

# **Auroral oval equatorward boundary during strong magnetic storms**

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Data has been collected for selected strong magnetic storms during which auroras were seen from ground at middle- and low-latitudes as reported by amateur observers all over the world. Auroral reports from ground were compared with auroral images from space (Timed, Image, Polar) and in situ measurements of plasma and magnetic/electric fields in the disturbed inner magnetosphere. A new version of the Weimer2005 electric potential model gives the boundary that defines the low-latitude edge of both the convection electric field and the magnetic perturbation due to the field-aligned currents. We tried to find out whether it is possible to predict auroral oval position during strong magnetic storms using this improved ionospheric electrodynamic model. A quite good compatibility between FAC pattern and oval position has been found. This suggests that during strong magnetic storm, Weimer2005 FAC model may be used to predict equatorward boundary of the auroral oval. We also compared the observed low-latitude oval boundaries with projections of Alfvén layer for plasma sheet electrons. Particle trajectories were traced using T04\_s magnetic field model and Weimer 2005 electric field model for given solar wind conditions. Results will be discussed.