

## How well is the main-field secular variation known?

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**A b s t r a c t:** Variations of the Earth's magnetic field occur over an astonishingly wide time spectrum. Slow changes with periods of a year to millions of years are of internal origin, sustained by fluid motion in the outer core, and are generally referred to as the geomagnetic secular variation (SV), although the cut-off between internal and external sources is not as distinct as is sometimes argued. Some characteristics of the magnetic field observed only by direct measurements are pointed out. Over about the last five centuries, measurements of magnetic declination are available and the role of the old measurements in understanding the SV behaviour is discussed. The accurate determination of the main-field secular variation at the global scale remains limited by the number of observatories and their poor distribution over the Earth's surface. The SV models obtained from geomagnetic observatory data are thereafter discussed. The SV behaviour between MAGSAT and Ørsted epochs is presented, now that the first data from the second vectorial satellite mission are available. In addition, the well-documented secular variation jerks are discussed.

**Key words:** geomagnetic field, secular variation, magnetic observatories, magnetic satellites

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