

Interactive comment on “Forecasting auroras from regional and global magnetic field measurements” by K. Kauristie et al.

Anonymous Referee #1

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General comment.

The paper describes a concept for a regional auroral forecast (RAF) service intended for users interested in viewing the Aurora. The main emphasis is given to Finland, but presumably the service may be expanded to include other geographic areas as well. The service, which is statistical in nature, is based upon archives of ground based magnetic field recordings and auroral observations as well as space weather alerts provided by NOAA, most successfully alerts based on Kp forecasts (Wing). Forecasts up to 12 hours ahead are successfully given, with extended time range for high latitudes.

The paper is well written and contains the necessary descriptions and background for a scientific paper. It also contains the sufficient amount of new findings. Any major problems with the paper has not been identified, therefore publication is recommended.

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Below, some minor comments are given, based on aspects that came to mind while reading

Special comments

As is often occurring in context of space weather related studies, emphasis is given to elevated conditions ranging from minor to severe geomagnetic storms. Some discussion should be added to the fact that in the auroral zone proper, which may be considered north of main-land Fennoscandia (Barents sea), the occurrence of non storm-time substorms is very common, and thus bright aurora might be expected for short time intervals under ambient solar wind conditions. As is pointed out on page 5, line 24, the northern stations used in the study are under the auroral oval under somewhat elevated activity levels ("moderate activity levels"). Although, these stations are located almost as north as aurora viewing is possible in this time sector, for the sake of applicability to other sectors such as the North American, some discussion could be added. Furthermore, the lack of NOAA alerts during quiet time substorms should be addressed.

Regarding the issuing of Kp alerts from NOAA, a few sentences discussing what problems the Wing-model might introduce, wrt. accuracy, should be added.

On page 10 there is a brief description of the auroral oval predictions performed by Sigernes et al. Mention of other techniques such as the Ovation Prime by NOAA may be considered. Furthermore, although not critical, alternative methods or proxies for determining the location of the auroral oval such as Johnsen (2013) (<http://www.swsc-journal.org/articles/swsc/abs/2013/01/swsc130002/swsc130002.html>) and references therein, where the eastward and westward electrojets are used as a proxy for the auroral oval, may also be mentioned.

Minor comment.

Page 5 line 3 Do you mean early 2000s or January 2000?

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