



Select start of calculation:

Date:

Time: : : . in TDT

Select duration:

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.

<p>Calendar and Timekeeping</p> <ul style="list-style-type: none"> <input type="checkbox"/> Space Calendar: <input type="checkbox"/> Birthdays, Rocket Launches <input type="checkbox"/> Local Events (Talks, Exhibitions) <input type="checkbox"/> NASA TV Guide <input type="checkbox"/> Local Telescope Dealers <input type="checkbox"/> Public Holidays <input type="checkbox"/> Saint's Day <input type="checkbox"/> Zodiac of today. <input type="checkbox"/> Change of Zodiac <input type="checkbox"/> Islamic, Indian, Persian and Hebrew Calendar <input type="checkbox"/> Week Number <input type="checkbox"/> Sundials / GPS Time / <input type="checkbox"/> Current Time Definitions <input type="checkbox"/> Julian Day Number <input type="checkbox"/> Sidereal Time <input type="checkbox"/> Local Magnetic Field 	<p>General events</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lunar Occultations (2 months) <input type="checkbox"/> Planetary Conjunctions <input type="checkbox"/> Lunar Eclipses <input type="checkbox"/> Solar Eclipses and Transits <input type="checkbox"/> Meteor Showers <input type="checkbox"/> Planetary Phenomena <input type="checkbox"/> Lunar Phenomena <input checked="" type="checkbox"/> The Sun <input type="checkbox"/> Asteroids (6 months) <input type="checkbox"/> Comets 	<p>Earth orbiting satellites</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Space Station ISS (1 month) <input type="checkbox"/> short duration Flares of Iridium satellites (14 days) <input checked="" type="checkbox"/> Passes of other bright satellites (1 day, slow!) <p>Daily reoccurring events</p> <ul style="list-style-type: none"> <input type="checkbox"/> Graphical night calendar <input type="checkbox"/> Sun and Moon <input type="checkbox"/> Planets <input type="checkbox"/> Asteroids <input type="checkbox"/> Comets <input type="checkbox"/> Meteor Showers <input type="checkbox"/> Polar Star Transits <input type="checkbox"/> Weather Balloons 	<p>Dimmer and more difficult objects</p> <ul style="list-style-type: none"> <input type="checkbox"/> Jupiter: Great Red Spot and satellite events <input type="checkbox"/> Jupiter's Satellites: position <input type="checkbox"/> Saturn: Satellite events and storms <input type="checkbox"/> Saturn's Satellites: position <input type="checkbox"/> Zodiacal light/Gegenschein <input type="checkbox"/> Variable Stars (3 months) <input type="checkbox"/> Supernovae <input type="checkbox"/> Binary Stars <p>Deep sky objects</p> <ul style="list-style-type: none"> <input type="checkbox"/> Star chart <input type="checkbox"/> Milky Way <input type="checkbox"/> Galaxies <input type="checkbox"/> Open Star Clusters <input type="checkbox"/> Globular Star Clusters <input type="checkbox"/> Nebula
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Monday 29 December 2014

Time (24-hour clock)	Object (Link)	Event
	Observer Site	Pauillac, France WGS84: Lon: -0d44m46.36s Lat: +45d11m58.51s Alt: 55m All times in CET or CEST (during summer)

<p>18h20m00s</p>	 <p>USA 179 Rocket (28385 2004-034-B) →Ground track →Star chart</p>	<p>Appears 18h11m53s 8.0mag az:273.8° W horizon Culmination 18h16m44s 4.4mag az:353.4° N h:31.6° distance: 1385.4km height above Earth: 822.3km elevation of Sun: -8° angular velocity: 0.34°/s at Meridian 18h17m02s 4.4mag az: 0.0° N h:31.4° Disappears 18h24m50s 6.4mag az: 54.4° NE h:9.7° Time uncertainty of about 30 seconds</p>	
<p>18h20m00s</p>	 <p>USA 122/NOSS 2-3E (23936 1996-029-E) →Ground track →Star chart</p>	<p>Appears 17h58m58s 8.7mag az:321.0° NW horizon Culmination 18h08m51s 6.0mag az:233.5° SW h:88.2° distance: 1297.7km height above Earth: 1297.2km elevation of Sun: -7° angular velocity: 0.32°/s at Meridian 18h08m59s 6.0mag az:180.0° S h:87.0° Disappears 18h20m42s 8.6mag az:145.8° SE horizon</p>	
<p>18h22m35s</p>	 <p>ADEOS 2 (27597 2002-056-A) →Ground track →Star chart</p>	<p>Appears 18h15m03s 6.5mag az:175.1° S horizon at Meridian 18h17m49s 5.7mag az:180.0° S h:12.4° Culmination 18h22m35s 3.8mag az:259.2° W h:60.1° distance: 914.7km height above Earth: 807.5km elevation of Sun: -9° angular velocity: 0.45°/s Disappears 18h30m11s 6.0mag az:343.7° NNW horizon</p>	
<p>18h23m12s</p>	 <p>USA 121/NOSS 2-3D (23862 1996-029-D) →Ground track →Star chart</p>	<p>Appears 18h13m19s 8.8mag az:320.4° NW horizon Culmination 18h23m12s 6.2mag az:235.5° SW h:77.8° distance: 1325.5km height above Earth: 1300.7km elevation of Sun: -9° angular velocity: 0.32°/s at Meridian 18h24m12s 6.2mag az:180.0° S h:68.9° Disappears 18h35m01s 8.7mag az:150.6° SSE horizon</p>	
<p>18h24m18s</p>	 <p>Shijian 6 LM Rocket (28415 2004-035-C) →Ground track →Star chart</p>	<p>Appears 18h18m14s 7.2mag az:157.6° SSE horizon Culmination 18h24m18s 3.5mag az: 73.8° ENE h:63.9° distance: 638.2km height above Earth: 578.7km elevation of Sun: -9° angular velocity: 0.66°/s at Meridian 18h26m28s 4.9mag az: 0.0° N h:26.3° Disappears 18h30m35s 7.0mag az:350.5° N horizon</p>	
<p>18h26m11s</p>	 <p>GOSAT Rocket (33500 2009-002-J) →Ground track →Star chart</p>	<p>Appears 18h22m22s 4.4mag az: 36.7° NE h:8.1° Culmination 18h26m11s 3.3mag az: 94.7° E h:23.8° distance: 1230.2km height above Earth: 587.4km elevation of Sun: -10° angular velocity: 0.36°/s Disappears 18h31m58s 5.8mag az:163.9° SSE horizon</p>	
<p>18h26m17s</p>	 <p>Cosmos 1408 Rocket (13553 1982-092-B) →Ground track →Star chart</p>	<p>Appears 18h19m39s 8.5mag az:183.6° S horizon at Meridian 18h23m52s 6.3mag az:180.0° S h:26.5° Culmination 18h26m17s 4.2mag az: 96.8° E h:78.9° distance: 635.6km height above Earth: 624.8km elevation of Sun: -10° angular velocity: 0.66°/s Disappears 18h32m53s 7.3mag az: 10.4° N horizon</p>	

<p>18h28m24s</p>	 <p>USA 181/NOSS 3-3A (28537 2005-004-A) →Ground track →Star chart</p>	<p>Appears 18h19m29s 10.8mag az:227.0° SW horizon Culmination 18h28m24s 5.3mag az:312.5° NW h:65.2° distance: 1120.1km height above Earth: 1031.7km elevation of Sun: -10° angular velocity: 0.37°/s at Meridian 18h29m36s 5.1mag az: 0.0° N h:55.3° Disappears 18h35m49s 6.8mag az: 35.6° NE h:7.8°</p>	
<p>18h28m30s</p>	 <p>USA 181-2/NOSS 3-3C (28541 2005-004-C) →Ground track →Star chart</p>	<p>Appears 18h19m35s 10.8mag az:226.7° SW horizon Culmination 18h28m30s 5.3mag az:312.3° NW h:65.7° distance: 1117.1km height above Earth: 1032.6km elevation of Sun: -10° angular velocity: 0.37°/s at Meridian 18h29m41s 5.1mag az: 0.0° N h:55.9° Disappears 18h35m55s 6.8mag az: 35.6° NE h:7.8°</p>	
<p>18h28m35s</p>	 <p>Cosmos 2263 Rocket (22803 1993-059-B) →Ground track →Star chart</p>	<p>Appears 18h20m43s 7.0mag az:189.2° S horizon at Meridian 18h24m37s 5.3mag az:180.0° S h:18.4° Culmination 18h28m35s 3.0mag az:109.4° ESE h:53.5° distance: 1017.9km height above Earth: 843.5km elevation of Sun: -10° angular velocity: 0.41°/s Disappears 18h34m33s 5.0mag az: 33.2° NNE h:7.9°</p>	
<p>18h28m52s</p>	 <p>USA 120/NOSS 2-3C (23908 1996-029-C) →Ground track →Star chart</p>	<p>Appears 18h18m56s 8.8mag az:320.1° NW horizon Culmination 18h28m52s 6.3mag az:236.6° WSW h:72.1° distance: 1367.4km height above Earth: 1312.6km elevation of Sun: -10° angular velocity: 0.31°/s at Meridian 18h30m28s 6.5mag az:180.0° S h:58.9° Disappears 18h40m42s 8.7mag az:153.4° SSE horizon</p>	
<p>18h29m22s</p>	 <p>COSMO-SkyMed 4 (37216 2010-060-A) →Ground track →Star chart</p>	<p>Appears 18h25m20s 5.5mag az: 35.2° NE h:8.2° Culmination 18h29m22s 4.3mag az: 94.3° E h:24.9° distance: 1268.0km height above Earth: 628.6km elevation of Sun: -10° angular velocity: 0.35°/s Disappears 18h35m27s 6.9mag az:163.8° SSE horizon</p>	
<p>18h33m13s</p>	 <p>Cosmos 1680 Rocket (16012 1985-079-B) →Ground track →Star chart</p>	<p>Appears 18h25m36s 8.6mag az:195.1° SSW horizon at Meridian 18h32m07s 4.9mag az:180.0° S h:56.1° Culmination 18h33m13s 4.2mag az:108.8° ESE h:78.1° distance: 789.9km height above Earth: 774.9km elevation of Sun: -11° angular velocity: 0.53°/s Disappears 18h39m36s 6.6mag az: 23.2° NNE h:4.9°</p>	
<p>18h34m29s</p>	 <p>Intelsat 22 Tk (38100 2012-011-C) →Ground track →Star chart</p>	<p>Appears 18h27m23s 12.1mag az:242.8° WSW horizon Culmination 18h34m29s 2.9mag az:333.0° NNW h:84.7° distance: 411.6km height above Earth: 410.1km elevation of Sun: -11° angular velocity: 1.29°/s at Meridian 18h34m31s 2.8mag az: 0.0° N h:84.1° Disappears 18h36m09s 4.2mag az: 61.4° ENE h:18.9° Time uncertainty of about 1 seconds</p>	

<p>18h34m53s</p>	 <p>Cosmos 1758 (16791 1986-046-A) →Ground track →Star chart</p>	<p>Appears 18h28m31s 7.5mag az:350.4° N horizon Culmination 18h34m53s 4.2mag az:262.3° W h:87.0° distance: 576.2km height above Earth: 575.6km elevation of Sun: -11° angular velocity: 0.78°/s at Meridian 18h35m22s 4.4mag az:180.0° S h:68.7° Disappears 18h41m09s 8.0mag az:173.8° S horizon</p>	
<p>18h35m45s</p>	 <p>USA 143/(Milstar 2-1) (25724 1999-023-A) →Ground track →Star chart</p>	<p>Appears 18h26m48s 10.0mag az:234.4° SW horizon at Meridian 18h34m29s 5.8mag az:180.0° S h:25.1° Culmination 18h35m45s 5.6mag az:166.4° SSE h:26.0° distance: 2602.1km height above Earth: 1495.3km elevation of Sun: -11° angular velocity: 9.93'/s Disappears 18h48m35s 6.7mag az:107.0° ESE h:2.4°</p>	
<p>18h36m05s</p>	 <p>Spot 2 Rocket (20443 1990-005-H) →Ground track →Star chart</p>	<p>Appears 18h28m41s 7.8mag az:167.4° SSE horizon at Meridian 18h34m42s 5.1mag az:180.0° S h:49.3° Culmination 18h36m05s 4.5mag az:256.1° WSW h:78.5° distance: 788.6km height above Earth: 774.5km elevation of Sun: -11° angular velocity: 0.53°/s Disappears 18h43m30s 7.5mag az:345.1° NNW horizon</p>	
<p>18h43m15s</p>	 <p>Timation 2 rAB (04159 1969-082-AB) →Ground track →Star chart</p>	<p>Appears 18h34m42s 7.9mag az:333.7° NNW horizon at Meridian 18h41m38s 5.0mag az: 0.0° N h:46.9° Culmination 18h43m15s 4.5mag az: 59.5° ENE h:65.1° distance: 994.9km height above Earth: 914.5km elevation of Sun: -13° angular velocity: 0.44°/s Disappears 18h51m42s 7.5mag az:145.0° SE horizon</p>	
<p>18h44m10s</p>	 <p>Cosmos 2455 (36095 2009-063-A) →Ground track →Star chart</p>	<p>Appears 18h36m06s 6.8mag az:183.6° S horizon at Meridian 18h37m32s 6.3mag az:180.0° S h:5.2° Culmination 18h44m10s 3.6mag az:110.8° ESE h:36.8° distance: 1382.8km height above Earth: 912.4km elevation of Sun: -13° angular velocity: 0.30°/s Disappears 18h48m17s 4.4mag az: 52.9° NE h:16.6°</p>	
<p>18h46m14s</p>	 <p>Cosmos 2406 (28352 2004-021-A) →Ground track →Star chart</p>	<p>Appears 18h38m00s 7.3mag az:333.6° NNW horizon at Meridian 18h46m06s 4.0mag az: 0.0° N h:85.9° Culmination 18h46m14s 3.9mag az: 65.0° ENE h:88.3° distance: 865.7km height above Earth: 865.4km elevation of Sun: -13° angular velocity: 0.50°/s Disappears 18h54m26s 7.1mag az:155.8° SSE horizon</p>	
<p>18h46m23s</p>	 <p>Cosmos 1805 (17191 1986-097-A) →Ground track →Star chart</p>	<p>Appears 18h40m12s 7.4mag az:353.7° N horizon at Meridian 18h43m20s 6.0mag az: 0.0° N h:16.6° Culmination 18h46m23s 3.9mag az: 79.7° E h:63.9° distance: 608.6km height above Earth: 551.9km elevation of Sun: -13° angular velocity: 0.73°/s Disappears 18h52m29s 7.7mag az:165.4° SSE horizon</p>	

 18h47m41s	 Cosmos 1328 Rocket (12988 1981-117-B) →Ground track →Star chart	Appears 18h41m01s 7.6mag az:355.4° N  horizon at Meridian 18h43m01s 6.8mag az: 0.0° N h:8.5° Culmination 18h47m41s 4.4mag az: 77.8° ENE h:51.0° distance: 794.0km height above Earth: 634.7km elevation of Sun: -13° angular velocity: 0.56°/s Disappears 18h54m16s 7.8mag az:159.8° SSE horizon
 18h47m55s	 Iridium 12	Flare from solar panels Magnitude= 1.0mag Azimuth= 29.8° NNE altitude= 34.1° in constellation Camelopardalis RA= 7h19.9m Dec=+64°43' Flare angle=4.38°  Flare center line, closest point →MapIt: Longitude=0.641°E Latitude=+45.185° (WGS84) Distance=108.6 km Azimuth= 90.4° E Peak Magnitude=-3.5mag Satellite above: longitude=6.0°E latitude=+51.9° height above Earth=785.1 km distance to satellite=1264.1 km Altitude of Sun=-13.3°

24 Items/Events:  [Export to Outlook/iCal](#)  [Print](#)  [E-mail](#)
Used satellite data set is from 27 December 2014

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.



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.

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.

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 $1 \times 2 \text{m}^2$). 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.

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.



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Database updated 8 min ago
Current Users: 282, Runtime: 3.4s

26 Mar 2015, 15:40 UTC
595 minutes left for this session / Mode
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