

Review of paper submitted to History of Geo- and Space Sciences

Title: Conjugate Aurora Observations by the Gjøa and Discovery Expeditions

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General comment

The paper is a review of the polar expeditions headed by Amundsen to the Northwest Passage at Gjøahavn in the Arctic and Scott's to Armitage at McMurdo in Antarctica, respectively. Focus is on conjugate auroral observation back in the early 1900. The language is clear, and the paper is interesting to read.

Based on expedition members logbooks and reports, the occurrence of auroras is reported and discussed in relation the magnetic activity / response at ground level for each site. The author concludes that the dominant forms observed must have been mainly substorm, theta and transpolar arcs. The latter two is usually found poleward of the auroral ovals. The only clear reported magnetic variation / response was found the be associated with substorm aurora.

As stated in the summary:

Thus, a one-to-one correlation, between auroras and magnetic disturbances, is not always true.

This must have confused the expeditions members, since it is much later on during the Space age that started with in-situ rocket and satellite exploration back in the late 50's, that the complex behavior of magnetic disturbances and aurora forms was mapped.

In addition, it was interesting to learn the history behind the expeditions and all the people involved in planning and conducting the magnetic measurements and observations.

To conclude, I recommend the paper to be published with minor corrections.

Minor corrections

Page 1 - line 32: remove spacing in word: f orm.

Page 2: lines 42 – 50 is very similar to first paragraph on page 1 (feels like repetition).

Page 9: line 238: misspelling: 'an aurorl fire"

Page 11: line 331: reference to Sigernes et al. (2011) is not listed in the reference list.

F. Sigernes, M. Dyrland, P. Brekke, S. Chernouss, D.A. Lorentzen, K. Oksavik, and C.S. Deehr, Two methods to forecast auroral displays, Journal of Space Weather and Space Climate (SWSC), Vol. 1, No. 1, A03, <https://doi.org/10.1051/swsc/2011003>, 2011.

Sincerely

Fred Sigernes

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