# Evidence on the link between global lightning activity and solar activity

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The monitoring of global lightning activity with Schumann resonance (SR) measurement is becoming an important tool in studying climate change. Williams [1992] showed that the close relationship between tropical surface temperature and the monthly variability of the SR. Many reports have also indicated a link between solar activity and climate [e.g., Lassen and Friis-Christensen, 1995] and a link between solar activity and thunderstorms [e.g., Schlegel et al., 2001; Marsh and Svensmark, 2000]. To continuously monitor global lightning activity, we set up a search coil magnetometer at Syowa station (69.0S, 39.6E), Antarctica in February 2000. This magnetometer can measure the H and D components of magnetic field with a sampling frequency of 1000 Hz. From the spectral analysis of one year data from February 2000 to January 2001, we investigated the characteristics of variations in the total power of the first three harmonics (8, 14, and 20 Hz) of the SR. It is found that the SR power has a peak around 25 days, and that this peak has the highest correlation with the flux variations of relativistic MeV electrons measured with GOES spacecraft on the geosynchronous orbit. Based on this result, a possible mechanism of the solar rotation modulation will be discussed.