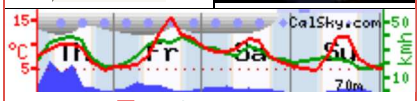
Select start of calculation:
Date: 17 July 2013
Time: 23 : 40 : 02 . 00 in TDT Now
Select duration: 15 Minutes go!

geipan
Jaunay-Clan, France
Easting: 0.375
Northing: 46.6837
Time zone: CET/ CEST
Astronomer



Weather · Sat-Image

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
- ☐ Sundials / GPS Time / Current Time Definitions
- ☐ Julian Day Number
- ☐ Sidereal Time
- ☐ Local Magnetic Field

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 (*1 day*, slow!)

Daily reoccurring events
- ☑ Sun and Moon
- ☑ Planets
- ☐ Asteroids
- ☐ Comets
- ☐ Meteor Streams
- ☐ Polar Star Transits
- ☐ Weather Balloons

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
- ☐ Milky Way
- ☐ Galaxies
- ☐ Open Star Clusters
- ☐ Globular Star Clusters
- ☐ Nebula

go!

Wednesday 17 July 2013

Time (24-hour clock)	Object (Link)	Event
	Observer Site	Jaunay-Clan, France WGS84: Lon: +0d22m30.27s Lat: +46d41m01.55s Alt: 118m All times in CET or CEST (during summer)
23h40m02s	Cosmos 1455 Rocket (14033 1983-037-B) →Ground track →Star chart	**Appears** **23h34m49s** 6.3mag az:199.0° SSW h:6.3° **Culmination** **23h39m57s** **4.4mag** az:281.5° **WNW** **h:60.3°** distance: 714.1km height above Earth: 629.3km elevation of Sun: -15° angular velocity: 0.62°/s **at Meridian** **23h43m33s** 7.5mag az: 0.0° N h:15.0° **Disappears** **23h46m35s** 8.8mag az: 6.5° N horizon

23h40m02s	Cosmos 1943 Rocket (19120 1988-039-B) →Ground track →Star chart	**Appears** **23h28m15s** 9.4mag az:334.4° NNW horizon **at Meridian** **23h34m51s** 4.2mag az: 0.0° N h:46.8° **Culmination** **23h36m21s** **3.0mag** az: 60.4° **ENE** **h:65.7°** distance: 908.8km height above Earth: 837.9km elevation of Sun: -14° angular velocity: 0.45°/s **Disappears** **23h40m03s** 4.0mag az:138.3° SE h:21.5°
23h40m02s	**SJ 11-03 Rocket (37731 2011-030-B)** →Ground track →Star chart	**Appears** **23h31m42s** **3.6mag** **az:141.1° SE** **h:21.2°** **Culmination** **23h34m35s** **2.7mag** **az: 71.7° ENE** **h:53.6°** **distance: 815.0km height above Earth: 672.7km elevation of Sun: -14° angular velocity: 0.55°/s** **at Meridian** **23h37m49s** **5.8mag** **az: 0.0° N** **h:17.8°** **Disappears** **23h41m13s** **8.1mag** **az:351.4° N** **horizon**
23.7h	♄Saturn	Magnitude= 0.6mag Best seen from 22.0h - 1.7h (h_{top}=29° at SSW at 22.0h) (in constellation Virgo) RA=14h13m03s Dec=-10°47.7' (J2000) Distance=9.624AU Elongation= 99° Diameter=17.2" planetocentric latitude of the Earth=17.2°
23h41m37s	Yaogan 3 LM Rocket (32290 2007-055-B) →Ground track →Star chart	**Appears** **23h39m09s** 5.3mag az:181.4° S h:20.0° **Culmination** **23h41m37s** **4.2mag** az:258.5° **WSW** **h:62.2°** distance: 575.2km height above Earth: 514.3km elevation of Sun: -15° angular velocity: 0.78°/s **Disappears** **23h47m17s** 10.2mag az:344.3° NNW horizon
23h42m	Sun	Sun 15° below horizon
23.7h	♇Pluto	Magnitude=14.0mag Best seen from 23.7h - 2.5h (h_{top}=23° at S at 0.9h) (in constellation Sagittarius) RA=18h41m13s Dec=-19°53.6' (J2000) Distance=31.495AU Elongation=164° Diameter=0.1"
23h44m40s	USA 181/NOSS 3-3A (28537 2005-004-A) →Ground track →Star chart	**Appears** **23h35m32s** 7.6mag az:215.9° SW horizon **at Meridian** **23h44m33s** 4.8mag az:180.0° S h:86.6° **Culmination** **23h44m40s** **4.8mag** az:127.8° **SE** **h:87.9°** distance: 1050.8km height above Earth: 1050.3km elevation of Sun: -15° angular velocity: 0.41°/s **Disappears** **23h54m20s** 8.4mag az: 40.3° NE horizon
23h44m47s	USA 181-2/NOSS 3-3C (28541 2005-004-C) →Ground track →Star chart	**Appears** **23h35m39s** 7.6mag az:215.6° SW horizon **at Meridian** **23h44m38s** 4.8mag az:180.0° S h:85.5° **Culmination** **23h44m47s** **4.8mag** az:127.7° **SE** **h:87.3°** distance: 1051.0km height above Earth: 1050.1km elevation of Sun: -15° angular velocity: 0.41°/s **Disappears** **23h54m26s** 8.4mag az: 40.3° NE horizon
23h45m37s	**Iridium 10**	**Flare from MMA0 (Front antenna) Magnitude= 1.7mag Azimuth=296.5° WNW altitude= 8.0° in constellation Leo** **RA=10h33.5m Dec=+23°52'** **Flare angle=1.73° (Flare center not on earth)** **Satellite above: longitude=30°W latitude=+54° height above Earth=785.4 km distance to satellite=2499.8 km** **Altitude of Sun=-15.4°**
23h45m58s	Pleiades 1B (39019 2012-068-A) →Ground track →Star chart	**Appears** **23h43m03s** 4.6mag az:155.0° SSE h:23.5° **Culmination** **23h45m58s** **3.5mag** az: 73.7° **ENE** **h:74.6°** distance: 727.9km height above Earth: 704.5km elevation of Sun: -15° angular velocity: 0.61°/s **at Meridian** **23h47m26s** 5.0mag az: 0.0° N h:43.9° **Disappears** **23h52m57s** 9.4mag az:348.4° NNW horizon
23h48m52s	OBJECT D (38080 2012-006-D) →Ground track	**Appears** **23h44m22s** 11.5mag az:332.2° NNW horizon **at Meridian** **23h48m29s** 4.8mag az: 0.0° N h:60.0°

		→Star chart	**Culmination** **23h48m52s** **4.1mag** az: 60.8° **ENE** **h:74.3°** distance: 378.8km height above Earth: 365.6km elevation of Sun: -16° angular velocity: 1.16°/s **Disappears** **23h49m44s** 4.5mag az:136.2° SE h:41.4° Time uncertainty of about 2 seconds
	23h49m25s	USA 121/NOSS 2-3D (23862 1996-029-D) →Ground track →Star chart	**Appears** **23h39m38s** 12.0mag az:320.1° NW horizon **at Meridian** **23h48m24s** 6.3mag az: 0.0° N h:65.3° **Culmination** **23h49m25s** **5.9mag** az: 48.1° **NE** **h:73.0°** distance: 1314.0km height above Earth: 1266.2km elevation of Sun: -16° angular velocity: 0.30°/s **Disappears** **23h55m44s** 7.0mag az:130.4° SE h:19.6°
	23h51m24s	ALOS (28931 2006-002-A) →Ground track →Star chart	**Appears** **23h47m24s** 5.0mag az:195.7° SSW h:12.1° **Culmination** **23h51m24s** **4.3mag** az:262.7° **W** **h:38.6°** distance: 1043.3km height above Earth: 697.9km elevation of Sun: -16° angular velocity: 0.42°/s **Disappears** **23h58m13s** 9.5mag az:340.1° NNW horizon
	23h54m59s	Iridium 54	Flare from MMA0 (Front antenna) **Magnitude= 0.1mag** Azimuth=298.5° WNW altitude= 6.4° in constellation Leo RA=10h31.7m Dec=+23°59' Flare angle=1.15° (Flare center not on earth) Satellite above: longitude=32°W latitude=+55° height above Earth=785.6 km distance to satellite=2637.4 km Altitude of Sun=-16.3°

16 Items/Events: Export to Outlook/iCal Print E-mail

Used satellite data set is from 17 July 2013

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, and the time is rounded to the next decimal hour; e.g. 6.4h corresponds to about 6:15 (hh:mm) to 6:20, and 18.9h to about 18:50 to 18:55. 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.

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.

Diameter
Diameter is the geocentric apparent angular diameter of a celestial object (topocentric for artificial satellites). The value is given in seconds of arc for planets and satellites, and in minutes of arc for Sun and Moon.

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 a celestial body and the central body (Sun, for moons: Jupiter or Saturn), as seen from the Earth mass center.

Flare angle
The angle between the direction of the mirrored image of the Sun and the observer. For bright flares, this angle must be as small as possible (i.e., the observer should be as close to the center line as possible).

Flare
The communication antennas and the solar panels reflect the sunlight almost as a perfect mirror. In case the observer lays within this reflected beam, the satellite suddenly appears very bright, as bright as the Moon in the first quarter; the light is even strong enough to cast shadows. Since the sunlight is bundled, the duration of the whole event is short, and lasts about 10 seconds. The indicated time is the center of the flare event; hence the satellite can be spotted some seconds earlier. Due to the shortness of the event, it is important to look in the right direction at the right time.

Iridium
Wireless worldwide communication system, which consists of 66 satellites that are in low Earth orbits. The user who has a rather small phone directly contacts one of the satellites, i.e., one of the three **Main Mission Antennas MMA** (the three panels in the bottom of the image with a size of about 1x2m^2). The satellites constellation consists of 6 planes with 11 satellites each (and some spares). Hence, another Iridium satellite passes at about the same place in the sky every 8 minutes.

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.

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.

Sat above
Geographic coordinates of the sub-satellite point (in WGS84 coordinates). This is the point on Earth, from which the satellite is in the zenith at the indicated time. The altitude of the satellite from this point is given as "**alt**".

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, in order to correspond to the accuracy of the calculation: 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.

Top