Concurrent observation of Atmospheric Electric Field and Schumann resonance

Masashi Kamogawa[1]; Yoshihisa Kimura[1]; Yukihiro Takahashi[2]; Isao Yamamoto[3]; Hironobu Fujiwara[4]; Mitsuteru Sato[5]; Tatsuo Torii[6]

[1] Dep. of Phys., Tokyo Gakugei Univ.; [2] Dept. of Geophysics, Tohoku Univ.; [3] ice.ous; [4] Dep. of Phys., Waseda Univ.; [5] Hokkaido Univ.; [6] JAEA

http://www.u-gakugei.ac.jp/˜kamogawa/

In early 20th century, global circuit (GC) model was proposed. After the observation of Carnegie research ship, the concept of the global electrical circuit was established. Although many applied models have been proposed, the initial GC model has been practically used to understand global atmospheric electric field (AEF) variations. However, it is very difficult to extract the global component of AEF, because AEF is highly affected by ion-aerosol variation in fair weather especially in the continent. Therefore, most of extracting the global component is operated by taking the average of AEF time-series in the fair weather condition. Similarly, lightning activities as a source of electric generator in the global circuit is estimated by taking the average of satellite data or local measurement. Therefore, the comparison between atmospheric electric field variation and lightning activities estimated from Schumann resonance data should be applied.

In our preliminary observation (around a few months) of atmospheric electric field in Ogasawara island, Japan, there are differences between atmospheric electric field variation and Schumann resonance measured in Showa station. In the presentation, we discuss the reason of this difference.