Select start of calculation:

Date: 27 July 2012

Time: 04 : 00 : 00 Now

Select duration: 1 Hour go!

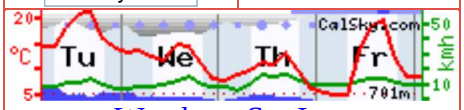
chaveroche, France

Easting: 2.2568

Northing: 45.5738

Time zone: CET/ CEST

Hobby



Weather · Sat-Image

Local Sponsors: Your name?

The Calendar-Sky

The astronomical calendar contains **thousands of events per day** for every point on Earth. We know that you only care for a very few of these events and hence we let you personalize your own Astro-Calendar. You may primarily do so by switching to your appropriate user level, and by selecting some of the three dozens categories.

In parentheses are forced limits for the maximum calculation interval. The celestial calendar is to be found further below on this page and will appear within some seconds after pressing the *Go!*-Button (depending on the complexity of your selections). The calendar is created especially for you. The higher your user level, the more complex objects you selected, the longer it does take to calculate. *Please do not press the reload-button*; the calculations will take significantly longer.

Calendar and Timekeeping

- ☐ Space Calendar: Birthdays, Rocket Launches
- ☐ Local Events (Talks, Exhibitions)
- ☐ NASA TV Guide
- ☐ Local Telescope Dealers
- ☑ Public Holidays
- ☐ Saint's Day
- ☐ Zodiac of today. Change of Zodiac
- ☐ Islamic, Indian, Persian and Hebrew Calendar
- ☑ Week Number

General events

- ☑ Lunar Occultations (2 months)
- ☑ Planetary Conjunctions
- ☑ Lunar Eclipses
- ☑ Solar Eclipses and Transits
- ☑ Meteor Streams
- ☐ Planetary Phenomena
- ☐ Lunar Phenomena
- ☐ The Sun
- ☐ Asteroids (6 months)
- ☐ Comets

Earth orbiting satellites

- ☑ Space Station ISS (1 month)
- short duration
- ☑ Flares of Iridium satellites (14 days)
- ☑ Passes of other bright satellites (*7 days*, slow!)

Daily reoccurring events

- ☐ Sun and Moon
- ☐ Planets
- ☑ Asteroids
- ☑ Comets
- ☑ Meteor Streams
- ☐ Polar Star Transits

Dimmer and more difficult objects

- ☑ Jupiter: Great Red Spot and satellite events
- ☐ Jupiter's Satellites: position
- ☐ Saturn: Satellite events and storms
- ☐ Saturn's Satellites: position
- ☐ Zodiacal light/Gegenschein
- ☐ Variable Stars (3 months)
- ☐ Supernovae
- ☐ Binary Stars

Deep sky objects

- Sundials / GPS
- Time / Current Time Definitions
- Julian Day Number
- Sidereal Time
- Local Magnetic Field
- Weather Balloons
- Milky Way
- Galaxies
- Open Star Clusters
- Globular Star Clusters
- Nebula

go!

Friday 27 July 2012

Time (24-hour clock)	Object (Link)	Event
	Observer Site	**chaveroche, France** **WGS84: Lon: +2d15m24.7s Lat: +45d34m25.7s Alt: 752m** **All times in CET or CEST (during summer)**
	Local Date	**Day of Year (DOY): 209** **Week of Year (WOY): 30**
4h00m00s	USA 121/NOSS 2-3D (23862 1996-029-D) →Ground track →Star chart	**Appears** **3h57m32s** 5.4mag az:196.6° SSW h:35.1° **at Meridian** **3h58m48s** 4.9mag az:180.0° S h:55.3° **Culmination** **3h59m54s** **5.0mag** az:123.4° **ESE** **h:69.6°** distance: 926.5km height above Earth: 876.1km elevation of Sun: -20° angular velocity: 0.47°/s **Disappears** **4h08m55s** 11.4mag az: 40.1° NE horizon
4h01m07s	Cosmos 2428 Rocket (31793 2007-029-B) →Ground track →Star chart	**Appears** **3h52m57s** 7.0mag az:334.1° NNW horizon **at Meridian** **4h00m22s** 3.3mag az: 0.0° N h:66.7° **Culmination** **4h01m07s** **3.0mag** az: 63.4° **ENE** **h:79.1°** distance: 865.8km height above Earth: 852.8km elevation of Sun: -19° angular velocity: 0.51°/s **Disappears** **4h07m44s** 5.3mag az:151.3° SSE h:5.8°
4h04m50s	**Aqua (27424 2002-022-A)** →Ground track →Star chart	**Appears** **3h57m48s** **8.9mag** **az: 12.1°** **NNE horizon** **at Meridian** **4h04m00s** **3.6mag** **az: 0.0°** **N h:60.6°** **Culmination** **4h04m50s** **2.9mag** **az:285.3° WNW** **h:81.7°** **distance: 714.6km height above Earth: 708.6km** **elevation of Sun: -19° angular velocity: 0.61°/s** **Disappears** **4h06m46s** **3.5mag** **az:202.2° SSW** **h:36.4°**
4h14m45s	HTV-3 (KOUNOTORI (38706 2012-038-A) →Ground track →Star chart	**Appears** **4h13m58s** 3.2mag az:270.7° W h:45.6° **Culmination** **4h14m45s** **3.1mag** az:334.4° **NNW h:66.9°** distance: 440.3km height above Earth: 407.9km elevation of Sun: -18° angular velocity: 1.01°/s **at Meridian** **4h14m56s** 3.3mag az: 0.0° N h:64.7° **Disappears** **4h20m06s** 8.9mag az: 61.4° ENE horizon
4h14m45s	**ISS** →Ground track	**Appears** **4h13m58s** **-3.8mag** **az:270.7°** **W h:45.6°** **Culmination** **4h14m45s** **-3.9mag** **az:334.4°**

	→Star chart	**NNW h:66.9°** **distance: 440.3km height above Earth: 407.9km** **elevation of Sun: -18° angular velocity: 1.01°/s** **at Meridian 4h14m56s -3.7mag az: 0.0° N** **h:64.6°** **Disappears 4h20m06s 1.9mag az: 61.4° ENE** **horizon**
4h15m36s	USA 215/FIA Radar 1 (37162 2010-046-A) →Ground track →Star chart	**Appears 4h06m40s** 7.2mag az:112.3° ESE horizon **Culmination 4h15m36s 4.6mag** az: 30.4° **NNE h:64.4°** distance: 1208.2km height above Earth: 1108.4km elevation of Sun: -18° angular velocity: 0.33°/s **at Meridian 4h16m16s** 4.6mag az: 0.0° N h:60.8° **Disappears 4h24m34s** 7.0mag az:308.7° NW horizon
4h16m21.39s	ISS	**Close to Capella, Alp Aur (SAO 40186, HIP 24608 HD 34029), Magnitude=0.1mag**. Separation=0.752° Position Angle=243.7°, Position angle vertex=294.6° Angular diameter=33.9" size=109.0m x 73.0m x 27.5m Satellite at Azimuth= 51.0° NE Altitude= 26.9° Distance=816.0 km **Magnitude=-1.2mag** In a clock-face concept, the satellite will seem to move toward 5:11 Angular Velocity=18.0'/s **Centerline**, **closest point** →Map: Longitude= 2°19'32"E Latitude=+45°28'51" (WGS84) **Distance=11.63 km** Azimuth=152.6° SSE Path direction= 62.6° ENE ground speed=8.637 km/s Sun elevation=-18° Elongation from Sun=47°
4h	Meteor	**South Delta-Aquariids (SDA)** Best seen from 23.4h - 5.1h (h_{top}=29° at S at 4.3h) ZHR=17.3 Local hour rate=3 Velocity=42.0km/s (rather rapid) Radiant: RA=22.8h/342° Dec=-15.7° (J2000) (**in constellation Aquarius/Aqr**)
4h23m59s	**Koronas F Rocket (26874 2001-032-B)** →Ground track →Star chart	**Appears 4h22m39s 3.4mag az:163.8° SSE h:31.6°** **Culmination 4h23m59s 3.0mag az: 96.0° E h:60.2°** **distance: 496.2km height above Earth: 435.9km** **elevation of Sun: -17° angular velocity: 0.86°/s** **Disappears 4h29m21s 8.6mag az: 12.6° NNE** **horizon**
4h	Meteor	**North Delta-Aquariids (NDA)** Best seen from 22.7h - 5.1h (h_{top}=45° at S at 4.5h) ZHR=3.4 Local hour rate=1 Velocity=42.0km/s (rather rapid) Radiant: RA=23.0h/345° Dec=0.6° (J2000) (**in constellation Pisces/Psc**)
4h33m55s	**GOSAT H2A Rocket (33500 2009-002-J)** →Ground track →Star chart	**Appears 4h31m17s 3.5mag az:184.3° S h:23.0°** **Culmination 4h33m55s 2.3mag az:258.5° WSW h:60.8°** **distance: 720.9km height above Earth: 638.6km** **elevation of Sun: -16° angular velocity: 0.58°/s** **Disappears 4h40m26s 6.6mag az:343.6° NNW** **horizon**
4h43m06s	USA 143/(Milstar 2-1) (25724 1999-023-A)	**Appears 4h20m38s** 7.5mag az:262.4° W horizon **Culmination 4h43m06s 5.4mag** az:200.0° **SSW h:33.7°** distance: 3324.3km height above Earth: 2296.7km

	→Ground track →Star chart	elevation of Sun: -15° angular velocity: 0.12°/s **at Meridian 4h45m33s** 5.4mag az:180.0° S h:31.4° **Disappears 4h54m53s** 6.9mag az:129.2° SE horizon
4h43m07s	**Cosmos 1220 (12054 1980-089-A)** →Ground track →Star chart	**Appears 4h37m42s 6.1mag az:317.6°** **NW horizon** **Culmination 4h43m07s 2.5mag az:240.7°** **WSW h:38.3°** **distance: 689.5km height above Earth: 449.0km** **elevation of Sun: -15° angular velocity: 0.66°/s** **Disappears 4h44m32s 3.1mag az:191.6° SSW** **h:25.7°**
4h46m32s	Aureole 2 Rocket (07004 1973-107-B) →Ground track →Star chart	**Appears 4h41m43s** 7.2mag az:331.2° NNW horizon **Culmination 4h46m32s 3.2mag** az:253.6° **WSW h:36.7°** distance: 583.2km height above Earth: 365.5km elevation of Sun: -15° angular velocity: 0.79°/s **Disappears 4h46m59s** 3.2mag az:229.3° SW h:34.0°
4h46m33s	USA 122/NOSS 2-3E (23936 1996-029-E) →Ground track →Star chart	**Appears 4h42m42s** 6.1mag az:237.8° WSW h:20.6° **Culmination 4h46m33s 5.3mag** az:313.8° **NW h:61.7°** distance: 1009.5km height above Earth: 905.3km elevation of Sun: -15° angular velocity: 0.42°/s **at Meridian 4h47m42s** 6.1mag az: 0.0° N h:51.8° **Disappears 4h55m48s** 12.1mag az: 38.5° NE horizon
4h54m12s	USA 120/NOSS 2-3C (23908 1996-029-C) →Ground track →Star chart	**Appears 4h50m04s** 6.2mag az:242.0° WSW h:18.1° **Culmination 4h54m12s 5.5mag** az:315.7° **NW h:55.6°** distance: 1070.8km height above Earth: 909.0km elevation of Sun: -14° angular velocity: 0.40°/s **at Meridian 4h55m35s** 6.4mag az: 0.0° N h:45.7° **Disappears 5h03m27s** 12.2mag az: 38.5° NE horizon

18 Items/Events: Export to Outlook/iCal Print

Used satellite data set is from 28 July 2012

☐ Hide glossary

Glossary:

Altitude/alt/h

Angular separation of the object from the local mathematical horizon. This accounts for refraction as well.

Appears

Local time at which the satellite appears visually. The first figure indicates the **visual brightness** of the object. The smaller the number, the brighter and more eye-catching it appears to an observer. The units are astronomical magnitudes [m]. **Azimuth** is given in degrees counting from geographic north clockwise to the east direction. The three-character direction code is given as well. In case the satellite exits from the Earth shadow and comes into the glare of the Sun, the elevation above horizon is given in degrees for this event. If this figure is omitted, the satellite is visible straight from the horizon.

at Meridian

Time of the transit of the meridian, i.e. the satellite is due South or due North. At this time, the satellite will not reach its highest point of the pass. Look for culmination.

Azimuth/az

Azimuth direction of the object is given in degrees counting from geographic north (0°) clockwise to the east direction. East is 90°, south 180°, and west 270°. The three-character direction code is given as well. For example, NNW stands for north-north-west.

Best seen between / h_{max}

This is the best visibility time interval of the object. The calculation takes into account the magnitude of the object (required elevation above horizon), and the elevation of the Sun. The time is given in local civil time (LCT), i.e., the time zone and definitions as selected by you. h_{max} is the maximum altitude over the horizon, that the object reaches during this time period.

Close to Moon/Sun

The satellite is closer than 1.5 degrees from the center of the Moon or the Sun, but the satellite does not cross in front of the Moon/Sun. The direction and distance to the center line on Earth is given. *For the Sun, move to the indicated center line position and observer with proper equipment. By no means observe the Sun without special filters!*

Close to...

The Moon or main object appears close to the listed star or planet. These events may be useful for reasons of 'near miss' or to make it easier to find the fainter object in the sky. Usually, such constellations give a nice view.

Clock-face Direction

In a simple clock-face coordinate system with the clock face superimposed on the satellite itself, with 12:00 o'clock being at the top and 9:00 o'clock being at the left, the satellite will seem to move toward the given direction. This number is helpful when observing with binoculars.

Culmination

Time at which the satellite reaches his highest point in the sky as seen from the observer. For description of the figures see **Appears**.
Visually "better" passes of satellites are indicated by highlighting the information. The selection within the list of all possible transits is coupled with the observer level, the daylight, and several other conditions.

Dec., declination, DE

One coordinate used to indicate the position on the sky. It is the angular distance of the object from the celestial equator. North pole, close to Polaris, is 90° north.

Delta

Distance of the celestial body from Earth in Astronomical Units (AU). For the Moon, Delta is the topocentric distance of the Moons mass center from the observer in Earth radii (ER). It is also the fourth letter in Greek alphabet.

Disappears

Local time of visual disappearance of the satellite. This may either be the time at which the satellite moves below the observer's horizon or the entry of the object in the shadow of Earth (the elevation is given for this event). The low Earth orbiting (LEO) satellites are usually visible for about 10 seconds more than the listed time, when they start fading rapidly.

Elongation

The elongation is the angular separation of the (ecliptic) longitudes of a celestial body and the central body (Sun, for moons: Jupiter or Saturn), as seen from the Earth mass center.

International Space Station ISS

The manned ISS is according to NASA the biggest and most complex scientific project in history. During twilight passed, the space station is easily seen by everyone as a strikingly bright and silently running star. It crosses the sky in a few minutes basically from west to east.

J2000, precession, nutation

The plains of ecliptic and equator shift with time by perturbations from the Sun, Moon and planets. The long-term shift is called precession; the short periodic variations are called nutation. The given celestial coordinates are referred to the true direction of the vernal equinox and the true obliquity of the ecliptic to the standard reference time 1 January 2000. For this date many star charts and coordinate tables are printed.

Magnitude/Mag

Brightness of an object considered as a point source of light, on a logarithmic scale.\ Visual limiting magnitude is about 6mag, whereas the brightest star Sirius reaches -1.4mag. The Hubble Space Telescope can image objects as dim as 29mag.

Position Angle rel. Vertex

Angle, defining a position on an apparent disk. It is counted around the reference points (center of disk) from local up, *zenith* direction 0° to east (left) 90°, south 180° to west (right) 270° in counter clockwise direction.

Position Angle / PA

Angle, defining a position on an apparent disk or the position of a dimmer star with regard of the main star. It is counted around the reference points (center of disk/brighter star) from *celestial north* direction 0° to east (left) 90°, south 180° to west (right) 270° in counter clockwise direction.

R.A., right ascension, RA

One coordinate used to indicate the position on the sphere. It is the angular distance of the object from the spring equinox measured along the celestial equator, expressed in hours of arc.

Radiant

Due to perspective, the meteors from a stream seem to originate from one point on the celestial sphere. This point is called radiant.

Remarks

These calculations are based on mean observed radiants and rates. For exceptional outbursts, these special predictions will be included as well.

Separation

Angular distance between the centers of disks of two objects. For eclipses: the Sun and the Moon. For occultations: Moon/satellite and Star/Planet. For binary stars: Star/Star

Time and Date

Date of validity of calculated output in local time and date, taking into account daylight saving time as well (see the current time zone on the left of the Earth icon on top right of almost all pages). The time is given as hours:minutes:seconds, or 00h00m00s. The time may also be rounded and given in decimal form: e.g., 10.1h means that the event will take place at about 5 minutes past 10 o'clock. This may also happen for days: 4.3d corresponds to the fourth day at around 7 o'clock. The start time is taken as selected by you, i.e., this is *not* necessarily at midnight. For intervals shorter than one day, decimal days are given. Times are given in 24 hour format (0h00m is midnight, 12h: noon, 18h: 6 pm.)

WGS84 / Geographical Coordinates

Geographical coordinates are given by the angles longitude (Lon), latitude (Lat), and altitude in meters (Alt). A place north of the equator at marked by N or +, places south of the equator by S or -. The longitude from the meridian of Greenwich is counted positive towards east (E). Places west from Greenwich are marked W or by -. The geographical coordinates refer to an ellipsoid, which fits the true shape of the Earth (geoid). The geoid corresponds to calm sea surface. The keyword "Geographic:" uses the local ellipsoid as reference system. WGS84 mark coordinates referring to the WGS84 ellipsoid. The difference in altitude to the geoid sums up to 100 meters and is called geoid undulation. This is corrected for when tagged "MSL" (mean sea level), such that the origin of the height system is at sea level.

ZHR

Zenith Hour Rate. This is a number for the current or estimated activity of a meteor stream:

the number is the hypothetical number of meteors in the sky for an observer with the radiant in the zenith and a limiting magnitude of 6.5m.

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