# *Interactive comment on* "Monitoring soil salinity using time-lapse electromagnetic conductivity imaging" *by* Maria Catarina Paz et al.

## Anonymous Referee #1

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In this paper, the authors explored the use of time-lapse EMI surveys and a 1-D inversion algorithm to predict soil salinity (ECe) at different depths at four sites in Lezíria de Vila Franca. A pre-established calibration equation was used to convert sigma to ECe. The model performance was good given the large R2, and Lin's concordance. They conclude that the method has the potential to be used for the rapid monitoring of soil salinity dynamics for agricultural management.

In general, the study is well-written and provides a nice example of monitoring soil salinity using non-invasive EMI surveys.

I have a few comments about the manuscript.

1. The authors need to elaborate more on the pre-calibration of the EM38 meter. How

are the variations of soil temperature (affecting soil ECa) be corrected?

2. Please discuss more on the pre-determined linear calibration equation. Since the soil water content is measured, can you include this in the model to improve the model performance? Can the variations in soil water content or soil texture explain the small misfit between the predicted ECe and measured ECe?

3. If possible, is it possible to include soil water content in the calibration model and develop a pedo-transfer physical model coupled with a novel inversion algorithm to simultaneously retrieve soil water and ECe values from time-lapse EMI surveys of ECa values in the future?

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