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Contributions to Astrophysical Data Series based on Solar Core Characteristics

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Abstract content

An analysis of the solar magnetic field strength (B(nT)) was based on the temporal evolution of the minimum (Bmin) values in relation to the maximum (Bmax) values of the 300-year data series. Three results seem of particular significance. A two-step cycling mode is exhibited by the absolute values of Bmax and Bmin. The ratios of Br = (Bmax-Bmin)/(Bmax+Bmin) can be defined as the dimensionless quantity of ?visibility?, which, when approaching zero, would have profound implications for the occurrence of deep minima. A third result seemed to indicate that there are optimum conditions within the energy generating region of the Sun to result in the observed Schwabe cycle of ˜11 years. This highly speculative interpretation is based on the varying contributions from either predominantly hydrogen (H-1) or helium (He-3) burning in the core. Here it is further speculated that the core contributions can be extended to the fundamental solar Hallstatt cycle of ˜2200 years displayed in the Holocene radiocarbon record. The temporal evolution of the Hallstatt cycle will be discussed making use of the simple concept of ?visibility? to describe amplitude and frequency modulation of the Hallstatt cycle.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 1 (SH), pages 541-544

Primary author(s) : Dr. DRESCHHOFF, Gisela (University of Kansas)

Presenter(s) : Dr. DRESCHHOFF, Gisela (University of Kansas)

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