

## Seasonal dependence of semidiurnal equatorial magnetic variation during quiet and disturbed periods

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The analysis of 20-year long-term semidiurnal lunar tidal variations along the magnetic equator gave the evidence that the semidiurnal variations are completely different between the magnetic quiet and disturbed periods. This is the first time that the seasonal dependence of disturbance-time semidiurnal variation has been provided from the analysis of the EE-index. We found the K<sub>p</sub> dependence of semidiurnal variation: For full and new moon phase, counter troughs are amplified during disturbance time, possibly related to disturbance dynamo. For all moon phase, there are positive enhancements in dawn and strong depressions after sunset, resulting from the penetration of polar electric field. For seasonal dependence, semidiurnal variations are divided to three seasonal groups, and characterized as deep trough, enhanced crest and weak structure for D-solstice, Equinoxes and J-solstice, respectively. There is no significant longitudinal difference between Ancon and Davao, except for the amplitude of semidiurnal variations. The deep troughs occur during D-solstice and the enhanced crests during Equinoxes, at both Ancon and Davao.