Terra gives you quick access to astronomical information, weather forecasts, earthquake reports, time zones and factual information about any part of the Earth. It presents a 3D globe which you can spin to see any point on Earth. You can also move forward and back in time.

Astronomy -- You can see:

- your current location
- the altitude and azimuth of the Sun and Moon at any location on Earth and at any date and time
- the rising and setting times for Sun and Moon, at any location and date
- the illumination of the Earth by the Sun at any time, the Terminator line and the twilights (civil, nautical and astronomical)
- the length of the day for any location and date
- the phase of the Moon and its appearance to the observer
- the shortest distance and compass bearing between any two locations
- sidereal time, Greenwich and local

Time Zones
Terra shows a globe with a political map of the Earth with more than 250 locations highlighted. Tapping a button will center the globe on a location and show its local time, correct for daylight saving time..

Weather
Terra will link to the Weather Underground web site and show the current conditions and forecast for any location.

Earthquakes
Terra will download the latest earthquake report from the USGS and display the quakes on the globe. You can jump to the USGS web site for more detailed information about any quake.

Facts
Terra will link to the CIA World Factbook web site for almost every country.

Terra will be useful to:

- travelers,
- business people,
- students,
- photographers, cinematographers
- architects,
- gardeners, landscapers,
- amateur astronomers,
- radio hams,
- those concerned with solar energy.

New in version 4.0:
takes advantage of the Retina display,
compatible with iOS 4.0
runs full screen on the iPad
numerous interface improvements
New in version 4.0.2:
Filter earthquakes by magnitude.

Terra Home screen.

Find more than 250 cites and their time zones, find distances between locations. Links to maps and weather forecasts.

See sidereal time, Greenwich and local, day and night appearance of the Earth.

See earthquakes, their location, magnitude and time. Links to USGS web site and maps.

Find Sun rise and set, length of the day, day and night appearance of the Earth, twilight zones, altitude and azimuth of the Sun.

Find Moon rise and set, phase, appearance, altitude and azimuth.

Go to the Settings screen.

Current local time

Latitude and longitude of the location in the crosshairs at the center of the screen.

The city nearest to the center crosshairs will be shown as a blinking black dot. Its name, local time and time zone are shown here.

This area is a button. Tap it and the globe will center itself on the nearest city.

The time will be set to the local time in that city.

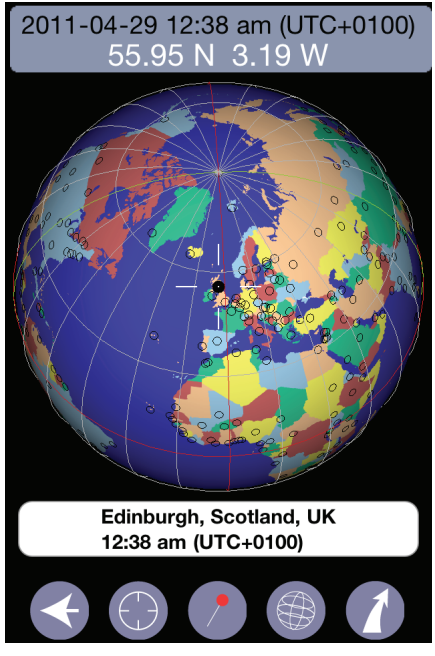
This always returns you to the Home screen.

Find the current location using GPS, turn the globe to center it there, reset the time to the current local time.

Show lines of longitude and latitude.

Latitudes are 0, 30, and 60 degrees. Longitudes are every 15 degrees. Equator and the Greenwich meridian are red, 90 and 180 meridians are green.

Tap the button again to turn off the lines.



Put a pin at the current location (the crosshairs).

As you rotate the globe this display will show the distance and compass bearing from the pin to the center.

Tap the button again to remove the pin and the distance information.

Bring up a panel with links to further information about this screen.

Go to the Weather Underground web site for a detailed report and forecast for this location.

Show this location in Google maps.

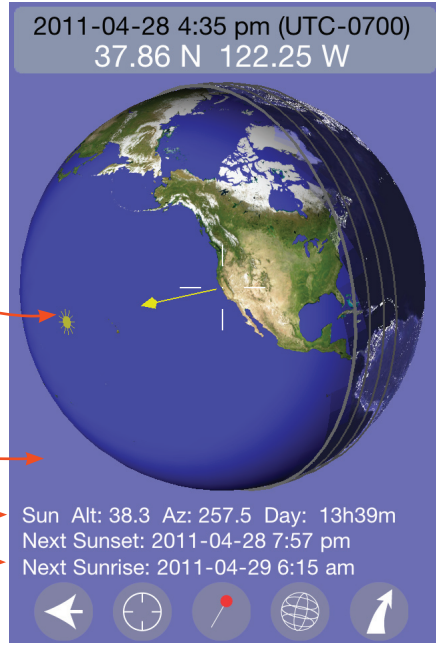
Go to the CIA World Factbook for information about the country in which the nearest city is located.

Email the coordinates of this location and the current time.
"Cancel" will return you to the previous screen.

The gold arrow points from the center toward the Sun. If the Sun is not visible from the central location the arrow will not appear. The blinking gold marker is the subsolar point, the point where the Sun is directly overhead.

The background shows the color of the sky at the central location -- black for night, light blue for day, fading from one to the other during twilight.

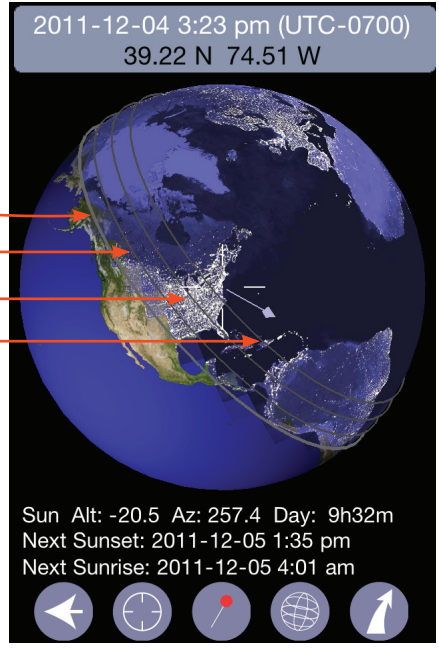
Altitude and azimuth of the Sun, length of the day at the central point.
Time of the next sunrise and sunset.



Terminator, the line between day and night.

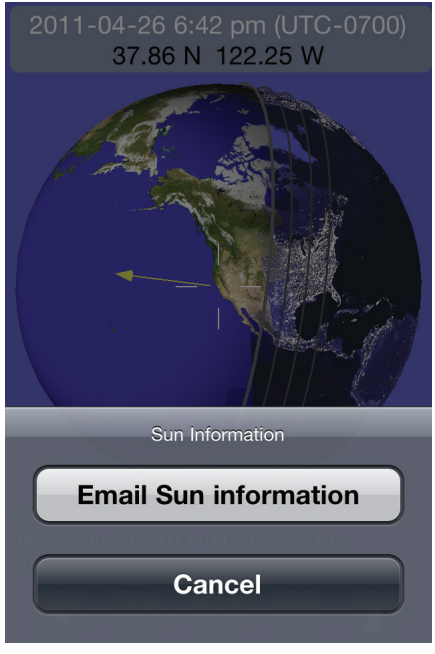
Twilights:
civil
nautical
astronomical

The blue arrow points toward the Moon. If the Moon is not visible from the central location the arrow will not appear. The blinking blue dot is the sublunar point, the point where the Moon is directly overhead.



Tap the “Email Sun information” button to prepare and send an email with the central location, Sun’s position, sunrise, sunset and the length of the day. The default address will be filled in.

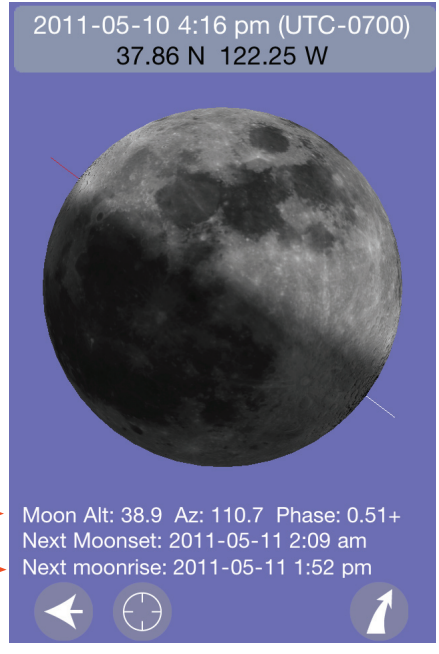
“Cancel” will return you to the previous screen.



This screen shows an image of the Moon as it would appear to an observer at the central location. The red line indicates the Moon's North Pole, the white is the South. If the Moon is not visible from that location at this time there will no image. The background color is approximately the color the sky would be at that time at the observer's location.

Altitude, azimuth and phase of the Moon as seen from the central location. A plus sign (+) after the phase means the Moon is waxing (growing brighter). A minus sign (-) means it is waning.

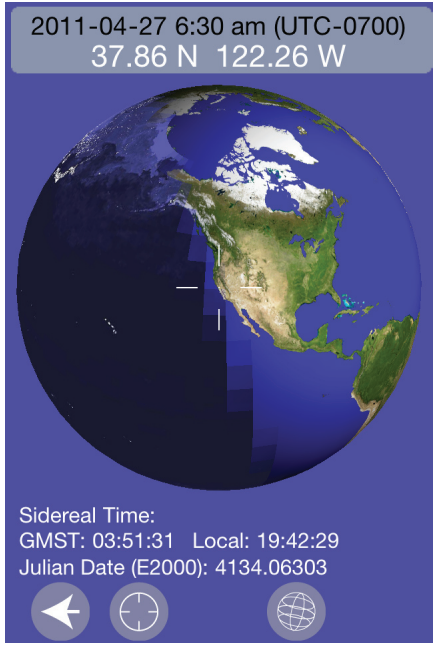
Time of the next moonrise and moonset.



If you tap the “Email Moon information” button Terra will bring up a mail message form. The central location, Moon’s position, phase and moonrise/moonset information and the default address will be filled in.

“Cancel” will return you to the previous screen.

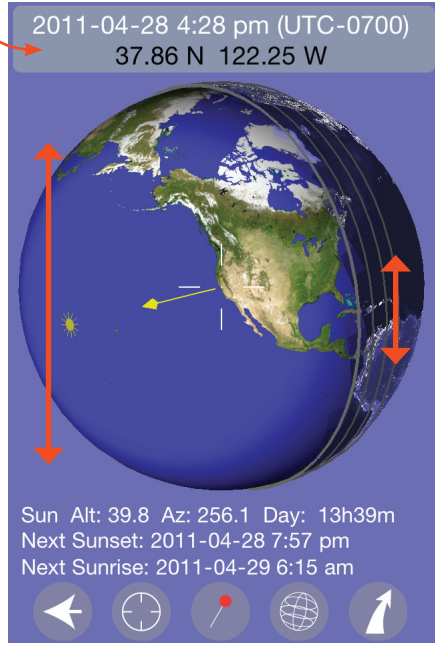
This screen shows the same image as the Sun screen, but without the twilight, Sun and Moon indicators.



The sidereal time at Greenwich and at the central location and the Julian date, Epoch 2000.

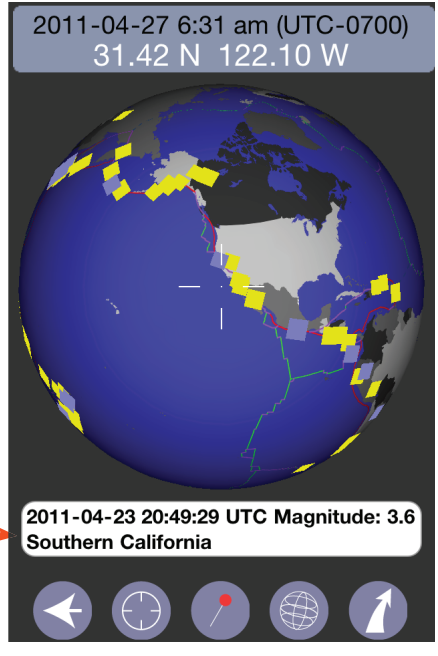
Terra can move to other times, past or future. The area at the top where the time and coordinates are shown is a button. Tap it once (in the Sun, Moon or Sidereal screens). The time will now be shown in larger white type and the location in black.

Swipe up the screen to move forward in time, down to move back. The display will show the changing time, and the globe will show the appearance of the Earth or Moon at the new time. Swiping on the left of the screen moves rapidly in time. Swiping on the right moves more slowly.

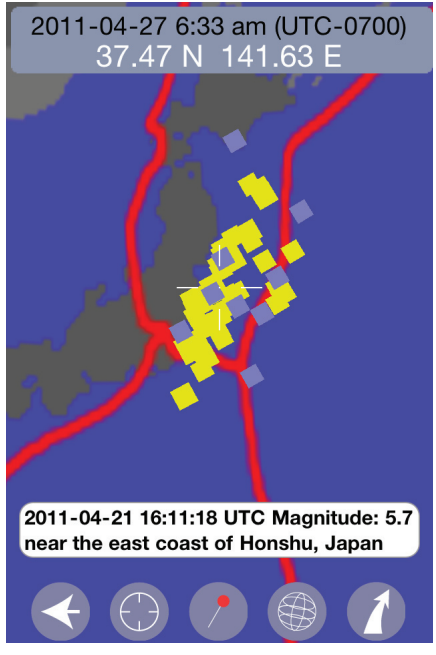


When you enter earthquake mode, Terra downloads the latest information from the United States Geological Survey (USGS). It lists all earthquakes with magnitude 2.5 or greater which occurred within the last week.
Each quake is displayed on the globe as a square. Its size indicates its magnitude. The color indicates how recently it occurred: red means within the last hour, blue within the last day, gold within the last week. The colored lines show the tectonic plate boundaries.

The square nearest the crosshairs will blink. Tap the Magnitude button to center the globe on this quake and show its time, magnitude and location.



With a two-finger pinch you can magnify or shrink the globe, up to 16 times normal size. Also with two fingers you can rotate the globe around the central point.



Bring up a panel with links to further information about the nearest earthquake.

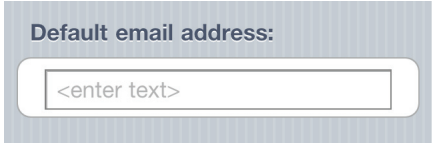
Go to the USGS web page containing more detailed information about this quake.

Go to Google maps and drop a pin on the location.

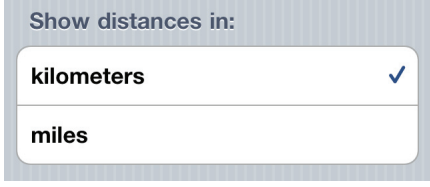
Compose an email with the earthquake information.

"Cancel" will return you to the previous screen.

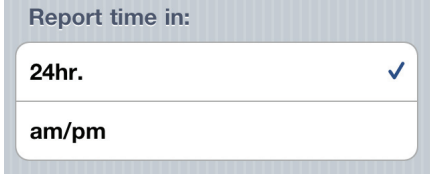
Choose an address where email will be sent.



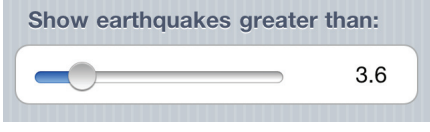
Choose to have distances displayed in miles or kilometers.



Choose to have time reported in 24 hour or am/pm style.



Filter earthquakes by magnitude.



Example

To find the time of the next sunrise, go to the Sun screen.

Tap the GPS button to set the current location and current time. The screen will show the next sunrise and sunset for this location.

Example

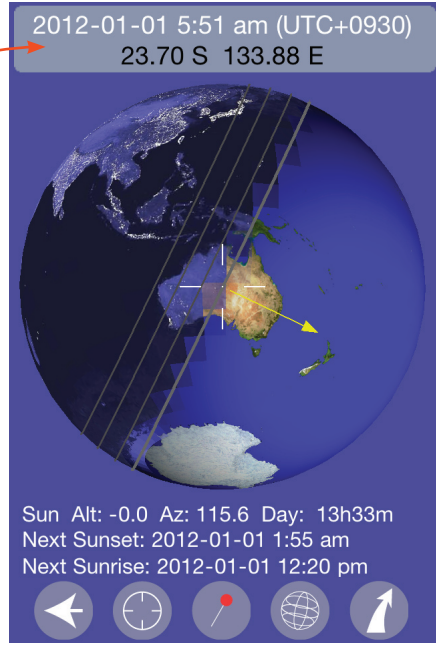
To find the azimuth of the Sun as it rises on Jan. 1, 2012 at your current location.

Go to the Sun screen.

Tap the GPS button to set the location and time zone.

Tap the time/space bar to go into time mode. Swipe upward to move forward in time. When you reach 2012/01/01 just after midnight you will see when the next sunrise will occur.

Swipe upward on the right side of the screen to bring Terra slowly up to that moment. Stop when the gold arrow first appears. The azimuth at that moment is the figure you want. (115.7)



According to astronomers Ansel Adams' famous picture "Moonrise, Hernandez New Mexico" was taken about 4:05 pm, local time, on Oct. 31, 1941. The story is told at http://www.anseladams.com/content/ansel_info/ansel_ancedotes.html
Terra can show exactly where the Moon was and how it looked at that moment.

Hernandez is about 36.09 N, 106.15 W and is in the Mountain Time Zone.

Go to the political map. Rotate the globe to be near Denver, which is in that zone. Tap the button where it says "Denver". That sets the time zone.

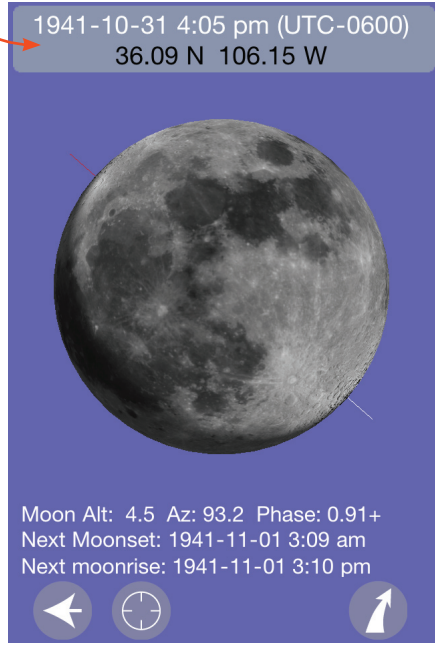
Rotate the globe to the location of Hernandez. Pinch to magnify the globe and make it easier to be precise.

Go back to the Home screen, then to the Moon screen.

Tap the time/location button to go into time mode. Swipe downward along the left side of the screen to move back in time. As you near the chosen time swipe on the right side of the screen to move more slowly.

At 4:05 pm, local time, on Oct. 31, 1941 the Moon was 4.5 degrees above the horizon at a compass point of 93.2 degrees, and it looked like this.

Notice that the background is fairly light, meaning that the sky was about this color. If you go to the Sun screen you will see that the Sun was still above the horizon. Adams would have used a red filter to make the sky darker.



Notes

The email panel is provided so that you can record information by sending an email to yourself, for example.

Another way to record a situation is to capture the iPhone screen as an image. Hold down the power button and press the Home button. The image will be saved in the photo library under “Camera Roll”.

Terra uses algorithms from the Astronomical Almanac (2009) for the positions of Sun and Moon. They will be correct to within 0.3 degrees.

Terra will run on any model of iPhone or iPod Touch or iPad using iPhone OS 3.0 or greater. Devices without a GPS may not be able to find the current location automatically.

Terra requires a network connection for earthquake information, sending email and when it launches the browser for maps and weather. All astronomical calculations are done locally by the device.

Earth and Moon images and mapping are from the National Aeronautics and Space Administration (NASA). Earthquake information is provided by the United States Geological Survey (USGS).

Support, comments, questions: rowlandd@sbcglobal.net