

## ***Interactive comment on “Complexity signatures in the geomagnetic H component recorded by the Tromsø magnetometer (70° N, 19° E) over the last ¼ century” by C. M. Hall***

### **Anonymous Referee #1**

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The author analyzes 25 years of horizontal geomagnetic component from the Tromsø magnetometer. The high-resolution data taken every 10 seconds are used to analyze fluctuations less than 1 day. Generalized Hurst exponent are derived. The author finds that times scales ranging between 1 h and 1 day are characterized by a generalized Hurst exponent of  $\sim 1.4$ , whereas shorter time scales with an exponent of  $\sim 1.6$ . This statistical behavior is consistent with changes in the position of the auroral electrojet. These signatures along with other space weather parameterization, contribute to the understanding and forecasting of solar activity on the terrestrial environment.

In general the paper is well written, and should be suitable for publication after minor corrections/modifications. Here is a list of suggestions:

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1. Title. Either use 25 years or spell out "quarter" In addition, I'm not sure if the coordinates should be included. Instead maybe add, "High latitudes"?
2. Abstract. Is it important to mention "Brownian motion" in the abstract and the exact coefficients? Maybe it is for usual readers of the journal, but I think the important part is to connect the analysis to the geophysics.
3. Conclusions. Although the abbreviations have been spelled out in the text, I suggest spelling them out in the conclusions part, e.g., Q-Q, DFA, SA, fmB, ...

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Interactive comment on Nonlin. Processes Geophys. Discuss., 1, 895, 2014.