

2014—Astronomically Handy Sky Calendar from Doug Snyder & the H.A.C.—2014
ARIZONA Observers SKY EVENTS Calendar for 2014 —All Times listed are MOUNTAIN STANDARD

JANUARY 2014

HIGHLITES:

**Quadrantid Meteors
 Jupiter at Opposition**

- 01 We ● **NEW MOON** 0414 hrs. (MST)
- 03 Fr **QUADRANTIDS** Meteor Shower very favorable; view after midnight; radiant near constellation Bootes; possible hourly rate of up to 120
- 04 Sa Earth at perihelion 0500hrs.; 0.983 A.U.
- 04 Sa **HAC** Member Star Party (S.P.)
- 05 Su **JUPITER AT OPPOSITION** 1400 hrs.; Mag. -2.7 distance=4.2 AU size=47"
- 07 Tu ☽ First Quarter Moon 2040 hrs.
- 09 Th **HAC** Public S.P.; P.O.;SS@ 1735 hrs.
- 10 Fr **HAC Meeting**, Cochise College 7pm
- 15 We ☉ Full Moon 2153 hrs.; smallest of 2014
- 23 Th ☾ Last Quarter Moon 2220 hr
- 25 Sa Saturn 1.2° north of Moon, 0535 hrs.
- 30 Th ● **NEW MOON** 1439 hrs.; lunation 1127
- 31 Fr Mercury G_ Elong. East (18°) 0300 h., view as 'evening' star in western sky 1/2 hour after sunset; mag. -0.7

FEBRUARY 2014

HIGHLITES:

**Venus at its brightest,
 Callisto's Shadow on Jupiter**

- 01 Sa **HAC** Member S.P.
- 06 Th ☽ First Quarter Moon 1221 hrs.
Double Shadow Transit, Jupiter; 0323 hrs. (Europa & Callisto); rare
HAC Public S.P.; P.O.;SS@ 1800 hrs.
- 07 Fr Alpha Centaurid Meteors, Pk. 2305 hrs.
 Radiant point in southern hemisphere
- 11 Tu Venus greatest magnitude: -4.6, 1600h.
- 14 Fr ☉ Full Moon 1654 hrs.
HAC Meeting, Cochise College 7pm
- 15 Sa Venus at greatest illumination, mag.-4.9; morning 'star' in southeast sky
- 17 Mo Zodiacal Light in the west for next two weeks following evening twilight
- 19 We Spica (star) within 2.5° of Moon,0500 h.
- 22 Sa ☾ Last Quarter Moon 1016 hrs.
- 26 We Venus within 6° of Moon, 0500 hrs.

MARCH 2014

HIGHLITES:

**Kartchner Caverns S.P.(22)
 Messier Marathon?(29)**

- 01 Sa ● **NEW MOON** 0100 hrs.
- 01 Sa **HAC** Member S.P.
- 06 Th **HAC** Public S.P.; P.O.; SS@1823 hrs.
- 08 Sa ☽ First Quarter Moon 0628 hrs.
- 14 Fr Mercury G_Elong. W. (28°); morning 'star' in twilight to the east
- 14 Fr **HAC Meeting**, Cochise College 7pm
- 16 Su ☉ Full Moon 1010 hrs.
- 18 Tu Zodiacal Light in the west for next two weeks following evening twilight
- 20 Th **Vernal Equinox** 0957 hrs.
- 21 Fr Saturn close (north) to Moon
- 22 Sa **Kartchner Caverns S.P.** ;1830 hrs.
- 23 Su ☾ Last Quarter Moon 1847 hrs.
- 29 Sa **HAC Messier Marathon**-Proposed
 This date 110 objects should be visible
- 30 Su ● **NEW MOON** 1146 hrs.

Jupiter's Galilean Moons—January 2014
 There are no double-transit events this month, but satellite Callisto has four encounters with its mother planet (local dates and times):
 1/11:1944 hrs. Occultation Disappearance
 1/12: 0044 hrs. Eclipse Reappearance
 1/20: 0438 hrs. Transit Ingress
 1/28: 1854 hrs. Eclipse Reappearance
 Note:**HAC=Huachuca Astronomy Club**

Long Period Variable Stars— Feb. 2014
 Verify with www.aavso.org ;listed are stars brighter than mag. 8 at max.: period in days (d);date is predicted epoch max.
 0228-13;U Cet;7.5>12.6;235d;Feb.10
 1811+36;W Lyr;7.9>12.2;196d;Feb.17
 1901+08;R Aql;6.1>11.5;267d; Feb.15
 2044-05;T Aqr;7.7>13.1;202d; Feb. 04

**Possible Favorable Periodic Comets—
 Reaching Perihelion March 2014**
 Obtain elements/ephemerides at www.minorplanetcenter.net; listed dates/times are in UT (to retain MPC accuracy)
 P/2007 H3 (Garradd); Mar 01.23;1.8 AU
 P/2008 A2 (LINEAR); Mar 03.40; 1.3 AU
 52P (Harrington-Abell); Mar 07.54; 1.8 AU
 290P/1998 U3(Jager); Mar 12.57; 2.15 AU
 117P/Helin-Roman-Alu; Mar 27.16; 3.0 AU

APRIL 2014

HIGHLITE: Total Lunar Eclipse (1 of 2 in 2014)

- 03 Th **HAC** Public S.P.; P.O.; SS@1841 hrs.
- 07 Mo ☽ First Quarter Moon 0132 hrs.
- 08 Tu **MARS** at opposition, 1400 hrs.
- 09 We Comet 124P (Mrkos) at perihelion 0738 hrs.; perihelion distance 1.6 AU
- 11 Fr **HAC Meeting**, Cochise College 7pm
- 12 Sa Asteroid 4 Vesta at opposition 2200hrs.
- 14 Mo Mars closest approach, 0600 hrs.; 0.62 AU from Earth, mag. -1.5; Size:15.2 arc-seconds
- 14>15 (Mo>Tu): **Total Lunar Eclipse** 2157 hrs. (14th) to 0337 h.(15th)
 Total from 0010h. to 0124h. (15th)
- 15 Tu ☉ Full Moon 0043 hrs.
- 17 Th Saturn close (north) to Moon, 0000h.
- 22 Tu ☾ Last Quarter Moon 0053 hrs.
- 23 We **Lyrid Meteor Shower**, Pk. 1045 h.; some 46% moon; view on 23rd am
- 26 Sa **HAC** Member S.P.
- 28 Tu ● **NEW MOON** 2315 hrs.

MAY 2014

HIGHLITE: Astronomy Day & Saturn at opposition, May 10

- 01 Th **HAC** Public S.P.; P.O.; SS@1900 hrs.
- 1 Th Mercury @ perihelion; evening star, mag. -1.6; view WNW at dusk
- 6 Tu **Eta Aquarid Meteor Shower**, Pk@ 0100 hrs.;40% Moon; rate 60+?
- 06 Tu ☽ First Quarter Moon 2016 hrs.
- 09 Fr **HAC Meeting**, Cochise College 7pm
- 10 Sa **NATIONAL ASTRONOMY DAY** (**HAC** event at Sierra Vista City Library)
- 10 Sa **Saturn** at opposition, 1100 hrs.; mag. +0.1, 8.9 AU from Earth, total size of 42.4" (planet itself 18.7")
- 14 We ☉ Full Moon 1217 hrs.
- 21 We ☾ Last Quarter Moon 0600 hrs.
- 24 Sa **NEW** Meteor Shower? Predicted strong peak from Midnight to 0100 on am of 24th; radiant in Camelopardalis; from Comet 209P/LINEAR; best of 2014?
- 28 We ● **NEW MOON** 1141 hrs.
- 31 Sa **HAC** Member S.P.

JUNE 2014

HIGHLITE: Venus/Moon Conjunction (photo-op?)

- 05 Th **HAC** Public S.P.; P.O.;SS@1923 hrs.
 ☽ First Quarter Moon 1340 hrs.
- 12 Th ☉ Full Moon 2112 hrs.
- 13 Fr **HAC Meeting**, Cochise College 7pm
- 19 Th ☾ Last Quarter Moon 1140 hrs.
- 21 Sa **Summer Solstice** 0351 hrs.
- 24 Tu Conjunction of crescent 7% Moon and Venus; 0518 to ENE
- 27 Fr June Bootids Meteor Shower; overhead to dawn on 27th; may show outburst
- 27 Fr ● **NEW MOON** 0109 hrs.
- 28 Sa **HAC** Member S.P.

Long Period Variable Stars—June 2014
 Verify with www.aavso.org ;listed are stars brighter than mag. 8 at max.: period in days (d);date is predicted epoch max.
 1946+32; x Cyg; 5.2>13.4; 407d; Jun 24
 1432+27; R Boo; 7.2>12.3; 223d; Jun 21

*Times/Dates= ARIZONA Mountain STANDARD Time (MST; NO DST; UT-7hrs); **updates/ details**, see: www.hacastronomy.com or <http://skycalendar.blackskies.org>;
Abbr: Tr=Transit; Pk=Peak; Merc=Mercury; E=East W=West; S=South; N=North; J, Jup.=Jupiter; V=Venus; v. = very; " =arc seconds; SS=SunSet; S.P.=Star Party; h., hrs.=hours (24 hour time system); MP=Minor Planet; MS=Moon Set; MR=Moon Rise; wks=weeks; Lt=Light; pm=evening; @=at; Pub.=Public ; NEA= Near Earth Asteroid; am=morning; mag.=magnitude; **meteor dates reflect predicted Peak Morning, but Moon may still be present; P.O.= Patterson Observatory; dbl= double; I=Io; Eu=Europa; G=Ganymede; C=Callisto; UT=Universal Time; **bold text**=possibly a promising/noteworthy event, activity or object; G_Elong=Greatest Elongation; AU=Astronomical Unit (93 million miles); °= degrees; **compiler: Doug Snyder**(C/2002 E2,MP15512, starhaven@me.com);V1.1.2014

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JULY 2014

HIGHLITE: Due to Monsoons, *no scheduled observing events*

- 03 Th Earth at aphelion, 1700 hrs.; 1.016 AU
 - 04 Fr Pluto at opposition, 0100 hrs.; mag. 14.1, distance 32.5 AU
 - 05 Sa ☽ First Quarter Moon 0500 hrs.
 - 07 Mo Saturn within 1.5° of 76% Moon; 2030 hrs.
 - 11 Fr **HAC Meeting**, Cochise College, 7 pm
 - 12 Sa ☉ Full Moon 0426 hrs.
 - 12 Sa Mercury G_Elong. W. (21°); morning 'star' in East, mag. +0.4; reaches mag. 0.0 on July 15
 - 18 Fr ☾ Last Quarter Moon 1909 hrs.
 - 26 Sa ● **NEW MOON** 1543 hrs.
 - 29 Tu **Delta Aquarids** Meteor Shower Pk. at 0200 hrs.; rate may approach 20 per hour, some persistent trains.
 - 30 We Alpha Capricornids Meteors— weak, slow moving, but yellowish fireballs can be photogenic; best rate of 5/hour?
- July (first-half): C/2012 K1; evening hrs. in LEO; mag 7?

AUGUST 2014

HIGHLITE: Monsoon Season; *Choose your own Highlight !*

- 03 Su ☽ First Quarter Moon 1751 hrs.
- 08 Fr **HAC Meeting**, Cochise College, 7 pm
- 10 Su ☉ Full Moon 1110 hrs; **largest** of 2014
- 12>13 Tu>We Perseid Meteor Shower Pk. at 1700 hrs. on the 12th; v. unfavorable due to strong moonlight; rates can be high as 90/hour under dark skies
- 17 Su **Conjunction:** Venus/Jupiter within 1.0° and close to Beehive cluster; 0500 hrs.; But very low in the ENE skies; closest planet-planet conjunction of 2014
- 17 Su ☾ Last Quarter Moon 0527 hrs.
- 24 Su Comet Siding Spring (C/2013 A1) at opposition, 1800 hrs.; may collide with MARS in mid-October !
- 25 Mo ● **NEW MOON** 0714 hrs.
- 29 Fr Neptune at opposition, 0800 hrs.; mag. +7.8; distance 29 AU; size 2.4"
- 31 Su Moon/Saturn/Mars within 5° circle; Moon will be at about 35%; 2000 hrs.

SEPTEMBER 2014

HIGHLITE: Comet Possibilities

- 01 Mo Aurigid Meteor Shower; peak after midnight of Aug. 31 and into morning of Sept.01; fast and many are bright ; low hourly rate (5) but may outburst
- 02 Tu ☽ First Quarter Moon 0412 hrs.
- 08 Mo ☉ Full Moon 1839 hrs; Harvest Moon
- 12 Fr **HAC Meeting**, Cochise College, 7 pm
- 15 Mo ☾ Last Quarter Moon 1906 hrs.
- 20 Sa **Kartchner Caverns/HAC S.P.**, dusk
- 21 Su Zodiacal Light in east before morning twilight for next two weeks
- 22 Mo **Autumnal Equinox** 1929 hrs.
- 23 Tu ● **NEW MOON** 2315 hrs.
- 25 Th **HAC** Public S.P.; P.O.; SS@1813 hrs.
- 27 Sa **Saturn** within 2° of 14% Moon, low in the WSW, 2000 hrs.

Comet Possibilities for September 2014
 C/2013 A1: v. low in S., early evening; 9/17>9/30 (Siding Spring); encounter MARS on 10/19
 C/2012 K1: low in E., early morning; 9/1>9/30
 C/2013 V5: low in E., morning; 9/1>9/13

OCTOBER 2014

HIGHLITES: MARS & COMET; *1 LUNAR ECLIPSE & 1 SOLAR ECLIPSE IN SAME MONTH !*

- 01 We ☽ First Quarter Moon 1233 hrs.
- 04 Sa **NATIONAL ASTRONOMY DAY**
HAC opens Patterson Observatory for Public Exhibits and Viewing
- 07 Tu Uranus at opposition, 1400 hrs.
- 08 We ☉ Full Moon 0351 hrs.
- 08 We **TOTAL LUNAR ECLIPSE**
Start: 0117hrs., End: shortly after moonset at 0630 hrs.; Totality: 0328 h. to 0423 hrs.
- 09 Th Draconids Meteor Shower; unfavorable due to bright Moonlight
- 10 Fr S. Taurids Meteor Shower; Pk. 0500h.
- 10 Fr **HAC Meeting**, Cochise College, 7 pm
- 15 We ☾ Last Quarter Moon 1213 hrs.
- 19 Su **Comet Siding Spring** (C/2013 A1) **Close** Encounter/Graze with **MARS!**
- 20 Mo Zodiacal Light in East before morning twilight for next two weeks
- 21 Tu **Orionid Meteor Shower**; v. favorable; Swift, some bright, rate about 20+/hr.
- 23 Th ● **NEW MOON** 1457 hrs.
- 23 Th Partial **Solar ECLIPSE**, Start: 1430 hrs. End: 1648 hrs.; max: 1543 hrs.(29.3%)
HAC viewing at S.V. City Library, 1 pm
- 25 Sa **HAC** Member S.P.
- 30 Th **HAC** Public S.P.; P.O.; SS@1733
- 30 Th ☽ First Quarter Moon 1949 hrs.

NOVEMBER 2014

HIGHLITE: METEORS & FIREBALLS

- 01 Sa Mercury at G_Elong. W.(19°), 0600 hrs.; **best** morning apparition of 2014, east
- 06 Th C/2012 K1 (PanSTARRS) at (2nd) opposition, 2000 hrs., in Pictor; possibly will or will have brightened to mag. 6
- 06 Th ☉ Full Moon 1523 hrs.
- 11 Tu North Taurids Meteor Shower; rate of about 5/hr; waning 77% moon & bright
- 14 Fr **HAC Meeting**, Cochise College, 7 pm
- 14 Fr ☾ Last Quarter Moon 0816 hrs.
- 17>18 Mo>Tu **Leonid Meteor Shower**
Peak at 1500 hrs on 17th; view pm hrs on 17th into am hours on 18th; about 20% moon; fast meteors & bright; a good number leave persistent 'trails' ; no 'storm' has been predicted, but do you remember 2001? Some of us do. WOW.
- 20 Th **HAC** Public S.P.; P.O.; SS@1720 hrs.
- 22 Sa ● **NEW MOON** 0532 hrs.
- 22 Sa **HAC** Member S.P.
- 29 Sa ☽ First Quarter Moon 0306 hrs.

Comet Of The Month—An Observing and Imaging Challenge for C/2012 K1 (PanSTARRS)
 Throughout November, this comet will remain VERY low near our southern horizon and reside in these constellations: Pictor, Dorado, Phoenix, Reticulum, Horologium, and Eridanus, but may reach mag. 6 this month. Close encounter with Globular Cluster NGC1261 on 11/13; good luck!

DECEMBER 2014

HIGHLITE: *GEMINID METEOR SHOWER*

- 06 Sa ☉ Full Moon 0527 hrs.
 - 12 Fr **HAC Meeting**, Cochise College, 7 pm
 - 13 Sa **Geminid** Meteor Shower Pk. Favorable Year, but with 50% moon; Pk. 0500 hrs. Saturday am; hourly rate can be as high as 120/hr.; mostly bright, few leaving 'trains'; 12/14 (Sunday) morning activity is possible also; Parent body is asteroid 3200 Phaethon (1.5 year orbit); radiant is near Castor
 - 14 Su ☾ Last Quarter Moon 0551 hrs.
 - 15 Mo **Dbl. Shadow Transit**, J. ; 2312 hrs. (Europa & Io); Note: At 0025 hrs. on 12/16, **both** Europa & Io will be in the process of transiting Jupiter! See 'em? **HAC** Public S.P.; P.O.; SS@1721 hrs.
 - 20 Sa **HAC** Member S.P.
 - 21 Su Winter Solstice, 1603 hrs.
 - 21 Su ● **NEW MOON** 1836 hrs..
 - 22 Mo Ursids Meteor Shower Pk. 1300 hrs.; good date, but poor peak timing; (favors northern Asia); radiant is near β Ursa Minor (Kokab); rate is about 10/hour; faint, with a few fireballs. Parent comet is 8P Tuttle
 - 25 Th **MERRY CHRISTMAS TO ALL !**
 - 28 Su ☽ First Quarter Moon 1132 hrs.
 - 28 Su ☽ Conjunction of Moon and Uranus; 2245 hrs.; less than 1.0° apart; first quarter Moon and mag. 5.8 Uranus
- HAPPY NEW YEAR !**

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