



The study on annual variation characteristic of the electric field using both space-based and ground-based observational data

Rui Yan, Lanwei Wang, and Zhe Hu

The Institute of Crustal Dynamics, China Earthquake Administration, Beijing, China (yanxiaoxiao_best@163.com)

In the paper, the ULF electric data recorded in DEMETER satellite, geoelectric field data recorded in all geoelectric stations in China were comprehensive studied.

The results showed that: (1) Corresponding to all geoelectric stations in China, the electric field data in ionosphere after removing the additional electric field value which caused by satellite cutting magnetic line all show the annual seasonal change trend. (2) Geoelectric field data recorded in specific observation direction from only several stations in China display the annual seasonal change trend; there are not obvious characteristic and law about these stations or observation direction. (3) For the same observation location, the geoelectric data showing a relatively stable annual variation is similar to the annual variation of the electric field data in ionosphere. (4) Through the initial phase calculation, the annual variation of the geoelectric field is consistent with the trend of the electric field in ionosphere, which has shown the correlation and synchronization between them every year.

To explore and research the characteristics of the space-based and ground-based electromagnetic observational data and the correlation between them has important scientific significance for integrating satellite and ground electromagnetic monitoring data used in earthquake monitoring and research.