

## ***Interactive comment on “Accounting for seasonality in a soil moisture change detection algorithm for ASAR Wide Swath time series” by J. Van doninck et al.***

### **Anonymous Referee #2**

Received and published: 20 January 2012

The article is a welcome addition to the ever-increasing effort to derive useful, higher-resolution (SAR-based) remotely-sensed soil moisture datasets. It attempts to evaluate an existing retrieval method over a very difficult test area and even suggests algorithmic improvements based on the vegetation dependence of SAR backscatter. I recommend the article for publication after the following minor issues:

Page 10341, lines 2-5: Using a total of only 50 measurements at three different sites (of which some are known to be outliers), combined with the large measurement uncertainties associated with portable TDR units makes me wonder if the presented model

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validation exercise makes much sense at all. I cannot find a description of the three sites, either. I agree with the previous reviewer, it would be useful to add data from the existing in-situ network in Calabria, with the caveat that the shallowest of those measurements are taken at 30 cm depth.

Page 10343, line 1: Although Equation 9 seems to be a simple scaling, at this point the meaning of "entirely dry conditions" and "sensitivity" is not clear, and their explanation comes only in the next paragraph, after two more sentences. I suggest modifying the order of the sentences. Also, it is not clear the "dry reference" means the same as the previously mentioned "entirely dry conditions".

Page 10346, lines 14-17: I also suggest comparing with the ASCAT soil moisture distributed by EUMETSAT, at least for the area north of Catanzaro (La Sila and northwards), where the peninsula is indeed wide enough and data is available.

Page 10347, lines 19-25: The choice of the two half-year periods is clearly very arbitrary at best, e.g. in Figure 4a, the NDVI maximum during all three years seems to occur in April, which would be in the summer period according to the authors' partitioning. A more pointwise/local evaluation of the vegetation situation would be desirable, possibly in a dedicated article, dealing with a larger geographical area on the Appenine Peninsula and including more SAR and phenology data. By too confident conclusions at this stage the authors risk adding an undesired speculative note to this part of the article.

Typos, technical issues:

Page 10334, line 26: "advanced" instead of "advances".

Page 10335, line 26: "ERS scatterometer" instead of "ERS SAR".

Page 10340, line 9: You probably mean "altitude", not "topography".

Figure 1: The figure annotations are too small and hardly readable in print. This is probably the reason I could not find the location of one of the three in-situ soil moisture

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sites.

Figure 2: Please indicate which site in Figure 1 corresponds to which symbol in Figure 2. The dot symbol is too small.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 10333, 2011.

**HESD**

8, C5821–C5823, 2012

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