How variable are Birkeland currents?

Johnathan K Burchill  

Statistically, Birkeland current density varies by at least 10’s of nA/m²/s in the auroral zones.

Examples from when Swarm was a string of pearls

Space series estimation

Resources

Burchill, J.K. How variable are Birkeland currents?. Earth Planets Space 75, 116 (2023), and references therein

Swarm MAG and ancillary data:  
https://swarm-diss.eo.esa.int

Swarm-Aurora:  
https://swarm-aurora.com

Source code:  
https://github.com/JohnathanBurchill/spaceseries

Vertical current density and its variability, 25 November to 31 December 2013

Video