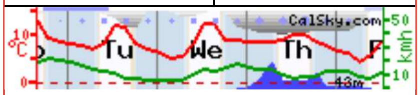
Select start of calculation:
Date: 30 January 2012
Time: 07 : 30 : 00 . 00 in TDT Now
Select duration: 15 Minutes go!

geipan
temple, France

Easting: 0.5524
Northing: 44.3797
Time zone: CET/ CEST
Astronomer



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
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- [ ] Week Number
- [ ] Sundials / GPS Time / Current Time Definitions
- [ ] Julian Day Number
- [ ] Sidereal Time
- [ ] Local Magnetic Field

General events
- [ ] Lunar Occultations (2 months)
- [x] Planetary Conjunctions
- [ ] Lunar Eclipses
- [ ] Solar Eclipses and Transits
- [ ] Meteor Streams
- [x] Planetary Phenomena
- [x] Lunar Phenomena
- [ ] The Sun
- [x] Asteroids (6 months)
- [ ] Comets

Earth orbiting satellites
- [x] Space Station ISS (1 month)
- [ ] short duration Flares of Iridium satellites (14 days)
- [ ] Passes of other bright satellites (*1 day*, slow!)

Daily reoccurring events
- [x] Sun and Moon
- [x] Planets
- [ ] Asteroids
- [ ] Comets
- [ ] Meteor Streams
- [ ] Polar Star Transits
- [ ] Weather Balloons

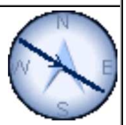
Dimmer and more difficult objects
- [ ] Jupiter: Great Red Spot and satellite events
- [ ] Jupiter's Satellites: position
- [ ] Saturn: Satellite events and storms
- [ ] Saturn's Satellites: position
- [ ] Zodiacal light/Gegenschein
- [ ] Variable Stars (3 months)
- [ ] Supernovae
- [ ] Binary Stars

Deep sky objects
- [ ] Milky Way
- [ ] Galaxies
- [ ] Open Star Clusters
- [ ] Globular Star Clusters
- [ ] Nebula

go!

Monday 30 January 2012

Time (24-hour clock)	Object (Link)	Event
	Observer Site	temple, France WGS84: Lon: +0d31m28.09s Lat: +44d22m47.15s Alt: 91m All times in CET or CEST (during summer)
7.5h	♂Mars	Magnitude=-0.5mag Best seen from 21.6h - 8.1h (h_{top}=52° at S at 4.0h) (in constellation Virgo) RA=11h39m04s Dec= +6°22.9' (J2000) Distance=0.804AU Elongation=137° Phase k=95% Diameter=11.6" planetographic latitude of the Earth=23.2°

	7.5h	Saturn	Magnitude= 0.6mag Best seen from 0.9h - 8.1h (h_{top}=37° at S at 6.3h) (in constellation Virgo) RA=13h52m31s Dec= -8°49.9' (J2000) Distance=9.476AU Elongation=100° Diameter=17.5" planetocentric latitude of the Earth=15.1°
	7h30m	Sun	Sun 9° below horizon
	7h35m25s	ISS →Ground track →Star chart	**Appears** **7h32m15s** -2.0mag az:301.0° WNW h:10.7° **at Meridian** **7h35m24s** -4.1mag az: 0.0° N h:88.7° **Culmination** **7h35m25s** **-4.1mag** az: 31.3° **NNE** **h:88.8°** distance: 405.1km height above Earth: 405.1km elevation of Sun: -8° angular velocity: 1.04°/s **Disappears** **7h40m45s** 3.3mag az:122.0° ESE horizon Time uncertainty of about 1 seconds

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

Used satellite data set is from 28 January 2012

Hide glossary

Glossary:

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 t he 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.

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.

Phase
: Ratio of the illuminated fraction of the apparent planetary or lunar disk to its entire area.

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.

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

Select start of calculation:

Date: 22 January 2012

Time: 07 : 00 : 00 . 00 in TDT Now

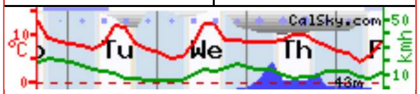
Select duration: 15 Minutes go!

geipan

temple, France

Easting:	0.5244
Northing:	44.3797
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

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- [ ] Comets

Earth orbiting satellites

- [x] Space Station ISS (1 month)
- [ ] short duration Flares of Iridium satellites (14 days)
- [ ] Passes of other bright satellites (*1 day*, slow!)

Daily reoccurring events

- [x] Sun and Moon
- [x] Planets
- [ ] Asteroids
- [ ] Comets
- [ ] Meteor Streams
- [ ] Polar Star Transits
- [ ] Weather Balloons

Dimmer and more difficult objects

- [ ] Jupiter: Great Red Spot and satellite events
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- [ ] Binary Stars

Deep sky objects

- [ ] Milky Way
- [ ] Galaxies
- [ ] Open Star Clusters
- [ ] Globular Star Clusters
- [ ] Nebula

go!

Sunday 22 January 2012

Time (24-hour clock)	Object (Link)	Event
	Observer Site	temple, France WGS84: Lon: +0d31m28.09s Lat: +44d22m47.15s Alt: 91m All times in CET or CEST (during summer)
7.0h	♂Mars	Magnitude=-0.3mag Best seen from 22.2h - 8.2h (h_{top}=52° at S at 4.6h) (in constellation Virgo) RA=11h39m33s Dec= +6°04.9' (J2000) Distance=0.862AU Elongation=128° Phase k=94% Diameter=10.9" planetographic latitude of the Earth=23.4°

7.0h	Saturn	Magnitude= 0.6mag Best seen from 1.4h - 8.2h (h_{top}=37° at S at 6.8h) (in constellation Virgo) RA=13h51m48s Dec= -8°48.3' (J2000) Distance=9.608AU Elongation= 92° Diameter=17.2" planetocentric latitude of the Earth=15.1°
7.0h	Deep-Sky Observing	Best time interval for observing dim objects: 19.3h- 7.0h
7h02m	Sun	Sun 15° below horizon
7h05m46.44s	ISS	**Close to Pollux, Bet Gem (SAO 79666, HIP 37826 HD 62509), Magnitude=1.2mag**. Separation=0.548° Position Angle=255.2°, Position angle vertex=207.9° Angular diameter=22.8" size=109.0m x 73.0m x 27.5m Satellite at Azimuth=295.0° WNW Altitude= 14.5° Distance=1211.5 km **(in shadow)** In a clock-face concept, the satellite will seem to move toward 2:04 Angular Velocity=14.8'/s **Centerline, closest point** →Map: Longitude= 0°31'14"E Latitude=+44°34'43" (WGS84) **Distance=22.09 km** Azimuth=359.2° N Path direction= 89.5° E ground speed=10.673 km/s Sun elevation=-14° Elongation from Sun=169° Orbit source: NASA predicted orbit
7h06m03.02s	ISS	**Close to Castor, Alp Gem (SAO 60198, HIP 36850 HD 60179), Magnitude=1.6mag**. Separation=0.606° Position Angle=72.6°, Position angle vertex=25.5° Angular diameter=24.5" size=109.0m x 73.0m x 27.5m Satellite at Azimuth=299.1° WNW Altitude= 16.4° Distance=1128.1 km **(in shadow)** In a clock-face concept, the satellite will seem to move toward 2:09 Angular Velocity=16.9'/s **Centerline, closest point** →Map: Longitude= 0°31'00"E Latitude=+44°09'39" (WGS84) **Distance=24.33 km** Azimuth=181.5° S Path direction= 89.7° E ground speed=10.098 km/s Sun elevation=-14° Elongation from Sun=165° Orbit source: NASA predicted orbit
7h07m53s	ISS →Ground track →Star chart	 **Appears 7h06m54s** -2.8mag az:316.7° NW h:22.6° **Culmination 7h07m53s -2.9mag** az:347.3° **NNW h:26.5°** distance: 820.6km height above Earth: 406.3km elevation of Sun: -14° angular velocity: 0.51°/s **at Meridian 7h08m15s** -2.7mag az: 0.0° N h:25.9° **Disappears 7h13m01s** 1.1mag az: 60.8° ENE horizon

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

Used satellite data set is from 21 January 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 t he 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.

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.

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.

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.

Phase

Ratio of the illuminated fraction of the apparent planetary or lunar disk to its entire area.

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 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 coun ter 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.

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, 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

Software Version: 24 November 2013
Database updated 7 min ago
Current Users: 170

16 Dec 2013, 18:09 UTC
579 minutes left for this session / Mode for our sponsors

Google Search
Web CalSky.com

Select start of calculation:

Date: 24 February 2012

Time: 21 : 00 : 00 . 00 [ ] in TDT Now

Select duration: 30 Minutes go!

geipan

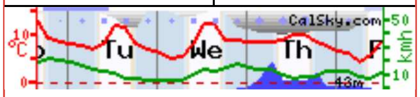
temple, France

Easting: 0.5244

Northing: 44.3797

Time zone: CET/ CEST

Astronomer



Weather · Sat-Image

Local Sponsors: Your name?

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- [ ] The Sun
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- [ ] Comets

Earth orbiting satellites

- [x] Space Station ISS (1 month)
- [x] short duration Flares of Iridium satellites (14 days)
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Daily reoccurring events

- [x] Sun and Moon
- [x] Planets
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- [ ] Meteor Streams
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- [ ] Weather Balloons

Dimmer and more difficult objects

- [ ] Jupiter: Great Red Spot and satellite events
- [ ] Jupiter's Satellites: position
- [ ] Saturn: Satellite events and storms
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- [ ] Zodiacal light/Gegenschein
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- [ ] Supernovae
- [ ] Binary Stars

Deep sky objects

- [ ] Milky Way
- [ ] Galaxies
- [ ] Open Star Clusters
- [ ] Globular Star Clusters
- [ ] Nebula

go!

Friday 24 February 2012

Time (24-hour clock)	Object (Link)	Event
	Observer Site	temple, France WGS84: Lon: +0d31m28.09s Lat: +44d22m47.15s Alt: 91m All times in CET or CEST (during summer)
21.0h	♀Venus	Magnitude=-4.2mag Best seen from 9.4h -22.4h (h_{top}=54° at S at 15.9h) (in constellation Pisces) RA= 1h09m23s Dec= +8°02.5' (J2000) Distance=0.944AU Elongation= 44° Phase k=65% Diameter=17.7"

21.0h	♂Mars	Magnitude=-1.1mag Best seen from 19.4h - 7.5h (h_{top}=11° at W at 7.5h) (in constellation Leo) RA=11h17m13s Dec= +9°11.0' (J2000) Distance=0.685AU Elongation=168° Phase k=99% Diameter=13.7" planetographic latitude of the Earth=22.6°
21.0h	♃Jupiter	Magnitude=-2.2mag Best seen from 18.9h -23.8h (h_{top}=50° at SW at 18.9h) (in constellation Aries) RA= 2h15m53s Dec=+12°34.7' (J2000) Distance=5.395AU Elongation= 61° Diameter=36.5"
21h00m00s	Geosats flare season	**There will be flares from geostationary satellites today!** Geostationary satellites are usually very dim objects, comparable with Pluto. Today, some can get so bright for some minutes, that they can be seen with the unaided eye. Look for them at the optimal coordinates and time given below and with patience. The satellites will move slowly through the stellar field, about one or one cluster every 5 minutes. • **Optimal coordinates** to look for geostationary satellites at this time: RA=10h30m Dec=-6.4°, az=114.2° h=14.3° (Purple Dot) The Sun is at Dec=-9.5°, flare angle=3.1° • **Optimal time** from 19h 43m to 6h 40m
21.0h	**Deep-Sky Observing**	**Best time interval for observing dim objects: 20.0h- 6.4h Prior to midnight**
21h12m45s	Cosmos 1763 Rocket (16864 1986-052-B) →Ground track →Star chart	**Appears** **21h05m11s** 7.7mag az:203.8° SSW horizon **Culmination** **21h12m45s** **4.3mag** az:291.7° **WNW** **h:75.3°** distance: 802.8km height above Earth: 779.4km elevation of Sun: -28° angular velocity: 0.55°/s **Disappears** **21h13m43s** 4.5mag az:356.2° N h:58.4° 
21h22m37s	USA 194/NOSS 3-4A (31701 2007-027-A) →Ground track →Star chart	**Appears** **21h14m05s** 8.8mag az:320.3° NW horizon **at Meridian** **21h20m27s** 6.4mag az: 0.0° N h:19.5° **Culmination** **21h22m37s** **5.8mag** az: 25.6° **NNE** **h:22.5°** distance: 2119.5km height above Earth: 1072.1km elevation of Sun: -30° angular velocity: 11.9'/s **Disappears** **21h22m41s** 5.8mag az: 26.4° NNE h:22.5° 
21h22m42s	USA 194-2/NOSS 3-4C (31708 2007-027-C) →Ground track →Star chart	**Appears** **21h14m11s** 8.8mag az:320.2° NW horizon **at Meridian** **21h20m33s** 6.4mag az: 0.0° N h:19.4° **Culmination** **21h22m42s** **5.8mag** az: 25.4° **NNE** **h:22.4°** distance: 2122.6km height above Earth: 1070.0km elevation of Sun: -30° angular velocity: 11.9'/s **Disappears** **21h22m47s** 5.8mag az: 26.3° NNE h:22.4° 
21h26m36s	**ISS** →Ground track →Star chart	**Appears** **21h24m29s** **1.8mag** **az:299.8°** **WNW** **horizon** **Disappears** **21h26m36s** **0.1mag** **az:298.7°** **WNW** **h:10.6°** 

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

Used satellite data set is from 25 February 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 t he 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.

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.

Phase

Ratio of the illuminated fraction of the apparent planetary or lunar disk to its entire area.

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.

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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