



# JANUARY 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>DECEMBER 2012</p> <p>S M T W T F S</p> <p>1</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 29</p> <p>30 31</p>	<p>FEBRUARY 2013</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</p>	<p>1</p> <p>0h = JD 2456293.833333</p> <p>9 PM ~ Earth at perihelion (91.4 million miles / 0.98 AU)</p> <p>NEW YEARS DAY</p>	<p>2</p>	<p>3</p> <p>7 PM ~ Mercury at aphelion (0.4667 AU)</p> <p>Quadrantid meteor shower peaks (max ZHR = 120±)</p>	<p>4</p> <p>7:58 PM </p>	<p>5</p>
<p>6</p> <p>4 AM ~ Mercury 4.7° S of Pluto (conjunction in RA, 7.6° W of Sun)</p> <p>7:12:06 AM ~ Latest sunrise of the year for Fresno</p>	<p>7</p> <p>ORTHODOX CHRISTMAS</p>	<p>8</p>	<p>9</p> <p>7 AM ~ Moon at max southerly declination for the year (-20.880°, geocentric)</p>	<p>10</p> <p>2 AM ~ Moon at perigee (223,716 miles)</p> <p>CHINESE NEW YEAR</p>	<p>11</p> <p>11:44 AM </p> <p>Nearest new moon of the year (dia = 33.023 arcmin)</p>	<p>12</p> <p>★ ★ ★ ★ ★ ★ ★ ★ ★ ★</p> <p>CYA Star Party at Eastman Lake</p> <p>★ ★ ★ ★ ★ ★ ★ ★ ★ ★</p>
<p>13</p>	<p>14</p>	<p>15</p>	<p>16</p> <p>1 PM ~ Venus 3.3° S of Pluto (conjunction in RA, 18° W of Sun)</p>	<p>17</p>	<p>18</p> <p>3:45 PM </p> <p>1 AM ~ Mercury at superior conjunction (2° below center of Sun)</p>	<p>19</p>
<p>20</p>	<p>21</p> <p>MARTIN LUTHER KING DAY</p>	<p>22</p> <p>3 AM ~ Moon at apogee (251,868 miles)</p> <p>9 PM ~ Moon at max northerly declination for the year (+20.816°, geocentric)</p>	<p>23</p>	<p>24</p> <p>1 AM ~ Mars at perihelion (1.3815 AU)</p>	<p>25</p> <p>Noon ~ Begin Carrington Solar Rotation number 2133</p>	<p>26</p> <p>8:38 PM </p> <p>Moon dia = 30.135 arcmin</p> <p>7:00 PM ~ CVA meeting at CSUF (East Engr 191) After Xmas Gadget Night</p>
<p>27</p>	<p>28</p>	<p>29</p>	<p>30</p>	<p>31</p>	<p><b>MOON PHASES</b></p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p><b>SUNRISE/SUNSET for SATURDAYS</b></p> <p>5: 7:12 AM / 4:58 PM</p> <p>12: 7:12 AM / 5:04 PM</p> <p>19: 7:09 AM / 5:11 PM</p> <p>26: 7:05 AM / 5:19 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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



# FEBRUARY 2013

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

JANUARY 2013

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 2013

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						



Jupiter & the four Galilean Moons by Casey Chumley

1  
0h = JD 2456324.833333  
Daytime Capricornid-Sagittariid meteor shower peaks (max ZHR = 7±)

2  
GROUNDHOG DAY

3 5:56 AM SUPER BOWL XLVII

4 8 AM ~ Mars 0.44° S of Neptune (conjunction in RA, 16° E of Sun)

5

6 1 PM ~ Mercury 0.46° S of Neptune (conjunction in RA, 14° E of Sun)

7 4 AM ~ Moon at perigee (226,984 miles)

8 1 PM ~ Mercury 0.31° N of Mars (conjunction in RA, 15° E of Sun)  
Alpha Centaurid meteor shower peaks (max ZHR = 6±)

9 11:20 PM   
★★★★★★★★★  
CYA Star Party at Eastman Lake  
★★★★★★★★★

10 11:14 PM ~ Equation of time at min (sundials 14:22 minutes late)

11

12 MARDI GRAS LINCOLN'S BIRTHDAY

13 ASH WEDNESDAY

14 ST. VALENTINE'S DAY

15

16 1 PM ~ Mercury at eastern elongation (18.1°, evening)  
6 PM ~ Mercury at perihellion (0.3075 AU)

17 12:31 PM

18 10 PM ~ Moon at apogee (251,351 miles)  
PRESIDENT'S DAY

19 Mercury dims to Mv 0.0

20 11 PM ~ Venus at aphelion (0.7282 AU)  
Neptune at solar conjunction (0.6° below center of Sun)

21 8 PM ~ Begin Carrington Solar Rotation number 2134  
Jupiter shrinks to 40 arcsec apparent dia (Mv -2.4)

22 WASHINGTON'S BIRTHDAY

23 1 AM ~ Mars' winter solstice (northern hemisphere)  
7:00 PM ~ CYA meeting at CSUF (East Engr 191)

24 3 PM ~ Mercury 4.2° N of Mars (conjunction in RA, 11° E of Sun)

25 12:26 PM   
Moon dia = 30.958 arcmin

26

27

28 0:05 AM ~ Venus 0.77° S of Neptune (conjunction in RA, 6° W of Sun)

**MOON PHASES**  
 New Moon  
 First Quarter  
 Full Moon  
 Third Quarter

**SUNRISE/SUNSET for SATURDAYS**  
2: 7:00 AM / 5:26 PM  
9: 6:53 AM / 5:34 PM  
16: 6:46 AM / 5:41 PM  
23: 6:37 AM / 5:48 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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



# MARCH 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>FEBRUARY 2013</b> 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	<b>APRIL 2013</b> 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	<b>MOON PHASES</b> New Moon First Quarter Full Moon Third Quarter	<p>@ Venus Transit by Fred Lusk</p>	<b>SUNRISE/SUNSET for SATURDAYS</b> 2: 6:28 AM / 5:55 PM 9: 6:18 AM / 6:01 PM 16: 7:08 AM / 7:08 PM 23: 6:58 AM / 7:14 PM 30: 6:47 AM / 7:20 PM	1	2
3	4 1:53 PM	5 3 PM ~ Moon at perigee (229,858 miles) 11 PM ~ Mercury 5.3° N of Venus (conjunction in RA, 4.7° W of Sun) Comet C/2011 L4 (PanSTARRS) 1.1 AU from Earth (Mv 0.8±)	6	7	8	9 8 PM ~ Comet C/2011 L4 (PanSTARRS) at perihelion (0.302 AU from Sun) ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ MESSIER MARATHON #1 at Eastman Lake ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
10 2:00 AM ~ Daylight Saving Time begins	11 12:51 PM	12	13	14 Gamma Normid meteor shower peaks (max ZHR = 6±)	15	16 6 PM ~ 15 Eumonia at opposition (2.0 AU, Mv 9.6) ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ CYA Public Star Party at Riverpark ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
17 ST. PATRICK'S DAY	18 8 PM ~ Moon at apogee (251,221 miles)	19 10:27 AM	20 4:02 AM ~ Vernal Equinox	21 5 AM ~ Begin Carrington Solar Rotation number 2135 Comet C/2012 F6 (Lemmon) 1.4 AU from Earth (Mv 9.4±)	22 11:26 PM ~ Mars 40 arcsec N of Uranus (conjunction in RA, 5.6° E of Sun)	23
24 PALM SUNDAY Comet C/2012 F6 (Lemmon) at perihelion (0.7 AU) 3 PM ~ Mercury at western elongation (28°) EASTER 31	25 PASSOVER begins at sunset	26	27 2:27 AM Moon dia = 31.875 arcmin	28 10:06 AM ~ Venus at superior conjunction (1.3° below center of Sun) 10:16 AM ~ Venus 0.72° S of Uranus (conjunction in RA) Uranus at solar conjunction (0.7° below center of Sun)	29 GOOD FRIDAY	30 9 PM ~ Moon at perigee (228,339 miles) 7:00 PM ~ CYA meeting at CSUF (East Engr 191)

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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours. [www.cvafresno.org](http://www.cvafresno.org)





# MAY 2013

Summer Friday nights  
observing at  
The Discovery Center

May 24: Penumbral  
Lunar Eclipse  
Maximum eclipse at 9:11 PM;  
penumbral magnitude = 0.0158.  
DON'T BOTHER.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>APRIL 2013</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>JUNE 2013</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 29</p> <p>30</p>	<p><b>MOON PHASES</b></p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p>1</p> <p>0h = JD 2456413.791667</p>	<p>2</p> <p>4:14 AM </p> <p>Noon ~ Moon at max libration south (-6.81°, geocentric) for 2013. Lunar South Pole tipped into view.</p>	<p>3</p>	<p>4</p>
<p>5</p>	<p>6</p> <p>Daytime Omega-Cetid meteor shower peaks (max ZHR = 8±)</p>	<p>7</p> <p>3 PM ~ Mercury 0.44° S of Mars (conjunction in RA; 4.5° W of Sun) Eta Aquariid meteor shower peaks (max ZHR = 28±)</p>	<p>8</p> <p>Eta Lyrid meteor shower peaks (max ZHR = 3±) VICTORY IN EUROPE DAY</p>	<p>9</p> <p>5:28 PM </p> <p>5:48 AM ~ Lunar limb passes 2 arcmin S of Mars 11:00 AM-12:59 PM ~ Moon occults Mercury 5:25 PM ~ Annular Solar Eclipse max (Pacific Ocean) Moon dia = 29.784 arcmin</p>	<p>10</p>	<p>11</p> <p>2 PM ~ Mercury at superior conjunction and occulted by the Sun</p> <p>★★★★★★★★</p> <p>CYA Star Party at Eastman Lake</p> <p>★★★★★★★★</p>
<p>12</p> <p>MOTHER'S DAY</p>	<p>13</p> <p>7 AM ~ Moon at apogee (252,184 miles) 1:30 PM ~ Equation of time at minor max (sundials 3.68 minutes early)</p>	<p>14</p> <p>5 PM ~ Begin Carrington Solar Rotation number 2137</p>	<p>15</p> <p>7 PM ~ Mercury at perihelion (0.3075 AU) Daytime May Arietid &amp; Epsilon Arietid meteor showers peak (max ZHR = 4± each) Alpha Scorpiid meteor shower peaks (max ZHR = 3±)</p>	<p>16</p>	<p>17</p> <p>9:34 PM </p>	<p>18</p> <p>2 PM ~ Moon at max total libration for 2013 (9.58°, geocentric)</p> <p>★★★★★★★★</p> <p>CYA Public Star Party at Riverpark</p> <p>★★★★★★★★</p>
<p>19</p>	<p>20</p>	<p>21</p> <p>Daytime Omega Cetid meteor shower peaks (max ZHR = 8±)</p>	<p>22</p>	<p>23</p> <p>Noon ~ 6 Hebe at opposition (1.8 AU, Mv 9.6)</p>	<p>24</p> <p>9:25 PM </p> <p>9 PM ~ Mercury 1.4° N of Venus (conjunction in RA, 16° E of Sun) Moon dia = 33.264 arcmin</p>	<p>25</p> <p>7 PM ~ Moon at perigee (222,680 miles)</p> <p>7:00 PM ~ CYA meeting at CSUF (East Engr 191)</p>
<p>May 22-27: RIVERSIDE TELESCOPE MAKERS CONFERENCE (RTMC), <a href="http://www.rtmcastronomyexpo.org/">http://www.rtmcastronomyexpo.org/</a></p>						
<p>26</p> <p>EVENING BINOCULAR OBSERVING ALERT: May 24 - May 28: Mercury, Venus, &amp; Jupiter grouped within a 4± circle</p> <p>RTMC</p>	<p>27</p> <p>3 AM ~ Mercury 2.4° N of Jupiter (conjunction in RA, 18° E of Sun) MEMORIAL DAY</p>	<p>28</p> <p>2 PM ~ Venus 1.0° N of Jupiter (conjunction in RA, 17° E of Sun)</p>	<p>29</p>	<p>30</p> <p>N &amp; S Omega Scorpiid meteor showers peak (max ZHR = 5± each)</p>	<p>31</p> <p>11:58 AM </p>	<p>SUNRISE/SUNSET for SATURDAYS</p> <p>4: 6:02 AM / 7:51 PM</p> <p>11: 5:55 AM / 7:57 PM</p> <p>18: 5:49 AM / 8:03 PM</p> <p>25: 5:45 AM / 8:08 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/2012](http://www.imo.net/calendar/2012) 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 2013

Summer Friday nights  
observing at Downing  
Planetarium

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p><b>JULY 2013</b></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 31</p>	<p><b>SEPTEMBER 2013</b></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><b>MOON PHASES</b></p> <p>☉ New Moon</p> <p>☾ First Quarter</p> <p>☀ Full Moon</p> <p>☾ Third Quarter</p>	<p><b>SUNRISE/SUNSET for SATURDAYS</b></p> <p>3: 6:07 AM / 8:03 PM</p> <p>10: 6:12 AM / 7:56 PM</p> <p>17: 6:18 AM / 7:47 PM</p> <p>24: 6:24 AM / 7:38 PM</p> <p>31: 6:30 AM / 7:28 PM</p>	<p>1</p> <p>0h = JD 2456505.791667</p>	<p>2</p> <p>8 AM ~ Mercury at dichotomy (half phase)</p> <p>★★★★★★★★★ CVA Courtright Star Party (Friday-Sunday) ★★★★★★★★★</p>	<p>3</p> <p>2 AM ~ Moon at apogee (251,157 miles)</p> <p>6 PM ~ ♃ Juno at opposition</p> <p>★★★★★★★★★ CVA Star Party at Eastman Lake ★★★★★★★★★</p>
<p>4</p> <p>8 AM ~ Begin Carrington Solar Rotation number 2140</p>	<p>5</p>	<p>6</p> <p>2:51 PM ☉</p>	<p>7</p>	<p>8</p>	<p>9</p> <p>Eta Eridanid meteor shower peaks (max ZHR = 6±)</p> <p>★★★★★★★★★ CVA Courtright Star Party (Friday-Sunday) ★★★★★★★★★</p>	<p>10</p> <p>★★★★★★★★★ CVA Public Star Party at Millerton Lake ★★★★★★★★★</p>
<p>11</p> <p>6 PM ~ Mercury at perihelion (0.3075 AU)</p>	<p>12</p> <p>Perseid meteor shower peaks (max ZHR = 100±)</p>	<p>13</p>	<p>14</p> <p>3:56 AM ☾</p>	<p>15</p>	<p>16</p> <p>10 AM ~ 7 Iris at opposition (1.2 AU, Mv 7.9)</p>	<p>17</p> <p>Kappa Cygnid meteor shower peaks (max ZHR = 3±)</p> <p>★★★★★★★★★ CVA Public Star Party at Riverpark ★★★★★★★★★</p>
<p>18</p> <p>7 PM ~ Moon at perigee (225,111 miles)</p>	<p>19</p>	<p>20</p> <p>6:45 PM ☀</p> <p>Moon dia = 32.697 arcmin</p>	<p>21</p>	<p>22</p>	<p>23</p>	<p>24</p> <p>2 PM ~ Mercury at superior conjunction (1.8° above center of Sun)</p>
<p>25</p>	<p>26</p> <p>Neptune at opposition (distance = 28.973 AU, dia = 2.31 arcsec, Mv = 7.8)</p>	<p>27</p>	<p>28</p> <p>2:35 AM ☾</p> <p>Gamma Doradid meteor shower peaks (max ZHR = 5±)</p>	<p>29</p>	<p>30</p> <p>5 PM ~ Moon at apogee (251,560 miles)</p>	<p>31</p> <p>2 PM ~ Begin Carrington Solar Rotation number 2141</p> <p>11 PM ~ Equation of time is zero (sundials on time)</p> <p>Alpha Aurigid meteor shower peaks (max ZHR = 6±)</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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.





# SEPTEMBER 2013

**COMET C/2012 S1 (ISON)**  
 This Sun-grazing comet has the potential to become a "Great Comet." It should be visible in binoculars by August or September and visible to the unaided eye by late October or early November through mid-January 2014. It will pass 0.4 AU from Earth on December 26.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1  0h = JD 2456536.791667	2  LABOR DAY	3	4  ROSH HASHANAH begins at sunset	5 4:36 AM	6	7  ★★★★★★★★★★ CVA Star Party & Star-BQ (Eastman; details TBA) ★★★★★★★★★★	
8  GRANDPARENTS DAY	9  September Epsilon Perseid meteor shower peaks (max ZHR = 5±) CALIFORNIA ADMISSION DAY	10	11	12 10:08 AM	13  YOM KIPPUR begins at sunset	14  ★★★★★★★★★★ CVA Public Star Party at Riverpark ★★★★★★★★★★	
15  10 AM ~ Moon at perigee (228,304 miles)	16	17	18	19 4:13 AM  5 PM ~ Venus 3.8° S of Saturn (conjunction in RA, 40° E of Sun) Moon dia = 31.882 arcmin	20	21  7:00 PM ~ CVA meeting at CSUF (East Engr 191)	
22  1:44 PM ~ Autumnal Equinox	23	24  6 PM ~ Mercury at aphelion (0.4667 AU) 7 PM ~ Mercury (Mv -0.1) 0.74° NE of Spica (Mv 1.0)	25	26 8:55 PM	27  11 AM ~ Moon at apogee (251,200 miles) 10 PM ~ Begin Carrington Solar Rotation number 2142	28	
29	30	 @ Venus Transit by Fred Lusk		<b>AUGUST 2013</b> 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	<b>OCTOBER 2013</b> 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	<b>MOON PHASES</b> New Moon First Quarter Full Moon Third Quarter	<b>SUNRISE/SUNSET for SATURDAYS</b> 7: 6:35 AM / 7:18 PM 14: 6:41 AM / 7:08 PM 21: 6:46 AM / 6:57 PM 28: 6:52 AM / 6:46 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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



# OCTOBER 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>SEPTEMBER 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</p>	<p>NOVEMBER 2013</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>1</p> <p>0h = JD 2456566.791667</p> <p>Daytime Sextanid meteor shower peaks (max ZHR = 20±)</p>	<p>2</p>	<p>3</p> <p>4 PM ~ Venus at aphelion (0.7282 AU)</p> <p>Uranus at opposition (distance = 19.040 AU, dia = 3.68 arcsec, Mv = 5.7)</p> <p>October Delta Aurigid meteor shower peaks (max ZHR=3±)</p>	<p>4</p> <p>5:34 PM </p>	<p>5</p> <p>2:29 PM - 3:48 PM ~ Moon occults Spica (9.7° E of Sun)</p> <p>★ ★ ★ ★ ★ ★ ★ ★ ★ ★</p> <p>CYA Star Party at Eastman Lake</p> <p>★ ★ ★ ★ ★ ★ ★ ★ ★ ★</p>
<p>6</p>	<p>7</p> <p>Mercury dims to Mv 0.0</p>	<p>8</p> <p>Draconid meteor shower peaks (max ZHR = 50±)</p>	<p>9</p> <p>3 AM ~ Mercury at eastern elongation (25.3°, evening)</p>	<p>10</p> <p>Noon ~ Mercury 5.4° S of Saturn (conjunction in RA)</p> <p>4 PM ~ Moon at perigee (229,814 miles)</p> <p>Southern Taurid meteor shower peaks (max ZHR = 5±)</p>	<p>11</p> <p>4:02 PM </p> <p>Delta Aurigid meteor shower peaks (max ZHR = 2±)</p>	<p>12</p> <p>INTERNATIONAL MOON NIGHT</p> <p>COLUMBUS DAY</p> <p>★ ★ ★ ★ ★ ★ ★ ★ ★ ★</p> <p>CYA Public Star Party at Riverpark</p> <p>★ ★ ★ ★ ★ ★ ★ ★ ★ ★</p>
<p>13</p>	<p>14</p> <p>9 AM ~ Mercury at dichotomy (half phase)</p> <p>COLUMBUS DAY (observed)</p>	<p>15</p> <p>4 AM ~ Mars (Mv 1.6)</p> <p>0.94° NNE of Regulus (Mv 1.4)</p>	<p>16</p>	<p>17</p>	<p>18</p> <p>4:38 PM </p> <p>Penumbral Lunar Eclipse (in progress at sunset; penumbral mag = 0.765; don't bother)</p> <p>Moon dia = 30.971 arcmin</p>	<p>19</p> <p>Epsilon Geminid meteor shower peaks (max ZHR = 3±)</p> <p>7:00 PM ~ CYA meeting at CSUF (East Engr 191)</p>
<p>20</p>	<p>21</p> <p>Orionid meteor shower peaks (max ZHR = 25±)</p>	<p>22</p>	<p>23</p>	<p>24</p> <p>Leo Minorid meteor shower peaks (max ZHR = 2±)</p>	<p>25</p> <p>3 AM ~ Begin Carrington Solar Rotation number 2143</p> <p>7 AM ~ Moon at apogee (251,356 miles)</p>	<p>26</p> <p>4:40 PM </p>
<p>27</p> <p>1 AM ~ Moon at max libration north (+6.86°, geocentric) for 2013. Lunar North Pole and Mare Frigoris tipped into view.</p>	<p>28</p> <p>2 PM ~ Mercury 4.1° S of Saturn (conjunction in RA; 8° E of Sun)</p>	<p>29</p>	<p>30</p> <p>8 PM ~ Venus at dichotomy (half phase)</p>	<p>31</p> <p>HALLOWEEN</p>	<p><b>MOON PHASES</b></p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p><b>SUNRISE/SUNSET for SATURDAYS</b></p> <p>5: 6:58 AM / 6:36 PM</p> <p>12: 7:04 AM / 6:26 PM</p> <p>19: 7:11 AM / 6:17 PM</p> <p>26: 7:17 AM / 6:08 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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



# NOVEMBER 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>OCTOBER 2013</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>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><b>MOON PHASES</b></p> <p> New Moon</p> <p> First Quarter</p> <p> Full Moon</p> <p> Third Quarter</p>	<p>@ Venus Transit by Fred Lusk</p>	<p><b>SUNRISE/SUNSET for SATURDAYS</b></p> <p>2: 7:24 AM / 6:01 PM</p> <hr/> <p>9: 6:31 AM / 4:54 PM</p> <p>16: 6:39 AM / 4:49 PM</p> <p>23: 6:46 AM / 4:45 PM</p> <p>30: 6:53 AM / 4:43 PM</p>	<p>1</p> <p>0h = JD 2456597.791667</p> <p>1 AM ~ Venus at eastern elongation (47°, evening)</p> <p>1 PM ~ Mercury at inferior conjunction (0.52" below center of Sun)</p>	<p>2</p> <p>4 PM ~ Equation of time at max (sundials 16.44 minutes early)</p> <p>★★★★★★★★★★</p> <p>CYA Star Party at Eastman Lake</p> <p>★★★★★★★★★★</p>
<p>3 4:50 AM </p> <p>4:46 AM ~ Max of Hybrid Solar Eclipse (Africa &amp; Atlantic Ocean)</p> <p>Moon dia = 32.242 arcmin</p> <p>2:00 AM ~ Daylight Saving Time ends</p>	<p>4</p>	<p>5</p> <p>ELECTION DAY</p>	<p>6</p> <p>1 AM ~ Moon at perigee (227,038 miles)</p> <p>4 AM ~ Saturn at solar conjunction (2.1" above center of Sun)</p>	<p>7</p> <p>4 PM ~ Mercury at perihelion (0.3075 AU)</p>	<p>8</p>	<p>9 9:57 PM </p> <p>★★★★★★★★★★</p> <p>CYA Public Star Party at Riverpark</p> <p>★★★★★★★★★★</p>
<p>10</p>	<p>11</p> <p>VETERANS DAY</p>	<p>12</p> <p>N &amp; S Taurid meteor shower peaks (max ZHR = 5± each)</p> <p>Mercury brightens to Mv 0.0</p>	<p>13</p>	<p>14</p>	<p>15</p> <p>0:16 AM ~ Venus 6.6° S of Pluto (conjunction in RA; 50° E of Sun)</p> <p>7 AM ~ Mercury at dichotomy (half phase)</p>	<p>16</p> <p>November Iota Aurigid meteor shower peaks (max ZHR = 8±)</p> <p>7:00 PM ~ CYA meeting at CSUF (East Engr 191)</p>
<p>17 7:16 AM </p> <p>6 PM ~ Mercury at western elongation (19.5°, morning)</p> <p>Leonid meteor shower peaks (max ZHR = 20-100±)</p> <p>Moon dia = 30.144 arcmin)</p>	<p>18</p>	<p>19</p>	<p>20</p>	<p>21</p> <p>10 AM ~ Begin Carrington Solar Rotation number 2144</p> <p>10 AM ~ Comet 2P / Encke at perihelion (17° W of Sun, Mv 5.8±)</p> <p>Alpha Monocerotid meteor shower peaks (max ZHR=5±)</p>	<p>22</p> <p>2 AM ~ Moon at apogee (251,911 miles)</p>	<p>23</p>
<p>24</p>	<p>25 11:28 AM </p> <p>8 PM ~ Mercury 0.33° S of Saturn (conjunction in RA, 17.4° W of Sun)</p>	<p>26</p>	<p>27</p> <p>HANUKKAH begins at sunset</p>	<p>28</p> <p>Noon ~ Comet C/2012 S1 (ISON) at perihelion behind Sun (0.013 AU; Mv -12.7±)</p> <p>THANKSGIVING</p>	<p>29</p> <p>8:41 AM - 9:55 AM ~ Moon occults Spica (44° W of Sun)</p> <p>November Orionid meteor shower peaks (max ZHR = 3±)</p>	<p>30</p> <p>★★★★★★★★★★</p> <p>CYA Star Party at Eastman Lake</p> <p>★★★★★★★★★★</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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.



# DECEMBER 2013

**Coming up in 2014**  
 Jan 1 ~ Pluto at solar conjunction  
 Jan 2 ~ Mars at aphelion  
 Jan 5 ~ Jupiter at opposition  
 Jan 10 ~ Venus at inferior conjunction  
 Apr 18 ~ Mars at opposition

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1  0h = JD 2456627.833333	2 4:22 PM	3	4  2 AM ~ Moon at perigee (223,743 miles)	5	6  4:42:36 AM ~ Earliest sunset of the year for Fresno Phoenicid meteor shower peaks (max ZHR = 0-100±) Puppis / Velid meteor shower peaks (max ZHR = 10±)	7  PEARL HARBOR DAY
8  Monocerotid meteor shower peaks (max ZHR = 2±)	9 7:12 AM  6 PM ~ Venus reaches max brilliance (Mv -4.67)	10	11  Sigma Hydrid meteor shower peaks (max ZHR = 3±)	12	13  Geminid meteor shower peaks (max ZHR = 120±)	14  7:00 PM ~ CVA meeting at CSUF (East Engr 191) Elect officers for 2014
15  Coma Berenicid meteor shower peaks (max ZHR = 3±)	16	17 1:28 AM  Moon dia = 29.575 arcmin (smallest and most northerly Full Moon of 2013; declination = +19.750)	18  5 PM ~ Begin Carrington Solar Rotation number 2145	19  4 PM ~ Moon at apogee (252,432 miles) December Leo Minorid meteor shower peaks (max ZHR = 5±)	20  Mars brightens to Mv 1.0	21  9:11 AM ~ Winter Solstice (solar decl = -23.436°) 4 PM ~ Mercury at aphelion (0.4667 AU)
22	23  Ursid meteor shower peaks (max ZHR = 10±)	24  9 PM ~ Equation of time is zero (sundials on time)	25 5:48 AM  December Comae Berenicid meteor shower peaks (max ZHR = 3±) CHRISTMAS	26  2 PM ~ Comet C/2012 S (ISON) closest to Earth (0.427 AU) 7 PM ~ Moon at max libration west (-7.65°, geocentric) for 2013. Crater Grimaldi tipped into view.	27  6 AM ~ Moon at max libration east for 2013 (7.87°, geocentric)	28  ★★★★★★★★★ CVA Star Party at Eastman Lake ★★★★★★★★★
29  7 PM Mars 0.65° S of Porima (Gamma Vir) 10 PM ~ Mercury at superior conjunction (1.7° below center of Sun)	30  10 PM ~ Mercury 4.6° S of Pluto (conjunction in RA, 1.4° E of Sun)	31  24h = JD 2456658.833333 NEW YEARS EVE	<b>NOVEMBER 2013</b> 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		<b>JANUARY 2014</b> 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	
					<b>MOON PHASES</b> New Moon First Quarter Full Moon Third Quarter	
					<b>SUNRISE/SUNSET for SATURDAYS</b> 7: 6:59 AM / 4:43 PM 14: 7:04 AM / 4:44 PM 21: 7:08 AM / 4:47 PM 28: 7:11 AM / 4:51 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/2012](http://www.imo.net/calendar/2012) for details about the major meteor showers shown in the calendar. Most meteor showers are strongest in the early morning hours.