

Relationship between Solar Wind Parameters and Seismic Activities

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Solar wind parameters play significant roles in electromagnetic coupling of the Sun-Earth system. From an earthquake database (called ANSS), we extracted all the earthquake events during the latest entire solar cycle, and analyzed the occurrences of the daytime and nighttime earthquakes as a function of the time difference from the maximum time (Tmax below) of the following three solar wind parameters: the epsilon parameter (reflecting the electromagnetic energy input rate into the magnetosphere), the solar wind dynamic pressure (Pdyn), and the solar wind kinetic energy flux density, $\rho \cdot V_{sw}^3$ (Fkin). We also applied this analysis to the earthquakes with magnitudes 4.0 to 9.9 Richter scale. As a result, we found that, for both epsilon and Pdyn, and for all the above earthquake-magnitude range, the earthquakes occur the most frequently near Tmax, regardless of whether we analyzed the daytime or nighttime earthquakes. At a glance this result is surprising, because the dayside of the earth is closer to the solar wind flow than the nightside; we will discuss the meaning of this result at the meeting. The analysis of Fkin is under way, and the results will also be presented at the meeting.

Acknowledgement

Solar wind parameters were obtained from the Goddard Space Flight Center, NASA via the OMNIWeb Data Explorer and the Space Physics Data Facility. Earthquake events were extracted from the Advanced National Seismic System (ANSS) database.

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