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The Earth Science Picture of the Day (EPOD) highlights the diverse processes and phenomena which shape our planet and our environment. EPOD will collect and archive photos, imagery, graphics, and artwork with short explanatory captions and links exemplifying features and processes within the Earth system. The community is invited to contribute digital imagery, short captions and relevant links.

Sunset, Atmospheric Refraction and Mirages

March 03, 2011



Photographer: [Athanasios Sismanis](#)

Summary Author: [Athanasios Sismanis](#); [Jim Foster](#)

The photo above showing a gorgeously hued and misshaped Sun was taken from [Alexandroupoli, Greece](#). When the Sun is on the horizon, or very near it, refraction in the lower atmosphere appears to flatten the solar disk. This happens because sunlight directed towards us from the bottom portion of the Sun passes through a slightly denser atmosphere than do rays coming from the Sun's upper portion. As a result, the bottom is refracted more obviously than the top. Additionally, the shorter wavelengths of sunlight (blues and greens) are refracted more than the longer wavelength (oranges and reds); thus the Sun and western quadrant of the sky are reddened.

Note the omega shape of the Sun, which is caused by an inferior mirage -- the refracted image is below the object's true position. As the Sun dips below the horizon (in the case of sunsets), its inferior mirage appears to join the "true" Sun, resulting in the omega shape. If an atmospheric inversion is present, the omega shape can be quite evident. The pronated "feet" resting on the horizon, are simply the inverted images of the parts of the Sun above them. Protect your eyes looking toward the Sun. Photo taken on December 15, 2010.

Photo details: Canon EOS 450D camera; shutter speed of 1/200; f7.5 aperture; Skywatcher lens ED80, 600mm; ISO 200.

- Alexandroupoli, Greece Coordinates: [40.85, 25.866667](#)

- [Mt. Olympus, Greece](#)

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