

Interactive comment on “Combined use of

FORMOSAT-2 images with a crop model for biomass and water monitoring of permanent grassland in Mediterranean region” by D. Courault et al.

Anonymous Referee #1

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General comments:

The paper is recommended for publication with minor clarifications and editorial improvements. It describes a method to assess and improve agriculture practises with the focus on water usage by using a crop model together with high spatio-temporal optical remote sensing data.

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Specific comments:

- is STICS also accounting for soil dynamics as indicated on page 3654 line 5. Please clarify - LAI was estimated from FORMOSAT data by using an empirical relationship. It is assumed that the relationship at least partially depend on the sensor characteristics. Was the NDVI/LAI relationship obtained with FORMOSAT data? If not, please describe possible introduced errors and try to establish an improved relationship with the in-situ data available. Please also describe alternative methods to estimate the LAI. - as reported in the text NDVI tends to saturate with LAI above 4 which introduces additional errors. Please estimate these errors using your in-situ data set. - on page 3656 - line 2 - it is indicated that airborne data was acquired, too. How was the data set used in your study? - please also consider in your discussion that future high-temporal SAR data (e.g. Sentinel-1 or a constellation of different SAR) will provide a mean to estimate soil moisture in field scale. - is it true that SPECTLA is from the Earth Explorer candidate SPECTRA. The statement looks far-fetched. I would propose to delete it.

Technical comments:

proposed editorial improvements: - throughout the text avoid using 1st. person such as "we developped", "we found" etc. - throughout the text change 'great' with 'large' - throughout the text avoid phrases like 'let us mention', use e.g. 'it should be noted' instead - p 3650 l 2 - delete 'large' - same page l 6 - change 'these last few years' to 'during the last few years' - same page l 10 - change the sentence 'Thus, the specific....' to 'Thus, the specific aim of the study is to develop and assess a new method based on a crop model for estimating water balance and crop yield constrained by products derived from optical remote sensing data with high spatio-temporal resolution' same page - l 16 - and 'the ' before STICS.... same page - l 20 - 'This information' is misleading as other information was used, too. Rephrase the sentence - p 3651 - l 6: 'These last years...' -> 'During the last years...' - same page - l 12 and throughout the text - 'agriculture practice variations' sound strange - maybe 'agriculture practice changes' is better? - p 3652 - l 1 : 'water needed' -> 'water needs' - p 3653 l 1: 'soil types (3 to 5)' is

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unclear - 3-5 different soil types? - same page - l 19: On the other hand, satellites with global coverage and high revisit (1 to 2 image / day) have typically a coarse resolution if not flying in constellation.... - same page - l 21: 'appeared' sound strangeuse are available now.....or something similar - same page - l 26: the last sentence on the page looks a bit out of context - use a new paragraph - p 3654 - l 4: delete '...of the main points listed below' - p 3656 - l 5: change 'moisture' to 'humidity' - p 3658 - l 17: delete 'using ENVI software' and use 'delineated and digitized' instead - p 3660 - l 15: 'Each ASA has it's own ...' and not 'have his...' - p 3661 - l 10: 'functional types' and not 'function types' - same page l 12: what is vernalo??? please explain - page 3667 l 2: 'methods' -> 'method' - same page - l 13: 'Accurate' appears exaggerated - I would propose to delete it - p 3669 - l 21: 'European' -> 'European Space Agency candidate Earth Explorer mission' - p 3670 l 9: 'mentioned in introduction'-> 'mentioned in the introduction' - same page - l 12: 'time revisit'-> 'revisit time'

References:

- Baillarin et al., 2004 is listed but appears not being cited in the text - Martimort, 2007 - incompletet authorship - Varella et al., - is it 2009 or 2010 as cited in the text? - Weiss et al., 2004 - is it cited in the text? - p 3665 l 17 - Merot et al, 2008 is it Merot et al, 2008b or a? - same line: Mayol should read Maihol

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 3649, 2010.