



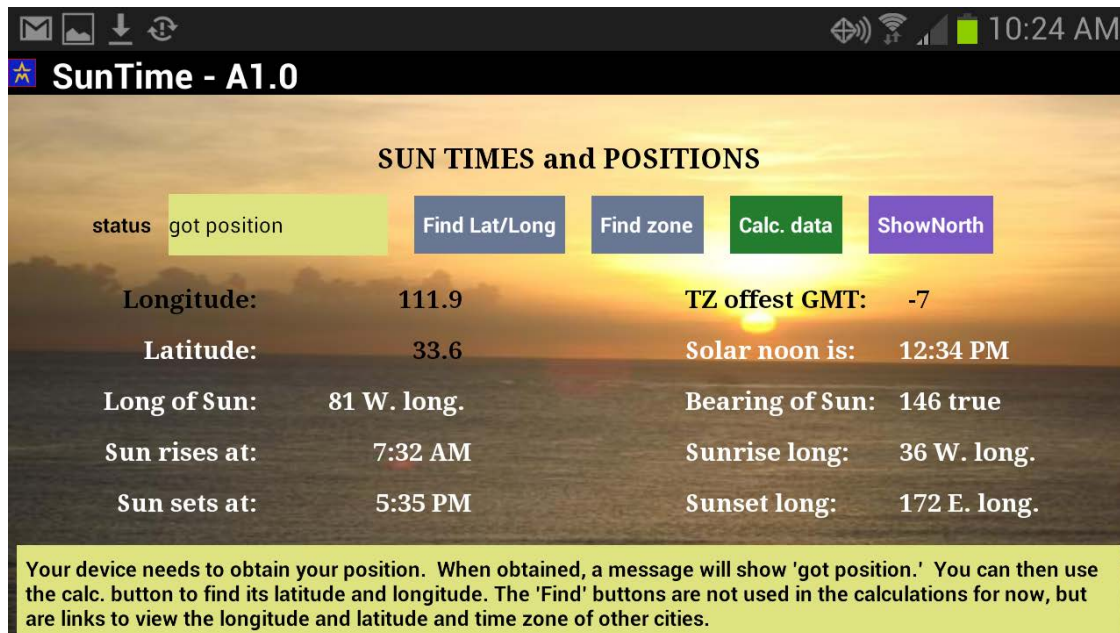
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SUNTIME APP FOR ANDROID 4.0

TIPS AND EXPLANATIONS

What *SunTime* does

This APP explores the world of astronomy and celestial navigation. It lets you know where you are in terms of latitude and longitude (not a new idea), where the sun is at the current time (yes, I know, in the sky) and where it is at sunrise and sunset (yes, I know, on the horizon). BUT, just where on the earth is the sun located? Aren't you curious? At what meridian (longitude) is the sun directly above at those times? *Suntime* also tells you at what time on your watch the sun will be directly over your head, which most commonly will not be noon on your watch. Didn't you want to know these things about life? *Suntime* takes the mystery away. Don't worry, a glossary is provided.



Uses

Suntime has serious uses that are fun to discover: finding North and telling time.

Finding North: see the Compass Rose screen below.

What time is it?

With a little arithmetic and help from the data provided by *Suntime* you can get the time of day – in the event you lost your watch or just for fun. First, understand that it takes the sun 4 minutes to travel 1 degree, that's right. Second, *Suntime* shows you the solar noon time -- the time the sun is directly overhead on your meridian and it also shows you on what meridian the sun is currently overhead.

Find the number of degrees the sun has moved/to move from/to your meridian by subtracting its position from yours (if negative, then the time is before solar noon). Multiply this by 4 to get the number of minutes the sun has traveled from your location's solar noon time. Add the 2 times (again, if negative, the time is before solar noon; that is, the time the sun has to travel to be overhead).

Example

1. Solar noon: 12:30 PM your longitude: 130 W. sun longitude: 138 W.
Sun traveled $138 - 130 = 8$ degrees; time sun traveled: $4 \times 8 = 32$ minutes; time is now 1:02 PM
2. Solar noon: 12:30 PM your longitude: 130 W. sun longitude: 114 W.
Sun to travel $114 - 130 = -16$ degrees; time sun to travel: $4 \times 16 = -56$ minutes;
time is now (11:90 less 56) or 11:34 AM

Explanations

1. Opening screen

- Status - Shows when device has found your position.
- Longitude - The North – south lines (meridians) of the grid coordinates indicating positions on the earth. Measured in degrees.
- Latitude - The East-West lines (parallels) of the grid coordinates indicating positions on the earth. Measured in degrees.
- TZ offset from GMT- This is nothing more than the time zone at your current location. For example, Phoenix is -7 and Sydney is +10.
- Solar noon - This is the time at your location when the sun is directly overhead. It differs from your watch time, local standard time, when your location is not the same as a time zone boundary. Time zones are in increments of 15 degrees from the zero meridian at Greenwich, England, known as GMT.
- Example, New York City is about 74 degrees and in time zone -5 (west of Greenwich is indicated as minus). Time zone -5 boundary is 75 degrees (5×15) and NYC's solar noon would be earlier than standard watch noon. Why? Because the sun is overhead earlier because NYC is later, further west and the sun must travel that much more to be overhead at the 75 meridian.

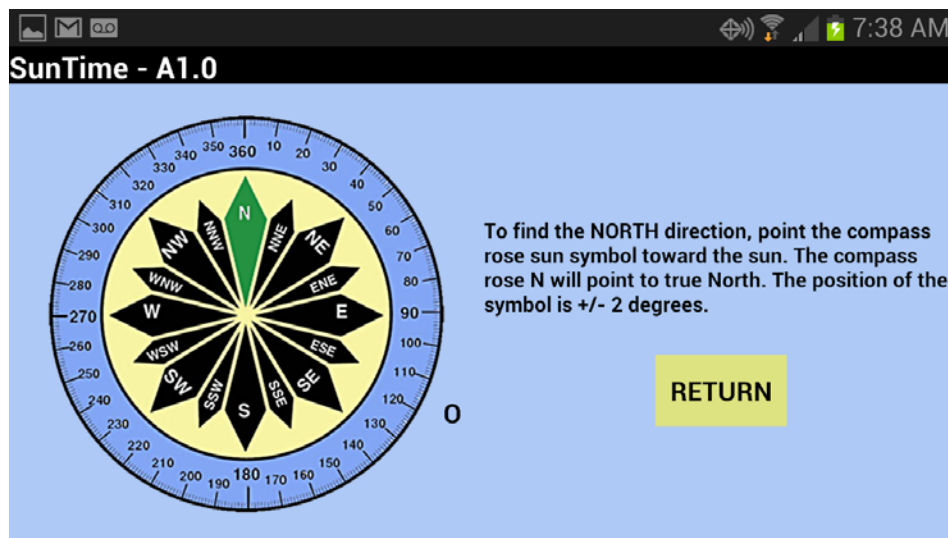
- Bearing of sun - Indicates the direction from North toward the sun. A bearing of 90 degrees would indicate a due east direction of the sun.
- Long of Sun - Shows the current longitude of the sun, which would be solar noon for anyone at the indicated meridian as the sun would be directly overhead.
- Sunrise/sunset - The times are the indicated times as can be found on other weather displays. The longitudes (“long”) indicate the meridian of the sun at the indicated event – sunrise or sunset. As with “Long of Sun,” solar noon occurs at these meridians. In other words, a sunrise longitude of 9 W would mean solar noon is occurring at Lisbon, Portugal.

Buttons

- Fin Lat/Long/Find zone - These buttons take you to links to find the coordinates and time zone for locations other than your current location. NOT USED.
- Calc. - Performs the *Suntime* calculations based on your current location. Opening data are dummy data.
- Show North - This will bring up the compass rose screen. See below.

2. Compass Rose screen

The second screen presents what is known as a compass rose, or a diagram of the directions in degrees where you are at the center. The sun symbol on the edge shows the current direction of the sun, or “bearing,” from your location. Pointing the sun symbol toward the sun will indicate where North is, just by looking at the “N” pointer on the compass rose.



Devices

Suntime runs on large screen smart phones or tablets that use Android 4.0 or better software. Required permissions: GPS and location services, as well as internet access.