

## ***Interactive comment on “Evolution of the potential distribution area of french mediterranean forests under global warming” by C. Gaucherel et al.***

### **Anonymous Referee #1**

Received and published: 11 March 2008

#### General comments:

The paper is within the scope of BG and gives an interesting contribution on the understanding of tree species response to climate change. The authors used a model based approach (MAIDEN model) to understand the response of two important Mediterranean species to climate change after parameterization and validation on the basis of evapotranspiration measurements and tree ring data. There are some inconsistencies that need to be solved before the paper can be published. I encourage the authors to resubmit the paper because of the importance of the topic.

#### Specific comments:

Introduction

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P. 575, L. 18: "temporal and spatial scales"; instead of "time and space scale";

P. 575, L. 24: "temporal and spatial scales" instead of "time and space scale";

P. 576 L. 1: "Several modelling approach have been proposed&"; instead of "Modelling approaches are diverse";

Methods: dendrochronological and ecophysiological data

You used data from 21 Aleppo pine and one oak stand. While you stated that tree ring series were based on annual earlywood width and latewoodwith and report an appropriate reference for the Pine, you do not give any information about the way you used to determine tree ring series for the oak. In fact, I expect problems in tree ring readings because of multiple growths on the same year (not real rings). How did you solve this problem ?

Why are you using an average regional chronology instead of using each single stand for parameterization and validation ?

How do you calculate average biomass index of each 21 stands over first 50 years if you have a 34 year regional chronology ?

P. 77 L. 19: how did you calculate the index ? Please report equation

Methods: ecophysiological model

P. 578 L. 13-15: these phases are true for not Mediterranean species. In the case of mediterranean species as *Quercus ilex* L. it is possible to have a stop in growth during summer because of not enough water availability and a restart in September with rainfalls. Did you take into account this possible different growth behaviour ?

Results

P. 582 L. 10-12: For the oak: is there any reason why after 1990 fits worse ?

P. 582 L. 12: "Details are given in Gaucherel et al 2007"; is part of the methods not of

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the results

P. 582 L. 18-19 and figure 2: it does not seem to me that there is a correct agreement. In fact maxima are not located at the centre for both maps.

Discussions

P. 585 L. 16-17: see first comment about the results section

P. 585 L. 23: see first comment about the results section

Tables:

Table 1: please explain the meaning of CRU and APG

Table 2: what does 21/20 mean ?

Figures

Please improve the quality of the figures.

Figure 1: why you start the data for pine in 1960 and the data for oak in 1965 ? The dotted line is hardly visible

Figure 2: it is not clear which is the region and the borders of it. You have to uniformate to the following figures.

Figure 7: the dotted line is hard to see

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Interactive comment on Biogeosciences Discuss., 5, 573, 2008.

**BGD**

5, S132–S134, 2008

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