Select start of calculation:

Date: 5 June 2012

Time: 00 : 00 : 00 Now

Select duration: 1 Hour go!

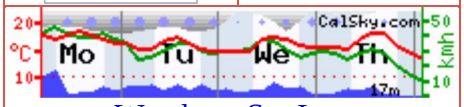
St Maixent, France

Easting: -1.8219

Northing: 46.7408

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!

Tuesday 5 June 2012

Time (24-hour clock)	Object (Link)	Event
	Observer Site	**St Maixent, France** **WGS84: Lon: -1d49m18.9s Lat: +46d44m27.1s Alt: 65m** **All times in CET or CEST (during summer)**
	Local Date	**Day of Year (DOY): 157** **Week of Year (WOY): 23**
0h00m00s	ALOS (28931 2006-002-A) →Ground track →Star chart	**Appears** **23h49m56s** 4.4mag az:174.4° S h:18.3° **at Meridian** **23h51m23s** 3.6mag az:180.0° S h:34.0° **Culmination** **23h53m24s** **3.2mag** az:257.4° **WSW h:73.0°** distance: 727.9km height above Earth: 699.5km elevation of Sun: -15° angular velocity: 0.59°/s **Disappears** **0h00m24s** 9.3mag az:345.3° NNW horizon 
0h00m00s	Lacrosse 4 Rocket (26474 2000-047-B) →Ground track →Star chart	**Appears** **23h52m55s** 3.5mag az:130.7° SE h:21.8° **Culmination** **23h53m59s** **3.5mag** az:109.4° **ESE h:23.9°** distance: 1311.2km height above Earth: 633.4km elevation of Sun: -15° angular velocity: 0.32°/s **Disappears** **0h00m09s** 6.2mag az: 42.9° NE horizon 
0.0h	♂ **Mars**	**Magnitude= 0.6mag Best seen from 22.6h - 2.8h (h_{top}=41° at SW at 22.6h) (in constellation Leo)** **RA=11h10m39s Dec= +6°22.6' (J2000)** **Distance=1.219AU Elongation= 92° Phase k=88%** **Diameter=7.7" planetographic latitude of the Earth=25.8°**
0.0h	♄ **Saturn**	**Magnitude= 0.5mag Best seen from 22.6h - 4.2h (h_{top}=37° at S at 22.7h) (in constellation Virgo)** **RA=13h28m48s Dec= -6°26.3' (J2000)** **Distance=9.073AU Elongation=128° Diameter=18.2"** **planetocentric latitude of the Earth=12.6°**
0h02m31s	**Cosmos 1005 Rocket (10861 1978-045-B)** →Ground track →Star chart	**Appears** **0h00m45s** **4.1mag** **az:191.9° SSW h:24.9°** **Culmination** **0h02m31s** **2.9mag** **az:280.5° W h:86.8°** **distance: 422.3km height above Earth: 421.8km** **elevation of Sun: -15° angular velocity: 1.03°/s** **at Meridian** **0h02m48s** **3.2mag** **az: 0.0° N h:73.0°** **Disappears** **0h07m49s** **8.3mag** **az: 11.1° N horizon** **Time uncertainty of about 4 seconds** 

	0h03m08s	Tiangong-1 (37820 2011-053-A) →Ground track →Star chart	Appears 23h58m39s 4.6mag az:262.2° W horizon Disappears 0h03m08s 0.7mag az:197.9° SSW h:33.7° Time uncertainty of about 6 seconds 
	0h05m36s	SJ 11-03 Rocket (37731 2011-030-B) →Ground track →Star chart	Appears 0h03m17s 3.2mag az:153.6° SSE h:26.4° Culmination 0h05m36s 2.3mag az: 74.0° ENE h:72.9° distance: 647.8km height above Earth: 621.7km elevation of Sun: -16° angular velocity: 0.68°/s at Meridian 0h07m04s 4.0mag az: 0.0° N h:39.9° Disappears 0h12m08s 8.6mag az:348.8° N horizon 
	0h13m13s	USA 194/NOSS 3-4A (31701 2007-027-A) →Ground track →Star chart	Appears 0h03m46s 10.5mag az:320.0° NW horizon at Meridian 0h11m49s 5.6mag az: 0.0° N h:50.4° Culmination 0h13m13s 4.8mag az: 44.3° NE h:59.7° distance: 1221.5km height above Earth: 1080.1km elevation of Sun: -16° angular velocity: 0.33°/s Disappears 0h18m39s 5.8mag az:120.6° ESE h:17.0° 
	0h13m20s	USA 194-2/NOSS 3-4C (31708 2007-027-C) →Ground track →Star chart	Appears 0h03m54s 10.5mag az:320.0° NW horizon at Meridian 0h11m55s 5.6mag az: 0.0° N h:50.0° Culmination 0h13m20s 4.9mag az: 44.2° NE h:59.3° distance: 1224.6km height above Earth: 1079.1km elevation of Sun: -16° angular velocity: 0.33°/s Disappears 0h18m46s 5.8mag az:120.3° ESE h:16.9° 
	0h19m22s	Terra (25994 1999-068-A) →Ground track →Star chart	Appears 0h16m30s 3.6mag az:183.5° S h:23.4° Culmination 0h19m22s 2.8mag az:258.6° WSW h:62.6° distance: 787.9km height above Earth: 708.8km elevation of Sun: -17° angular velocity: 0.55°/s Disappears 0h26m23s 9.1mag az:343.9° NNW horizon 
	0h27m05s	Iridium 82	Flare from MMA1 (Right antenna) Magnitude=-0.1mag Azimuth= 21.8° NNE altitude= 11.0° in constellation Cassiopeia Flare angle=1.22° Flare center line, closest point →MapIt: Longitude=0.954°W Latitude=+46.641° (WGS84) Distance=67.1 km Azimuth= 99.2° E Satellite above: longitude=13.1°E latitude=+61.7° height above Earth=786.9 km distance to satellite=2176.0 km Altitude of Sun=-17.2° 
	0h29m55s	ISS →Ground track →Star chart	Appears 0h29m55s -2.4mag az: 84.5° E h:19.7° Disappears 0h33m15s -0.2mag az: 66.8° ENE horizon 
	0h34m15s	USA 182/Lacrosse 5	Appears 0h27m13s 6.5mag az:275.1° W horizon Culmination 0h34m15s 5.2mag az:346.9° 

	(28646 2005-016-A) →Ground track →Star chart	**NNW h:28.6°** distance: 1307.4km height above Earth: 718.9km elevation of Sun: -18° angular velocity: 0.32°/s **at Meridian 0h34m52s** 5.1mag az: 0.0° N h:27.8° **Disappears 0h41m17s** 6.1mag az: 58.8° ENE horizon
0h39m	Sun	End astronomical twilight
0h44m13s	Cosmos 1154 Rocket (11683 1980-008-B) →Ground track →Star chart	**Appears 0h43m18s** 3.3mag az:203.1° SSW h:45.8° **Culmination 0h44m13s 3.1mag** az:281.1° **W h:78.8°** distance: 457.7km height above Earth: 449.7km elevation of Sun: -18° angular velocity: 0.96°/s **at Meridian 0h45m11s** 4.6mag az: 0.0° N h:44.0° **Disappears 0h49m42s** 8.8mag az: 10.3° N horizon Time uncertainty of about 3 seconds

17 Items/Events: Export to Outlook/iCal Print

Used satellite data set is from 2 June 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.

Astronomical Twilight
The times are the moments of beginning/end of the astronomical twilight, i.e., the moments the Sun reaches a depression of 18° below the horizon. If the Sun is below this angle, no brightening of the sky can be observed.

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.

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 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.

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.

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.

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.

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.

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: 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: 12 May 2012

Time: 22 : 30 : 00 Now

Select duration: 1 Hour go!

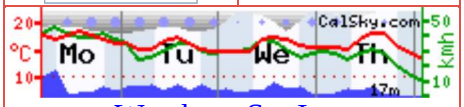
St Maixent, France

Easting: -1.8219

Northing: 46.7408

Time zone: CET/ CEST

Hobby



Weather · Sat-Image

Local Sponsors: Your name?

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- ☑ Public Holidays
- ☐ Saint's Day
- ☑ Zodiac of today. Change of Zodiac
- ☐ Islamic, Indian, Persian and Hebrew Calendar
- ☑ Week Number

General events

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- ☑ Planetary Conjunctions
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- ☐ Saturn's Satellites: position
- ☐ Zodiacal light/Gegenschein
- ☐ Variable Stars (3 months)
- ☐ Supernovae
- ☐ Binary Stars

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- 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!

Saturday 12 May 2012

Time (24-hour clock)	Object (Link)	Event
	Observer Site	St Maixent, France WGS84: Lon: -1d49m18.9s Lat: +46d44m27.1s Alt: 65m All times in CET or CEST (during summer)
22h30m	**Sun Sign**	Taurus 22°
	Local Date	Day of Year (DOY): 133 Week of Year (WOY): 19
22h30m	**Moon Sign**	Aquarius 22°
22h30m	**Horoscope Chart**	Current Planets Planet Sign Degrees Direction Sun Taurus 22°29'57.1" direct Moon Aquarius 21°51'36.7" direct Mercury Taurus 6°30'13.8" direct Venus Gemini 23°50'46.5" direct Mars Virgo 8°06'26.4" direct Jupiter Taurus 23°00'40.6" direct Saturn Libra 24°13'43.2" retrograde Uranus Aries 7°05'47.2" direct Neptune Pisces 3°00'30.0" direct Mean Node Sagittarius 5°57'53.1" retrograde Aspects Planet Aspect Planet Orbes Sun Square Moon 0°38'20.4" Sun Conjunktion Jupiter 0°30'43.4" Sun Semisquare Uranus 0°24'09.9" Moon Trine Saturn 2°22'06.5" Moon Biquintil MC 1°28'03.7" Mercury Semisextil Uranus 0°35'33.4" Mercury Sextil Neptune 3°29'43.8" Mercury Quincunx Mean Node 0°32'20.7" Mercury Quincunx Aszendent 1°58'48.0" Venus Semisextil Jupiter 0°50'06.0" Mars Quincunx Uranus 1°00'39.2" Mars Opposition Neptune 5°05'56.4" Jupiter Semisquare Uranus

		0°54'53.3" Saturn Semisextil MC 2°09'49.8" Uranus Trine Mean Node 1°07'54.1" Uranus Trine Aszendent 2°34'21.4" Neptune Square Mean Node 2°57'23.1" Neptune Square Aszendent 1°30'55.8"
	22.5h	♀ Venus	Magnitude=-4.5mag Best seen from 21.6h - 0.5h (h_{top}=27° at WNW at 21.6h) (in constellation Taurus) RA= 5h31m30s Dec=+27°31.9' (J2000) Distance=0.368AU Elongation= 32° Phase k=15% Diameter=45.3"
	22.5h	♂ Mars	Magnitude= 0.2mag Best seen from 22.1h - 4.1h (h_{top}=52° at SSW at 22.1h) (in constellation Leo) RA=10h40m54s Dec=+10°08.3' (J2000) Distance=1.035AU Elongation=106° Phase k=90% Diameter=9.0" planetographic latitude of the Earth=24.4°
	22.5h	♄ Saturn	Magnitude= 0.4mag Best seen from 22.1h - 5.8h (h_{top}=36° at S at 0.3h) (in constellation Virgo) RA=13h33m07s Dec= -6°46.9' (J2000) Distance=8.829AU Elongation=152° Diameter=18.7" planetocentric latitude of the Earth=12.9°
	22h53m	Sun	Dusk
	23h01m16s	Iridium 35	Flare from MMA1 (Right antenna) Magnitude=-0.6mag Azimuth= 59.8° ENE altitude= 45.1° in constellation Hercules Flare angle=1.60° Flare center line, closest point →MapIt: Longitude=1.327°W Latitude=+46.741° (WGS84) Distance=37.7 km Azimuth= 89.8° E Satellite above: longitude=6.1°E latitude=+49.4° height above Earth=784.6 km distance to satellite=1051.3 km Altitude of Sun=-13.0°
	23h05m58s	Iridium 51	Flare from MMA1 (Right antenna) Magnitude=-5.3mag Azimuth= 59.4° ENE altitude= 47.1° in constellation Hercules Flare angle=0.40° Flare center line, closest point →MapIt: Longitude=1.940°W Latitude=+46.741° (WGS84) Distance=9.0 km Azimuth=270.1° W Satellite above: longitude=5.3°E latitude=+49.3° height above Earth=755.7 km distance to satellite=988.7 km Altitude of Sun=-13.6° This is a spare satellite or its status is unknown. Brightness estimate may be unreliable and flare time accurate to a few seconds.
	23.3h	Deep-Sky Observing	Best time interval for observing dim objects: 23.3h- 3.9h Prior to midnight
	23h19m	Sun	Sun 15° below horizon

13 Items/Events: Export to Outlook/iCal Print

Used satellite data set is from 12 May 2012

☐ Hide glossary

Glossary:

Altitude/alt/h

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

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.

Conjunction

The object shows the closest angular separation from the Sun for this orbit.

Dawn and Dusk: nautical Twilight

In CalSky, is taken as the moments of nautical twilight, i.e., the moments the Sun reaches a depression of 12° below the horizon. Not astronomically trained people will recognize the brightening of the horizon at these times.

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.

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.

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.

Moon sign

The position of the Moon within a part of the Zodiac that is subdivided into 30° wide segments. Besides this sign of the zodiac the angle within the sign is given as well.

Opposition

An outer planet (orbit outside the orbit of Earth around the Sun) apparently stands opposite the Sun. Hence, it can be observed throughout the night.

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.

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**".

Spare satellite or unknown status

Not all Iridium satellites are operational. Some of them are spare satellites and are in a fuel save mode. Hence the attitude of the satellite is not as strictly stabilized as for operational ones. Predictions of the flare's brightness are not that accurate in this case, a no-show is also possible.

Sun sign

The position of the Sun within a part of the Zodiac that is subdivided into 30° wide segments. Besides this sign of the zodiac the angle within the sign is given as well.

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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.)

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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.

Zodiac Sign

The zodiac is a band of about 8° width on both sides of the ecliptic, within which the Sun, the Moon and the planets reside. The zodiac is divided into 12 equally spaced, 30° long sections, called signs that are used in astrology. The signs corresponded to the actual constellations about two millenniums ago, but drifted by about one sign since then due to precession.

Top

Select start of calculation:

Date: 15 May 2012

Time: 23 : 30 : 00 Now

Select duration: 1 Hour go!

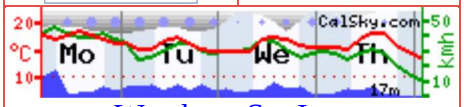
St Maixent, France

Easting: -1.8219

Northing: 46.7408

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!

Tuesday 15 May 2012

Time (24-hour clock)	Object (Link)	Event
	Observer Site	St Maixent, France WGS84: Lon: -1d49m18.9s Lat: +46d44m27.1s Alt: 65m All times in CET or CEST (during summer)
23h30m	♉ **Sun Sign**	Taurus 25°
23h30m	♓ **Moon Sign**	Pisces 30°
	Local Date	Day of Year (DOY): 136 Week of Year (WOY): 20
23h30m	**Horoscope Chart**	Current Planets Planet Sign Degrees Direction Sun Taurus 25°26'00.9" direct Moon Pisces 29°52'12.0" retrograde Mercury Taurus 12°16'26.0" direct Venus Gemini 23°59'25.6" retrograde Mars Virgo 9°00'11.3" direct Jupiter Taurus 23°43'55.9" direct Saturn Libra 24°02'33.9" retrograde Uranus Aries 7°13'38.9" direct Neptune Pisces 3°02'37.0" direct Mean Node Sagittarius 5°48'13.3" retrograde Aspects Planet Aspect Planet Orbes Sun Conjunktion Jupiter 1°42'05.1" Moon Conjunktion Uranus 7°21'26.9" Moon Trine Mean Node 5°56'01.2" Mercury Quintile Neptune 2°46'11.1" Mercury Biquintil Aszendent 0°36'36.7" Venus Semisextil Jupiter 0°15'29.7" Venus Opposition Aszendent 5°06'22.9" Mars Quincunx Uranus 1°46'32.4" Mars Opposition Neptune 5°57'34.2" Jupiter Semisquare Uranus 1°30'17.0" Uranus Trine Mean Node 1°25'25.6" Uranus Opposition MC 8°42'58.2" Neptune Square Mean Node

		2°45'36.2" Neptune Quintile Aszendent 2°09'34.4" Neptune Sesquisquare MC 2°06'00.0"
	23.5h	♀ Venus	Magnitude=-4.4mag Best seen from 21.6h - 0.3h (h_{top}=24° at WNW at 21.6h) (in constellation Taurus) RA= 5h32m13s Dec=+27°16.4' (J2000) Distance=0.351AU Elongation= 29° Phase k=13% Diameter=47.5"
	23.5h	♂ Mars	Magnitude= 0.3mag Best seen from 22.2h - 4.0h (h_{top}=51° at SSW at 22.2h) (in constellation Leo) RA=10h44m07s Dec= +9°42.7' (J2000) Distance=1.059AU Elongation=104° Phase k=89% Diameter=8.8" planetographic latitude of the Earth=24.6°
	23.5h	♄ Saturn	Magnitude= 0.4mag Best seen from 22.2h - 5.6h (h_{top}=36° at S at 0.1h) (in constellation Virgo) RA=13h32m24s Dec= -6°43.3' (J2000) Distance=8.854AU Elongation=148° Diameter=18.7" planetocentric latitude of the Earth=12.9°
	23.5h	Deep-Sky Observing	Best time interval for observing dim objects: 23.4h- 4.7h Prior to midnight
	23h39m10s	Metop A	Flare from fixed mounted left looking ASCAT Magnitude= 0.7mag Azimuth=337.0° NNW altitude= 7.6° in constellation Perseus Flare angle=3.34° (Flare center not on earth) Satellite above: longitude=23.1°W latitude=+66.8° height above Earth=830.7 km distance to satellite=2822.8 km Altitude of Sun=-16.6° This is an experimental flare prediction. Brightness estimate may be unreliable. Please report a successful observation (Object/site coordinates/date/measured time/accuracy/magnitude).
	23h45m	Moon	Enters Moon sign Aries ♈
	23h55m	Sun	End astronomical twilight

Wednesday 16 May 2012

Time (24-hour clock)	Object (Link)	Event
0h04.2m	♄ Saturn	Transit Altitude=+36.5° (in constellation Virgo) Elongation=148.5° East, Magnitude=0.4mag
0h16m46s	Iridium 50	Flare from MMA1 (Right antenna) Magnitude=-2.8mag Azimuth= 31.1° NNE altitude= 16.7° in constellation Lacerta Flare angle=0.58° Flare center line, closest point →MapIt: Longitude=2.240°W Latitude=+46.786° (WGS84) Distance=32.2 km Azimuth=279.1° W Satellite above: longitude=12.8°E latitude=+59.1° height above Earth=786.4 km distance to satellite=1943.3 km Altitude of Sun=-19.9°
0h21.5m	♀ Venus	Set Azimuth=312.8°, NW (in constellation Taurus)

15 Items/Events: Export to Outlook/iCal Print
Used satellite data set is from 16 May 2012

Hide glossary

Glossary:

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

Astronomical Twilight
The times are the moments of beginning/end of the astronomical twilight, i.e., the moments the Sun reaches a depression of 18° below the horizon. If the Sun is below this angle, no brightening of the sky can be observed.

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.

Conjunction
The object shows the closest angular separation from the Sun for this orbit.

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.

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.

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.

Moon sign

The position of the Moon within a part of the Zodiac that is subdivided into 30° wide segments. Besides this sign of the zodiac the angle within the sign is given as well.

Opposition

An outer planet (orbit outside the orbit of Earth around the Sun) apparently stands opposite the Sun. Hence, it can be observed throughout the night.

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.

Rise, Transit, Culmination, Set

Rise and set times are for a mathematical horizon. Transit is the moment when the celestial object crosses the south meridian (for the northern hemisphere, north otherwise), i.e., it stands exactly in south (north) direction. There it reaches (for objects other than stars: almost) its highest point on its diurnal journey. Culmination is the event of the highest point. Times are listed only if they fall within the chosen interval, starting at the start time. Missing values indicate that the event does not take place at the underlying interval.

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