

Daylight at Midnight

Eagle Summit provides an opportunity to witness a phenomenon of the high northern latitudes—the Midnight Sun.

Eagle Summit, at mile 107 of the Steese Highway, is also the eastern trailhead of the Pinnell Mountain National Recreation Trail. Weather permitting, the midnight sun can be seen from the Eagle Summit parking lot, a nearby knoll, and points along the Pinnell Mountain Trail, from approximately June 17 to June 24.

The summer solstice, the longest day of the year, generally falls on June 21 or 22. However, the sun is not at its lowest in the sky at midnight. Due to the latitude and longitude of Eagle Summit, and because Alaska has made changes to its time zones and is on daylight savings time, the sun won't reach its lowest point in the sky until approximately 1:45 a.m.

Go prepared for all types of weather, and be sure to bring plenty of mosquito repellent!

Solstice Sun South of the Circle?

Eagle Summit, situated at 65°30'N latitude, is actually south of the Arctic Circle (66° 33'N) and should not receive 24 hours of continuous sunlight. Yet, it does.

At Eagle Summit, the sun is actually 1.75° below the horizon on the summer solstice. However, an atmospheric phenomenon called **refraction** causes a 2° to 3° *lift* of the sun's image. As a result, the sun's **image** is in full view, even though the sun itself is actually just below the horizon.

Eagle Summit's altitude (3,624 feet) also elevates the view of the sun by 1°.

Photographing the Midnight Sun

Many people want to make a multiple exposure photo with eight to 10 suns in an arc above the horizon. Stu Rothman, a professional photo-grapher in Fairbanks, offers these tips (© 1995).

First, you need a sturdy tripod and a camera capable of making double exposures. Recommended speed for either slide or print film is ISO 200 or 400. The best lens focal length is between 50mm and 100mm.

Place your tripod securely—it would be extremely frustrating to bump your tripod partway through your exposure series.

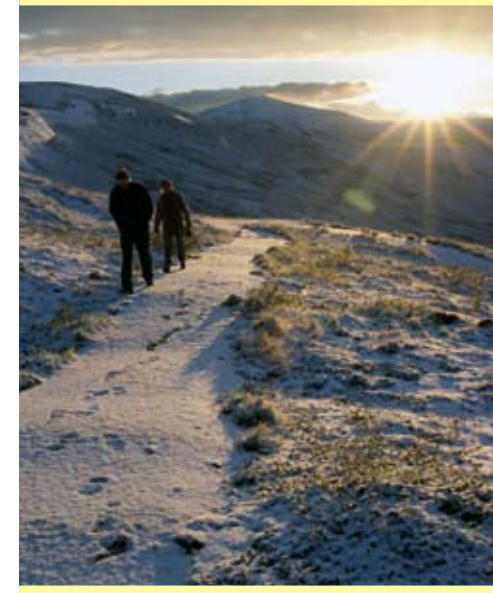
If your rewind release button cannot be reached once your camera is mounted on the tripod, you must find a way to keep it depressed. If you have a 35mm camera, try taping a small pebble over the rewind button and make sure it is flush with the bottom of your camera. Also, place tape over the rewind knob. Now you can cock the shutter without advancing the film.

Take your light reading just under the sun, near the horizon. If you plan to make nine exposures, close the aperture three stops. For example—if your light meter reading is f/5.6, you should stop down to f/8 (1 stop), to f/11 (2 stops), to f/16 (3 stops). If you want to make 12 to 13 exposures of the sun, then go down only two stops.

The sun will be at its lowest point on the horizon at approximately 1:45 a.m. Place the sun in the left side of the viewfinder and make your first exposure at 12:45 a.m. Make another exposure every 15 minutes until 2:45 a.m. With good weather, you should have a worthy addition to your photographic collection!

Cover Photo by Dennis Green: The Midnight Sun at Eagle Summit, June 2002.

Eagle Summit



Window to the Midnight Sun

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BLM

Alaska



The Summer Solstice

June 21st (approx.)
Longest day of the year.

The northern hemisphere tilts directly toward the sun. The sun remains above the horizon for 24 hours at the Arctic Circle and farther north. After the summer solstice the days begin to shorten in the northern hemisphere and lengthen in the southern hemisphere.

The Vernal Equinox

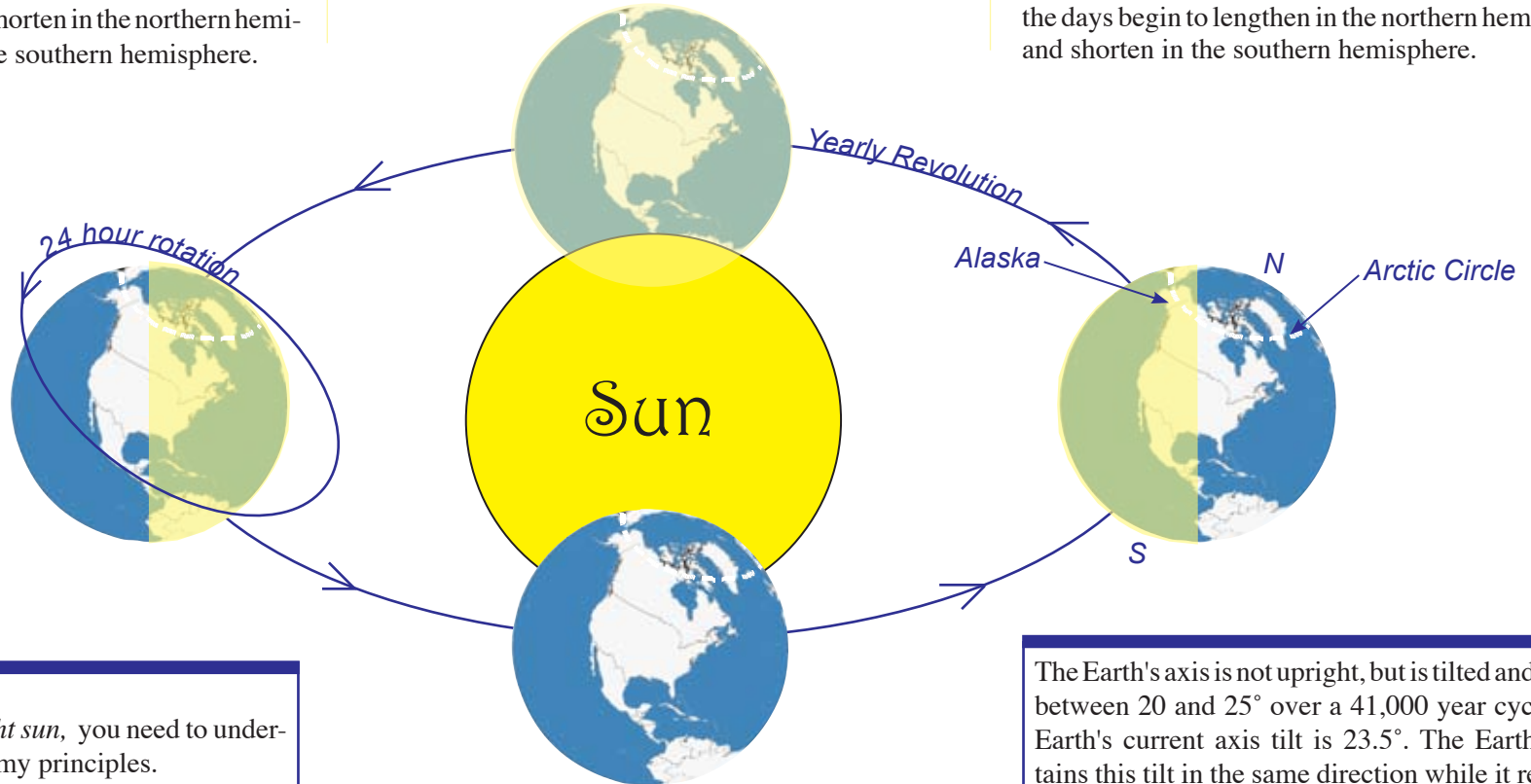
March 21st (approx.)
Equal sunlight and darkness.

The tilt of the Earth's axis is perpendicular to the sun. The sun is seen above the horizon for 12 hours from all points on the earth. After the spring equinox the days become longer the farther north you go, and shorter the farther south you go.

The Winter Solstice

December 21st (approx.)
Shortest day of the year.

The northern hemisphere tilts directly away from the sun. The sun does not rise above the horizon at the Arctic Circle and farther north. After the winter solstice the days begin to lengthen in the northern hemisphere and shorten in the southern hemisphere.



Kids Corner:

To understand the *midnight sun*, you need to understand a few basic astronomy principles.

The Earth spins in place around an imaginary line running from the North Pole to the South Pole. This line is called the Earth's **axis**. The Earth makes one complete rotation around this axis every 24 hours.

While spinning around this axis, the Earth is also circling around the sun. It takes one year for the Earth to make one revolution around the sun.

The Autumnal Equinox

September 21st (approx.)
Equal sunlight and darkness.

The tilt of the Earth's axis is perpendicular to the sun. The sun is seen above the horizon for 12 hours from all points on Earth. After the fall equinox the days become shorter the farther north you go, and longer the farther south you go.

The Earth's axis is not upright, but is tilted and ranges between 20 and 25° over a 41,000 year cycle. The Earth's current axis tilt is 23.5°. The Earth maintains this tilt in the same direction while it revolves around the sun.

The northern hemisphere is tilted towards the sun in the summer, allowing you to view the midnight sun at the Arctic Circle and farther north.

In winter, the northern hemisphere is tilted away from the sun, creating continuous darkness at the Arctic Circle and farther north.