br>SS: 20:01<br>MR: 0:10<br>MS: 12:33<br>LQ: 11:21 | 28<br>SR: 4:58<br>SS: 20:01<br>MR: 0:45<br>MS: 13:42 | 29<br>SR: 4:58<br>SS: 20:00<br>MR: 1:21<br>MS: 14:51 | 30<br>SR: 4:59<br>SS: 20:00<br>MR: 2:01<br>MS: 16:00 | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


July  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | 1<br>SR: 4:59<br>SS: 20:00<br>MR: 2:45<br>MS: 17:09 | 2<br>SR: 5:00<br>SS: 20:00<br>MR: 3:34<br>MS: 18:14 |
| 3<br>SR: 5:01<br>SS: 20:00<br>MR: 4:28<br>MS: 19:14 | 4<br>SR: 5:01<br>SS: 20:00<br>MR: 5:27<br>MS: 20:08<br>NM: 4:03 | 5<br>SR: 5:02<br>SS: 19:59<br>MR: 6:29<br>MS: 20:55 | 6<br>SR: 5:02<br>SS: 19:59<br>MR: 7:32<br>MS: 21:36 | 7<br>SR: 5:03<br>SS: 19:59<br>MR: 8:35<br>MS: 22:12 | 8<br>SR: 5:04<br>SS: 19:58<br>MR: 9:36<br>MS: 22:44 | 9<br>SR: 5:04<br>SS: 19:58<br>MR: 10:35<br>MS: 23:15 |
| 10<br>SR: 5:05<br>SS: 19:58<br>MR: 11:33<br>MS: 23:44 | 11<br>SR: 5:06<br>SS: 19:57<br>MR: 12:29<br>MS: None<br>FQ: 17:53 | 12<br>SR: 5:06<br>SS: 19:57<br>MR: 13:25<br>MS: 0:13 | 13<br>SR: 5:07<br>SS: 19:56<br>MR: 14:21<br>MS: 0:44 | 14<br>SR: 5:08<br>SS: 19:55<br>MR: 15:17<br>MS: 1:16 | 15<br>SR: 5:09<br>SS: 19:55<br>MR: 16:13<br>MS: 1:52 | 16<br>SR: 5:09<br>SS: 19:54<br>MR: 17:08<br>MS: 2:32 |
| 17<br>SR: 5:10<br>SS: 19:54<br>MR: 18:00<br>MS: 3:17 | 18<br>SR: 5:11<br>SS: 19:53<br>MR: 18:51<br>MS: 4:07 | 19<br>SR: 5:12<br>SS: 19:52<br>MR: 19:37<br>MS: 5:02<br>FM: 16:00 | 20<br>SR: 5:13<br>SS: 19:51<br>MR: 20:21<br>MS: 6:02 | 21<br>SR: 5:14<br>SS: 19:51<br>MR: 21:00<br>MS: 7:06 | 22<br>SR: 5:14<br>SS: 19:50<br>MR: 21:37<br>MS: 8:11 | 23<br>SR: 5:15<br>SS: 19:49<br>MR: 22:13<br>MS: 9:18 |
| 24<br>SR: 5:16<br>SS: 19:48<br>MR: 22:48<br>MS: 10:26 | 25<br>SR: 5:17<br>SS: 19:47<br>MR: 23:24<br>MS: 11:34 | 26<br>SR: 5:18<br>SS: 19:46<br>MR: None<br>MS: 12:42<br>LQ: 16:03 | 27<br>SR: 5:19<br>SS: 19:45<br>MR: 0:01<br>MS: 13:50 | 28<br>SR: 5:20<br>SS: 19:44<br>MR: 0:43<br>MS: 14:57 | 29<br>SR: 5:21<br>SS: 19:43<br>MR: 1:28<br>MS: 16:02 | 30<br>SR: 5:22<br>SS: 19:42<br>MR: 2:19<br>MS: 17:03 |
| 31<br>SR: 5:23<br>SS: 19:41<br>MR: 3:15<br>MS: 17:58 | | | | | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


August  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | 1<br>SR: 5:24<br>SS: 19:40<br>MR: 4:14<br>MS: 18:47 | 2<br>SR: 5:25<br>SS: 19:39<br>MR: 5:16<br>MS: 19:30<br>NM: 13:47 | 3<br>SR: 5:26<br>SS: 19:38<br>MR: 6:19<br>MS: 20:09 | 4<br>SR: 5:26<br>SS: 19:37<br>MR: 7:21<br>MS: 20:43 | 5<br>SR: 5:27<br>SS: 19:36<br>MR: 8:21<br>MS: 21:15 | 6<br>SR: 5:28<br>SS: 19:34<br>MR: 9:20<br>MS: 21:45 |
| 7<br>SR: 5:29<br>SS: 19:33<br>MR: 10:18<br>MS: 22:14 | 8<br>SR: 5:30<br>SS: 19:32<br>MR: 11:14<br>MS: 22:44 | 9<br>SR: 5:31<br>SS: 19:31<br>MR: 12:11<br>MS: 23:16 | 10<br>SR: 5:32<br>SS: 19:29<br>MR: 13:06<br>MS: 23:50<br>FQ: 11:22 | 11<br>SR: 5:33<br>SS: 19:28<br>MR: 14:02<br>MS: None | 12<br>SR: 5:34<br>SS: 19:27<br>MR: 14:56<br>MS: 0:27 | 13<br>SR: 5:35<br>SS: 19:25<br>MR: 15:50<br>MS: 1:09 |
| 14<br>SR: 5:36<br>SS: 19:24<br>MR: 16:41<br>MS: 1:57 | 15<br>SR: 5:37<br>SS: 19:23<br>MR: 17:29<br>MS: 2:50 | 16<br>SR: 5:38<br>SS: 19:21<br>MR: 18:14<br>MS: 3:48 | 17<br>SR: 5:39<br>SS: 19:20<br>MR: 18:56<br>MS: 4:51 | 18<br>SR: 5:40<br>SS: 19:18<br>MR: 19:35<br>MS: 5:56<br>FM: 2:30 | 19<br>SR: 5:41<br>SS: 19:17<br>MR: 20:12<br>MS: 7:04 | 20<br>SR: 5:42<br>SS: 19:15<br>MR: 20:49<br>MS: 8:13 |
| 21<br>SR: 5:43<br>SS: 19:14<br>MR: 21:25<br>MS: 9:23 | 22<br>SR: 5:44<br>SS: 19:13<br>MR: 22:03<br>MS: 10:33 | 23<br>SR: 5:45<br>SS: 19:11<br>MR: 22:43<br>MS: 11:42 | 24<br>SR: 5:46<br>SS: 19:09<br>MR: 23:27<br>MS: 12:50<br>LQ: 20:44 | 25<br>SR: 5:47<br>SS: 19:08<br>MR: None<br>MS: 13:55 | 26<br>SR: 5:48<br>SS: 19:06<br>MR: 0:16<br>MS: 14:56 | 27<br>SR: 5:49<br>SS: 19:05<br>MR: 1:09<br>MS: 15:52 |
| 28<br>SR: 5:50<br>SS: 19:03<br>MR: 2:06<br>MS: 16:42 | 29<br>SR: 5:51<br>SS: 19:02<br>MR: 3:06<br>MS: 17:27 | 30<br>SR: 5:52<br>SS: 19:00<br>MR: 4:07<br>MS: 18:06 | 31<br>SR: 5:53<br>SS: 18:59<br>MR: 5:09<br>MS: 18:42 | | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


September  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | 1<br>SR: 5:54<br>SS: 18:57<br>MR: 6:09<br>MS: 19:14<br>NM: 2:05<br>SE: 2:09 | 2<br>SR: 5:55<br>SS: 18:55<br>MR: 7:09<br>MS: 19:45 | 3<br>SR: 5:56<br>SS: 18:54<br>MR: 8:07<br>MS: 20:15 |
| 4<br>SR: 5:57<br>SS: 18:52<br>MR: 9:04<br>MS: 20:45 | 5<br>SR: 5:58<br>SS: 18:50<br>MR: 10:00<br>MS: 21:15 | 6<br>SR: 5:59<br>SS: 18:49<br>MR: 10:56<br>MS: 21:48 | 7<br>SR: 5:59<br>SS: 18:47<br>MR: 11:51<br>MS: 22:24 | 8<br>SR: 6:00<br>SS: 18:46<br>MR: 12:46<br>MS: 23:04 | 9<br>SR: 6:01<br>SS: 18:44<br>MR: 13:39<br>MS: 23:48<br>FQ: 4:51 | 10<br>SR: 6:02<br>SS: 18:42<br>MR: 14:30<br>MS: None |
| 11<br>SR: 6:03<br>SS: 18:41<br>MR: 15:19<br>MS: 0:37 | 12<br>SR: 6:04<br>SS: 18:39<br>MR: 16:05<br>MS: 1:32 | 13<br>SR: 6:05<br>SS: 18:37<br>MR: 16:48<br>MS: 2:32 | 14<br>SR: 6:06<br>SS: 18:35<br>MR: 17:29<br>MS: 3:36 | 15<br>SR: 6:07<br>SS: 18:34<br>MR: 18:07<br>MS: 4:43 | 16<br>SR: 6:08<br>SS: 18:32<br>MR: 18:44<br>MS: 5:53<br>FM: 12:08 | 17<br>SR: 6:09<br>SS: 18:30<br>MR: 19:22<br>MS: 7:04 |
| 18<br>SR: 6:10<br>SS: 18:29<br>MR: 20:00<br>MS: 8:16 | 19<br>SR: 6:11<br>SS: 18:27<br>MR: 20:41<br>MS: 9:28 | 20<br>SR: 6:12<br>SS: 18:25<br>MR: 21:25<br>MS: 10:39 | 21<br>SR: 6:13<br>SS: 18:24<br>MR: 22:13<br>MS: 11:47 | 22<br>SR: 6:14<br>SS: 18:22<br>MR: 23:05<br>MS: 12:51<br>SEQ: 7:18 | 23<br>SR: 6:15<br>SS: 18:20<br>MR: None<br>MS: 13:49<br>LQ: 2:59 | 24<br>SR: 6:16<br>SS: 18:19<br>MR: 0:01<br>MS: 14:41 |
| 25<br>SR: 6:17<br>SS: 18:17<br>MR: 1:00<br>MS: 15:26 | 26<br>SR: 6:18<br>SS: 18:15<br>MR: 2:00<br>MS: 16:07 | 27<br>SR: 6:19<br>SS: 18:14<br>MR: 3:01<br>MS: 16:43 | 28<br>SR: 6:20<br>SS: 18:12<br>MR: 4:01<br>MS: 17:16 | 29<br>SR: 6:21<br>SS: 18:10<br>MR: 5:00<br>MS: 17:46 | 30<br>SR: 6:22<br>SS: 18:09<br>MR: 5:58<br>MS: 18:16<br>NM: 17:13 | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


October  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | | 1<br>SR: 6:23<br>SS: 18:07<br>MR: 6:55<br>MS: 18:46 |
| 2<br>SR: 6:24<br>SS: 18:05<br>MR: 7:52<br>MS: 19:16 | 3<br>SR: 6:25<br>SS: 18:04<br>MR: 8:48<br>MS: 19:48 | 4<br>SR: 6:26<br>SS: 18:02<br>MR: 9:44<br>MS: 20:22 | 5<br>SR: 6:27<br>SS: 18:01<br>MR: 10:38<br>MS: 21:00 | 6<br>SR: 6:28<br>SS: 17:59<br>MR: 11:31<br>MS: 21:42 | 7<br>SR: 6:29<br>SS: 17:57<br>MR: 12:23<br>MS: 22:29 | 8<br>SR: 6:30<br>SS: 17:56<br>MR: 13:12<br>MS: 23:20<br>FQ: 21:35 |
| 9<br>SR: 6:31<br>SS: 17:54<br>MR: 13:58<br>MS: None | 10<br>SR: 6:32<br>SS: 17:53<br>MR: 14:41<br>MS: 0:16 | 11<br>SR: 6:33<br>SS: 17:51<br>MR: 15:21<br>MS: 1:17 | 12<br>SR: 6:34<br>SS: 17:50<br>MR: 16:00<br>MS: 2:21 | 13<br>SR: 6:35<br>SS: 17:48<br>MR: 16:37<br>MS: 3:28 | 14<br>SR: 6:36<br>SS: 17:46<br>MR: 17:14<br>MS: 4:39 | 15<br>SR: 6:38<br>SS: 17:45<br>MR: 17:52<br>MS: 5:51<br>FM: 21:25 |
| 16<br>SR: 6:39<br>SS: 17:43<br>MR: 18:32<br>MS: 7:04 | 17<br>SR: 6:40<br>SS: 17:42<br>MR: 19:16<br>MS: 8:18 | 18<br>SR: 6:41<br>SS: 17:41<br>MR: 20:04<br>MS: 9:30 | 19<br>SR: 6:42<br>SS: 17:39<br>MR: 20:57<br>MS: 10:39 | 20<br>SR: 6:43<br>SS: 17:38<br>MR: 21:53<br>MS: 11:42 | 21<br>SR: 6:44<br>SS: 17:36<br>MR: 22:53<br>MS: 12:37 | 22<br>SR: 6:45<br>SS: 17:35<br>MR: 23:54<br>MS: 13:26<br>LQ: 12:16 |
| 23<br>SR: 6:46<br>SS: 17:33<br>MR: None<br>MS: 14:08 | 24<br>SR: 6:47<br>SS: 17:32<br>MR: 0:55<br>MS: 14:45 | 25<br>SR: 6:49<br>SS: 17:31<br>MR: 1:55<br>MS: 15:19 | 26<br>SR: 6:50<br>SS: 17:29<br>MR: 2:54<br>MS: 15:50 | 27<br>SR: 6:51<br>SS: 17:28<br>MR: 3:52<br>MS: 16:19 | 28<br>SR: 6:52<br>SS: 17:27<br>MR: 4:49<br>MS: 16:48 | 29<br>SR: 6:53<br>SS: 17:26<br>MR: 5:46<br>MS: 17:18 |
| 30<br>SR: 6:54<br>SS: 17:24<br>MR: 6:42<br>MS: 17:49<br>NM: 10:40 | 31<br>SR: 6:55<br>SS: 17:23<br>MR: 7:38<br>MS: 18:23 | | | | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


November  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | 1<br>SR: 6:57<br>SS: 17:22<br>MR: 8:33<br>MS: 18:59 | 2<br>SR: 6:58<br>SS: 17:21<br>MR: 9:27<br>MS: 19:39 | 3<br>SR: 6:59<br>SS: 17:20<br>MR: 10:19<br>MS: 20:24 | 4<br>SR: 7:00<br>SS: 17:18<br>MR: 11:08<br>MS: 21:13 | 5<br>SR: 7:01<br>SS: 17:17<br>MR: 11:55<br>MS: 22:06 |
| 6<br>SR: 7:02<br>SS: 17:16<br>MR: 12:38<br>MS: 23:04 | 7<br>SR: 7:04<br>SS: 17:15<br>MR: 13:18<br>MS: None<br>FQ: 12:53 | 8<br>SR: 7:05<br>SS: 17:14<br>MR: 13:56<br>MS: 0:05 | 9<br>SR: 7:06<br>SS: 17:13<br>MR: 14:32<br>MS: 1:08 | 10<br>SR: 7:07<br>SS: 17:12<br>MR: 15:07<br>MS: 2:15 | 11<br>SR: 7:08<br>SS: 17:11<br>MR: 15:44<br>MS: 3:24 | 12<br>SR: 7:09<br>SS: 17:10<br>MR: 16:22<br>MS: 4:36 |
| 13<br>SR: 7:11<br>SS: 17:10<br>MR: 17:03<br>MS: 5:49 | 14<br>SR: 7:12<br>SS: 17:09<br>MR: 17:49<br>MS: 7:04<br>FM: 6:54 | 15<br>SR: 7:13<br>SS: 17:08<br>MR: 18:41<br>MS: 8:16 | 16<br>SR: 7:14<br>SS: 17:07<br>MR: 19:38<br>MS: 9:25 | 17<br>SR: 7:15<br>SS: 17:06<br>MR: 20:38<br>MS: 10:26 | 18<br>SR: 7:16<br>SS: 17:06<br>MR: 21:42<br>MS: 11:20 | 19<br>SR: 7:18<br>SS: 17:05<br>MR: 22:45<br>MS: 12:07 |
| 20<br>SR: 7:19<br>SS: 17:04<br>MR: 23:47<br>MS: 12:47 | 21<br>SR: 7:20<br>SS: 17:04<br>MR: None<br>MS: 13:22<br>LQ: 1:35 | 22<br>SR: 7:21<br>SS: 17:03<br>MR: 0:47<br>MS: 13:54 | 23<br>SR: 7:22<br>SS: 17:03<br>MR: 1:46<br>MS: 14:23 | 24<br>SR: 7:23<br>SS: 17:02<br>MR: 2:43<br>MS: 14:52 | 25<br>SR: 7:24<br>SS: 17:02<br>MR: 3:40<br>MS: 15:21 | 26<br>SR: 7:25<br>SS: 17:01<br>MR: 4:36<br>MS: 15:52 |
| 27<br>SR: 7:26<br>SS: 17:01<br>MR: 5:32<br>MS: 16:24 | 28<br>SR: 7:28<br>SS: 17:00<br>MR: 6:28<br>MS: 16:59 | 29<br>SR: 7:29<br>SS: 17:00<br>MR: 7:22<br>MS: 17:38<br>NM: 5:20 | 30<br>SR: 7:30<br>SS: 17:00<br>MR: 8:15<br>MS: 18:21 | | | |

Midway, UT (JMC)  Latitude:  40°30'43" N  Longitude:  111°28'40" W
Local Time = UT -  7.00 hours  Elevation: 1706 meters  Year 2016


December  2016

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | 1<br>SR: 7:31<br>SS: 17:00<br>MR: 9:06<br>MS: 19:09 | 2<br>SR: 7:32<br>SS: 16:59<br>MR: 9:54<br>MS: 20:01 | 3<br>SR: 7:33<br>SS: 16:59<br>MR: 10:38<br>MS: 20:57 |
| 4<br>SR: 7:34<br>SS: 16:59<br>MR: 11:19<br>MS: 21:56 | 5<br>SR: 7:34<br>SS: 16:59<br>MR: 11:57<br>MS: 22:57 | 6<br>SR: 7:35<br>SS: 16:59<br>MR: 12:32<br>MS: None | 7<br>SR: 7:36<br>SS: 16:59<br>MR: 13:06<br>MS: 0:01<br>FQ: 2:04 | 8<br>SR: 7:37<br>SS: 16:59<br>MR: 13:40<br>MS: 1:06 | 9<br>SR: 7:38<br>SS: 16:59<br>MR: 14:16<br>MS: 2:14 | 10<br>SR: 7:39<br>SS: 16:59<br>MR: 14:54<br>MS: 3:24 |
| 11<br>SR: 7:40<br>SS: 16:59<br>MR: 15:36<br>MS: 4:36 | 12<br>SR: 7:40<br>SS: 16:59<br>MR: 16:23<br>MS: 5:49 | 13<br>SR: 7:41<br>SS: 17:00<br>MR: 17:17<br>MS: 7:00<br>FM: 17:07 | 14<br>SR: 7:42<br>SS: 17:00<br>MR: 18:17<br>MS: 8:06 | 15<br>SR: 7:43<br>SS: 17:00<br>MR: 19:21<br>MS: 9:06 | 16<br>SR: 7:43<br>SS: 17:01<br>MR: 20:26<br>MS: 9:58 | 17<br>SR: 7:44<br>SS: 17:01<br>MR: 21:31<br>MS: 10:42 |
| 18<br>SR: 7:44<br>SS: 17:01<br>MR: 22:35<br>MS: 11:21 | 19<br>SR: 7:45<br>SS: 17:02<br>MR: 23:36<br>MS: 11:55 | 20<br>SR: 7:46<br>SS: 17:02<br>MR: None<br>MS: 12:26<br>LQ: 18:57 | 21<br>SR: 7:46<br>SS: 17:03<br>MR: 0:35<br>MS: 12:56<br>DSO: 3:41 | 22<br>SR: 7:47<br>SS: 17:03<br>MR: 1:32<br>MS: 13:25 | 23<br>SR: 7:47<br>SS: 17:04<br>MR: 2:29<br>MS: 13:54 | 24<br>SR: 7:47<br>SS: 17:04<br>MR: 3:25<br>MS: 14:26 |
| 25<br>SR: 7:48<br>SS: 17:05<br>MR: 4:20<br>MS: 15:00 | 26<br>SR: 7:48<br>SS: 17:06<br>MR: 5:16<br>MS: 15:37 | 27<br>SR: 7:48<br>SS: 17:06<br>MR: 6:10<br>MS: 16:19 | 28<br>SR: 7:49<br>SS: 17:07<br>MR: 7:02<br>MS: 17:05<br>NM: 23:54 | 29<br>SR: 7:49<br>SS: 17:08<br>MR: 7:52<br>MS: 17:56 | 30<br>SR: 7:49<br>SS: 17:09<br>MR: 8:38<br>MS: 18:51 | 31<br>SR: 7:49<br>SS: 17:09<br>MR: 9:20<br>MS: 19:50 |

## Seasons Report for 2016

| | | | |
|---|---|---|---|
| MEQ: | 3/19/2016 21:27 | Winter Length: | 88.99 days |
| JSO: | 6/20/2016 15:32 | Spring Length: | 92.75 days |
| SEQ: | 9/22/2016 7:18 | Summer Length: | 93.66 days |
| DSO: | 12/21/2016 3:41 | Autumn Length: | 89.85 days |

## Dates of Easter Report for 2016

3/27/2016

## Lunar Eclipse Report for 2016

## Solar Eclipse Report for 2016

Solar eclipse on  3/ 8/2016
Sun rise:  6:48
Sun set:  18:26
Time of maximum eclipse: 18:59
Eclipse is total
Eclipse is visible in the northern hemisphere

Solar eclipse on  9/ 1/2016
Sun rise:  5:54
Sun set:  18:57
Time of maximum eclipse:  2:09
Eclipse is annular
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/ 1/2016 to 12/31/2016

Mercury

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 9:03 | 18:39 | 20h06m25s | -21°02'31" | 19°18'48" | 0.489 | 0.92062 |
| 1/ 8/2016 | 8:27 | 18:17 | 20h09m32s | -18°53'02" | 13°23'04" | 0.164 | 0.74965 |
| 1/15/2016 | 7:26 | 17:16 | 19h38m16s | -18°22'03" | 3°15'10" | 0.008 | 0.66742 |
| 1/22/2016 | 6:33 | 16:18 | 19h07m46s | -19°09'56" | 15°43'34" | 0.172 | 0.71533 |
| 1/29/2016 | 6:10 | 15:49 | 19h06m09s | -20°13'52" | 23°06'23" | 0.405 | 0.83126 |
| 2/ 5/2016 | 6:07 | 15:41 | 19h26m38s | -20°52'40" | 25°27'05" | 0.577 | 0.95662 |
| 2/12/2016 | 6:11 | 15:48 | 19h58m53s | -20°43'33" | 25°04'20" | 0.694 | 1.06963 |
| 2/19/2016 | 6:18 | 16:05 | 20h37m12s | -19°36'25" | 23°09'11" | 0.775 | 1.16530 |
| 2/26/2016 | 6:23 | 16:28 | 21h18m47s | -17°27'26" | 20°10'55" | 0.839 | 1.24341 |
| 3/ 4/2016 | 6:27 | 16:57 | 22h02m23s | -14°15'35" | 16°19'03" | 0.892 | 1.30394 |
| 3/11/2016 | 6:29 | 17:31 | 22h47m34s | -10°01'22" | 11°33'38" | 0.941 | 1.34505 |
| 3/18/2016 | 6:30 | 18:09 | 23h34m32s | -4°47'08" | 5°52'13" | 0.982 | 1.36112 |
| 3/25/2016 | 6:31 | 18:53 | 0h23m42s | 1°19'17" | 1°38'42" | 0.998 | 1.34042 |
| 4/ 1/2016 | 6:31 | 19:39 | 1h14m41s | 7°53'34" | 8°31'14" | 0.941 | 1.26564 |
| 4/ 8/2016 | 6:31 | 20:22 | 2h04m15s | 14°00'43" | 15°13'33" | 0.763 | 1.12882 |
| 4/15/2016 | 6:27 | 20:51 | 2h45m47s | 18°32'51" | 19°20'41" | 0.512 | 0.95455 |
| 4/22/2016 | 6:16 | 20:55 | 3h12m56s | 20°53'55" | 19°22'07" | 0.281 | 0.78579 |
| 4/29/2016 | 5:57 | 20:33 | 3h22m17s | 20°59'09" | 14°40'33" | 0.109 | 0.65344 |
| 5/ 6/2016 | 5:30 | 19:48 | 3h15m17s | 19°01'53" | 5°40'35" | 0.013 | 0.57434 |
| 5/13/2016 | 5:00 | 18:54 | 3h00m59s | 15°59'49" | 5°22'52" | 0.011 | 0.55542 |
| 5/20/2016 | 4:33 | 18:11 | 2h51m49s | 13°34'04" | 15°05'18" | 0.087 | 0.59181 |
| 5/27/2016 | 4:11 | 17:47 | 2h54m50s | 12°51'57" | 21°21'41" | 0.202 | 0.67033 |
| 6/ 3/2016 | 3:56 | 17:42 | 3h10m49s | 13°55'22" | 24°00'42" | 0.331 | 0.77813 |
| 6/10/2016 | 3:48 | 17:53 | 3h38m33s | 16°14'56" | 23°33'48" | 0.470 | 0.90611 |
| 6/17/2016 | 3:48 | 18:18 | 4h17m32s | 19°13'46" | 20°27'14" | 0.628 | 1.04574 |
| 6/24/2016 | 4:00 | 18:55 | 5h08m10s | 22°07'28" | 14°55'43" | 0.803 | 1.18209 |
| 7/ 1/2016 | 4:27 | 19:37 | 6h09m33s | 23°56'53" | 7°25'52" | 0.952 | 1.28713 |
| 7/ 8/2016 | 5:08 | 20:13 | 7h15m55s | 23°46'12" | 1°48'26" | 0.997 | 1.33089 |
| 7/15/2016 | 5:53 | 20:36 | 8h18m39s | 21°29'29" | 9°12'14" | 0.942 | 1.31127 |
| 7/22/2016 | 6:35 | 20:46 | 9h13m09s | 17°46'40" | 15°47'03" | 0.851 | 1.25048 |
| 7/29/2016 | 7:09 | 20:46 | 9h59m08s | 13°20'53" | 20°56'47" | 0.759 | 1.16862 |
| 8/ 5/2016 | 7:36 | 20:39 | 10h37m35s | 8°43'09" | 24°41'24" | 0.671 | 1.07617 |
| 8/12/2016 | 7:55 | 20:27 | 11h09m06s | 4°16'31" | 26°55'34" | 0.580 | 0.97767 |
| 8/19/2016 | 8:04 | 20:09 | 11h33m09s | 0°23'19" | 27°19'32" | 0.475 | 0.87581 |
| 8/26/2016 | 7:59 | 19:45 | 11h47m39s | -2°26'34" | 25°10'17" | 0.346 | 0.77505 |
| 9/ 2/2016 | 7:34 | 19:14 | 11h48m41s | -3°25'57" | 19°16'32" | 0.188 | 0.68674 |
| 9/ 9/2016 | 6:43 | 18:37 | 11h33m30s | -1°38'04" | 8°50'02" | 0.041 | 0.63714 |
| 9/16/2016 | 5:39 | 18:02 | 11h10m54s | 2°30'05" | 6°21'14" | 0.026 | 0.66739 |
| 9/23/2016 | 4:56 | 17:41 | 11h03m49s | 5°41'48" | 15°31'47" | 0.234 | 0.79791 |
| 9/30/2016 | 4:52 | 17:34 | 11h23m34s | 5°22'31" | 17°47'30" | 0.558 | 0.98941 |
| 10/ 7/2016 | 5:15 | 17:32 | 12h01m07s | 1°58'41" | 14°48'38" | 0.814 | 1.17201 |
| 10/14/2016 | 5:48 | 17:32 | 12h44m37s | -2°52'11" | 9°51'27" | 0.942 | 1.30574 |
| 10/21/2016 | 6:22 | 17:30 | 13h28m42s | -7°59'12" | 4°42'27" | 0.990 | 1.38873 |
| 10/28/2016 | 6:56 | 17:29 | 14h12m22s | -12°48'24" | 0°31'27" | 1.000 | 1.43091 |
| 11/ 4/2016 | 7:28 | 17:30 | 14h55m56s | -17°04'17" | 4°32'58" | 0.993 | 1.44044 |
| 11/11/2016 | 7:58 | 17:33 | 15h39m58s | -20°37'52" | 8°33'32" | 0.974 | 1.42174 |
| 11/18/2016 | 8:26 | 17:39 | 16h24m46s | -23°21'41" | 12°16'48" | 0.945 | 1.37614 |
| 11/25/2016 | 8:52 | 17:49 | 17h10m04s | -25°08'07" | 15°42'44" | 0.898 | 1.30242 |
| 12/ 2/2016 | 9:11 | 18:04 | 17h54m35s | -25°49'41" | 18°41'31" | 0.820 | 1.19749 |
| 12/ 9/2016 | 9:20 | 18:18 | 18h34m44s | -25°22'27" | 20°36'41" | 0.683 | 1.05850 |
| 12/16/2016 | 9:11 | 18:21 | 19h01m59s | -23°55'15" | 19°43'09" | 0.447 | 0.89108 |
| 12/23/2016 | 8:30 | 17:54 | 19h00m13s | -22°03'33" | 12°21'39" | 0.133 | 0.73377 |
| 12/30/2016 | 7:21 | 16:55 | 18h24m48s | -20°35'37" | 3°58'43" | 0.012 | 0.67497 |

Venus

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 4:52 | 14:44 | 16h01m34s | -18°36'53" | 37°58'02" | 0.771 | 1.16631 |
| 1/ 8/2016 | 5:06 | 14:45 | 16h37m01s | -20°16'55" | 36°34'32" | 0.791 | 1.21010 |
| 1/15/2016 | 5:20 | 14:49 | 17h13m17s | -21°30'29" | 35°08'37" | 0.810 | 1.25242 |
| 1/22/2016 | 5:32 | 14:56 | 17h50m11s | -22°14'27" | 33°40'29" | 0.828 | 1.29330 |
| 1/29/2016 | 5:43 | 15:05 | 18h27m26s | -22°26'47" | 32°10'21" | 0.845 | 1.33274 |
| 2/ 5/2016 | 5:51 | 15:16 | 19h04m44s | -22°06'29" | 30°38'33" | 0.860 | 1.37067 |
| 2/12/2016 | 5:56 | 15:29 | 19h41m47s | -21°13'51" | 29°05'21" | 0.875 | 1.40700 |
| 2/19/2016 | 5:59 | 15:44 | 20h18m17s | -19°50'23" | 27°30'41" | 0.889 | 1.44175 |
| 2/26/2016 | 6:00 | 16:00 | 20h54m03s | -17°58'32" | 25°54'33" | 0.902 | 1.47495 |
| 3/ 4/2016 | 5:58 | 16:16 | 21h28m59s | -15°41'29" | 24°17'03" | 0.914 | 1.50655 |
| 3/11/2016 | 5:55 | 16:32 | 22h03m03s | -13°02'57" | 22°38'17" | 0.925 | 1.53642 |
| 3/18/2016 | 5:50 | 16:49 | 22h36m19s | -10°06'56" | 20°58'08" | 0.936 | 1.56453 |
| 3/25/2016 | 5:44 | 17:05 | 23h08m55s | -6°57'32" | 19°16'28" | 0.946 | 1.59087 |
| 4/ 1/2016 | 5:37 | 17:21 | 23h41m01s | -3°38'46" | 17°33'22" | 0.955 | 1.61538 |
| 4/ 8/2016 | 5:29 | 17:36 | 0h12m50s | -0°14'39" | 15°48'55" | 0.963 | 1.63791 |
| 4/15/2016 | 5:22 | 17:52 | 0h44m34s | 3°10'42" | 14°03'00" | 0.971 | 1.65832 |
| 4/22/2016 | 5:14 | 18:08 | 1h16m27s | 6°33'16" | 12°15'34" | 0.978 | 1.67659 |
| 4/29/2016 | 5:08 | 18:25 | 1h48m43s | 9°49'04" | 10°26'41" | 0.984 | 1.69264 |
| 5/ 6/2016 | 5:02 | 18:41 | 2h21m35s | 12°54'01" | 8°36'31" | 0.989 | 1.70631 |
| 5/13/2016 | 4:57 | 18:58 | 2h55m11s | 15°43'55" | 6°45'05" | 0.993 | 1.71743 |
| 5/20/2016 | 4:54 | 19:15 | 3h29m38s | 18°14'34" | 4°52'24" | 0.996 | 1.72595 |
| 5/27/2016 | 4:54 | 19:31 | 4h05m00s | 20°21'55" | 2°58'37" | 0.999 | 1.73184 |
| 6/ 3/2016 | 4:55 | 19:46 | 4h41m14s | 22°02'12" | 1°04'00" | 1.000 | 1.73498 |
| 6/10/2016 | 5:00 | 20:01 | 5h18m12s | 23°12'07" | 0°51'19" | 1.000 | 1.73524 |
| 6/17/2016 | 5:07 | 20:13 | 5h55m38s | 23°49'09" | 2°47'16" | 0.999 | 1.73260 |
| 6/24/2016 | 5:17 | 20:23 | 6h33m16s | 23°51'50" | 4°43'36" | 0.997 | 1.72709 |
| 7/ 1/2016 | 5:30 | 20:30 | 7h10m45s | 23°19'55" | 6°40'00" | 0.993 | 1.71873 |
| 7/ 8/2016 | 5:44 | 20:34 | 7h47m48s | 22°14'18" | 8°36'16" | 0.989 | 1.70747 |
| 7/15/2016 | 6:00 | 20:35 | 8h24m06s | 20°37'05" | 10°32'18" | 0.983 | 1.69333 |
| 7/22/2016 | 6:16 | 20:34 | 8h59m31s | 18°31'13" | 12°27'52" | 0.976 | 1.67645 |
| 7/29/2016 | 6:33 | 20:31 | 9h33m59s | 16°00'16" | 14°22'37" | 0.968 | 1.65696 |
| 8/ 5/2016 | 6:50 | 20:26 | 10h07m29s | 13°08'07" | 16°16'21" | 0.959 | 1.63489 |
| 8/12/2016 | 7:06 | 20:19 | 10h40m09s | 9°58'58" | 18°09'00" | 0.949 | 1.61033 |
| 8/19/2016 | 7:23 | 20:11 | 11h12m06s | 6°36'59" | 20°00'23" | 0.939 | 1.58346 |
| 8/26/2016 | 7:39 | 20:03 | 11h43m33s | 3°06'16" | 21°50'12" | 0.927 | 1.55446 |
| 9/ 2/2016 | 7:54 | 19:54 | 12h14m45s | -0°29'09" | 23°38'17" | 0.914 | 1.52343 |
| 9/ 9/2016 | 8:10 | 19:46 | 12h45m54s | -4°05'12" | 25°24'37" | 0.901 | 1.49045 |
| 9/16/2016 | 8:26 | 19:37 | 13h17m15s | -7°37'43" | 27°09'04" | 0.887 | 1.45566 |
| 9/23/2016 | 8:43 | 19:29 | 13h49m03s | -11°02'37" | 28°51'24" | 0.872 | 1.41927 |
| 9/30/2016 | 8:59 | 19:23 | 14h21m29s | -14°15'41" | 30°31'24" | 0.857 | 1.38136 |
| 10/ 7/2016 | 9:16 | 19:18 | 14h54m44s | -17°12'37" | 32°09'03" | 0.841 | 1.34199 |
| 10/14/2016 | 9:33 | 19:14 | 15h28m54s | -19°49'00" | 33°44'17" | 0.824 | 1.30122 |
| 10/21/2016 | 9:49 | 19:13 | 16h04m00s | -22°00'35" | 35°16'43" | 0.807 | 1.25922 |
| 10/28/2016 | 10:05 | 19:15 | 16h39m58s | -23°43'27" | 36°46'05" | 0.789 | 1.21609 |
| 11/ 4/2016 | 10:19 | 19:19 | 17h16m37s | -24°54'15" | 38°12'13" | 0.769 | 1.17181 |
| 11/11/2016 | 10:31 | 19:26 | 17h53m39s | -25°30'32" | 39°34'53" | 0.750 | 1.12641 |
| 11/18/2016 | 10:40 | 19:36 | 18h30m39s | -25°31'04" | 40°53'29" | 0.729 | 1.08002 |
| 11/25/2016 | 10:46 | 19:48 | 19h07m14s | -24°55'58" | 42°07'21" | 0.707 | 1.03272 |
| 12/ 2/2016 | 10:49 | 20:01 | 19h43m01s | -23°46'40" | 43°16'00" | 0.684 | 0.98453 |
| 12/ 9/2016 | 10:48 | 20:15 | 20h17m39s | -22°05'51" | 44°18'39" | 0.659 | 0.93546 |
| 12/16/2016 | 10:45 | 20:30 | 20h50m52s | -19°57'12" | 45°14'05" | 0.633 | 0.88560 |
| 12/23/2016 | 10:39 | 20:44 | 21h22m31s | -17°24'55" | 46°00'43" | 0.605 | 0.83511 |
| 12/30/2016 | 10:30 | 20:57 | 21h52m32s | -14°33'32" | 46°36'58" | 0.575 | 0.78407 |

Mars

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 2:03 | 13:02 | 13h48m19s | -9°33'33" | 71°26'08" | 0.913 | 1.68387 |
| 1/ 8/2016 | 1:55 | 12:44 | 14h03m00s | -10°54'01" | 74°42'55" | 0.910 | 1.61500 |
| 1/15/2016 | 1:47 | 12:26 | 14h17m31s | -12°10'07" | 78°04'23" | 0.906 | 1.54496 |
| 1/22/2016 | 1:38 | 12:09 | 14h31m49s | -13°21'33" | 81°30'45" | 0.903 | 1.47411 |
| 1/29/2016 | 1:28 | 11:51 | 14h45m52s | -14°28'07" | 85°02'28" | 0.901 | 1.40271 |
| 2/ 5/2016 | 1:18 | 11:34 | 14h59m36s | -15°29'35" | 88°40'32" | 0.899 | 1.33099 |
| 2/12/2016 | 1:07 | 11:16 | 15h12m54s | -16°25'47" | 92°26'04" | 0.898 | 1.25927 |
| 2/19/2016 | 0:56 | 10:58 | 15h25m41s | -17°16'40" | 96°19'54" | 0.899 | 1.18796 |
| 2/26/2016 | 0:43 | 10:39 | 15h37m50s | -18°02'21" | 100°23'14" | 0.900 | 1.11742 |
| 3/ 4/2016 | 0:30 | 10:20 | 15h49m12s | -18°42'56" | 104°38'02" | 0.902 | 1.04792 |
| 3/11/2016 | 0:15 | 10:01 | 15h59m35s | -19°18'36" | 109°06'45" | 0.906 | 0.97990 |
| 3/18/2016 | 23:56 | 9:40 | 16h08m48s | -19°49'41" | 113°51'37" | 0.911 | 0.91389 |
| 3/25/2016 | 23:38 | 9:19 | 16h16m37s | -20°16'37" | 118°55'12" | 0.918 | 0.85038 |
| 4/ 1/2016 | 23:18 | 8:55 | 16h22m47s | -20°39'47" | 124°21'08" | 0.927 | 0.78986 |
| 4/ 8/2016 | 22:55 | 8:31 | 16h27m00s | -20°59'30" | 130°13'38" | 0.937 | 0.73295 |
| 4/15/2016 | 22:30 | 8:04 | 16h28m57s | -21°16'01" | 136°36'18" | 0.949 | 0.68048 |
| 4/22/2016 | 22:03 | 7:35 | 16h28m25s | -21°29'24" | 143°31'54" | 0.962 | 0.63325 |
| 4/29/2016 | 21:32 | 7:03 | 16h25m15s | -21°39'18" | 151°02'42" | 0.975 | 0.59206 |
| 5/ 6/2016 | 20:59 | 6:29 | 16h19m27s | -21°45'03" | 159°09'02" | 0.986 | 0.55782 |
| 5/13/2016 | 20:23 | 5:53 | 16h11m17s | -21°45'54" | 167°46'05" | 0.995 | 0.53147 |
| 5/20/2016 | 19:45 | 5:16 | 16h01m26s | -21°41'36" | 176°37'39" | 1.000 | 0.51362 |
| 5/27/2016 | 19:06 | 4:39 | 15h50m51s | -21°32'45" | 173°53'06" | 0.999 | 0.50450 |
| 6/ 3/2016 | 18:28 | 4:02 | 15h40m34s | -21°21'05" | 164°51'27" | 0.992 | 0.50401 |
| 6/10/2016 | 17:51 | 3:26 | 15h31m39s | -21°09'31" | 156°06'35" | 0.981 | 0.51167 |
| 6/17/2016 | 17:17 | 2:53 | 15h24m59s | -21°01'21" | 147°53'17" | 0.966 | 0.52650 |
| 6/24/2016 | 16:46 | 2:22 | 15h21m00s | -20°59'05" | 140°18'27" | 0.949 | 0.54732 |
| 7/ 1/2016 | 16:18 | 1:53 | 15h19m50s | -21°04'08" | 133°24'03" | 0.932 | 0.57305 |
| 7/ 8/2016 | 15:53 | 1:26 | 15h21m30s | -21°16'58" | 127°09'47" | 0.916 | 0.60270 |
| 7/15/2016 | 15:32 | 1:02 | 15h25m51s | -21°37'10" | 121°33'29" | 0.902 | 0.63530 |
| 7/22/2016 | 15:13 | 0:39 | 15h32m36s | -22°03'29" | 116°30'58" | 0.889 | 0.67004 |
| 7/29/2016 | 14:57 | 0:18 | 15h41m30s | -22°34'15" | 111°57'40" | 0.878 | 0.70639 |
| 8/ 5/2016 | 14:43 | 23:57 | 15h52m21s | -23°07'49" | 107°49'56" | 0.869 | 0.74396 |
| 8/12/2016 | 14:31 | 23:40 | 16h04m57s | -23°42'25" | 104°04'40" | 0.862 | 0.78235 |
| 8/19/2016 | 14:20 | 23:24 | 16h19m06s | -24°16'11" | 100°38'35" | 0.856 | 0.82127 |
| 8/26/2016 | 14:10 | 23:10 | 16h34m37s | -24°47'19" | 97°28'27" | 0.852 | 0.86060 |
| 9/ 2/2016 | 14:01 | 22:57 | 16h51m22s | -25°14'11" | 94°32'02" | 0.849 | 0.90029 |
| 9/ 9/2016 | 13:53 | 22:46 | 17h09m12s | -25°35'15" | 91°47'42" | 0.847 | 0.94024 |
| 9/16/2016 | 13:46 | 22:37 | 17h27m59s | -25°49'06" | 89°13'40" | 0.847 | 0.98035 |
| 9/23/2016 | 13:38 | 22:29 | 17h47m33s | -25°54'27" | 86°48'03" | 0.847 | 1.02068 |
| 9/30/2016 | 13:30 | 22:22 | 18h07m47s | -25°50'16" | 84°29'28" | 0.848 | 1.06131 |
| 10/ 7/2016 | 13:22 | 22:16 | 18h28m33s | -25°35'43" | 82°17'08" | 0.850 | 1.10223 |
| 10/14/2016 | 13:14 | 22:12 | 18h49m43s | -25°10'12" | 80°10'08" | 0.852 | 1.14341 |
| 10/21/2016 | 13:05 | 22:09 | 19h11m08s | -24°33'25" | 78°07'16" | 0.855 | 1.18494 |
| 10/28/2016 | 12:55 | 22:06 | 19h32m41s | -23°45'15" | 76°07'37" | 0.858 | 1.22693 |
| 11/ 4/2016 | 12:45 | 22:05 | 19h54m15s | -22°45'50" | 74°10'45" | 0.862 | 1.26940 |
| 11/11/2016 | 12:34 | 22:04 | 20h15m46s | -21°35'33" | 72°16'15" | 0.866 | 1.31231 |
| 11/18/2016 | 12:22 | 22:03 | 20h37m08s | -20°15'01" | 70°23'22" | 0.870 | 1.35570 |
| 11/25/2016 | 12:09 | 22:03 | 20h58m17s | -18°44'57" | 68°31'28" | 0.874 | 1.39968 |
| 12/ 2/2016 | 11:56 | 22:02 | 21h19m12s | -17°06'11" | 66°40'18" | 0.879 | 1.44422 |
| 12/ 9/2016 | 11:43 | 22:02 | 21h39m50s | -15°19'40" | 64°49'46" | 0.884 | 1.48924 |
| 12/16/2016 | 11:28 | 22:02 | 22h00m12s | -13°26'29" | 62°59'28" | 0.889 | 1.53473 |
| 12/23/2016 | 11:14 | 22:01 | 22h20m16s | -11°27'42" | 61°08'58" | 0.894 | 1.58072 |
| 12/30/2016 | 10:58 | 22:01 | 22h40m05s | -9°24'21" | 59°18'08" | 0.900 | 1.62717 |

Jupiter

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 23:01 | 11:36 | 11h36m44s | 3°51'50" | 106°51'26" | 0.992 | 5.04683 |
| 1/ 8/2016 | 22:34 | 11:08 | 11h37m05s | 3°51'41" | 113°54'32" | 0.993 | 4.94204 |
| 1/15/2016 | 22:06 | 10:41 | 11h36m52s | 3°55'16" | 121°07'03" | 0.994 | 4.84285 |
| 1/22/2016 | 21:37 | 10:13 | 11h36m04s | 4°02'32" | 128°28'25" | 0.995 | 4.75101 |
| 1/29/2016 | 21:07 | 9:44 | 11h34m42s | 4°13'17" | 135°58'07" | 0.996 | 4.66812 |
| 2/ 5/2016 | 20:37 | 9:16 | 11h32m48s | 4°27'16" | 143°35'39" | 0.997 | 4.59572 |
| 2/12/2016 | 20:06 | 8:47 | 11h30m26s | 4°44'05" | 151°19'49" | 0.998 | 4.53532 |
| 2/19/2016 | 19:35 | 8:18 | 11h27m41s | 5°03'11" | 159°08'43" | 0.999 | 4.48823 |
| 2/26/2016 | 19:03 | 7:48 | 11h24m36s | 5°23'54" | 166°59'59" | 1.000 | 4.45535 |
| 3/ 4/2016 | 18:31 | 7:19 | 11h21m20s | 5°45'33" | 174°47'17" | 1.000 | 4.43733 |
| 3/11/2016 | 17:59 | 6:49 | 11h17m58s | 6°07'23" | 176°43'52" | 1.000 | 4.43462 |
| 3/18/2016 | 17:27 | 6:20 | 11h14m38s | 6°28'34" | 169°06'19" | 1.000 | 4.44723 |
| 3/25/2016 | 16:55 | 5:50 | 11h11m27s | 6°48'25" | 161°20'38" | 0.999 | 4.47472 |
| 4/ 1/2016 | 16:23 | 5:21 | 11h08m31s | 7°06'17" | 153°39'19" | 0.998 | 4.51638 |
| 4/ 8/2016 | 15:53 | 4:51 | 11h05m56s | 7°21'38" | 146°04'47" | 0.997 | 4.57134 |
| 4/15/2016 | 15:22 | 4:23 | 11h03m47s | 7°34'01" | 138°38'46" | 0.996 | 4.63840 |
| 4/22/2016 | 14:53 | 3:54 | 11h02m07s | 7°43'09" | 131°22'26" | 0.995 | 4.71610 |
| 4/29/2016 | 14:24 | 3:26 | 11h00m58s | 7°48'52" | 124°16'04" | 0.994 | 4.80295 |
| 5/ 6/2016 | 13:56 | 2:58 | 11h00m23s | 7°51'05" | 117°19'49" | 0.993 | 4.89748 |
| 5/13/2016 | 13:28 | 2:30 | 11h00m20s | 7°49'46" | 110°33'52" | 0.992 | 4.99812 |
| 5/20/2016 | 13:02 | 2:03 | 11h00m51s | 7°45'01" | 103°58'16" | 0.992 | 5.10323 |
| 5/27/2016 | 12:36 | 1:36 | 11h01m54s | 7°36'58" | 97°32'24" | 0.991 | 5.21131 |
| 6/ 3/2016 | 12:10 | 1:09 | 11h03m28s | 7°25'45" | 91°15'33" | 0.991 | 5.32105 |
| 6/10/2016 | 11:46 | 0:43 | 11h05m31s | 7°11'32" | 85°07'15" | 0.991 | 5.43105 |
| 6/17/2016 | 11:22 | 0:17 | 11h08m01s | 6°54'30" | 79°07'04" | 0.992 | 5.53996 |
| 6/24/2016 | 10:58 | 23:47 | 11h10m56s | 6°34'52" | 73°14'12" | 0.992 | 5.64664 |
| 7/ 1/2016 | 10:35 | 23:22 | 11h14m14s | 6°12'51" | 67°27'40" | 0.992 | 5.75010 |
| 7/ 8/2016 | 10:13 | 22:57 | 11h17m53s | 5°48'36" | 61°46'50" | 0.993 | 5.84930 |
| 7/15/2016 | 9:51 | 22:32 | 11h21m51s | 5°22'21" | 56°11'12" | 0.994 | 5.94325 |
| 7/22/2016 | 9:29 | 22:07 | 11h26m06s | 4°54'18" | 50°40'05" | 0.995 | 6.03117 |
| 7/29/2016 | 9:08 | 21:42 | 11h30m36s | 4°24'37" | 45°12'33" | 0.996 | 6.11237 |
| 8/ 5/2016 | 8:47 | 21:18 | 11h35m20s | 3°53'29" | 39°47'57" | 0.996 | 6.18615 |
| 8/12/2016 | 8:26 | 20:53 | 11h40m15s | 3°21'07" | 34°25'51" | 0.997 | 6.25183 |
| 8/19/2016 | 8:06 | 20:29 | 11h45m20s | 2°47'41" | 29°05'45" | 0.998 | 6.30890 |
| 8/26/2016 | 7:45 | 20:04 | 11h50m33s | 2°13'23" | 23°46'54" | 0.999 | 6.35698 |
| 9/ 2/2016 | 7:25 | 19:40 | 11h55m53s | 1°38'23" | 18°28'42" | 0.999 | 6.39563 |
| 9/ 9/2016 | 7:05 | 19:16 | 12h01m19s | 1°02'51" | 13°10'59" | 1.000 | 6.42444 |
| 9/16/2016 | 6:45 | 18:52 | 12h06m49s | 0°27'01" | 7°54'05" | 1.000 | 6.44318 |
| 9/23/2016 | 6:25 | 18:28 | 12h12m22s | -0°08'58" | 2°43'37" | 1.000 | 6.45174 |
| 9/30/2016 | 6:05 | 18:04 | 12h17m55s | -0°44'56" | 3°03'18" | 1.000 | 6.44994 |
| 10/ 7/2016 | 5:45 | 17:40 | 12h23m29s | -1°20'39" | 8°18'32" | 1.000 | 6.43765 |
| 10/14/2016 | 5:25 | 17:16 | 12h29m00s | -1°55'56" | 13°41'59" | 1.000 | 6.41496 |
| 10/21/2016 | 5:05 | 16:52 | 12h34m28s | -2°30'37" | 19°09'01" | 0.999 | 6.38205 |
| 10/28/2016 | 4:45 | 16:28 | 12h39m51s | -3°04'28" | 24°39'39" | 0.999 | 6.33905 |
| 11/ 4/2016 | 4:24 | 16:04 | 12h45m07s | -3°37'20" | 30°14'07" | 0.998 | 6.28617 |
| 11/11/2016 | 4:04 | 15:39 | 12h50m15s | -4°08'57" | 35°52'32" | 0.997 | 6.22385 |
| 11/18/2016 | 3:43 | 15:15 | 12h55m12s | -4°39'09" | 41°35'15" | 0.996 | 6.15263 |
| 11/25/2016 | 3:22 | 14:51 | 12h59m56s | -5°07'44" | 47°22'54" | 0.996 | 6.07303 |
| 12/ 2/2016 | 3:00 | 14:26 | 13h04m26s | -5°34'29" | 53°15'57" | 0.995 | 5.98566 |
| 12/ 9/2016 | 2:38 | 14:01 | 13h08m39s | -5°59'11" | 59°14'35" | 0.994 | 5.89137 |
| 12/16/2016 | 2:16 | 13:36 | 13h12m33s | -6°21'37" | 65°19'07" | 0.993 | 5.79114 |
| 12/23/2016 | 1:53 | 13:11 | 13h16m06s | -6°41'38" | 71°30'09" | 0.993 | 5.68592 |
| 12/30/2016 | 1:30 | 12:46 | 13h19m15s | -6°58'59" | 77°48'15" | 0.992 | 5.57678 |

Saturn

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 5:34 | 15:10 | 16h39m10s | -20°29'00" | 28°55'01" | 0.999 | 10.88004 |
| 1/ 8/2016 | 5:10 | 14:46 | 16h42m19s | -20°34'48" | 35°18'01" | 0.999 | 10.81795 |
| 1/15/2016 | 4:46 | 14:21 | 16h45m19s | -20°40'00" | 41°43'19" | 0.999 | 10.74517 |
| 1/22/2016 | 4:21 | 13:56 | 16h48m08s | -20°44'35" | 48°10'48" | 0.999 | 10.66263 |
| 1/29/2016 | 3:57 | 13:30 | 16h50m45s | -20°48'33" | 54°40'39" | 0.998 | 10.57135 |
| 2/ 5/2016 | 3:32 | 13:05 | 16h53m07s | -20°51'53" | 61°13'16" | 0.998 | 10.47239 |
| 2/12/2016 | 3:07 | 12:39 | 16h55m15s | -20°54'37" | 67°48'47" | 0.998 | 10.36695 |
| 2/19/2016 | 2:41 | 12:13 | 16h57m05s | -20°56'45" | 74°27'03" | 0.998 | 10.25646 |
| 2/26/2016 | 2:15 | 11:47 | 16h58m38s | -20°58'18" | 81°08'11" | 0.998 | 10.14240 |
| 3/ 4/2016 | 1:49 | 11:21 | 16h59m51s | -20°59'18" | 87°52'32" | 0.998 | 10.02621 |
| 3/11/2016 | 1:22 | 10:54 | 17h00m44s | -20°59'46" | 94°40'17" | 0.998 | 9.90947 |
| 3/18/2016 | 0:55 | 10:27 | 17h01m17s | -20°59'43" | 101°31'12" | 0.998 | 9.79390 |
| 3/25/2016 | 0:28 | 10:00 | 17h01m29s | -20°59'11" | 108°25'12" | 0.998 | 9.68118 |
| 4/ 1/2016 | 0:00 | 9:32 | 17h01m20s | -20°58'11" | 115°22'26" | 0.998 | 9.57289 |
| 4/ 8/2016 | 23:28 | 9:04 | 17h00m50s | -20°56'45" | 122°22'59" | 0.998 | 9.47064 |
| 4/15/2016 | 22:59 | 8:36 | 17h00m01s | -20°54'55" | 129°26'26" | 0.999 | 9.37610 |
| 4/22/2016 | 22:30 | 8:08 | 16h58m53s | -20°52'42" | 136°32'19" | 0.999 | 9.29076 |
| 4/29/2016 | 22:01 | 7:39 | 16h57m29s | -20°50'09" | 143°40'27" | 0.999 | 9.21588 |
| 5/ 6/2016 | 21:32 | 7:10 | 16h55m49s | -20°47'18" | 150°50'35" | 0.999 | 9.15269 |
| 5/13/2016 | 21:02 | 6:41 | 16h53m58s | -20°44'13" | 158°01'52" | 1.000 | 9.10231 |
| 5/20/2016 | 20:33 | 6:11 | 16h51m56s | -20°40'57" | 165°12'53" | 1.000 | 9.06556 |
| 5/27/2016 | 20:03 | 5:42 | 16h49m48s | -20°37'34" | 172°20'08" | 1.000 | 9.04296 |
| 6/ 3/2016 | 19:33 | 5:12 | 16h47m37s | -20°34'09" | 178°10'47" | 1.000 | 9.03487 |
| 6/10/2016 | 19:03 | 4:43 | 16h45m26s | -20°30'48" | 172°46'37" | 1.000 | 9.04150 |
| 6/17/2016 | 18:33 | 4:14 | 16h43m17s | -20°27'36" | 165°42'10" | 1.000 | 9.06266 |
| 6/24/2016 | 18:03 | 3:44 | 16h41m15s | -20°24'40" | 158°35'11" | 1.000 | 9.09789 |
| 7/ 1/2016 | 17:34 | 3:15 | 16h39m22s | -20°22'05" | 151°29'20" | 0.999 | 9.14660 |
| 7/ 8/2016 | 17:04 | 2:46 | 16h37m41s | -20°19'56" | 144°25'47" | 0.999 | 9.20803 |
| 7/15/2016 | 16:35 | 2:17 | 16h36m15s | -20°18'19" | 137°25'25" | 0.999 | 9.28111 |
| 7/22/2016 | 16:07 | 1:48 | 16h35m04s | -20°17'18" | 130°28'38" | 0.999 | 9.36458 |
| 7/29/2016 | 15:38 | 1:20 | 16h34m11s | -20°16'56" | 123°35'22" | 0.998 | 9.45717 |
| 8/ 5/2016 | 15:10 | 0:52 | 16h33m36s | -20°17'15" | 116°45'43" | 0.998 | 9.55754 |
| 8/12/2016 | 14:43 | 0:24 | 16h33m21s | -20°18'17" | 109°59'56" | 0.998 | 9.66415 |
| 8/19/2016 | 14:15 | 23:53 | 16h33m26s | -20°20'01" | 103°18'06" | 0.998 | 9.77538 |
| 8/26/2016 | 13:48 | 23:25 | 16h33m51s | -20°22'26" | 96°39'50" | 0.998 | 9.88973 |
| 9/ 2/2016 | 13:22 | 22:59 | 16h34m36s | -20°25'31" | 90°04'49" | 0.997 | 10.00571 |
| 9/ 9/2016 | 12:56 | 22:32 | 16h35m40s | -20°29'13" | 83°33'02" | 0.998 | 10.12173 |
| 9/16/2016 | 12:30 | 22:06 | 16h37m03s | -20°33'27" | 77°04'24" | 0.998 | 10.23620 |
| 9/23/2016 | 12:04 | 21:39 | 16h38m44s | -20°38'11" | 70°38'26" | 0.998 | 10.34775 |
| 9/30/2016 | 11:39 | 21:14 | 16h40m42s | -20°43'18" | 64°14'37" | 0.998 | 10.45506 |
| 10/ 7/2016 | 11:14 | 20:48 | 16h42m56s | -20°48'46" | 57°52'48" | 0.998 | 10.55672 |
| 10/14/2016 | 10:50 | 20:22 | 16h45m24s | -20°54'27" | 51°32'53" | 0.998 | 10.65148 |
| 10/21/2016 | 10:25 | 19:57 | 16h48m05s | -21°00'18" | 45°14'27" | 0.999 | 10.73826 |
| 10/28/2016 | 10:01 | 19:32 | 16h50m58s | -21°06'13" | 38°56'59" | 0.999 | 10.81608 |
| 11/ 4/2016 | 9:37 | 19:07 | 16h54m02s | -21°12'06" | 32°40'16" | 0.999 | 10.88396 |
| 11/11/2016 | 9:13 | 18:43 | 16h57m14s | -21°17'55" | 26°24'20" | 1.000 | 10.94103 |
| 11/18/2016 | 8:49 | 18:18 | 17h00m34s | -21°23'33" | 20°08'58" | 1.000 | 10.98671 |
| 11/25/2016 | 8:25 | 17:54 | 17h03m59s | -21°28'58" | 13°54'01" | 1.000 | 11.02048 |
| 12/ 2/2016 | 8:02 | 17:29 | 17h07m29s | -21°34'05" | 7°40'33" | 1.000 | 11.04186 |
| 12/ 9/2016 | 7:38 | 17:05 | 17h11m01s | -21°38'53" | 1°49'40" | 1.000 | 11.05052 |
| 12/16/2016 | 7:14 | 16:41 | 17h14m33s | -21°43'17" | 5°10'18" | 1.000 | 11.04644 |
| 12/23/2016 | 6:51 | 16:16 | 17h18m04s | -21°47'17" | 11°23'06" | 1.000 | 11.02965 |
| 12/30/2016 | 6:27 | 15:52 | 17h21m33s | -21°50'51" | 17°41'01" | 1.000 | 11.00024 |

Uranus

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 12:21 | 1:10 | 1h02m04s | 5°55'36" | 96°34'52" | 0.999 | 19.84056 |
| 1/ 8/2016 | 11:54 | 0:42 | 1h02m16s | 5°57'09" | 89°30'10" | 0.999 | 19.96083 |
| 1/15/2016 | 11:26 | 0:15 | 1h02m38s | 5°59'39" | 82°28'03" | 0.999 | 20.08100 |
| 1/22/2016 | 10:59 | 23:45 | 1h03m09s | 6°03'06" | 75°28'54" | 0.999 | 20.19920 |
| 1/29/2016 | 10:32 | 23:18 | 1h03m48s | 6°07'26" | 68°32'44" | 0.999 | 20.31376 |
| 2/ 5/2016 | 10:05 | 22:52 | 1h04m36s | 6°12'35" | 61°39'23" | 1.000 | 20.42313 |
| 2/12/2016 | 9:38 | 22:26 | 1h05m31s | 6°18'32" | 54°48'54" | 1.000 | 20.52575 |
| 2/19/2016 | 9:11 | 22:00 | 1h06m34s | 6°25'09" | 48°01'34" | 1.000 | 20.62014 |
| 2/26/2016 | 8:44 | 21:34 | 1h07m43s | 6°32'24" | 41°17'18" | 1.000 | 20.70513 |
| 3/ 4/2016 | 8:18 | 21:08 | 1h08m57s | 6°40'10" | 34°35'47" | 1.000 | 20.77971 |
| 3/11/2016 | 7:51 | 20:42 | 1h10m16s | 6°48'24" | 27°56'52" | 1.000 | 20.84287 |
| 3/18/2016 | 7:24 | 20:16 | 1h11m39s | 6°56'58" | 21°20'40" | 1.000 | 20.89382 |
| 3/25/2016 | 6:58 | 19:51 | 1h13m05s | 7°05'47" | 14°47'10" | 1.000 | 20.93204 |
| 4/ 1/2016 | 6:31 | 19:25 | 1h14m34s | 7°14'47" | 8°16'08" | 1.000 | 20.95717 |
| 4/ 8/2016 | 6:05 | 19:00 | 1h16m03s | 7°23'51" | 1°50'54" | 1.000 | 20.96891 |
| 4/15/2016 | 5:38 | 18:34 | 1h17m33s | 7°32'54" | 4°45'14" | 1.000 | 20.96713 |
| 4/22/2016 | 5:12 | 18:09 | 1h19m02s | 7°41'50" | 11°10'24" | 1.000 | 20.95201 |
| 4/29/2016 | 4:45 | 17:43 | 1h20m30s | 7°50'35" | 17°35'21" | 1.000 | 20.92384 |
| 5/ 6/2016 | 4:18 | 17:18 | 1h21m55s | 7°59'04" | 23°59'51" | 1.000 | 20.88296 |
| 5/13/2016 | 3:52 | 16:52 | 1h23m18s | 8°07'12" | 30°23'56" | 1.000 | 20.82985 |
| 5/20/2016 | 3:25 | 16:26 | 1h24m36s | 8°14'54" | 36°47'41" | 1.000 | 20.76531 |
| 5/27/2016 | 2:58 | 16:00 | 1h25m50s | 8°22'05" | 43°11'32" | 1.000 | 20.69018 |
| 6/ 3/2016 | 2:32 | 15:34 | 1h26m59s | 8°28'43" | 49°36'04" | 1.000 | 20.60534 |
| 6/10/2016 | 2:05 | 15:08 | 1h28m01s | 8°34'43" | 56°01'33" | 1.000 | 20.51179 |
| 6/17/2016 | 1:38 | 14:42 | 1h28m57s | 8°40'01" | 62°28'02" | 0.999 | 20.41081 |
| 6/24/2016 | 1:11 | 14:15 | 1h29m45s | 8°44'35" | 68°55'54" | 0.999 | 20.30370 |
| 7/ 1/2016 | 0:44 | 13:49 | 1h30m26s | 8°48'22" | 75°25'43" | 0.999 | 20.19171 |
| 7/ 8/2016 | 0:17 | 13:22 | 1h30m58s | 8°51'20" | 81°57'46" | 0.999 | 20.07627 |
| 7/15/2016 | 23:45 | 12:55 | 1h31m22s | 8°53'27" | 88°32'06" | 0.999 | 19.95896 |
| 7/22/2016 | 23:18 | 12:27 | 1h31m37s | 8°54'43" | 95°08'53" | 0.999 | 19.84135 |
| 7/29/2016 | 22:51 | 12:00 | 1h31m43s | 8°55'05" | 101°48'36" | 0.999 | 19.72495 |
| 8/ 5/2016 | 22:23 | 11:32 | 1h31m40s | 8°54'36" | 108°31'31" | 0.999 | 19.61133 |
| 8/12/2016 | 21:55 | 11:05 | 1h31m27s | 8°53'14" | 115°17'32" | 0.999 | 19.50220 |
| 8/19/2016 | 21:28 | 10:37 | 1h31m07s | 8°51'02" | 122°06'35" | 1.000 | 19.39915 |
| 8/26/2016 | 21:00 | 10:08 | 1h30m38s | 8°48'03" | 128°58'58" | 1.000 | 19.30362 |
| 9/ 2/2016 | 20:32 | 9:40 | 1h30m01s | 8°44'20" | 135°54'50" | 1.000 | 19.21705 |
| 9/ 9/2016 | 20:04 | 9:12 | 1h29m17s | 8°39'55" | 142°53'53" | 1.000 | 19.14091 |
| 9/16/2016 | 19:36 | 8:43 | 1h28m27s | 8°34'56" | 149°55'49" | 1.000 | 19.07641 |
| 9/23/2016 | 19:08 | 8:14 | 1h27m32s | 8°29'27" | 157°00'35" | 1.000 | 19.02455 |
| 9/30/2016 | 18:39 | 7:45 | 1h26m33s | 8°23'35" | 164°08'08" | 1.000 | 18.98623 |
| 10/ 7/2016 | 18:11 | 7:16 | 1h25m30s | 8°17'26" | 171°17'47" | 1.000 | 18.96225 |
| 10/14/2016 | 17:43 | 6:47 | 1h24m26s | 8°11'10" | 178°23'28" | 1.000 | 18.95304 |
| 10/21/2016 | 17:15 | 6:18 | 1h23m22s | 8°04'52" | 174°12'44" | 1.000 | 18.95877 |
| 10/28/2016 | 16:47 | 5:49 | 1h22m19s | 7°58'42" | 166°58'35" | 1.000 | 18.97942 |
| 11/ 4/2016 | 16:18 | 5:21 | 1h21m18s | 7°52'47" | 159°42'33" | 1.000 | 19.01483 |
| 11/11/2016 | 15:50 | 4:52 | 1h20m21s | 7°47'15" | 152°25'59" | 1.000 | 19.06444 |
| 11/18/2016 | 15:22 | 4:23 | 1h19m29s | 7°42'14" | 145°09'26" | 1.000 | 19.12738 |
| 11/25/2016 | 14:54 | 3:55 | 1h18m43s | 7°37'49" | 137°53'05" | 1.000 | 19.20271 |
| 12/ 2/2016 | 14:26 | 3:26 | 1h18m04s | 7°34'08" | 130°37'18" | 1.000 | 19.28929 |
| 12/ 9/2016 | 13:58 | 2:58 | 1h17m33s | 7°31'15" | 123°22'47" | 1.000 | 19.38570 |
| 12/16/2016 | 13:31 | 2:30 | 1h17m10s | 7°29'13" | 116°09'58" | 1.000 | 19.49030 |
| 12/23/2016 | 13:03 | 2:02 | 1h16m56s | 7°28'07" | 108°58'55" | 0.999 | 19.60150 |
| 12/30/2016 | 12:35 | 1:35 | 1h16m52s | 7°27'57" | 101°49'51" | 0.999 | 19.71760 |

Neptune

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 10:51 | 21:49 | 22h38m10s | -9°28'15" | 57°34'11" | 1.000 | 30.47556 |
| 1/ 8/2016 | 10:23 | 21:23 | 22h38m49s | -9°24'15" | 50°36'40" | 1.000 | 30.57395 |
| 1/15/2016 | 9:56 | 20:56 | 22h39m34s | -9°19'47" | 43°40'27" | 1.000 | 30.66312 |
| 1/22/2016 | 9:29 | 20:30 | 22h40m22s | -9°14'55" | 36°45'51" | 1.000 | 30.74179 |
| 1/29/2016 | 9:02 | 20:03 | 22h41m14s | -9°09'43" | 29°52'52" | 1.000 | 30.80896 |
| 2/ 5/2016 | 8:36 | 19:37 | 22h42m08s | -9°04'14" | 23°01'19" | 1.000 | 30.86375 |
| 2/12/2016 | 8:09 | 19:11 | 22h43m06s | -8°58'32" | 16°11'20" | 1.000 | 30.90536 |
| 2/19/2016 | 7:42 | 18:45 | 22h44m04s | -8°52'41" | 9°23'31" | 1.000 | 30.93325 |
| 2/26/2016 | 7:15 | 18:19 | 22h45m04s | -8°46'46" | 2°41'38" | 1.000 | 30.94718 |
| 3/ 4/2016 | 6:48 | 17:52 | 22h46m04s | -8°40'49" | 4°15'39" | 1.000 | 30.94705 |
| 3/11/2016 | 6:21 | 17:26 | 22h47m03s | -8°34'55" | 10°57'23" | 1.000 | 30.93284 |
| 3/18/2016 | 5:54 | 17:00 | 22h48m02s | -8°29'08" | 17°39'50" | 1.000 | 30.90480 |
| 3/25/2016 | 5:27 | 16:34 | 22h48m58s | -8°23'32" | 24°21'17" | 1.000 | 30.86347 |
| 4/ 1/2016 | 5:00 | 16:07 | 22h49m53s | -8°18'11" | 31°01'53" | 1.000 | 30.80948 |
| 4/ 8/2016 | 4:33 | 15:41 | 22h50m44s | -8°13'09" | 37°41'51" | 1.000 | 30.74351 |
| 4/15/2016 | 4:06 | 15:15 | 22h51m32s | -8°08'28" | 44°21'06" | 1.000 | 30.66651 |
| 4/22/2016 | 3:39 | 14:48 | 22h52m16s | -8°04'12" | 50°59'37" | 1.000 | 30.57964 |
| 4/29/2016 | 3:12 | 14:21 | 22h52m56s | -8°00'23" | 57°37'47" | 1.000 | 30.48410 |
| 5/ 6/2016 | 2:45 | 13:55 | 22h53m31s | -7°57'04" | 64°15'58" | 1.000 | 30.38109 |
| 5/13/2016 | 2:18 | 13:28 | 22h54m01s | -7°54'18" | 70°54'14" | 1.000 | 30.27204 |
| 5/20/2016 | 1:51 | 13:01 | 22h54m25s | -7°52'05" | 77°32'32" | 1.000 | 30.15851 |
| 5/27/2016 | 1:23 | 12:34 | 22h54m44s | -7°50'28" | 84°11'12" | 1.000 | 30.04203 |
| 6/ 3/2016 | 0:56 | 12:06 | 22h54m56s | -7°49'27" | 90°50'39" | 1.000 | 29.92409 |
| 6/10/2016 | 0:29 | 11:39 | 22h55m03s | -7°49'03" | 97°30'59" | 1.000 | 29.80633 |
| 6/17/2016 | 0:01 | 11:11 | 22h55m04s | -7°49'16" | 104°12'07" | 1.000 | 29.69045 |
| 6/24/2016 | 23:30 | 10:44 | 22h54m59s | -7°50'04" | 110°54'15" | 1.000 | 29.57803 |
| 7/ 1/2016 | 23:02 | 10:16 | 22h54m48s | -7°51'28" | 117°37'46" | 1.000 | 29.47054 |
| 7/ 8/2016 | 22:34 | 9:48 | 22h54m32s | -7°53'24" | 124°22'49" | 1.000 | 29.36956 |
| 7/15/2016 | 22:06 | 9:20 | 22h54m10s | -7°55'52" | 131°09'12" | 1.000 | 29.27661 |
| 7/22/2016 | 21:39 | 8:52 | 22h53m43s | -7°58'49" | 137°56'57" | 1.000 | 29.19299 |
| 7/29/2016 | 21:11 | 8:24 | 22h53m13s | -8°02'10" | 144°46'22" | 1.000 | 29.11986 |
| 8/ 5/2016 | 20:43 | 7:55 | 22h52m38s | -8°05'53" | 151°37'32" | 1.000 | 29.05838 |
| 8/12/2016 | 20:15 | 7:27 | 22h52m00s | -8°09'54" | 158°30'09" | 1.000 | 29.00957 |
| 8/19/2016 | 19:47 | 6:58 | 22h51m20s | -8°14'08" | 165°23'56" | 1.000 | 28.97414 |
| 8/26/2016 | 19:19 | 6:30 | 22h50m38s | -8°18'31" | 172°18'22" | 1.000 | 28.95262 |
| 9/ 2/2016 | 18:51 | 6:01 | 22h49m55s | -8°22'58" | 178°53'11" | 1.000 | 28.94545 |
| 9/ 9/2016 | 18:23 | 5:33 | 22h49m12s | -8°27'23" | 173°38'30" | 1.000 | 28.95288 |
| 9/16/2016 | 17:55 | 5:04 | 22h48m30s | -8°31'42" | 166°40'27" | 1.000 | 28.97481 |
| 9/23/2016 | 17:27 | 4:36 | 22h47m49s | -8°35'51" | 159°39'58" | 1.000 | 29.01089 |
| 9/30/2016 | 16:59 | 4:08 | 22h47m10s | -8°39'43" | 152°38'00" | 1.000 | 29.06074 |
| 10/ 7/2016 | 16:31 | 3:39 | 22h46m35s | -8°43'16" | 145°35'02" | 1.000 | 29.12370 |
| 10/14/2016 | 16:04 | 3:11 | 22h46m03s | -8°46'24" | 138°31'33" | 1.000 | 29.19878 |
| 10/21/2016 | 15:36 | 2:43 | 22h45m35s | -8°49'05" | 131°27'37" | 1.000 | 29.28485 |
| 10/28/2016 | 15:08 | 2:15 | 22h45m13s | -8°51'15" | 124°23'12" | 1.000 | 29.38070 |
| 11/ 4/2016 | 14:40 | 1:47 | 22h44m56s | -8°52'51" | 117°18'32" | 1.000 | 29.48496 |
| 11/11/2016 | 14:13 | 1:19 | 22h44m44s | -8°53'51" | 110°14'05" | 1.000 | 29.59596 |
| 11/18/2016 | 13:45 | 0:52 | 22h44m39s | -8°54'14" | 103°09'59" | 1.000 | 29.71202 |
| 11/25/2016 | 13:17 | 0:24 | 22h44m40s | -8°53'59" | 96°06'10" | 1.000 | 29.83146 |
| 12/ 2/2016 | 12:50 | 23:53 | 22h44m47s | -8°53'06" | 89°02'47" | 1.000 | 29.95253 |
| 12/ 9/2016 | 12:23 | 23:26 | 22h45m01s | -8°51'34" | 82°00'14" | 1.000 | 30.07332 |
| 12/16/2016 | 11:55 | 22:59 | 22h45m21s | -8°49'26" | 74°58'46" | 1.000 | 30.19203 |
| 12/23/2016 | 11:28 | 22:32 | 22h45m47s | -8°46'41" | 67°58'16" | 1.000 | 30.30697 |
| 12/30/2016 | 11:01 | 22:05 | 22h46m18s | -8°43'23" | 60°58'45" | 1.000 | 30.41650 |

Pluto

| Date | Rise | Set | RA | Dec | Elongation | Ill Fr | DIST(AU) |
|---|---|---|---|---|---|---|---|
| 1/ 1/2016 | 8:01 | 17:33 | 19h04m34s | -21°00'22" | 5°18'19" | 1.000 | 33.99300 |
| 1/ 8/2016 | 7:34 | 17:07 | 19h05m36s | -20°59'25" | 2°24'54" | 1.000 | 34.00084 |
| 1/15/2016 | 7:08 | 16:40 | 19h06m38s | -20°58'24" | 8°51'44" | 1.000 | 33.99423 |
| 1/22/2016 | 6:41 | 16:14 | 19h07m39s | -20°57'21" | 15°41'17" | 1.000 | 33.97340 |
| 1/29/2016 | 6:15 | 15:47 | 19h08m38s | -20°56'17" | 22°32'51" | 1.000 | 33.93880 |
| 2/ 5/2016 | 5:48 | 15:21 | 19h09m36s | -20°55'13" | 29°25'03" | 1.000 | 33.89094 |
| 2/12/2016 | 5:21 | 14:54 | 19h10m30s | -20°54'12" | 36°17'26" | 1.000 | 33.83050 |
| 2/19/2016 | 4:55 | 14:28 | 19h11m20s | -20°53'13" | 43°09'35" | 1.000 | 33.75849 |
| 2/26/2016 | 4:28 | 14:01 | 19h12m06s | -20°52'19" | 50°01'24" | 1.000 | 33.67608 |
| 3/ 4/2016 | 4:01 | 13:34 | 19h12m48s | -20°51'31" | 56°53'07" | 1.000 | 33.58447 |
| 3/11/2016 | 3:34 | 13:07 | 19h13m24s | -20°50'51" | 63°44'45" | 1.000 | 33.48497 |
| 3/18/2016 | 3:07 | 12:40 | 19h13m55s | -20°50'18" | 70°36'03" | 1.000 | 33.37914 |
| 3/25/2016 | 2:40 | 12:13 | 19h14m20s | -20°49'56" | 77°26'56" | 1.000 | 33.26863 |
| 4/ 1/2016 | 2:12 | 11:46 | 19h14m39s | -20°49'43" | 84°17'40" | 1.000 | 33.15500 |
| 4/ 8/2016 | 1:45 | 11:19 | 19h14m52s | -20°49'42" | 91°08'24" | 1.000 | 33.03990 |
| 4/15/2016 | 1:18 | 10:51 | 19h14m58s | -20°49'52" | 97°58'56" | 1.000 | 32.92509 |
| 4/22/2016 | 0:50 | 10:24 | 19h14m58s | -20°50'14" | 104°49'09" | 1.000 | 32.81233 |
| 4/29/2016 | 0:23 | 9:56 | 19h14m52s | -20°50'48" | 111°39'16" | 1.000 | 32.70321 |
| 5/ 6/2016 | 23:51 | 9:28 | 19h14m40s | -20°51'34" | 118°29'31" | 1.000 | 32.59930 |
| 5/13/2016 | 23:23 | 9:00 | 19h14m22s | -20°52'31" | 125°19'45" | 1.000 | 32.50222 |
| 5/20/2016 | 22:55 | 8:32 | 19h13m59s | -20°53'38" | 132°09'47" | 1.000 | 32.41345 |
| 5/27/2016 | 22:27 | 8:04 | 19h13m31s | -20°54'56" | 138°59'43" | 1.000 | 32.33425 |
| 6/ 3/2016 | 22:00 | 7:36 | 19h12m59s | -20°56'23" | 145°49'50" | 1.000 | 32.26576 |
| 6/10/2016 | 21:31 | 7:08 | 19h12m23s | -20°57'59" | 152°39'58" | 1.000 | 32.20911 |
| 6/17/2016 | 21:03 | 6:39 | 19h11m44s | -20°59'41" | 159°29'44" | 1.000 | 32.16521 |
| 6/24/2016 | 20:35 | 6:11 | 19h11m03s | -21°01'28" | 166°18'47" | 1.000 | 32.13466 |
| 7/ 1/2016 | 20:07 | 5:43 | 19h10m20s | -21°03'20" | 173°05'20" | 1.000 | 32.11794 |
| 7/ 8/2016 | 19:39 | 5:14 | 19h09m36s | -21°05'15" | 178°37'36" | 1.000 | 32.11543 |
| 7/15/2016 | 19:11 | 4:46 | 19h08m52s | -21°07'11" | 172°56'36" | 1.000 | 32.12727 |
| 7/22/2016 | 18:43 | 4:18 | 19h08m09s | -21°09'08" | 166°09'49" | 1.000 | 32.15326 |
| 7/29/2016 | 18:15 | 3:49 | 19h07m28s | -21°11'03" | 159°20'13" | 1.000 | 32.19308 |
| 8/ 5/2016 | 17:47 | 3:21 | 19h06m49s | -21°12'55" | 152°29'42" | 1.000 | 32.24633 |
| 8/12/2016 | 17:19 | 2:53 | 19h06m13s | -21°14'44" | 145°38'55" | 1.000 | 32.31232 |
| 8/19/2016 | 16:51 | 2:25 | 19h05m41s | -21°16'28" | 138°48'07" | 1.000 | 32.39006 |
| 8/26/2016 | 16:23 | 1:56 | 19h05m13s | -21°18'05" | 131°57'07" | 1.000 | 32.47854 |
| 9/ 2/2016 | 15:55 | 1:28 | 19h04m50s | -21°19'36" | 125°05'47" | 1.000 | 32.57664 |
| 9/ 9/2016 | 15:28 | 1:01 | 19h04m32s | -21°20'59" | 118°14'20" | 1.000 | 32.68300 |
| 9/16/2016 | 15:00 | 0:33 | 19h04m20s | -21°22'14" | 111°22'57" | 1.000 | 32.79609 |
| 9/23/2016 | 14:32 | 0:05 | 19h04m14s | -21°23'19" | 104°31'26" | 1.000 | 32.91438 |
| 9/30/2016 | 14:05 | 23:34 | 19h04m15s | -21°24'15" | 97°39'34" | 1.000 | 33.03632 |
| 10/ 7/2016 | 13:38 | 23:06 | 19h04m21s | -21°25'01" | 90°47'28" | 1.000 | 33.16020 |
| 10/14/2016 | 13:10 | 22:39 | 19h04m34s | -21°25'37" | 83°55'23" | 1.000 | 33.28423 |
| 10/21/2016 | 12:43 | 22:12 | 19h04m54s | -21°26'02" | 77°03'11" | 1.000 | 33.40672 |
| 10/28/2016 | 12:16 | 21:44 | 19h05m19s | -21°26'17" | 70°10'36" | 1.000 | 33.52606 |
| 11/ 4/2016 | 11:49 | 21:18 | 19h05m50s | -21°26'21" | 63°17'43" | 1.000 | 33.64055 |
| 11/11/2016 | 11:22 | 20:51 | 19h06m27s | -21°26'15" | 56°24'47" | 1.000 | 33.74854 |
| 11/18/2016 | 10:55 | 20:24 | 19h07m09s | -21°25'59" | 49°31'49" | 1.000 | 33.84856 |
| 11/25/2016 | 10:29 | 19:57 | 19h07m56s | -21°25'33" | 42°38'34" | 1.000 | 33.93932 |
| 12/ 2/2016 | 10:02 | 19:30 | 19h08m46s | -21°24'58" | 35°45'03" | 1.000 | 34.01952 |
| 12/ 9/2016 | 9:35 | 19:04 | 19h09m40s | -21°24'15" | 28°51'34" | 1.000 | 34.08797 |
| 12/16/2016 | 9:09 | 18:37 | 19h10m37s | -21°23'24" | 21°58'19" | 1.000 | 34.14382 |
| 12/23/2016 | 8:42 | 18:11 | 19h11m37s | -21°22'26" | 15°05'16" | 1.000 | 34.18638 |
| 12/30/2016 | 8:15 | 17:44 | 19h12m38s | -21°21'23" | 8°13'05" | 1.000 | 34.21505 |

## Planet Apsides Report for 2016

Earth

| | | | |
|---|---|---|---|
| 1/ 3/2016 | Perihelion | Distance from Sun: | 0.98 AU |
| 7/ 4/2016 | Aphelion | Distance from Sun: | 1.02 AU |

Mercury

| | | | |
|---|---|---|---|
| 1/ 8/2016 | Perihelion | Distance from Sun: | 0.31 AU |
| 4/ 5/2016 | Perihelion | Distance from Sun: | 0.31 AU |
| 7/ 2/2016 | Perihelion | Distance from Sun: | 0.31 AU |
| 9/28/2016 | Perihelion | Distance from Sun: | 0.31 AU |
| 12/25/2016 | Perihelion | Distance from Sun: | 0.31 AU |
| 2/21/2016 | Aphelion | Distance from Sun: | 0.47 AU |
| 5/19/2016 | Aphelion | Distance from Sun: | 0.47 AU |
| 8/15/2016 | Aphelion | Distance from Sun: | 0.47 AU |
| 11/11/2016 | Aphelion | Distance from Sun: | 0.47 AU |

Venus

| | | | |
|---|---|---|---|
| 7/10/2016 | Perihelion | Distance from Sun: | 0.72 AU |
| 3/20/2016 | Aphelion | Distance from Sun: | 0.73 AU |
| 10/31/2016 | Aphelion | Distance from Sun: | 0.73 AU |

Mars

| | | | |
|---|---|---|---|
| 10/29/2016 | Perihelion | Distance from Sun: | 1.38 AU |

Jupiter
No Apsis

Saturn
No Apsis

## Planet Conjunction/Opposition Report for 1/ 1/2016 to 12/31/2016

Mercury

| Date | Hour | Event |
|---|---|---|
| 1/14/2016 | 17 | Inferior Conjunction |
| 3/23/2016 | 17 | Superior Conjunction |
| 5/ 9/2016 | 17 | Inferior Conjunction |
| 7/ 6/2016 | 20 | Superior Conjunction |
| 9/12/2016 | 17 | Inferior Conjunction |
| 10/27/2016 | 17 | Superior Conjunction |
| 12/28/2016 | 17 | Inferior Conjunction |

Venus

| Date | Hour | Event |
|---|---|---|
| 6/ 6/2016 | 17 | Superior Conjunction (Occultation) |

Mars

| Date | Hour | Event |
|---|---|---|
| 5/22/2016 | 4 | Opposition |

Jupiter

| Date | Hour | Event |
|---|---|---|
| 9/26/2016 | 0 | Conjunction |
| 3/ 8/2016 | 3 | Opposition |

Saturn

| Date | Hour | Event |
|---|---|---|
| 12/10/2016 | 3 | Conjunction |
| 6/ 2/2016 | 22 | Opposition |

Uranus

| Date | Hour | Event |
|---|---|---|
| 4/ 9/2016 | 17 | Conjunction |
| 10/15/2016 | 4 | Opposition |

Neptune

| Date | Hour | Event |
|---|---|---|
| 2/28/2016 | 17 | Conjunction |
| 9/ 2/2016 | 17 | Opposition |

Pluto

| Date | Hour | Event |
|---|---|---|
| 1/ 5/2016 | 20 | Conjunction |
| 7/ 7/2016 | 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 |
| Pluto | 39.44 | 248 | years | 17.2° | 2200-2300 |

Moon Apsides Report for 1/ 1/2016 to 12/31/2016

| Date | Hour | Apsis | Distance (km) | Diameter |
|---|---|---|---|---|
| 1/ 2/2016 | 5 | Apogee | 404280 | 0.4926° |
| 1/14/2016 | 19 | Perigee | 369634 | 0.5388° |
| 1/30/2016 | 2 | Apogee | 404549 | 0.4923° |
| 2/10/2016 | 20 | Perigee | 364364 | 0.5466° |
| 2/26/2016 | 20 | Apogee | 405376 | 0.4913° |
| 3/10/2016 | 0 | Perigee | 359516 | 0.5540° |
| 3/25/2016 | 7 | Apogee | 406135 | 0.4904° |
| 4/ 7/2016 | 10 | Perigee | 357170 | 0.5576° |
| 4/21/2016 | 9 | Apogee | 406341 | 0.4901° |
| 5/ 5/2016 | 21 | Perigee | 357836 | 0.5566° |
| 5/18/2016 | 15 | Apogee | 405925 | 0.4906° |
| 6/ 3/2016 | 4 | Perigee | 361152 | 0.5514° |
| 6/15/2016 | 5 | Apogee | 405038 | 0.4917° |
| 7/ 1/2016 | 0 | Perigee | 365993 | 0.5442° |
| 7/12/2016 | 22 | Apogee | 404280 | 0.4926° |
| 7/27/2016 | 5 | Perigee | 369654 | 0.5388° |
| 8/ 9/2016 | 17 | Apogee | 404269 | 0.4926° |
| 8/21/2016 | 18 | Perigee | 367048 | 0.5426° |
| 9/ 6/2016 | 12 | Apogee | 405070 | 0.4917° |
| 9/18/2016 | 10 | Perigee | 361889 | 0.5503° |
| 10/ 4/2016 | 4 | Apogee | 406108 | 0.4904° |
| 10/16/2016 | 17 | Perigee | 357864 | 0.5565° |
| 10/31/2016 | 13 | Apogee | 406666 | 0.4897° |
| 11/14/2016 | 4 | Perigee | 356536 | 0.5586° |
| 11/27/2016 | 13 | Apogee | 406549 | 0.4899° |
| 12/12/2016 | 16 | Perigee | 358485 | 0.5556° |
| 12/24/2016 | 23 | Apogee | 405858 | 0.4907° |

Moon Nodes Report for 1/ 1/2016 to 12/31/2016

| Date | Time | Node | Illuminated Fraction |
|---|---|---|---|
| 1/14/2016 | 8:47 | Descending | 0.22 |
| 1/27/2016 | 16:57 | Ascending | 0.87 |
| 2/10/2016 | 13:45 | Descending | 0.05 |
| 2/23/2016 | 23:09 | Ascending | 0.99 |
| 3/ 8/2016 | 23:30 | Descending | 0.00 |
| 3/22/2016 | 5:58 | Ascending | 0.99 |
| 4/ 5/2016 | 10:26 | Descending | 0.06 |
| 4/18/2016 | 11:03 | Ascending | 0.88 |
| 5/ 2/2016 | 18:26 | Descending | 0.22 |
| 5/15/2016 | 13:38 | Ascending | 0.68 |
| 5/29/2016 | 21:44 | Descending | 0.46 |
| 6/11/2016 | 15:19 | Ascending | 0.43 |
| 6/25/2016 | 22:27 | Descending | 0.70 |
| 7/ 8/2016 | 18:41 | Ascending | 0.20 |
| 7/23/2016 | 0:48 | Descending | 0.89 |
| 8/ 5/2016 | 0:47 | Ascending | 0.05 |
| 8/19/2016 | 7:14 | Descending | 0.99 |
| 9/ 1/2016 | 8:26 | Ascending | 0.00 |
| 9/15/2016 | 16:54 | Descending | 0.98 |
| 9/28/2016 | 15:05 | Ascending | 0.05 |
| 10/13/2016 | 2:42 | Descending | 0.87 |
| 10/25/2016 | 18:44 | Ascending | 0.21 |
| 11/ 9/2016 | 8:56 | Descending | 0.66 |

| | | | |
|---|---|---|---|
| 11/21/2016 | 19:48 | Ascending | 0.45 |
| 12/ 6/2016 | 10:34 | Descending | 0.40 |
| 12/18/2016 | 21:45 | Ascending | 0.71 |

Meteor Showers Report for 1/ 1/2016 to 12/31/2016

| Date | Meteor Shower | ZHR | RA | DEC | Illum. Frac. | Longitude |
|---|---|---|---|---|---|---|
| 1/ 4/2016 | Quadrantids | 80 | 15h28m | 50° | 0.28 | 284° |
| 4/11/2016 | Virginids | 5 | 14h04m | -9° | 0.24 | 22° |
| 4/21/2016 | Lyrids | 12 | 18h08m | 32° | 1.00 | 32° |
| 4/27/2016 | alpha-Scorpiids | 5 | 16h32m | -24° | 0.74 | 38° |
| 5/ 4/2016 | eta-Aquarids | 35 | 22h20m | -1° | 0.07 | 45° |
| 5/12/2016 | alpha-Scorpiids | 5 | 16h04m | -24° | 0.40 | 52° |
| 6/ 9/2016 | Ophiuchids | 5 | 17h56m | -23° | 0.25 | 79° |
| 6/19/2016 | Ophiuchids | 5 | 17h20m | -20° | 0.99 | 89° |
| 7/ 7/2016 | Capricornids | 5 | | | 0.12 | 106° |
| 7/14/2016 | Capricornids | 5 | 20h44m | -15° | 0.74 | 113° |
| 7/20/2016 | alpha-Cygnids | 5 | 21h00m | 48° | 0.99 | 118° |
| 7/25/2016 | Capricornids | 5 | 21h00m | -15° | 0.64 | 123° |
| 7/28/2016 | delta-Aquarids | 20 | 22h36m | -17° | 0.30 | 126° |
| 7/30/2016 | Piscis Australids | 5 | 22h40m | -30° | 0.12 | 128° |
| 8/ 1/2016 | alpha-Capricornids | 5 | 20h36m | -10° | 0.02 | 130° |
| 8/ 5/2016 | iota-Aquarids | 8 | 22h10m | -15° | 0.09 | 134° |
| 8/12/2016 | Perseids | 75 | 3h04m | 58° | 0.68 | 140° |
| 8/20/2016 | alpha-Cygnids | 5 | 21h00m | 48° | 0.93 | 148° |
| 9/ 7/2016 | Piscids | 10 | 0h36m | 7° | 0.33 | 166° |
| 9/20/2016 | Piscids | 5 | 0h24m | 0° | 0.79 | 178° |
| 10/12/2016 | Piscids | ?? | 1h44m | 14° | 0.84 | 200° |
| 10/21/2016 | Orionids | 25 | 6h24m | 15° | 0.62 | 209° |
| 11/ 2/2016 | Taurids | 8 | 3h44m | 14° | 0.08 | 221° |
| 11/17/2016 | Leonids | 10 | 10h08m | 22° | 0.86 | 236° |
| 12/ 8/2016 | Puppids-Velids | 15 | 9h00m | -48° | 0.65 | 257° |
| 12/13/2016 | Geminids | 75 | 7h28m | 32° | 1.00 | 262° |
| 12/22/2016 | Ursids | 5 | 14h28m | 78° | 0.35 | 271° |
| 12/25/2016 | Puppids-Velids | 15 | 9h20m | -65° | 0.12 | 274° |

Twilight Report for 1/ 1/2016 to 12/31/2016

| Date | Sun | | Astronomical | | Nautical | | Civil | |
|---|---|---|---|---|---|---|---|---|
| | Rise | Set | Begin | End | Begin | End | Begin | End |
| 1/ 1/2016 | 7:49 | 17:10 | 6:06 | 18:53 | 6:39 | 18:19 | 7:14 | 17:45 |
| 1/ 8/2016 | 7:49 | 17:16 | 6:07 | 18:58 | 6:40 | 18:25 | 7:14 | 17:51 |
| 1/15/2016 | 7:47 | 17:23 | 6:06 | 19:05 | 6:39 | 18:32 | 7:13 | 17:58 |
| 1/22/2016 | 7:44 | 17:31 | 6:04 | 19:11 | 6:36 | 18:39 | 7:09 | 18:06 |
| 1/29/2016 | 7:39 | 17:40 | 6:00 | 19:19 | 6:32 | 18:46 | 7:05 | 18:14 |
| 2/ 5/2016 | 7:32 | 17:48 | 5:54 | 19:26 | 6:26 | 18:54 | 6:59 | 18:22 |
| 2/12/2016 | 7:24 | 17:57 | 5:47 | 19:33 | 6:19 | 19:02 | 6:51 | 18:30 |
| 2/19/2016 | 7:15 | 18:05 | 5:39 | 19:41 | 6:11 | 19:09 | 6:42 | 18:38 |
| 2/26/2016 | 7:05 | 18:14 | 5:30 | 19:48 | 6:01 | 19:17 | 6:33 | 18:45 |
| 3/ 4/2016 | 6:54 | 18:21 | 5:19 | 19:56 | 5:51 | 19:25 | 6:23 | 18:53 |
| 3/11/2016 | 6:43 | 18:29 | 5:08 | 20:04 | 5:40 | 19:32 | 6:12 | 19:01 |
| 3/18/2016 | 6:32 | 18:37 | 4:56 | 20:12 | 5:28 | 19:40 | 6:00 | 19:08 |
| 3/25/2016 | 6:20 | 18:44 | 4:44 | 20:20 | 5:16 | 19:48 | 5:48 | 19:16 |
| 4/ 1/2016 | 6:09 | 18:51 | 4:31 | 20:29 | 5:04 | 19:56 | 5:37 | 19:23 |
| 4/ 8/2016 | 5:57 | 18:58 | 4:18 | 20:38 | 4:52 | 20:04 | 5:25 | 19:31 |
| 4/15/2016 | 5:47 | 19:06 | 4:04 | 20:48 | 4:40 | 20:12 | 5:14 | 19:38 |
| 4/22/2016 | 5:36 | 19:13 | 3:51 | 20:58 | 4:28 | 20:21 | 5:03 | 19:46 |
| 4/29/2016 | 5:27 | 19:20 | 3:38 | 21:09 | 4:17 | 20:30 | 4:53 | 19:54 |

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2016


| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5/ 6/2016 | 5:18 | 19:27 | 3:26 | 21:19 | 4:07 | 20:39 | 4:43 | 20:02 |
| 5/13/2016 | 5:11 | 19:34 | 3:15 | 21:30 | 3:57 | 20:48 | 4:35 | 20:10 |
| 5/20/2016 | 5:05 | 19:41 | 3:05 | 21:41 | 3:49 | 20:57 | 4:28 | 20:17 |
| 5/27/2016 | 5:00 | 19:47 | 2:56 | 21:50 | 3:42 | 21:04 | 4:23 | 20:24 |
| 6/ 3/2016 | 4:57 | 19:52 | 2:50 | 21:59 | 3:38 | 21:11 | 4:19 | 20:30 |
| 6/10/2016 | 4:55 | 19:56 | 2:46 | 22:05 | 3:35 | 21:16 | 4:17 | 20:34 |
| 6/17/2016 | 4:55 | 19:59 | 2:45 | 22:09 | 3:34 | 21:20 | 4:17 | 20:37 |
| 6/24/2016 | 4:57 | 20:00 | 2:46 | 22:11 | 3:36 | 21:21 | 4:18 | 20:39 |
| 7/ 1/2016 | 4:59 | 20:00 | 2:51 | 22:09 | 3:39 | 21:20 | 4:21 | 20:38 |
| 7/ 8/2016 | 5:04 | 19:58 | 2:57 | 22:05 | 3:45 | 21:17 | 4:26 | 20:36 |
| 7/15/2016 | 5:09 | 19:55 | 3:05 | 21:58 | 3:51 | 21:12 | 4:32 | 20:32 |
| 7/22/2016 | 5:14 | 19:50 | 3:15 | 21:49 | 3:59 | 21:05 | 4:38 | 20:26 |
| 7/29/2016 | 5:21 | 19:43 | 3:25 | 21:39 | 4:07 | 20:57 | 4:45 | 20:19 |
| 8/ 5/2016 | 5:27 | 19:36 | 3:35 | 21:28 | 4:16 | 20:47 | 4:53 | 20:10 |
| 8/12/2016 | 5:34 | 19:27 | 3:46 | 21:15 | 4:24 | 20:37 | 5:00 | 20:01 |
| 8/19/2016 | 5:41 | 19:17 | 3:56 | 21:02 | 4:33 | 20:25 | 5:08 | 19:50 |
| 8/26/2016 | 5:48 | 19:06 | 4:05 | 20:49 | 4:41 | 20:13 | 5:15 | 19:39 |
| 9/ 2/2016 | 5:55 | 18:55 | 4:15 | 20:35 | 4:49 | 20:01 | 5:22 | 19:28 |
| 9/ 9/2016 | 6:01 | 18:44 | 4:23 | 20:22 | 4:57 | 19:48 | 5:30 | 19:16 |
| 9/16/2016 | 6:08 | 18:32 | 4:32 | 20:09 | 5:04 | 19:36 | 5:37 | 19:04 |
| 9/23/2016 | 6:15 | 18:20 | 4:39 | 19:56 | 5:12 | 19:24 | 5:43 | 18:52 |
| 9/30/2016 | 6:22 | 18:09 | 4:47 | 19:44 | 5:19 | 19:12 | 5:50 | 18:40 |
| 10/ 7/2016 | 6:29 | 17:57 | 4:54 | 19:32 | 5:26 | 19:00 | 5:57 | 18:29 |
| 10/14/2016 | 6:36 | 17:46 | 5:02 | 19:21 | 5:33 | 18:50 | 6:05 | 18:18 |
| 10/21/2016 | 6:44 | 17:36 | 5:09 | 19:12 | 5:40 | 18:40 | 6:12 | 18:08 |
| 10/28/2016 | 6:52 | 17:27 | 5:16 | 19:03 | 5:47 | 18:31 | 6:19 | 17:59 |
| 11/ 4/2016 | 7:00 | 17:18 | 5:23 | 18:56 | 5:55 | 18:24 | 6:27 | 17:52 |
| 11/11/2016 | 7:08 | 17:11 | 5:30 | 18:50 | 6:02 | 18:18 | 6:35 | 17:45 |
| 11/18/2016 | 7:16 | 17:06 | 5:37 | 18:45 | 6:09 | 18:13 | 6:42 | 17:40 |
| 11/25/2016 | 7:24 | 17:02 | 5:43 | 18:43 | 6:16 | 18:10 | 6:49 | 17:36 |
| 12/ 2/2016 | 7:32 | 16:59 | 5:50 | 18:41 | 6:22 | 18:09 | 6:56 | 17:35 |
| 12/ 9/2016 | 7:38 | 16:59 | 5:55 | 18:42 | 6:28 | 18:09 | 7:02 | 17:35 |
| 12/16/2016 | 7:43 | 17:01 | 6:00 | 18:44 | 6:33 | 18:11 | 7:07 | 17:36 |
| 12/23/2016 | 7:47 | 17:04 | 6:04 | 18:47 | 6:37 | 18:14 | 7:11 | 17:40 |
| 12/30/2016 | 7:49 | 17:09 | 6:06 | 18:52 | 6:39 | 18:19 | 7:13 | 17:44 |