

Magnetic Variation

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Magnetic variation is the difference between true north and magnetic north.

True north is the North Pole. The vertical lines on a map (longitude lines) for lines running from north and south all end up at a point geographically called the North and South poles respectfully. The longitudinal lines on an atlas are lines representing true north and south. They are lines drawn from pole to pole. Starting at Greenwich, England as the (0° degree) reference point they are identified as 0-180° west and 0-180° east. So every line in 10° increments west of Greenwich are labeled as west. Going 10,20,30 degrees half way around the world to 180° east/west called the International Date Line. This line extends from the North Pole, down just east of the Bearing Strait (Separating Alaska Siberia) down across the Pacific Ocean through Polynesia just west of New Zealand on the South Pole.

Magnetic north is located 1300 miles south at point just north of Hudson Bay in Canada. The magnetic variation is the difference between the reference point looking at magnetic north vs true north. The longitudinal lines on an atlas are lines representing true north and south. They are lines drawn from pole to pole.

Just east of longitude line **80° West** the magnetic deviation is **zero** in the northern part of the USA. This line is called the Agonic Line and it does not run exactly parallel to the longitudinal lines. It runs down through the United States just east of Lake Michigan through Alabama just touching the panhandle of Florida and crosses just about at the Panama Canal. Of course this also coincides with a line running just east of the **110° East** diagonal, running through Jakarta, in Indonesia, on the opposite side of the world they are two longitudinal lines that will have zero magnetic variation. Depending where you are located in the world, magnetic variation can be anywhere from 0 to 180°. It gets rather difficult to navigate up around the magnetic pole as you can well imagine.

Nautical charts (other than small scale sailing charts) usually have a compass rose on them indicating magnetic variation. **GPS** provides a second method to determining magnetic variation.