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AEM002-P04

Room:Convention Hall

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## Periodic Changes of Global Lightning Activities and Their Regional Dependences

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In order to study the periodic changes of global lightning activity and their regional dependences, we have analyzed ELF magnetic field waveform data obtained at Syowa station in Antarctica, Onagawa observatory in Japan and ESRANGE in Sweden for the period between February 2000 and December 2009. We have estimated day-to-day amplitude variation of the global lightning activity derived from Schumann resonance (SR) spectral power. As a next step, we have calculated power spectrum of the SR spectral amplitude variation to estimate periodicities using MEM, FFT, and wavelet method. It is found that the periodogram showed steep spectral peak at ~28-day in 2000-2001 which is the solar maximum period. On the other hand, a peaked period of the SR spectral amplitude variation gradually increased and showed a steep spectral peak over 30-days after 2002. Using the transient SR waveform data and newly developed geolocation method, we have also estimated the occurrence locations of intense lightning discharges for the period between September 2003 and August 2003. We will discuss the relationship between the periodic changes of regional lightning occurrence numbers and periodic changes of the regional lightning activity.

Keywords: lightning, Schumann resonance, periodic change