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# *Interactive comment on* "Assessing the dynamics of soil salinity with time-lapse inversion of electromagnetic data guided by hydrological modelling" *by* Mohammad Farzamian et al.

**Anonymous Referee #2**

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In this study, the authors carried out a time-lapse EMI survey over four experimental plots irrigated with water at four different salinity levels for three months. They examined how well the time-lapse EMI measurements and a time-lapse inversion algorithm can be used to monitor soil salinity variability in space and time through performing simulation experiments and inversion processes.

The proposed methods are up to date, innovative, and a new addition to agriculture geophysics. It could be used in the field of precision agriculture. The manuscript is well written. I would recommend publishing the paper after "minor revision". I have a few comments:

1- Interpretation of the results should be more quantitative rather than qualitative 2- Although the manuscript is well written, it is lengthy and has many details that should be omitted. 3- Why not to use the real field EMI measurements instead of synthetic data. 4- I am wondering if you could do a correction for EM data before using it. I would recommend reading Beamish (2011) paper to correct the FDEM data that is measured under LIN-condition. FDEM – apparent conductivity is no longer in a linear relationship with true soil conductivity in highly conductive geomaterials such as soil saturated with saltwater, which is your case.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2020-514, 2020.