

Intro Calendar Sun Moon Planets Comets Asteroids Meteors Deep-Sky Satellites



Introduction • Sat-Library • Selected Satellite • Internat. Space Station ISS • Space Shuttle | **Satellites within interval** | Tracking/Identification • (Iridium) Flares •

ToC 🏠 Tumbling Iridium • Geostationary • Radio Amateurs • GPS/GLONASS •

Remote Sensing (radar/optical) • Star Chart • Decaying Satellites • Sun/Moon Crossers, Occultations

→ Nightvision-Mode

→ E-mail & Alert Manager

Select start of calculation:


Date: 🌞

Time: : : . in TDT 🌐

Select duration:

geipan
Paray-le-Monial, France, France 🇫🇷 🏠

Easting: 4.1206
Northing: 46.4522
Time zone: CET/CEST
Astronomer



🌡️ °C °C
🌪️ km/h km/h
📶 m
Weather - Sat-Image

Local Sponsors: Your name?

Bright Satellites









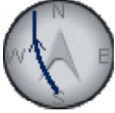


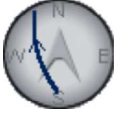












- Tracking of satellites all over the sky.
- Searching for satellites found within a certain area (given by celestial coordinates and diameter). This point is taken from the last starchart geometry. To change the center and diameter, click **here** (field of view must be at least 1° and at most 90°). Satellites are sorted by ascending elongation from selected center point. For the listed events the conjunction must not take place during the selected time window, but the satellites must be within the search radius. If you are a astro photographer, you can also find the time interval where no LEO satellite will pass through your field of view.

























Magnitude cutoff used for the following list: Mag. (Manual selection)

























Visible or not: Calculate all passes, day or night, even if not optically visible

Friday 30 August 2013

Time (24-hour clock)	Object (Link)	Event
	Observer Site	Paray-le-Monial, France, France WGS84: Lon: +4d07m14.39s Lat: +46d27m08.00s Alt: 294m All times in CET or CEST (during summer)
22h30m00s	Cosmos 2181 Rocket (21903 1992-012-B) →Ground track →Star chart	Appears 22h20m59s 8.9mag az:355.9° N horizon at Meridian 22h22m38s 8.3mag az: 0.0° N h:5.9° Culmination 22h29m41s 5.2mag az: 73.6° ENE h:41.7° distance: 1411.1km height above Earth: 1013.5km elevation of Sun: -20° angular velocity: 0.29°/s Disappears 22h31m42s 5.3mag az:113.7° ESE h:33.1°
22h30m00s	Cosmos 2228 Rocket (22287 1992-094-B) →Ground track →Star chart	Appears 22h22m27s 6.2mag az:192.0° SSW h:10.1° Culmination 22h27m02s 4.0mag az:279.3° W h:79.0° distance: 666.5km height above Earth: 655.6km elevation of Sun: -20° angular velocity: 0.67°/s at Meridian 22h28m42s 5.2mag az: 0.0° N h:39.0° Disappears 22h33m51s 8.1mag az: 8.5° N horizon

 22h30m00s	 GAOFEN 1 Rk (39154 2013-018-E) →Ground track →Star chart	Appears 22h27m43s 5.5mag az: 61.3° ENE h:12.9° Culmination 22h27m58s 5.5mag az: 57.7° ENE h:13.0° distance: 1878.2km height above Earth: 662.2km elevation of Sun: -20° angular velocity: 0.23°/s Disappears 22h33m20s 7.7mag az: 4.0° N horizon	
 22h30m00s	 Cosmos 2334 Rocket (24306 1996-052-C) →Ground track →Star chart	Appears 22h23m20s 6.5mag az:168.8° S h:20.0° Culmination 22h27m46s 5.2mag az: 93.2° E h:63.5° distance: 1097.4km height above Earth: 998.9km elevation of Sun: -20° angular velocity: 0.39°/s Disappears 22h36m36s 9.0mag az: 11.7° NNE horizon	
 22h30m00s	 Yaogan 4 (33446 2008-061-A) →Ground track →Star chart	Appears 22h22m20s 6.3mag az:182.1° S h:20.9° Culmination 22h25m15s 5.3mag az:258.9° W h:63.2° distance: 718.4km height above Earth: 648.8km elevation of Sun: -19° angular velocity: 0.61°/s Disappears 22h31m53s 9.9mag az:344.6° NNW horizon	
 22h30m00s	 Spot 5 Rocket (27422 2002-021-B) →Ground track →Star chart	Appears 22h23m39s 5.5mag az:182.3° S h:15.5° Culmination 22h27m50s 4.3mag az:259.2° W h:58.6° distance: 911.1km height above Earth: 793.8km elevation of Sun: -20° angular velocity: 0.48°/s Disappears 22h35m21s 8.7mag az:343.4° NNW horizon	
 22h30m00s	 Metop A (29499 2006-044-A) →Ground track →Star chart	Appears 22h23m35s 5.6mag az:152.8° SSE h:30.6° Culmination 22h26m15s 4.7mag az: 72.9° ENE h:75.9° distance: 850.4km height above Earth: 827.9km elevation of Sun: -19° angular velocity: 0.51°/s at Meridian 22h27m46s 5.8mag az: 0.0° N h:48.0° Disappears 22h33m59s 9.6mag az:347.6° NNW horizon	
 22h30m00s	 Fengyun 3A (32958 2008-026-A) →Ground track →Star chart	Appears 22h25m06s 4.9mag az:128.5° SE h:35.0° Culmination 22h27m07s 4.5mag az: 69.9° ENE h:55.4° distance: 984.1km height above Earth: 832.3km elevation of Sun: -20° angular velocity: 0.44°/s at Meridian 22h30m35s 6.8mag az: 0.0° N h:21.4° Disappears 22h34m47s 9.0mag az:350.0° N horizon	
 22h30m00s	 USA 129/KH 12-3 (24680 1996-072-A) →Ground track →Star chart	Appears 22h25m44s 4.1mag az:196.8° SSW h:41.3° Culmination 22h26m40s 4.0mag az:259.4° W h:63.0° distance: 507.7km height above Earth: 456.5km elevation of Sun: -20° angular velocity: 0.88°/s Disappears 22h32m37s 9.2mag az:345.2° NNW horizon	
 22h32m33s	 Meteor 1-26 (09481 1976-102-A) →Ground track →Star chart	Appears 22h28m17s 7.4mag az:179.4° S h:18.4° Culmination 22h32m33s 5.8mag az: 97.8° E h:73.4° distance: 906.0km height above Earth: 873.0km elevation	

		of Sun: -20° angular velocity: $0.48^\circ/s$ Disappears 22h40m40s 9.8mag az: 13.3° NNE horizon	
 22h34m09s	 CBERS 2B LM Rocket (32063 2007-042-B) →Ground track →Star chart	Appears 22h33m39s 5.7mag az: 75.2° ENE h: 26.5° Culmination 22h34m09s 5.7mag az: 64.7° ENE h: 27.0° distance: 1366.1km height above Earth: 725.4km elevation of Sun: -21° angular velocity: $0.32^\circ/s$ at Meridian 22h39m44s 8.6mag az: 0.0° N h: 3.5° Disappears 22h40m40s 9.1mag az: 356.8° N horizon	
 22h34m54s	 USA 181/NOSS 3-3A (28537 2005-004-A) →Ground track →Star chart	Appears 22h25m55s 11.0mag az: 313.6° NW horizon Culmination 22h34m54s 6.9mag az: 248.6° WSW h: 27.2° distance: 2086.4km height above Earth: 1185.4km elevation of Sun: -21° angular velocity: $11.8'/s$ Disappears 22h42m06s 7.2mag az: 190.0° S h: 6.4°	
 22h35m01s	 USA 181-2/NOSS 3-3C (28541 2005-004-C) →Ground track →Star chart	Appears 22h26m01s 11.0mag az: 313.6° NW horizon Culmination 22h35m01s 6.9mag az: 248.5° WSW h: 27.5° distance: 2077.5km height above Earth: 1186.6km elevation of Sun: -21° angular velocity: $11.8'/s$ Disappears 22h42m10s 7.2mag az: 189.9° S h: 6.6°	
 22h35m29s	 Cosmos 1607 (15378 1984-112-A) →Ground track →Star chart	Appears 22h35m17s 5.0mag az: 118.9° ESE h: 36.9° Culmination 22h35m29s 5.0mag az: 114.4° ESE h: 37.0° distance: 1418.5km height above Earth: 941.5km elevation of Sun: -21° angular velocity: $0.31^\circ/s$ Disappears 22h43m46s 7.8mag az: 42.2° NE horizon	
 22h35m34s	 Yaogan 1 LM Rocket (29093 2006-015-B) →Ground track →Star chart	Appears 22h35m34s 4.4mag az: 55.1° NE h: 17.9° Disappears 22h40m27s 7.1mag az: 2.5° N horizon	
 22h35m49s	 Quickbird 2 (26953 2001-047-A) →Ground track →Star chart	Appears 22h35m49s 5.6mag az: 38.8° NE h: 34.4° Disappears 22h40m18s 9.6mag az: 354.9° N horizon	
 22h37m00s	 Yaogan 10 LM Rocket (36835 2010-038-B) →Ground track →Star chart	Appears 22h36m58s 2.5mag az: 246.1° WSW h: 79.3° Culmination 22h37m00s 2.5mag az: 257.0° WSW h: 79.5° distance: 443.1km height above Earth: 436.5km elevation of Sun: -21° angular velocity: $1.01^\circ/s$ Disappears 22h42m10s 7.9mag az: 346.3° NNW horizon	
 22h37m09s	 Cosmos 1470 Rocket (14148 1983-061-B) →Ground track →Star chart	Appears 22h30m31s 8.9mag az: 355.5° N horizon at Meridian 22h32m20s 8.1mag az: 0.0° N h: 7.5° Culmination 22h37m09s 4.6mag az: 76.5° ENE h: 46.9° distance: 828.2km height above Earth: 627.6km elevation	

		of Sun: -21° angular velocity: $0.52^\circ/s$ Disappears 22h37m24s 4.5mag az: 87.9° E h: 46.3°	
 22h37m20s	 Astro F (28939 2006-005-A) →Ground track →Star chart	Appears 22h36m03s 4.5mag az: 155.3° SSE h: 47.3° Culmination 22h37m20s 4.3mag az: 74.6° ENE h: 82.0° distance: 671.4km height above Earth: 665.8km elevation of Sun: -21° angular velocity: $0.65^\circ/s$ at Meridian 22h38m05s 4.8mag az: 0.0° N h: 61.7° Disappears 22h44m12s 9.4mag az: 347.6° NNW horizon	
 22h38m00s	 Cosmos 1386 Rocket (13354 1982-069-B) →Ground track →Star chart	Appears 22h35m36s 5.6mag az: 152.7° SSE h: 34.6° Culmination 22h38m00s 5.1mag az: 92.4° E h: 56.7° distance: 1093.9km height above Earth: 939.0km elevation of Sun: -21° angular velocity: $0.40^\circ/s$ Disappears 22h46m23s 8.9mag az: 12.6° NNE horizon	
 22h38m02s	 OrbitalEx Cn Rocket (30778 2007-006-G) →Ground track →Star chart	Appears 22h34m58s 6.5mag az: 244.5° WSW horizon Disappears 22h38m02s 4.8mag az: 217.4° SW h: 10.7°	
 22h38m47s	 Cosmos 2407 Rocket (28381 2004-028-B) →Ground track →Star chart	Appears 22h32m42s 7.2mag az: 187.5° S h: 10.5° Culmination 22h38m47s 5.1mag az: 277.7° W h: 87.7° distance: 977.0km height above Earth: 976.6km elevation of Sun: -21° angular velocity: $0.44^\circ/s$ at Meridian 22h39m26s 5.4mag az: 0.0° N h: 73.5° Disappears 22h47m37s 9.1mag az: 9.0° N horizon	
 22h39m01s	 Cosmos 1953 (19210 1988-050-A) →Ground track →Star chart	Appears 22h39m01s 4.0mag az: 61.7° ENE h: 33.0° Disappears 22h44m16s 7.3mag az: 16.8° NNE horizon	
 22h39m10s	 Cosmos 614 Rocket (06966 1973-098-B) →Ground track →Star chart	Appears 22h31m36s 7.9mag az: 208.9° SSW horizon Culmination 22h39m10s 5.2mag az: 294.4° WNW h: 64.5° distance: 847.0km height above Earth: 774.0km elevation of Sun: -21° angular velocity: $0.52^\circ/s$ at Meridian 22h40m58s 6.1mag az: 0.0° N h: 39.8° Disappears 22h46m48s 8.5mag az: 20.2° NNE horizon	
 22h39m48s	 Spot 6 (38755 2012-047-A) →Ground track →Star chart	Appears 22h39m06s 4.7mag az: 98.7° E h: 45.1° Culmination 22h39m48s 4.8mag az: 70.3° ENE h: 49.1° distance: 899.8km height above Earth: 704.4km elevation of Sun: -21° angular velocity: $0.48^\circ/s$ at Meridian 22h43m29s 7.5mag az: 0.0° N h: 15.3° Disappears 22h46m41s 9.3mag az: 351.7° N horizon	
 22h39m48s	 Helios 1B (25977 1999-064-A)	Appears 22h39m33s 4.7mag az: 79.4° E h: 42.3° Culmination 22h39m48s 4.8mag az: 69.6° ENE	

	→Ground track →Star chart	h:42.7° distance: 894.4km height above Earth: 637.7km elevation of Sun: -21° angular velocity: 0.49°/s at Meridian 22h43m44s 7.7mag az: 0.0° N h:11.3° Disappears 22h46m14s 9.1mag az:352.8° N horizon
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27 Items/Events: [Export to Outlook/iCal](#) [Print](#) [E-mail](#)

Used satellite data set is from 31 August 2013

Hide glossary

Glossary:

Time

The local time in 24-hour format at which the satellite is visible at its best. The satellite may be observable *before* this time. 0:00 or 0h00m is midnight, 12h is noon, 18h is 6 pm. The time zone is the one indicated on the left of the Earth icon on top of (almost) each page. Daylight saving is applied automatically.

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.



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.

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.

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.

Magnitude/Mag:

The magnitude indicates the **visual brightness** of an object. The brightest star (Sirius) reaches -1.4m, whereas 6m is the limit of the unaided eye. Venus, the brightest planet, reaches -4m. The Moon at first quarter is -8m, about the same magnitude that the brightest Iridium flares can produce.

Object

The name and identification information of the satellite. Besides the name, the number in the catalog of the USSPACECOM is given (5-digits code, called Satellite, NORAD or NASA Catalog Number and USSPACECOM object number), and the International Designator Code in the form launch year - launch number of the year - launch part (usually one launch produces several orbiting objects). The latter is also called COSPAR designation and NSSDC ID.

Spy Satellites:

Satellites with name **USA** are US military satellites (common names e.g., Keyhole KH, Lacrosse).

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!*

Crosses the disk of Moon/Sun:

The satellite passes in front of the Moon or the Sun; the event may be observed using a small telescope (equipped with special mylar filters for the Sun only!), especially if the event takes place in broad daylight. The direction and distance to the center line on Earth is given. Moon phases are not checked for. The timing may slightly change due to the quality and age of the used orbital elements and active orbit maintenance. *By no means observe the Sun without special filters!* Please feel free to report successful observations!

Separation

Angular distance of an object (e.g., star) with regard of the reference object (e.g., main star or center of moon), measured among the center of figures. Often, this value is given for the closest distance among two objects.

Position Angle / PA

Angle, defining a position on an apparent disk or the position of e.g. a dimmer star (or the anti-solar point for lunar eclipses) with regard of the main star or the center of disk. 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.

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.

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.

Daylight pass

This satellite pass over the observer is taking place on broad daylight and cannot be observed without special equipment (automated guided telescope or radio ham equipment).

Radio pass

The satellite is not outside the shadow of Earth during the whole pass (hence not lighted by the Sun) and is therefore not visible. However, using radio equipment, the satellite can be detected.

Ascending/descending Orbit:

Satellites are orbiting around the earth center. Therefore the point on the Earth surface "below" the satellite (i.e., the sub-satellite point) crosses the equator twice every orbit. The part of the orbit with northernbound motion component is called ascending, and a southernbound motion is called descending.

Rise

The satellite rises above the horizon of the observer (cf. **Appear** for visual rising of the satellite).

Set

The satellite sets below the horizon of the observer, but may not have been visible before (cf. **Disappear**).

Side-look

Time at which the observer is passing exactly at the side of the satellite (as seen from the satellite).

Off-Nadir

Angle at which the observer appears from the nadir (down direction) as seen from the satellite.

Squint angle

Angle relative to the satellite orbit; flight direction is 0°. The angle is counted clockwise, with right looking at 90° and left looking at 270°.

Range

Distance to the satellite.

0-Doppler / Zero-Doppler

Time at which the range between satellite and observer does not change, i.e., the range rate is zero.

Forecasted Decay:

All Earth orbiting satellites are exposed to atmospheric drag, which lowers the orbit. Usually, this is countermeasured by frequent firings of the rocket engines - as long there is propulsion available. At an altitude of about 120 km, the objects are destroyed in the atmosphere by a fiery play; the over 100 km long light trace is visible even at daylight. Predictions however are difficult. CalSky calculates the evolution of the satellite elements and the time of final decay based on [SatEvo](#) by Alan Pickup.

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Software Version: 30 August 2014

Database updated 3 min ago

Current Users: 176, Runtime: 2.2s

2 Sep 2014, 13:35 UTC

599 minutes left for this session 

29 days left in ad-free mode