年輪中炭素14濃度の高精度分析によるマウンダー極小期の宇宙線22年周期変動の検出について

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Detection of the 22-yr cycles of GCRs at the Maunder Minimum with high precision measurement of carbon-14 in tree rings.

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Annually resolved records of beryllium-10 content in ice cores have revealed significant amplification of the 22-year cycles in the incident galactic cosmic rays around the Maunder Minimum (AD1645-1715). Since the solar cycles were lengthened to be about 14 years during the Maunder Minimum, the length of the Hale cycles were 28 years. Beryllium-10 record show annual-scale 40% enhancement in the flux near the solar minima, but only at the phases solar polarity is negative.

In order to determine the absolute ages of the GCR events and to determine the precise flux, we have been conducting high precision measurements of carbon-14 content in tree rings using the Accelerator Mass Spectrometer. We show the preliminary results of the measurements, and discuss the feature of the GCR variations at the deep solar minimum.