Numerical simulation of magnetosphere-ionosphere convection in high-latitude ionosphere

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The numerical model of the open magnetosphere, consisting of magnetospheric magnetic field, interconnection field and interplanetary magnetic field, has been constructed.
The boundary of the magnetosphere has the ellipsoidal shape, and the magnetic field inside and outside of the magnetosphere is considered curl-free. The total magnetospheric magnetic field is a sum of the Earth dipole magnetic field, shield's magnetic field, magnetic field in the magnetosperic tail and the interconnection field. The magnetospheric model Tsyganenko 96 has been used for the determination of the shield's and tail magnetic fields.
The numerical calculations of the electric field of the magnetosphere-ionosphere convection for the south component B_z of the interplanetary magnetic field have been build using this model. The comparisons between the numerical simulation and data from the SuperDarn observation, have been made.