



Figure 1-D: Compass Rose Oriented to Magnetic North

To see the effects of this variation: Go to Seattle and Boston, read your compass headings, then compare them to true north. You will see why recognizing variation at your origin, destination, and en route locations is so crucial to accurate navigation.

Because the Earth's magnetic field is irregular, the variation itself varies from place to place. Consequently, there is no formula for determining variation. Instead, variation is scientifically checked and recorded then reported on charts. Figure 1-C shows magnetic variation around the world as of 2010.

Isogonic Lines. *Isogonic lines* are imaginary lines connecting locations with identical magnetic variation. Figure 1-C shows isogonic lines in the entire world. The constant changing of these lines is another reason that pilots keep their charts up to date.