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Long-term variation of solar activity, heliospheric magnetic field, and the galactic cosmic rays

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Records of cosmogenic nuclides obtained using tree rings and ice cores provide the information on the variation of incident galactic cosmic rays and thus the information on the variability of solar magnetic activity and the consequent variation of heliospheric current sheet. We discuss the long-term variation of solar activity, heliospheric magnetic field, and the incident galactic cosmic rays over the last 1200 years based on the records of multiple nuclides; carbon-14 in tree rings and beryllium-10 in ice cores. Characteristic variations have been found at the Maunder Minimum and the Early Medieval Maximum Period of solar activity. We exhibit their variations, and discuss the potential and the future tasks of space climate study.

Keywords: solar activity, heliosphere, cosmic rays, space climate