Interactive comment on "Distinguishing between early and late covering crops in the land surface model Noah-MP: Impact on simulated surface energy fluxes and temperature" *by* Kristina Bohm et al.

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We thank the reviewer for his very positive feedback and helpful comments. We have addressed all the questions and comments as described below.

1: A map of the Kraichgau region of Germany with the accompanying GVF data and the spatial representation of ECC vs. LCC would help readers conceptualize the study region and better understand what a 10% increase in LCC share means.

We added a figure with a spatial representation of ECC and LCC crops in the Kraichgau

region. Please see Figure 1 (Line 206)

2. The weather data driving Noah-MP is derived from the study site EC1. Comparing the surface energy ïňĆuxes calculated by Noah-MP to observations with the eddy covariance instrumentation at EC1 would aid readers in understanding how improved (by splitting crops into ECC and LCC) the surface ïňĆuxes are compared to generic crop representations included with Noah-MP.

We tested the Noah-MP performance against latent heat flux measured with the Eddy Covariance method and added the obtained results into the Manuscript. Please see Chapters 2.2, 2.5, 3.2 and lines 401-410 of the discussion part.

3. It's difïňĄcult to discern whether Noah-MP is being run only for the study site EC1 (point location) or for the entire Kraichgau region. The authors state Noah-MP simulations were performed for the entire Kraichgau region but Table 2 shows GVF dynamics for only for 1 point. If it's for a single point location, then more language is needed to clarify this. If it's for the entire region then a justiïňĄcation for using weather data acquired at one point location for simulating the energy ïňĆuxes of the entire Kraichgau region is needed. A discussion of the spatial resolution of Noah-MP would then be needed as well.

Obviously, this methodological point was misleadingly described in the manuscript. The simulations were forced with the local weather data of EC1 and Noah-MP was informed with regionally-derived GVF and LAI data of the Kraichgau. We removed the sentence "Noah-MP simulations were performed for the Kraichgau region", which was obviously misleading and rephrased it in "The site under study is the agricultural field belonging to the farm "Katharinentalerhof". The field is located north of the city of Pforzheim (48.920N, 8.700E). The central research site is a part of the Kraichgau region." (line 119-121).

4. Since eddy covariance data exists for the site EC1, discussion about how the other Noah-MP parameters (included in Noah-MP parameter table) might inïňĆuence the

results when vegetation type is set to 2 such as SAI or roughness length.

In the discussion, we added a study of Ingwersen et al. (2011) who performed a sensitivity study with the Noah model for our study site. Please see lines 412-425.

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