

A comparison of field-aligned currents from global MHD simulation and KRM for substorms

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Field-aligned currents obtained from the global MHD simulation [Ogino et al., 1992] and from the statistical study of the KRM magnetogram-inversion algorithm [Kamide et al., 1996] are compared on different substorm phases. The time evolution of the magnetosphere is obtained by using the global MHD simulation on the different IMF conditions. IMF is changed from the northward of 2.5, 5.0, and 10.0 nT to the southward of -2.5, -5.0, and -10.0 nT. Quiet times and three substorm phases: Growth phase, Expansion phase, and Peak of substorm are identified in the simulation results. The global distribution of field-aligned currents in the ionosphere for four phases is obtained. Kamide et al. [1996] showed the average patterns of ionospheric parameters for substorms by using the KRM method. These simulation and observation results are compared.