

Interactive comment on “Repeated electromagnetic induction measurements for mapping soil moisture at the field scale: validation with data from a wireless soil moisture monitoring network” by E. Martini et al.

Anonymous Referee #3

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The authors have acquired a valuable dataset of EMI repeat surveys taken over a period of more than one year and have expended some effort with calibration and drift issues. The authors conclude, as many others recently have before them, that the EMI data do not simply indicate soil moisture, as traditionally held. Instead, apparent conductivity is, as one would expect, a complicated function of many soil and hydrologic parameters. The authors claim that they would like to interpret the EMI data in terms of vadose zone dynamics. There is a crude attempt to do this, by separating the time series into different epochs, i.e. wet and dry, and different parcels of land, the slopes and the valley bottom. There is an elementary use of Spearman's rank correlation

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to compare soil water content, in various guises, with EMI apparent conductivity. In general, however, I don't think in the end much was learned about the capability of EMI data to resolve vadose zone dynamics. Moreover, I am not actually sure what is the take-home message of this paper and, for that, I give the work a rating of "fair." I am not totally convinced there is a publishable result here, which is very surprising given the high quality of the dataset and the painstaking analysis that has already been done. Authors need to extract more compelling insights and convincing lessons from their dataset before this work could possibly be recommended for publication.

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