

## Contribution from different current systems to SYM and ASY mid-latitude indices

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Journal of Geophysical Research, Space Physics, 2014

### Introduction

Figures “fs01.pdf”, “fs02.pdf”, “fs03.pdf”, “fs04.pdf” show the contributions from the model current systems to the different indices for October 31, 2005 storm event. Figures “fs05.pdf”, “fs06.pdf”, “fs07.pdf”, “fs08.pdf” show the results of the statistical superposed epoch analysis for the different subsets of geomagnetic storms: CIR/CME-driven storms as well as strong/moderate storms. It is known that CME-driven storms usually are more intense than CIR-driven storms. To avoid the influence of the different storm strength on the CIR- and CME-driven storm comparison we have performed the following procedure: We start from plotting the histograms of the minimum SYM-H index for CME and CIR storms separately. The histograms are plotted for 10nT bin size. For each bin, we check what type of storm is dominant and randomly remove certain number of the dominant storm events from that bin so that numbers of CIR and CME events become equal. After this procedure, the distributions of the storm strength for the CIR and CME subsets become identical.

- 1.1 fs01.pdf Analysis of the contributions from the TS05 modules to ASY-D for October 31, 2005 storm. (a) ASY-D contribution of PRC and R1, R2 FACs. (b) ASY-D contribution of the tail module, symmetric ring current and the earth's dipole shielding field (c) real (black) and model (red) ASY-D indices.
- 1.2 fs02.pdf Analysis of the contributions from the T01 modules to SYM-H for October 31, 2005 storm. (a) Contribution from the model modules to the SYM-H index. (b) Real (black) and model (red) SYM-H indices.
- 1.3 fs03.pdf Analysis of the contributions from the T01 modules to ASY-H for October 31, 2005 storm. (a) The ASY-H contribution of PRC and R1, R2 FACs. (b) ASY-H contribution of the tail module, symmetric ring current and the earth's dipole shielding field (c) real (black) and model (red) ASY-H indices.
- 1.4 fs04.pdf Analysis of the contributions from the T01 modules to ASY-D for October 31, 2005 storm. (a) The ASY-D contribution of PRC and R1, R2 FACs. (b) ASY-D contribution of the tail module, symmetric ring current and the earth's dipole shielding field (c) real (black) and model (red) ASY-D indices.

1.5 fs05.pdf Superposed epoch analysis of the normalized contribution of the different T01 model current systems to SYM-H, ASY-H, and ASY-D indices. Left and right columns correspond to the CME- and CIR-driven storm subsets, respectively. Thick black curves correspond to the normalized total model index, while thin curves show the contribution of different model modules.

1.6 fs06.pdf the same as fs05.pdf but for the TS05 model

1.7 fs07.pdf Superposed epoch analysis of the normalized contribution of the different T01 model current systems to SYM-H, ASY-H, and ASY-D indices. Left and right columns correspond to the strong ( $\min(\text{SYM-H}) < -100\text{nT}$ ) and moderate ( $-100\text{nT} < \min(\text{SYM-H}) < -50\text{nT}$ ) storm subsets, respectively. Thick black curves correspond to the normalized total model index, while thin curves show the contribution of different model modules.

1.8 fs08.pdf the same as fs07.pdf but for the TS05 model