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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Estimating Sahelian and East African soil moisture using the Normalized Difference Vegetation Index" *by* A. McNally et al.

Anonymous Referee #1

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The paper try to translate NDVI into estimates of soil moisture, which address the scientific questions within the scope of HESS, and present novel ideas of soil moisture estimation. In my opinion, the results and conclusions are clear; while, the study methods may be confused, and the comments and suggestions are as follows.
(1) There are some papers on the relationship between NDVI and soil moisture, and some researchers have estimated soil moisture using NDVI. But, these references haven't been reviewed in the manuscript.
(2) Soil moisture contents are different for different soil depth. What's the depth of the soil moisture estimated from NDVI in the paper?
(3)The in-situ soil moisture data were measured at different depths (eg. at 40–70 and 70–100 cm in fallow fields in Niger, and at 60 cm on grassy dunes in Mali). I am not

sure these different depth data are suitable for the paper?
(4) Soil moisture has great spatial variability. The eMODIS NDVI is at 250m resolution originally. Can one point observations of soil moisture represent the 250m′250m area?
(5) The multi-satellite rainfall estimates (RFE2) at 0.1° (10km) from NOAA CPC were used to calculate the antecedent precipitation index (API). While, the NDVI-derived soil moisture (NSM) was at 250m resolution. When comparing the API and NSM data, how to identify the resolution effects?
(6) When evaluating the results of API and NSM models, the in-depth analysis were missing. Why the model results are different?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 7963, 2013.