

Interactive comment on “Estimation of westward auroral electrojet current with magnetometer chain data” by Marina A. Evdokimova and Anatoli A. Petrukovich

Vladimir Papitashvili (Referee)

vpapita@verizon.net

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Referee's review of the following paper: Journal: Annales Geophysicae (ANGEO) Title: Estimation of westward auroral electrojet current with magnetometer chain data Author(s): Marina A. Evdokimova and Anatoli A. Petrukovich MS No.: angeo-2019-96 MS Type: Regular paper

The reviewed paper presents a new approach to the interpretation of ground-magnetometer data to reconstruct ionospheric currents that is applicable to a wide range of applications over the polar, mid-latitude, and equatorial region. The new modeling approach takes care of several issues that plagued previous models such as

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false minima and when the number of magnetometers along a geomagnetic meridian is limited.

The presentation of the methodology, model description, and example results is clear and up to international standards. The length of the paper is adequate and the language is fluent and precise.

The Authors reached substantial conclusions with their new algorithm for reconstruction of ionospheric currents. The title and abstract are pertinent and understandable.

The mathematical justification of the new modeling approach is very clear, figures are of excellent quality and good size. The Authors give full credits to related works and indicate clearly their own contributions.

The scientific value of this paper is important for more automated reconstruction of ionospheric currents from existing and future magnetometer networks and arrays. I recommend publishing this paper in *Annales Geophysicae*.

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2019-96>, 2019.