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 #2

General comments:

The authors introduce a new dataset (ECOCLIMAPII) of land cover and related surface parameters (like roughness length, albedo, root depth, and others) for Europe. Such datasets are mandatory for numerical weather prediction and climate models, and as the authors point out, need to be updated from time to time. The derivation of the new dataset is based on two vegetation related variables, the leaf area index (LAI) and the NDVI, which are both satellite derived, allowing rather high spatial and temporal resolution of the final product. An advantage of the new dataset is that it is based on multiannual consistent satellite observations, whereas products like ECOCLIMAPI refer only to single annual cycles of satellite data The authors point out that one demand of the new dataset is a better regional characterization of land cover in accordance with the climatic environments of the different regions in Europe (latitude, continental or marine climate, topography). Of course, this could help to improve climate simulations for climate sensitive regions like the Mediterranean. Already from these points of view the paper it worth to be published The authors also perform validations exercises using three different databases. Unfortunately, the validations using the high resolution French dataset AGRESTE and the high resolution satellite product FORMOSAT2 concentrate only on France. A validation for other region in Europe would be desirable. I doubt a little bit whether the comparison with ISLSCP2 C4 data, which have a rough resolution of $1°$, is of real value in the sense of validation. The authors also present a comparison of the new ECOCLIMAPII dataset with ECOCLIMAPI, which is certainly necessary. But only the differences between the two products are described. But this does not tell the reader and the potential user of the new dataset whether it is really better than the old one. For instance, is the higher representation of broadleaf trees in central Russia and their tendency to disappear from the Mediterranean regions more realistic than in ECOCLIMAPI (Section 5.3.2, Fig. 11 d)? Or is the complete modification of the distribution of wetlands in ECOCLIMAPII (Section 5.3.2, Fig.11l) more realistic? These questions can be summarized by the more general questions: what is the impact of the new dataset when being applied in NWP or regional climate simulations? Can the modeller expect an improvement of his results? Solely from reading the paper the potential user of the new dataset cannot answer these questions. In addition, for a modeller, who perhaps is not an expert in the generation of land cover datasets, the paper is not easy to read and to understand. Especially, the implementation of the ECOCLIMAPII database (Chapter 4) is hard to read.

In summary: the paper describes an important study which should be published. However, in order to increase the value of the paper the authors should try to describe their methodologies in a more understandable manner, understandable for interested readers who are not experts in the author's research fields. Although there are a lot of references, the reader should be able to follow the methods without reading additional literature. The authors should spend some effort to explain briefly the different terms, and their possible relationship. For instance, what is the difference, respectively the relationship, between land cover classes and PFTs? There are some more questions and suggestions in the specific comments, which are attached in a PDFdocument.

Please also note the supplement to this comment: http://www.geoscimodeldev-discuss.net/5/C1073/2012/gmdd5C10732012 supplement.pdf

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First of all, we would like to thank the reviewer her/his support of this work and detailed comments. First major concern of the referee is the lack solid of validation outside France while considering higher resolution products. One main reason is that statistical information in a format similar to AGRESTE was not available for other countries in Europe. Worth reminding here that the CORINE Land Cover already integrates such kind of information issued from a negotiation with the different countries. This was indeed not possible at our level to have access to more information. Besides, the acquisition of highresolution imagery like FORMOSAT has a cost and cannot be repeated easily. On the other hand, we believe that the fragmented landscapes of south-west of France are quite good examples to judge of the reliability of ECOCLIMAP-II product. This point is now oullined in the last paragraph of section of 3.5.

The purpose of showing a comparison with ISLSCP2 is because we estimate that both products could enter in competition for time being and therefore we expect ECOCLIMAP-II to be advantageously more utilized in the future, especially for people already familiar with ISLSCP2 products.

The question of the differences between the two versions of ECOCLIMAP is completely funded. We modified the text in the section 'Comparison with ECOCLIMAP-I map' to emphasize on the limitations of ECOCLIMAP-I (obsolete, broad resolution addressing mixed pixels, lack of solid pre-existing land cover maps like GLC2000/CLC2000). We believe that he reduction of the number of mixed pixels, thanks for an improved spatial resolution, supports the arguments why the spatial patterns of broadleaved forests and wetlands have differently observed today compared to recent past as said in the text (as this happens in fragmented landscapes). Furthermore, it is clear that such modifications would have a priori an impact in numerical weather prediction (NWP) simulations. But sometimes a more realistic physiography may not show a clear improvement prior NWP model is tuned to the new situations. So, the answer does not come quickly. In fact, the two – surface parameters database and climate modelling – must be handled quite separately although a certain level of interactions is suitable, which happens in fact in practice. On the other hand, we do agree that the development of land cover products and associated list of parameters should offer more readability to the meteorological community. We did some effort to arrange the text in Chapter 4, probably being too technical in the submitted version. In particular, we will check that the partitioning of a given land cover class into a series of Plant Functional Types (PFT relates to generic surface types) is well understandable in the text. Thanks for posting such comment as it certainly addresses a key issue. Note that the new Figure 2 highlights such features.