



JANUARY 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>DECEMBER 2013</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6 7</p> <p>8 9 10 11 12 13 14</p> <p>15 16 17 18 19 20 21</p> <p>22 23 24 25 26 27 28</p> <p>29 30 31</p>	<p>FEBRUARY 2014</p> <p>S M T W T F S</p> <p>2 3 4 5 6 7 8</p> <p>9 10 11 12 13 14 15</p> <p>16 17 18 19 20 21 22</p> <p>23 24 25 26 27 28</p>	<p>MOON PHASES</p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p>1 3:14 AM </p> <p>0h = JD 2456658.8333</p> <p>1 PM ~ Moon at perigee (221,782 miles)</p> <p>Pluto at solar conjunction (2.7° N of center of Sun)</p> <p>NEW YEAR'S DAY</p>	<p>2</p> <p>4 PM ~ Mars at aphelion</p>	<p>3</p> <p>Quadrantid meteor shower peaks (ZHR = 120±)</p>	<p>4</p> <p>4 AM ~ Earth at perihelion (91.4 million miles/0.98 AU)</p> <p>★★★★★★★★★</p> <p>CYA Star Party at Eastman Lake</p> <p>★★★★★★★★★</p>
<p>5</p> <p>1 PM ~ Jupiter at opposition (dist to Earth = 4.21 AU; dia = 46.8"; Mv = -2.7)</p>	<p>6</p> <p>7:12.1 AM ~ Latest sunrise of the year for Fresno</p>	<p>7 7:39 PM </p> <p>2 AM ~ Mercury 6.4° S of Venus (conjunction in RA; 6° E of Sun)</p> <p>1 PM ~ Moon at max libration east for the year (7.76°)</p> <p>ORTHODOX CHRISTMAS</p>	<p>8</p>	<p>9</p>	<p>10</p>	<p>11</p> <p>4:25 AM ~ Venus at inferior conjunction (5.2' above center of Sun; dist to Earth = 0.266 AU)</p>
<p>12</p>	<p>13</p> <p>12:12 AM ~ Moon at max declination north for the year (19.5°)</p>	<p>14</p>	<p>15 8:52 PM </p> <p>1 AM ~ Begin Carrington Solar Rotation No. 2146</p> <p>6 PM ~ Moon at apogee (252,607 miles)</p> <p>Moon dia = 29.384 arcmin (this is the smallest full moon for >±1000 years)</p>	<p>16</p>	<p>17</p>	<p>18</p> <p>7:00 PM ~ CVA meeting at CSUF (East Engr 191) After Xmas Gadget Night</p>
<p>19</p>	<p>20</p> <p>MARTIN LUTHER KING DAY</p>	<p>21</p>	<p>22</p>	<p>23 9:20 PM </p> <p>6 PM ~ Venus at perihelion</p>	<p>24</p>	<p>25</p>
<p>26</p>	<p>27</p> <p>8:31 AM ~ Moon at max declination South for the year (-19.4°)</p>	<p>28</p>	<p>29</p>	<p>30 1:38 PM </p> <p>2 AM ~ Moon at perigee (221,879 miles)</p>	<p>31</p> <p>2 AM ~ Mercury at eastern elongation (18.4°, evening)</p> <p>11 PM ~ Mercury at dichotomy (half phase)</p> <p>CHINESE NEW YEAR</p>	<p>SUNRISE/SUNSET for SATURDAYS</p> <p>4: 7:12 AM / 4:56 PM</p> <p>11: 7:12 AM / 5:03 PM</p> <p>18: 7:10 AM / 5:10 PM</p> <p>25: 7:06 AM / 5:17 PM</p>

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



FEBRUARY 2014

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

JANUARY 2014

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

MARCH 2014

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					



The Terminator
by Griffin & Kissinger

MOON PHASES

-  New Moon
-  First Quarter
-  Full Moon
-  Third Quarter

1

0h = JD 2456689.8333
 ★★★★★★
 CVYA Star Party
 at Eastman Lake
 ★★★★★★

2

SUPER BOWL XLVIII
GROUNDHOG DAY

3

4:19 AM ~ Mars close to Spica
(4.6° NNE; 110° W of Sun)
 4 PM ~ Mercury at perihelion
 6 PM ~ Mercury dims
 to $M_v = 0.0$

4

4:39 AM ~ Mercury close to
Neptune (2.5° NW;
17° E of Sun)

5

8:58 AM ~ Venus close to
Pluto (4.3° N; 33° W of Sun)

6

11:22 AM



7

8

Alpha Centaurid meteor
shower peaks (ZHR = 6±)

9

Centaurid II meteor shower
peaks (ZHP = 3±)

10

11

12:37 AM ~ Equation of time
at minimum (sundials 14.21
minutes late)
 9 AM ~ Begin Carrington
Solar Rotation No. 2147
 9 PM ~ Moon at apogee
(252,420 miles)

12

LINCOLN'S BIRTHDAY

13

2 PM ~ Mars grows to
10 arcsec ($M_v = -0.1$)

14

3:53 PM



7:42 PM ~ Summer begins in
Mars' northern hemisphere
 Moon dia = 29.607 arcmin
 ST. VALENTINE'S DAY

15

12:25 AM ~ Mercury at
inferior conjunction (3.7° N
of center of Sun; dist to
Earth = 0.646 AU)

7:00 PM ~ CVYA meeting
at CSUF (East Engr 191)

16

17

PRESIDENT'S DAY

18

19

20

21

7 AM ~ Comet C/2012 X1
(Linear) at perihelion
 Dist to Sun center = 1.6 AU
 Dist to Earth = 2.0 AU
 Estm $M_v = 7.4$ (51° W of Sun)

22

9:15 AM



1 AM ~ 2 Pallas at opposition
(dist. = 1.23 AU, $M_v = 7.0$)
 WASHINGTON'S BIRTHDAY

23

Neptune at solar
conjunction (40 arcmin
S of center of Sun)

24

25

26

27

Noon ~ Moon at perigee
(223,967 miles)

28

SUNRISE/SUNSET
for SATURDAYS

1: 7:01 AM / 5:25 PM
 8: 6:55 AM / 5:32 PM
 15: 6:47 AM / 5:40 PM
 22: 6:39 AM / 5:47 PM



MARCH 2014

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

FEBRUARY 2014

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

APRIL 2014

S	M	T	W	T	F	S
						1
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

MOON PHASES


-  New Moon
-  First Quarter
-  Full Moon
-  Third Quarter





Meteor Crater
by Dr. Fred Ringwald

SUNRISE/SUNSET for SATURDAYS

1:	6:30 AM / 5:54 PM
8:	6:20 AM / 6:00 PM
15:	7:10 AM / 7:07 PM
22:	7:00 AM / 7:13 PM
29:	6:49 AM / 7:19 PM

1 12:00 AM 

0h = JD 2456717.833
9 AM ~ Mars stationary, then moving retrograde
★ ★ ★ ★ ★ ★ ★ ★ ★ ★
MESSIER MARATHON #1
at Eastman Lake
★ ★ ★ ★ ★ ★ ★ ★ ★ ★

2 9 AM ~ Saturn stationary, then moving retrograde	3	4 MARDI GRAS	5 ASH WEDNESDAY	6 2 AM ~ Jupiter stationary, then moving prograde	7	8 5:27 AM  9 AM ~ Jupiter 1.9° S of Mabsuta (Eps Gem) ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ CVA Public Star Party at River Park ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
9 2:00 AM ~ Daylight Saving Time begins	10 7 AM ~ Venus 1.3° S of Dabih (Beta Cap), 46° W of Sun 6 PM ~ Begin Carrington Solar Rotation No. 2148 11 PM ~ Mercury at dichotomy (half phase)	11 1 PM ~ Moon at apogee (251,882 miles) Jupiter at greatest northern declination (+26°16'15")	12	13 11:30 PM ~ Mercury at W elongation (27.6°, morning) Gamma Normid meteor shower peaks (ZHR = 6±)	14	15 7:00 PM ~ CVA meeting at CSUF (East Engr 191)
16 10:08 AM  7 PM ~ Equinox: equal length day & night for Fresno (= local spring) Moon dia = 30.193 arcmin	17 ST. PATRICK'S DAY	18	19 4 PM ~ Mercury at aphelion Jupiter shrinks to 40 arcsec Mv = -2.3	20 9:57 AM ~ Vernal Equinox	21	22 4:33 AM ~ Mercury 1.2° S of Neptune (conjunction in RA; 26° W of Sun) 12:30 PM ~ Venus at western elongation (46.6°, morning)
23  6:46 PM 10 AM ~ Venus at dichotomy = half phase 11:45 AM  30	24 31	25 2 AM ~ Mercury brightens to Mv = 0 4 PM ~ Mars 4.8° north of Spica	26	27 Noon ~ Moon at perigee (227,237 miles)	28	29 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ MESSIER MARATHON #2 at Eastman Lake ★ ★ ★ ★ ★ ★ ★ ★ ★ ★









Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



APRIL 2014

TAX DAY TOTAL LUNAR ECLIPSE	
U1	= 10:58.0 PM (4/14)
U2	= 12:06.4 AM (4/15)
Mid	= 12:45.7 AM
U3	= 1:25.0 AM
U4	= 2:33.4 AM

★ ★ ★ ★ ★ ★ ★ ★
April 26
 CVA Star Party
 at Eastman Lake
 ★ ★ ★ ★ ★ ★ ★ ★

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
MARCH 2014 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	MAY 2014 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 Oh = JD 2456748.7917 Comet C/2012 X1 (Linear) at estm. max. brightness Dist to Sun center = 1.7 AU Dist to Earth = 1.9 AU Estm Mv = 7.4 (62° W of Sun) APRIL FOOLS' DAY	2 Uranus at solar conjunction (38.8 arcmin S of center of Sun)	3	4	5 Kappa Serpentid meteor shower peaks (ZHR = 4±) ★ ★ ★ ★ ★ ★ ★ ★ CVA Public Star Party at River Park ★ ★ ★ ★ ★ ★ ★ ★
6	7 1:31 AM  2 AM ~ Begin Carrington Solar Rotation No. 2149	8 8 AM ~ Moon at apogee (251,345 miles) 2 PM ~ Mars at opposition (dist = 0.621 AU; dia = 15.1"; Mv = -1.5)	9	10	11	12 1 AM ~ Venus 41.5 arcmin N of Neptune (conjunction in RA; 45° W of Sun) <div style="border: 1px solid black; padding: 2px; display: inline-block;"> 7:00 PM ~ CVA meeting at CSUF (East Engr 191) </div>
13 4 AM ~ 4 Vesta at opposition (dist. = 1.23 AU; Mv = 5.7) Pluto stationary, then moving retrograde PALM SUNDAY	14 6 AM ~ Mars closest to Earth (0.618 AU; Mv = -1.4; 15.16") 9 AM ~ Mercury 1.4° S of Uranus (conjunction in RA; 12° W of Sun) 10 PM ~ 1 Ceres at opposition (dist. = 1.64 AU, Mv = 7.0)	15 12:42 AM  8:50 AM ~ Equation of Time is zero (sundials on time) TOTAL LUNAR ECLIPSE Moon dia = 31.019 arcmin PASSOVER begins at sunset <div style="border: 1px solid yellow; padding: 2px; display: inline-block;"> Ⓣ \$TAX\$DAY\$ Ⓣ </div>	16 April Lyrid meteor shower begins (erratic fireballs)	17	18 Alpha Virginid meteor shower peaks (ZHR = 5±) GOOD FRIDAY	19
20 EASTER	21	22 12:52 AM  5 PM ~ Moon at perigee (229,761 miles) April Lyrid meteor shower peaks (ZHR = 13±)	23 ADMIN. PROFESSIONAL'S DAY	24	25 8:30 PM ~ Mercury at superior conjunction (22.4 arcmin S of center of Sun) ARBOR DAY <div style="background-color: #FFDAB9; padding: 2px; display: inline-block;"> April 25-27: VINTAGE DAYS at Fresno State </div>	26 <div style="border: 1px solid black; padding: 2px; display: inline-block;"> ☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼ CVA Solar Viewing at CSUF ☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼ </div>
27 <div style="background-color: #FFDAB9; padding: 2px; display: inline-block;"> VINTAGE DAYS </div>	28 11:14 PM  11:03 PM ~ Maximum of rare NON-CENTRAL ANNULAR SOLAR ECLIPSE (visible from Australia plus parts of S Indian Ocean and Antarctica) γ = 1.00001, Mag = 0.9868	29	30	<div style="border: 1px solid black; padding: 5px;">  @ CUSF by Fred Lusk </div>	<div style="border: 1px solid black; padding: 5px;"> MOON PHASES  New Moon  First Quarter  Full Moon  Third Quarter </div>	<div style="border: 1px solid black; padding: 5px;"> SUNRISE/SUNSET for SATURDAYS 5: 6:39 AM / 7:25 PM 12: 6:29 AM / 7:31 PM 19: 6:20 AM / 7:37 PM 26: 6:11 AM / 7:43 PM </div>



MAY 2014

*Summer Friday nights
observing at
The Discovery Center*

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>APRIL 2014</p> <p>S M T W T F S</p> <p>1 2 3 4 5</p> <p>6 7 8 9 10 11 12</p> <p>13 14 15 16 17 18 19</p> <p>20 21 22 23 24 25 26</p> <p>27 28 29 30</p>	<p>JUNE 2014</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6 7</p> <p>8 9 10 11 12 13 14</p> <p>15 16 17 18 19 20 21</p> <p>22 23 24 25 26 27 28</p> <p>29 30</p>	<p>MOON PHASES</p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p>SUNRISE/SUNSET for SATURDAYS</p> <p>3: 6:03 AM / 7:50 PM</p> <p>10: 5:56 AM / 7:56 PM</p> <p>17: 5:50 AM / 8:01 PM</p> <p>24: 5:45 AM / 8:07 PM</p> <p>31: 5:42 AM / 7:12 PM</p>	1	2	3
4	5	6 8:15 PM	7 Daytime Omega-Cetid meteor shower peaks (ZHR = 8±) Eta Aquariid meteor shower peaks (ZHR = 28±)	8 VICTORY IN EUROPE DAY	9 Eta Lyrid meteor shower peaks (ZHR = 3±)	10 11 AM ~ Saturn at opposition (dist. = 8.90 AU; dia. = 18.7"; Mv = 0.1)
May 5-11: SPRING ASTRONOMY WEEK / May 10: ASTRONOMY DAY						
11 MOTHER'S DAY ASTRONOMY WEEK	12	13	14 12:16 PM 1:39 AM ~ Equation of time at maximum (sundials 3.67 minutes early) Moon dia = 31.921 arcmin	15 6 AM ~ Venus 1.3° S of Uranus (conjunction in RA; 40° W of Sun) Daytime Epsilon Arietid meteor shower peaks (ZHR = 4±)	16 1:30 AM ~ Venus at aphelion Alpha Scorpiid meteor shower peaks (ZHR = 3±)	17 7:00 PM ~ CVA meeting at CSUF (East Engr 191)
18 5 AM ~ Moon at perigee (228,107 miles)	19 2 PM ~ Mercury at dichotomy (half phase) 6 PM ~ Mars stationary, then moving prograde 7 PM ~ Mercury dims to Mv = 0.0	20	21 5:59 AM	22 Midnight ~ Jupiter 30 arcmin S of Wasat (Delta Gem)	23	24 CVA Star Party at Eastman Lake
May 22-26: RIVERSIDE TELESCOPE MAKERS CONFERENCE (RTMC)						
25 12 AM ~ Mercury at eastern elongation (22.7°, evening) RTMC	26 MEMORIAL DAY	27	28 11:40 AM	29 Midnight ~ Mars 2.5° S of Porrima (Gamma Vir)	30 N & S Omega Scorpiid meteor showers peak (ZHR = 5± ea.)	31 1 PM ~ Begin Carrington Solar Rotation No. 2151 CVA Star Party at Eastman Lake

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



JUNE 2014

Summer Friday nights
observing at Downing
Planetarium & The
Discovery Center

★★★★★★★★★
Glacier Point Star Party
(dates TBA)
★★★★★★★★★

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																					
1 0h = JD 2456809.7917	2 9 PM ~ Moon at apogee (251,627 miles)	3	4	5 1:39 PM	6 11 AM ~ Earth crosses the Sun's equator (S to N)	7 Daytime Arietid meteor shower peaks (ZHR = 54±) ★★★★★★★★★ CVA Public Star Party at River Park ★★★★★★★★★																																																																																					
8	9 Neptune stationary, then moving retrograde Daytime Zeta Perseid meteor shower peaks (ZHR = 20±)	10	11	12 9:11 PM 11:59 PM ~ Equation of Time is zero (sundials on time) Moon dia = 32.724 arcmin	13 5:39.6 AM ~ Earliest sunrise of the year for Fresno	14 8 PM ~ Moon at perigee (224,977 miles) FLAG DAY 7:00 PM ~ CVA meeting at CSUF (East Engr 191)																																																																																					
15 FATHER'S DAY	16 June Lyrid meteor shower peaks (ZHR = 3±)	17 South June Aquilid meteor shower peaks (ZHR = 3±)	18	19 11:39 PM 3:50 PM ~ Mercury at inferior conjunction (3.8° S of center of Sun; dist to Earth = 0.554 AU)	20	21 3:51 AM ~ Summer Solstice (solar decl = +23°26'06") ★★★★★★★★★ CVA Public Star Party at Millerton Lake ★★★★★★★★★																																																																																					
22 8 PM ~ Mars shrinks to 10 arcsec (Mv = -0.1)	23	24	25	26 Pi Cetid meteor shower peaks (ZHR = 4±)	27 1:08 AM June Bootid meteor shower peaks (ZHR = 0-100±) ★★★★★★★★★ CVA Courtright Star Party (Friday-Sunday) ★★★★★★★★★	28 2 PM ~ Mars dims to Mv = 0.0 8:22.1 PM ~ Latest sunset of the year for Fresno ★★★★★★★★★ CVA Star Party at Eastman Lake ★★★★★★★★★																																																																																					
29 Tau-Aquarid meteor shower peaks (ZHR = 7±)	30 Noon ~ Moon at apogee (252,233 miles)	 Full Moon by Fred Lusk		MAY 2014 <table border="1"> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table>	S	M	T	W	T	F	S					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	JULY 2014 <table border="1"> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table>	S	M	T	W	T	F	S					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MOON PHASES New Moon First Quarter Full Moon Third Quarter	SUNRISE/SUNSET for SATURDAYS 7: 5:40 AM / 8:16 PM 14: 5:40 AM / 8:19 PM 21: 5:41 AM / 8:21 PM 28: 5:43 AM / 8:22 PM
S	M	T	W	T	F	S																																																																																					
				1	2	3																																																																																					
4	5	6	7	8	9	10																																																																																					
11	12	13	14	15	16	17																																																																																					
18	19	20	21	22	23	24																																																																																					
25	26	27	28	29	30	31																																																																																					
S	M	T	W	T	F	S																																																																																					
				1	2	3																																																																																					
4	5	6	7	8	9	10																																																																																					
11	12	13	14	15	16	17																																																																																					
18	19	20	21	22	23	24																																																																																					
25	26	27	28	29	30	31																																																																																					

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



No CVA meeting
this month

JULY 2014

*Summer Friday nights
observing at Downing
Planetarium & The
Discovery Center*

★★★★★★★★★
Glacier Point Star Party
(dates TBA)
★★★★★★★★★

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>JUNE 2014</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6 7</p> <p>8 9 10 11 12 13 14</p> <p>15 16 17 18 19 20 21</p> <p>22 23 24 25 26 27 28</p> <p>29 30</p>	<p>AUGUST 2014</p> <p>S M T W T F S</p> <p>1 2</p> <p>3 4 5 6 7 8 9</p> <p>10 11 12 13 14 15 16</p> <p>17 18 19 20 21 22 23</p> <p>24 25 26 27 28 29 30</p> <p>31</p>	<p>1</p> <p>0h = JD 2456639.7917 Noon ~ Venus 4.1° N of Aldebaran</p>	<p>2</p>	<p>3</p> <p>5 PM ~ Earth at aphelion (94.5 million miles/1.02 AU)</p>	<p>4</p> <p>1 AM ~ Pluto at opposition (dist. = 31.7 AU; dia. = 0.13"; Mv = 14.0) INDEPENDENCE DAY</p>	<p>5 4:59 AM </p> <p>★★★★★★★★★ CVA Public Star Party at River Park ★★★★★★★★★</p>
<p>6</p>	<p>7</p>	<p>8</p>	<p>9</p>	<p>10</p>	<p>11</p>	<p>12 4:25 AM </p> <p>11 AM ~ Mercury at western elongation (20.9°, morning) July Phoenicid meteor shower peaks (ZHR = 4±) Moon dia = 33.277 arcmin</p>
<p>13</p> <p>1 AM ~ Moon at perigee (222,612 miles) 10 PM ~ Mars 1.3° N of Spica</p>	<p>14</p> <p>2 AM ~ Venus 1.3° N of Zeta Tau</p>	<p>15</p> <p>6 PM ~ Mercury brightens to Mv = 0</p>	<p>16</p> <p>10 PM ~ Mercury at dichotomy (half phase)</p>	<p>17</p>	<p>18 7:08 PM </p>	<p>19</p> <p>★★★★★★★★★ CVA Public Star Party at Millerton Lake ★★★★★★★★★</p>
<p>20</p> <p>2 PM ~ Saturn stationary, then moving prograde</p>	<p>21</p> <p>7 AM ~ Venus 19.8 arcmin N of Tejat Prior (Eta Gem) Uranus stationary, then moving retrograde</p>	<p>22</p> <p>7 AM ~ Venus 19.9 arcmin N of Tejat Posterior (Mu Gem)</p>	<p>23</p>	<p>24</p> <p>8 AM ~ Saturn 2.4° NE of Zubelgenubi (Alpha2 Lib) 2 PM ~ Jupiter at solar conjunction (23.8 arcmin N of center of Sun) 11 PM ~ Begin Carrington Solar Rotation No. 2153</p>	<p>25</p> <p>★★★★★★★★★ CVA Courtright Star Party (Friday-Sunday) ★★★★★★★★★</p>	<p>26 3:42 PM </p> <p>3:39 AM ~ Equation of time at minimum (sundials 6:53 minutes late)</p> <p>★★★★★★★★★ CVA Star Party at Eastman Lake ★★★★★★★★★</p>
<p>27</p> <p>8 PM ~ Moon at apogee (252,629 miles) Piscis Austrinid meteor shower peaks (ZHR = 5±)</p>	<p>28</p> <p>South Delta Aquariid meteor shower peaks (ZHR = 18±)</p>	<p>29</p> <p>3 PM ~ Mercury at perihelion Beta Cassiopeid meteor shower peaks (ZHR = 10±)</p>	<p>30</p> <p>Alpha Capricornid meteor shower peaks (ZHR = 5±)</p>	<p>31</p>	<p>MOON PHASES</p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p>SUNRISE/SUNSET for SATURDAYS</p> <p>5: 5:46 AM / 8:21 PM</p> <p>12: 5:50 AM / 8:19 PM</p> <p>19: 5:55 AM / 8:16 PM</p> <p>26: 6:00 AM / 8:11 PM</p>

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



No CVA meeting
this month

AUGUST 2014

Summer Friday nights
observing at Downing
Planetarium

★★★★★★★★★
Glacier Point Star Party
(dates TBA)
★★★★★★★★★

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>JULY 2014</p> <p>S M T W T F S</p> <p>1 2 3 4 5</p> <p>6 7 8 9 10 11 12</p> <p>13 14 15 16 17 18 19</p> <p>20 21 22 23 24 25 26</p> <p>27 28 29 30 31</p>	<p>SEPTEMBER 2014</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6</p> <p>7 8 9 10 11 12 13</p> <p>14 15 16 17 18 19 20</p> <p>21 22 23 24 25 26 27</p> <p>28 29 30</p>	<p>MOON PHASES</p> <p>☉ New Moon</p> <p>☾ First Quarter</p> <p>☀ Full Moon</p> <p>☾ Third Quarter</p>	 <p>Star Party, Dr. Fred Ringwald</p>	<p>SUNRISE/SUNSET for SATURDAYS</p> <p>2: 6:06 AM / 8:04 PM</p> <p>9: 6:11 AM / 7:57 PM</p> <p>16: 6:17 AM / 7:49 PM</p> <p>23: 6:23 AM / 7:40 PM</p> <p>30: 6:29 AM / 7:30 PM</p>	<p>1</p> <p>0h = JD 2456870.7917</p>	<p>2</p> <p>10 AM ~ Mercury 0.97° N of Jupiter (conjunction in RA; 6.6° W of Sun)</p> <p>★★★★★★★★★ CVA Public Star Party at River Park ★★★★★★★★★</p>
<p>3</p> <p>5:50 PM ☾</p>	<p>4</p> <p>11 AM ~ Moon at westernmost libration for 2014 (Earth's selenographic longitude: -7.78°; latitude: -3.17°) Crater Grimaldi tipped into view</p>	<p>5</p> <p>NEIL ARMSTRONG DAY (Proposed)</p>	<p>6</p>	<p>7</p>	<p>8</p> <p>9:24 AM ~ Mercury at superior conjunction (1.7° N of center of Sun)</p>	<p>9</p>
<p>10</p> <p>11:09 AM ☀</p> <p>11 AM ~ Moon at closest perigee of 2014 (221,765 miles) Moon dia = 33.470 arcmin Eta Eridanid meteor shower peaks (ZHR = 6±)</p>	<p>11</p>	<p>12</p> <p>10 PM ~ Perseid meteor shower peaks (ZHR = 100±) Stream active from July 17 to August 24</p>	<p>13</p>	<p>14</p>	<p>15</p> <p>10 AM ~ Mercury 1.2° N of Regulus (7.2° E of Sun)</p>	<p>16</p> <p>★★★★★★★★★ CVA Public Star Party at Millerton Lake ★★★★★★★★★</p>
<p>17</p> <p>5:26 AM ☾</p> <p>9 AM ~ Begin southern spring & dust storm season 9 PM ~ Venus 12 arcmin N of Jupiter (conjunction in RA; 18° W of Sun)</p>	<p>18</p> <p>Kappa Cygnid meteor shower peaks (ZHR = 3±)</p>	<p>19</p>	<p>20</p>	<p>21</p> <p>4 AM ~ Begin Carrington Solar Rotation No. 2154 3 PM ~ Mars 1.6° S of Zubeneigenubi (Alp2 Lib)</p>	<p>22</p> <p>★★★★★★★★★ CVA Courtright Star Party (Friday-Sunday) ★★★★★★★★★</p>	<p>23</p> <p>11 PM ~ Moon at apogee (251,602 miles)</p> <p>★★★★★★★★★ CVA Star Party at Eastman Lake ★★★★★★★★★</p>
<p>24</p> <p>31</p>	<p>25</p> <p>7:13 AM ☀</p>	<p>26</p>	<p>27</p> <p>6 AM ~ Mars 3.6° S of Saturn (conjunction in RA; 74° E of Sun) 9 AM ~ Comet C/2012 K1 (PanSTARRS) at perihelion (Mv = 5.7±; 1.055 AU from Sun & 1.956 AU from Earth)</p>	<p>28</p>	<p>29</p> <p>7 AM ~ Neptune at opposition (dist = 29.0 AU; dia = 2.52"; Mv = 7.64) Gamma Doradid meteor shower peaks (ZHR = 5±)</p>	<p>30</p> <p>★★★★★★★★★ CVA Public Star Party at Riverpark ★★★★★★★★★</p>

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



SEPTEMBER 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																																			
 <p>Gloomy Moon by Fred Lusk</p>	<p>1</p> <p>0h = JD 2456901.7917 7:12 AM ~ Equation of Time is zero (sundials on time) Alpha Aurigid meteor shower peaks (ZHR = 4±) LABOR DAY</p>	<p>2</p> <p>4:11 AM </p>	<p>3</p>	<p>4</p>	<p>5</p> <p>9 AM ~ Venus at perihelion 10 AM ~ Venus 43.9 arcmin N of Regulus</p>	<p>6</p> <p>7:00 PM ~ CVA meeting at CSUF (East Engr 191)</p>																																																																																																			
<p>7</p> <p>9 PM ~ Moon at perigee (222,693 miles) GRANDPARENTS DAY</p>	<p>8</p> <p>6:38 PM </p> <p>Moon dia = 33.258 arcmin</p>	<p>9</p> <p>September Epsilon Perseid meteor shower peaks (ZHR = 5±) CALIFORNIA ADMISSION DAY</p>	<p>10</p>	<p>11</p> <p>3 AM ~ Mercury dims to Mv 0 3 PM ~ Mercury at aphelion</p>	<p>12</p>	<p>13</p>																																																																																																			
<p>14</p>	<p>15</p> <p>7:05 PM </p> <p>Noon ~ Moon at max libration for the year (total = 8.99°)</p>	<p>16</p> <p>12 AM ~ Comet C/2013 V5 closest to Earth Dist to Sun center = 0.7 AU Dist to Earth = 0.48 AU Estm Mv = 6.1 (35° SW Sun)</p>	<p>17</p> <p>10 AM ~ Begin Carrington Solar Rotation No. 2155 6 PM ~ Mars 32.1 arcmin N of Delta Sco</p>	<p>18</p> <p>Comet C/2013 V5 brightest Estm Mv = 6.0 (34° SW of Sun)</p>	<p>19</p>	<p>20</p> <p>7 AM ~ Moon at apogee (252,180 miles) 11 AM ~ Mercury 33' S of Spica ★★★★★★★★★ CVA Star Party & Star-BQ (Eastman; details TBA) ★★★★★★★★★</p>																																																																																																			
<p>21</p> <p>3 PM ~ Mercury at eastern elongation (26.4°, evening)</p>	<p>22</p> <p>7:29 PM ~ Autumnal Equinox Pluto stationary, then moving prograde</p>	<p>23</p> <p>11:14 PM </p>	<p>24</p> <p>ROSH HASHANAH begins at sunset</p>	<p>25</p>	<p>26</p> <p>4 AM ~ Mercury at dichotomy (half phase) 7 AM ~ Equilux: equal length day & night for Fresno (= local fall)</p>	<p>27</p> <p>12 AM ~ Comet C/2013 V5 at perihelion Dist to Sun center = 0.6 AU Dist to Earth = 0.72 AU Estm Mv = 6.7 (39° SW Sun)</p>																																																																																																			
<p>28</p> <p>6 AM ~ Mars 3.1° N of Antares</p>	<p>29</p>	<p>30</p>	<p>AUGUST 2014</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>31</td></tr> </table>		S	M	T	W	T	F	S						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							31	<p>OCTOBER 2014</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table>	S	M	T	W	T	F	S												1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	<p>MOON PHASES</p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p>SUNRISE/SUNSET for SATURDAYS</p> <p>6: 6:34 AM / 7:20 PM</p> <p>13: 6:40 AM / 7:09 PM</p> <p>20: 6:45 AM / 6:59 PM</p> <p>27: 6:51 AM / 6:48 PM</p>
S	M	T	W	T	F	S																																																																																																			
					1	2																																																																																																			
3	4	5	6	7	8	9																																																																																																			
10	11	12	13	14	15	16																																																																																																			
17	18	19	20	21	22	23																																																																																																			
24	25	26	27	28	29	30																																																																																																			
						31																																																																																																			
S	M	T	W	T	F	S																																																																																																			
				1	2	3																																																																																																			
4	5	6	7	8	9	10																																																																																																			
11	12	13	14	15	16	17																																																																																																			
18	19	20	21	22	23	24																																																																																																			
25	26	27	28	29	30	31																																																																																																			
<p>Sep 29–Oct 5: FALL ASTRONOMY WEEK</p>																																																																																																									

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



OCTOBER 2014

10/8 TOTAL LUNAR ECLIPSE	10/23 PARTIAL SOLAR ECLIPSE
U1 = 2:14.5 AM	Beg = 1:58:46 PM
U2 = 3:24.6 AM	Max = 3:21:19 PM
Mid = 3:54.6 AM	End = 4:35:47 PM
U3 = 4:24.5 AM	Duration: 2 ^h 37 ^m 01 ^s
U4 = 5:34.7 AM	Magnitude: 0.495

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
SEPTEMBER 2014 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	NOVEMBER 2014 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	MOON PHASES New Moon First Quarter Full Moon Third Quarter	1 12:32 PM 0h = JD 2456931.7917 Daytime Sextanid meteor shower peaks (ZHR = 20±)	2 7 AM ~ Moon at max libration south for the year (-6.80°)	3 October Delta Aurigid meteor shower peaks (ZHR=3±) YOM KIPPUR begins at sunset	4 ★★★★★★★★ CVA Public Star Party at River Park ★★★★★★★★
Sep 29-Oct 5: FALL ASTRONOMY WEEK / Oct 4: ASTRONOMY DAY						
5 ASTRONOMY WEEK	6 3 AM ~ Moon at perigee (225,232 miles)	7 2 PM ~ Uranus at opposition (dist. = 19.0 AU, dia. = 3.68", Mv = 5.7) 10 PM ~ Venus 1.4° S of Gam Vir (Porrima; 5° W of Sun)	8 3:51 AM Draconid meteor shower peaks (ZHR = 50±) Moon dia = 32.668 arcmin TOTAL LUNAR ECLIPSE	9	10 Comet C/2012 K1 brightest Dist to Earth = 1.17 AU Estm Mv = 5.5 (72° SW of Sun) Southern Taurid meteor shower peaks (ZHR = 5±)	11 7:00 PM ~ CVA meeting at CSUF (East Engr 191)
12 COLUMBUS DAY	13 COLUMBUS DAY (observed)	14 4 PM ~ Mars 19.5 arcmin N of Theta Oph (60° E of Sun); 5 PM ~ Begin Carrington Solar Rotation No. 2156	15 12:12 PM 6 AM ~ Moon at max libration north for the year (6.86°) 11 PM ~ Mercury 23.3 arcmin N of Spica (2° E of Sun)	16 1:40 PM ~ Mercury at inferior conjunction (1.5° below center of Sun; dist to Earth = 0.666 AU)	17 1 AM ~ Mercury 2.7° S of Venus (conjunction in RA; 2° W of Sun) 11 PM ~ Moon at apogee (251,591 miles)	18 11 PM ~ Venus 3.2° N of Spica (2° W of Sun)
19 Epsilon Geminid meteor shower peaks (ZHR = 3±)	20	21	22 Orionid meteor shower peaks (ZHR = 25±)	23 2:57 PM Moon dia = 30.509 arcmin PARTIAL SOLAR ECLIPSE	24 Leo Minorid meteor shower peaks (ZHR = 2±)	25 12:30 AM ~ Venus at superior conjunction 2 PM ~ Mercury at perihelion ★★★★★★★★ CVA Star Party at Eastman Lake ★★★★★★★★
26	27	28 12 AM ~ Mercury brightens to Mv = 0	29	30 7:48 PM 3 PM ~ Mercury at dichotomy (half phase) 11 PM ~ Comet C/2012 K1 closest to Earth Dist to Sun = 1.5 AU Dist to Earth = 0.95 AU Estm Mv = 5.8 (99° SW Sun)	31 HALLOWEEN ★★★★★★★★ Star Party in Your Yard ★★★★★★★★	SUNRISE/SUNSET for SATURDAYS 4: 6:57 AM / 6:38 PM 11: 7:03 AM / 6:28 PM 18: 7:09 AM / 6:18 PM 25: 7:16 AM / 6:10 PM

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



NOVEMBER 2014

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

OCTOBER 2014

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

DECEMBER 2014

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			



Star Party
by Fred Lusk

MOON PHASES

- New Moon
- First Quarter
- Full Moon
- Third Quarter

SUNRISE/SUNSET
for SATURDAYS

1:	7:23 AM / 6:02 PM
8:	6:30 AM / 4:55 PM
15:	6:37 AM / 4:50 PM
22:	6:44 AM / 4:46 PM
29:	6:51 AM / 4:43 PM

1
0h = JD 2456962.7917
6 AM ~ Mercury at western elongation (18.7°, morning)
★ ★ ★ ★ ★ ★ ★ ★ ★ ★
CVA Public Star Party
at River Park
★ ★ ★ ★ ★ ★ ★ ★ ★ ★

2 3 PM ~ Moon at perigee (228,601 miles) 2:00 AM ~ Daylight Saving Time ends	3 4:15 AM ~ Equation of time at maximum (sundials 16.43 minutes early) 9 PM ~ Mars 38.4 arcmin N of Kaus Borealis (Lam Sgr)	4 8 AM ~ Mercury 4.2° N of Spica (18° W of Sun) 6 PM ~ Venus 20.3 arcmin N of Zubenelgenubi (3° E of Sun) ELECTION DAY	5	6 2:23 PM Noon ~ Mars 48 arcmin S of M22 N & S Taurid meteor shower peaks (ZHR = 5± ea) Moon dia = 31.817 arcmin	7	8 7:00 PM ~ CVA meeting at CSUF (East Engr 191)
9 12 AM ~ Mars 2.5° N of Phi Sgt (54° E of Sun)	10 5 PM ~ Mars 3.8° S of Pluto (conjunction in RA; 53° E of Sun) 11 PM ~ Begin Carrington Solar Rotation No. 2157	11 10 PM ~ Mars 2.0° N of Nunki (Sig Sgr; 53° E of Sun) VETERANS DAY	12	13 1 AM ~ Venus 1.6° S of Saturn (conjunction in RA; 5° E of Sun)	14 7:15 AM 6 PM ~ Moon at apogee (251,243 miles)	15 10 AM ~ 6 Hebe at opposition (dist. = 1.07 AU, Mv = 8.0) November Iota Aurigid meteor shower peaks (ZHR = 8±)
16 Neptune stationary, then moving prograde	17 Leonid meteor shower peaks (ZHR = 20-100±)	18 1 AM ~ Saturn at solar conjunction (1.9° N of Sun) 5 PM ~ Venus 2.1° N of Del Sco (6° E of Sun)	19 3 PM ~ Venus 53.1 arcmin S of Graffuas (Bet1 Sco; 6° E of Sun)	20	21 Alpha Monocerotid meteor shower peaks (ZHR=5±)	22 4:32 AM ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ CVA Star Party at Eastman Lake ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
23 30	24 Noon ~ Venus 4.5° N of Antares (8° E of Sun)	25	26 1 AM ~ Mercury 1.7° S of Saturn (conjunction in RA; 7° W of Sun)	27 3 PM ~ Moon at perigee (229,800 miles) THANKSGIVING	28 Mars dims to Mv 1.0	29 2:06 AM November Orionid meteor shower peaks (ZHR = 3±)

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



DECEMBER 2014

Coming up in 2015
 Jan 3 ~ Pluto at solar conjunction
 Jan 3 ~ Quadrantid meteor shower peaks
 Jan 4 ~ Earth at perihelion
 Jan 11 ~ Mercury & Venus 39 arcmin apart
 Jan 14 ~ Mercury at eastern elongation
 Jan 30 ~ Mercury at inferior conjunction

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
MOON PHASES New Moon First Quarter Full Moon Third Quarter	1 0h = JD 2456992.8333	2 Jupiter grows to 40 arcsec (Mv = -2.3)	3 5 PM ~ Venus 1.4° N of Theta Oph (10° E of Sun)	4 6 AM ~ Mercury 3.9° N of Antares (2.2° W of Sun)	5 4:42:36 AM ~ Earliest sunset of the year for Fresno Phoenicid meteor shower peaks (ZHR = 0-100±) Puppis / Velid meteor shower peaks (ZHR = 10±)	6 4:27 AM 4:42:36 PM ~ Fresno's earliest sunset of the year Moon dia = 30.885 arcmin 7:00 PM ~ CVA meeting at CSUF (East Engr 191) Elect officers for 2015
7 8 PM ~ Earth crosses the Sun's equator (N to S) PEARL HARBOR DAY	8 2 AM ~ Mercury at superior conjunction (1.1° S of center of Sun) 7 AM ~ Begin Carrington Solar Rotation No. 2158 1 PM ~ Jupiter stationary, then moving retrograde	9	10	11 Sigma Hydrid meteor shower peaks (ZHR = 3±)	12 12 AM ~ Mars at perihelion (1.38 AU) 3 PM ~ Moon at apogee (251,395 miles)	13
14 4:51 AM Geminid meteor shower peaks (ZHR = 120±)	15 2 PM ~ Venus 2.8° N of Kaus Borealis (Lam Sgr; 13° E of Sun) Coma Berenicid meteor shower peaks (ZHR = 3±)	16 HANUKKAH begins at sunset	17 WRIGHT BROTHERS DAY	18	19 December Leo Minorid meteor shower peaks (ZHR = 5±)	20 7 AM ~ Venus 3.3° S of Pluto (conjunction in RA; 14° E of Sun) ★★★★★★★★★★ CVA Star Party at Eastman Lake ★★★★★★★★★★
21 5:38 PM 3:03 PM ~ Winter Solstice (solar decl = -23°26'05") Uranus stationary, then moving prograde	22 Ursid meteor shower peaks (ZHR = 12±)	23	24 9 AM ~ Moon at perigee (226,674 miles) 5 PM ~ Mercury 4.3° S of Pluto (conjunction in RA; 10° E of Sun)	25 2:54 AM ~ Equation of Time is zero (sundials on time) December Comae Berenicid meteor shower peaks (ZHR = 3±) CHRISTMAS	26 4 PM ~ Venus at aphelion	27
28 10:31 AM	29	30	31 24h = JD 2457023.8333 NEW YEAR'S EVE	NOVEMBER 2014 S M T W T F S 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	JANUARY 2015 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	SUNRISE/SUNSET for SATURDAYS 6: 6:58 AM / 4:43 PM 13: 7:03 AM / 4:44 PM 20: 7:07 AM / 4:46 PM 27: 7:11 AM / 4:50 PM

Dates and times are for the Pacific Time Zone (PST = UT - 8 hr; PDT = UT - 7 hr), specifically Fresno. Some events will not be visible from California. Times next to the Moon symbols indicate when that phase occurs. See www.imo.net/calendar/ for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.