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# *Interactive comment on* "Regional soil moisture monitoring network in the Raam catchment in the Netherlands" *by* Harm-Jan F. Benninga et al.

**Anonymous Referee #2**

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Regional soil moisture monitoring network in the Raam catchment in the Netherlands.

General comments: The study describes the implementation of a new in situ soil moisture monitoring network In the Raam catchment in the Netherlands. It is definitely relevant to the HESS journal. I think the paper is well written and well presented. I think the methodology is thorough and well explained, with a concise description of the calibration techniques employed. I have only minor comments regarding the validation. In particular, the data series analysis could be improved by demonstrating the influence of soil type and vegetation on the soil moisture measurements over the validation year.

Specific comments: Section 3.1: The stations are densely situated with stations located 15km apart on average and some stations just 2.5 km apart (e.g. 1 and 4). So you would presumably need a very high resolution land surface model or hydrological



model to resolve such small scale variability. Please give some examples, perhaps referencing studies for similar size networks.

Section 4.3.2: Information is missing regarding the influence of soil type and vegetation on the soil moisture measurements over the validation year. For example, for sandy soils you would expect to find a smaller dynamic range than clay soils. Was this evidenced in your results? It would be useful to see soil moisture time series plots for stations with different soil/vegetation types.

Section 4.3.3: Most soil moisture measuring devices malfunction when soils are frozen. This can lead to spurious low values (e.g. Hallikainen et al 1985). Did this affect any of the stations during the validation period and could this potentially be an issue? If so, would it be possible to plot the soil moisture for a station during frozen conditions?

Section 5: I also found the website a bit unintuitive. Please make it easier to find the data.

Section 6: In the conclusions section it might be good to add some information on future work that is expected to result from this study. What particular models/data assimilation systems might people be interested in using?

Figure 3: Perhaps use a different colour scale to show better the GHG variability Table 2: Could be refined a bit. References could be removed from the column headings and put in the caption instead.

References: Hallikainen, M. T., F. T. Ulaby, M. C. Dobson, M. A. El-Rayes, and L.-K. Wu, 1985: Microwave dielectric behavior of wet soilâĂŤ Part I: Empirical models and experimental observations. IEEE Trans. Geosci. Remote Sens., 23, 25–34, doi:10.1109/TGRS.1985.289497.

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