Interactive comment on "Harmonic quiet-day curves as magnetometer baselines for ionospheric current analyses" *by* M. van de Kamp

Anonymous Referee #1

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The paper reports on the method of baseline determination of variometer time series that has been developed inside the ECLAT project . The report is meant to provide a detailed description for the users of the data provided through ECLAT. The baseline determination method has been especially highlighted to be valuable for observations from remote, unmanned stations that are effected by instrumental biases and trends. The method makes a couple of data from otherwise not populated regions useful for ionospheric research. For these reasons this report makes a valuable contribution.

Since this is an important description for results from the ECLAT program a weblink to the site where the processed magnetic data can be requested would be meaningful.

The method for baseline determination presented here is highly complex and removes

many instrumental and natural effects on the magnetic measurements. It for example removes all variations that have periods of few hours or longer, including Sq. Sq has an important day-to-day variability, and by itself is not regular in amplitude.

Due to the complexity of the method, two points should be considered to be discussed:

(1)Since Sq is a part of the natural geomagnetic field variations a more exact definition of the often used term "disturbance magnetic field" variation is required and the purpose of this baseline retrieval has to be made more clear. Here only variations due to storms or substorms (westward electrojet) remain. The equivalent currents that are retrieved from these processed data can only reflect this remaining field. Real ionospheric currents are the sum of Sq and other disturbances.

(2)The modeling and removal of the many different "unwanted" natural and instrumental effects may carry also different uncertainties. What uncertainty (in % or nT) do you expect for the processed observations?

How is a jump baseline described, a step function? (section 2.1)

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