Mapping surface soil moisture over the Gourma mesoscale site (Mali) by using ENVISAT ASAR data

The article is an interesting asset to the soil moisture monitoring due to a) the unusual geographic location of the study site (large feedback between soil moisture and precipitation) and b) the existence of in-situ data in such remote areas. However, similar but more elaborated study has been published by the author in Remote Sensing of Environment (RSoE) in 2007.

Major comments:

1) The quality of the paper can be significantly improved if novelties in methods that were added since the last publication are highlighted and analyses and discussions are provided that demonstrate improvements that were introduced (i.e. did results improve when normalization function was applied only in vegetated season in comparison to the previous paper where two different normalization function were applied for dry and wet season?).
2) In addition, LAI vegetation index was implemented within the last study in RSoE with minimal performance improvement. Why did author continued with implementation of NDVI?
3) The method section can be improved: a) explain better the normalization step in relation to your previous work, b) what is meant by "change detection method is applied to reduce roughness effects". Did you do the test on images or with in-situ measurements?, c) discuss and explain more "applying of empirical inversion function".
4) Page 7420, line 9: "The objective of the present study…" I did not find a section in the paper that would further discuss this objective (only in conclusion). The Baup et al., 2007a presents already up-scaled results at 1-km scale. Can you comment on this?
5) Completely missing section 2.2 Ground data
6) There is rather small number of samples used in the analyses. Please add statistics that would prove significance of the results.

Minor comments:

1) Page 7419, line 15, + Page 7431, line 6 "Particularly, the ASAR Wide Swath…" can you comment also on the usage last mode = ASAR GM for soil moisture monitoring that has significantly better temporal coverage and moderate spatial resolution?.
2) Page 7419, line 25. "At low…" rephrase and improve the statement
3) Page 7427, line 28, "is not straightforward exercise" rephrase, improve
4) The noise of ERS is lower than that of ASAR, how would you explain the 3-10% higher SSM in ERS measures? Discuss the bias.
5) Page 7431, line 25. Comment on future SENTINEL and possibly implications.