Interactive comment on "ECOCLIMAPII/Europe: a twofold database of ecosystems and surface parameters at 1km resolution based on satellite information for use in land surface, meteorological and climate models" by S. Faroux et al.

Reply to Anonymous Referee #3

The paper describes an approach to land cover mapping providing data suitable to be employed in SVAT models. It is an important contribution and within the scope of the journal. I had quite large problems understanding the mapping procedure and conclusions. I suggest a minor revision.

General comments: The first week point of the article is the description of the mapping procedure. The authors state that they use a large number of clusters in section 4.1, In section 4.2 they say the number is between 200 and 300 and mention 270 and finally they have 273 in section 4.3. The description of the mapping procedure at the beginning of chapter 4 should definitely be more understandable. What do we want to finally have, what is the input, and what are the particular steps and procedures, why they are required in this multi stage approach? Where unsupervised procedure is applicable and where supervised techniques are required in addition? The details and constraints are then described in 4.1 – 4.4.

First of all, we would like to thank the referee for her/his quite helpful and useful comments that will doubtlessly lead to improve the understanding and readability of the manuscript.

We have the feeling that major improvements brought in chapter 4 in will be quite helpful tobetter understand our step-by-step procedure of classification. In particular, we put more emphasis on the multi stage approach and the reason for having different steps, and also for the need of supervised/unsupervised classifications. This is now well illustrated in the new figure 1.

The second problem is the presentation of the results in chapter 5. The validation of the data should be presented first (5.1) and the description, that is very long with lot of rather trivial statements, go to 5.2. Comparison with previous version of ECOCLIMAP would in my opinion be much more useful when included in the validation chapter 5.1 and described along with the new version. Consider putting emphasis on new findings.

We can share the concern of the reviewer regarding the validation part. We rather choose to divide section 5 in 3 independent sections.

I would suggest to add a small paragraph in section 3.5 describing a general procedure of the data verification/validation. Both thematical content (aggregation of data with different land cover categories) as well as geographical validation at regional and local scales should be addressed here.

Because the procedure of verification/validation relies on different elements, it is not certain that a general procedure can be presented. On the other hand, we could better explain in form of recommendation why such ancillary information (AGRESTE, ISLSCP, FORMOSAT) is deemed necessary in a normal procedure of verification to strengthen the reliability of ECOCLIMAP-II land cover classification. The content of the section 3.5 has been reviewed accordingly.

Use arc second unit instead of 1/120 degree

This was corrected.

Specific comments:

page 3575 line 10

In climate modeling . . . should perhaps be a new paragraph

This was done.

page 3576

line 5, original CORINE resolution is 30 m

This is correct. The text has been corrected.

page 3577

line 1, some information and references on the application of ECOCLIMAP data in regional climate models, for example in COSMO CLM, could be added before " The rationale..."

This is indeed an interesting suggestion. The new text now integrates that.

page 3578

line 1, is the stratification an objective or rather method?

The stratification of the landscape is a targeted objective. The text may therefore be kept as it is.

line 10, add for clarification some information on what the tile approach is. I would assume a geographical area

the tile approach corresponds to a partitioning of the landscape into generic land surface types as explained. Hence a tile is not specific to a geographic area and the statement of the referee is probably not correct. We believe that new Figure 1 highlights this statement.

line 20, SVAT acronym was already explained before

Thanks for the comment. As there is no need to repeat material, acronym justification has been removed here.

page 3579

line 5, some information on the formulas used is need here

We share the concern. Actually, the formulas were present in the manuscript describing ECOCLIMAP-I. Therefore, a reference to Masson et al. (2003) was added.

line 5, "legal calendar" could by more specific like Gregorian or is it Julian?

We do agree. Actually, 'legal calendar' is not even necessary here and was removed from the text.

line 25, why only Europe?

We do agree that this maybe perceived as a somewhat arbitrary choice although of course improvement of weather forecast in Europe was the main driver of this work. Moreover, we believe that the high level of fragmented landscapes in Europe is interesting to appraise the reliability of the method. Finally, consider other continents would have lead to a too long manuscript. We mentioned this in the conclusion as a future work with emphasis on the sake of harmonization with Europe.

page 3580

line 5, rewrite the first sentence , what means "divided up"?

We recognize this is awkward. The text was modified.

line 15, you are introducing a "domain", do you mean the extent of the ECOCLIMAPII

data set?, what means "the reference"?

This is correct. We changed 'domain' into 'study area'. The word 'reference' means here the 'confidence' map. Text has been arranged.

line 25, what do you mean with "proposes"?

The text was modified here as: '… GLC2000 whole package also contains a mosaic …'.

page 3581

line 1, this is an important step, the input data employ different classifications, are the

14, categories the common categories? You should add a brief explanation

This is correct. The 14 categories correspond to the more widespread surface types. The text was improved to make that clear.

line 5, if you mean with that sentence that satellite image should have some priority,

then this information should go into the introduction

We believe that this is not a too strong statement here and also a good introduction to the following presentation of SPOT/Vegetation. The text may be kept as it is.

line 15, repeats the calendar issue already given

The text was also modified as previously for the 'calendar issue'.

line 20, explain what is "unsuitable", cloud elimination algorithms can introduce adverse

artifacts

We replaced 'unsuitable' by 'unrealistic'.

line 25, some details on the polynomial function cloud help the reader

We believe that no additional information is probably necessary here as it is a common and well-known simple technique of interpolation. We still prefer to refer the reader on this topic to publish results and to stick on the conciseness of our paper.

page 3582

line 5, what is collection 5 of MODIS LAI?

The Collection 5 concerns the more elaborated MODIS products. We assume any interested reader could visit the MODIS Internet portal to get further information.

lines1015, what do you mean by smoothing and were is it described?

'Smoothed' means here the use of 4-degree polynomial function just like for VGT NDVI. The text will be improved to mention this.

page 3583

line 1, does limits mean differences?

This is a correct statement. The text has been arranged accordingly.

line 5, see general comment, give some information on the procedure first, address the

general problems and describe the available data then.

The text has been arranged as already explained at the beginning of the review in our answer to the general comments.

page 3584

line 1, the procedure... This is not a nice start of a chapter. Describe the procedure

first and then refer to the figure and details.

We do agree that it does not offer a logical flow. The text was improved here. Thanks for posting this comment.

line 5, what does disentangle mean?

The word 'to disentangle' was actually not appropriate here and the sentence was reformulated. line 10, what samples ?

The sentence was modified as: 'Clusters of pixels at 1km resolution**…'.**

page 3585

line 1 and 5, the supervised steps need some justification, add the range used for the

threshold value

Will be done.

page 3587

line 20, what do you mean with "density"

Will be modified.

page 3588

line 1, you have a quite detailed figure 4 and let the reader with this figure somehow

alone. Add the description of F and P in the caption and F and P at all appropriate
occasions in lines 5 16

We do agree. The text will be arranged accordingly.

line 20, have a look to Noah LSM and WRF, are the values comparable ?

 We feel indebted to the referee for this suggestion. However, we would like to limit the length of the manuscript and in this regard we believe it is not reasonable to develop those previous works

page 3589

line 1, what is the area considered in Table 2. Add some details in the caption. The caption of a table/figure should give all informations needed to understand the table/figure

We share the concern. The caption has been improved to reflect the fact that all land covers classes were considered.

page 3589

line 10, is the first sentence correct? we have less forests in Portugal than in Northern

Russia

The sentenced was rewritten to clarify the meaning.

page 3593

line 20, you could add some quantitative information of the accuracy of the forest area here

Actually, we thought it would be too fastidious to come into such level of details and preferred to report instead an average of the comparison assessed to 2.5% as indicated in the text. Nevertheless, crossing Figures 8 and 9 (previously Figures 7 and 8), the reader can have a rough idea about the accuracy of the depicting of forested areas by our method at moderate resolution.

page 3595

line 5, what are the results of the adjustment in France

*J***They are described in the current subsection.**

page 3596

line 1, Figure 9 , yellow and cyan colors need explanation

We share the concern. Figure 10 (previously Figure 9) was largely improved.

pages 3597 – 3600

It is difficult to comment on that section. Put the relevant comparison into the evaluation

section. The data users would like to see the evidence that the new version provides

a more accurate description of the land surface. Only then the statements given in the

Summary section (line 5) are justified

Actually, the new version of the manuscript provides a more accurate description of the elaboration of ECOCLIMAP-II, thereby fixing the limits for ECOCLIMAP-I. This dedicated section wants to be more informative in this respect than giving straight evidence while stressing recommendations on the use of the new version in the context of meteorological applications.