

## Seasonal variation of geomagnetic activity

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Although discovery of the seasonal variation of geomagnetic activity dates back long ago and various ideas and theories have been proposed so far to explain the feature, it seems that the origin is not yet completely understood. The essential points of the semi-annual variation are that geomagnetic activity maxima appear around equinoxes and the variation is more prominent for severe storms than less intense ones. Most of the works that studied the cause have been focusing on the mechanism how the interplanetary magnetic field has the southward component more likely in spring and autumn rather than summer and winter. This can be understood because the southward component of IMF is most effective among the factors that are relevant to producing large geomagnetic storms. We found by using the data of storm observation at Kakioka for about 80 years that the ratio of severe storms to less severe ones differs apparently between solstitial and equinoctial months, though Russell and McPherron (1973) stated that they could not find a significant seasonal modulation in the slopes of the cumulative storm count distribution. The new finding is that the slope is gentler for storm distribution in equinoctial months than that in solstitial months, indicating that storm is likely to develop to a big one in spring and autumn season. This feature accords to the fact that the seasonal variation is more remarkable for severe storms. One more interesting thing we found is that the slope is steeper for storms that are not preceded by sudden commencements irrespective of the season. We think there is a clue in the above-mentioned features to understand the mechanism of seasonal variation of geomagnetic activity and discuss the physical meanings from the viewpoints what determines the efficiency of the process of magnetic reconnection.