

Project Details

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Project Title:

Changes in Geomagnetic Cutoff Rigidities over a 400-Year Interval

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Summary:

We propose to determine the change in geomagnetic cutoff on a world wide basis over a 400-year interval from 1600 to the present. The geomagnetic field is recognized to be changing (i.e. decreasing) over the present epoch of human history. These changes are non-uniform over the surface of the earth. While a crude representation may be accomplished by considering only the dipole changes, we propose a better representation by utilizing higher order simulations of the geomagnetic field to calculate the geomagnetic cutoff rigidities from 1600 to the present. Our present work shows that over the 400-year time interval the change in cutoff rigidity is sufficiently large so that the change in the cosmic radiation flux impacting the earth is approximately equal to the relative change in flux over a solar cycle. Presuming the work of Svensmark and Friis-Christensen is correct, that the change in the cosmic ray intensity over a solar cycle affects the cloud cover, then an equivalent change over a 400-year period should have similar importance on the long-term climate effects.

Publication References:

Summary: no summary

Reference: Shea, M. A.; Smart, D. F.; (2004), Preliminary study of cosmic rays, geomagnetic field changes and possible climate changes, *Advances in Space Research*, Volume 34, Issue 2, p. 420-425, doi: 10.1016/j.asr.2004.02.008