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Maximum Elevation of the Sun

Since the axis of the Earth is tilted at about 23.5 degrees we have different seasons. The various seasons are the result of the tilted Earth causing the angle of the sunlight to vary at different times of the year.

On the first day of summer, usually 20 or 21 June, the sun will appear to have its highest angle of elevation in the northern hemisphere. The maximum angle of elevation depends upon the latitude.

The maximum angle of elevation of the sun is shown below for the start of each season.

For the first day of spring(20 or 21 March):

Maximum Sun angle = (90° - latitude in degrees) + 0°.

For the first day of summer (20 or 21 June):

Maximum Sun angle = (90° - latitude in degrees) + 23.5°.

For the first day of fall(20 or 21 September):

Maximum Sun angle = (90° - latitude in degrees) + 0°.

For the first day of winter (20 or 21 December):

Maximum Sun angle = (90° - latitude in degrees) - 23.5°.