This study shows the feasibility of improving soil moisture simulation through parameter calibration based on data assimilation (DA). It further identifies the relative importance of improved rainfall data and DA for soil moisture simulation in wet and dry seasons, i.e., improved rainfall data is more important in wet season but DA is more important in dry season. In satellite era, I anticipate assimilating globally available data to estimate model parameter values should be a new and promising way to improve land hydrological simulations and therefore this kind of studies should be encouraged. Although this study is not the first one in terms of this topic, it presents a case to demonstrate the effectiveness of this way. The paper is well organized and written clearly. I would like to see its publication after minor revisions below.

(1) The framework of the DA used in this study is very similar to Yang et al. (2007; 2009). This DA framework was used by Rasmy et al. (2011) and Sawada et al. (2014). The strategy to select optimized parameters (P4L31-32, P5L1-2) is also similar to Yang et al. (2007).
(2) Did the authors optimize soil porosity? As demonstrated in Yang et al. (2016), soil moisture estimation is most sensitive to this parameter, and in turn, this parameter is the most possible one to be estimated reasonably. A sensitivity analysis to include soil porosity as an optimized parameter can help our understanding.
(3) P6L28-29: "a finding consistent with the comparisons of precipitation between v3.0 and v2.0 presented by Maidment et al. (2017)". This is not clear if not referring to this paper. It is expected to give a little explanation to the finding in Maidment et al. (2017).
(4) P8L3-4: "it is possible that for other grid cells we are overfitting to the data.", I don't think so, because there are only two parameters optimized, as sand%+silt%+ clay%=100%. The pedo-transfer functions are empirical, and the optimized parameter values are apt to satisfying better soil moisture estimate instead of soil texture estimate.
(5) P8L10-13, I don't agree the discussion. The biases are so small that are within uncertainties of CCI soil moisture data.
(6) P12L23-25. "representativity between the satellite derived soil moisture observations and the JULES modelled soil moisture in our DA system". The CCI soil moisture is believed to be representative of a much shallower layer than 10 cm.

Ref.

Yang et al., 2007. Auto-calibration system developed to assimilate AMSR-E data into a land surface model for estimating soil moisture and the surface energy budget. J. Meteorol. Soc. Jpn. 85A, 229–242.

Yang et al., 2009. Validation of a dual-pass microwave land data assimilation system for estimating surface soil moisture in semiarid regions. J. Hydrometeorol. 10, 780–793.