

## ***Interactive comment on “A regional climate simulation over the Iberian Peninsula for the last millennium” by J. J. Gómez-Navarro et al.***

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Received and published: 1 February 2011

We thank the reviewer for his/her constructive comments on this manuscript, with which we essentially agree. We have taken into account most of the reviewer suggestions. In this letter we will comment some of the more important modifications:

- We acknowledge that there was some information missing about the added value of the RCM in aspects such as the reproduction of the NAO in the model. The new version of the paper adds two more figures and comments in this respect. In particular there is a new section (3.4) and a new figure (Figure 10) which shows explicitly how the RCM improves the relationship between NAO and precipitations in the IP with respect to the observations. In addition, and following the reviewer's advice, Figure 14 illustrates the differences introduced by the RCM with respect to the GCM in the high frequency

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domain during the last millennium. It is also clearly stated through the text and in the conclusions that the gain is much clearer for precipitation than for temperature, since we also think it is a very important message.

- We have added a brief discussion in the introduction respect to different reconstructions of solar irradiance, and its possible impact in these simulations. Also, we have stated explicitly that changes in land use have not been taken into account.

- We have studied the referee's suggestion on the role of internal variability as a plausible explanation for part of the differences between the mean precipitation in ECHO-G and ERA40 in the reference period (1960-1990). We have calculated the mean precipitation in the same season and period in ECHO-G but for two different experiments. The only difference between them is the initial condition, and thus the differences are only due to internal variability. The winter mean precipitation for those experiments is depicted in the Fig. 1 in this comment. It can be appreciated how the internal variability in the GCM is responsible for large biases in most parts of the IP. Nevertheless it should be noted that in general the difference, and thus the uncertainty due to internal variability, can be even larger.

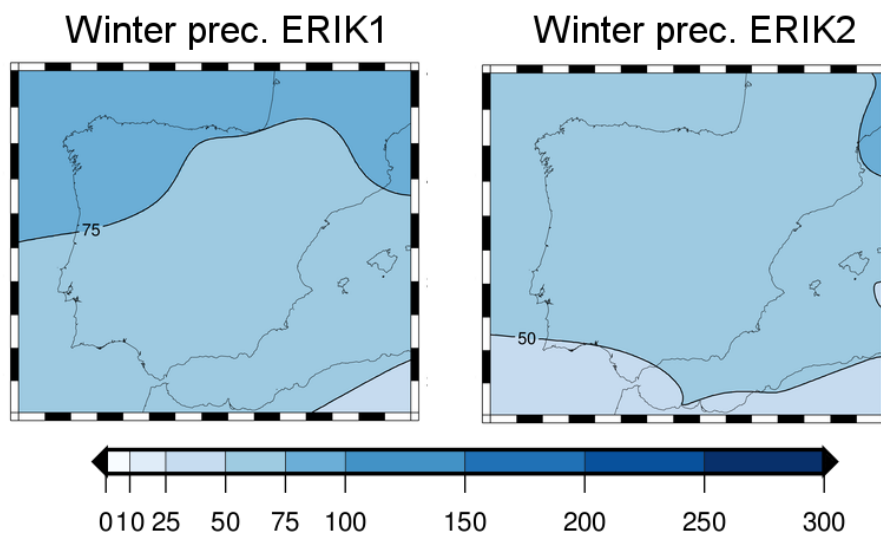
- In general, we have rewritten many parts in the text which were too ambiguous. In particular we have given numbers to the variability of all series, and to the correlations between them.

- All typos and wrong sentences noticed by the reviewer have been rewritten to make the text more easily readable.

We hope these changes satisfactorily address the reviewer's points.

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Interactive comment on Clim. Past Discuss., 6, 2071, 2010.



**Fig. 1.** Winter precipitation (in mm/month) in the reference period (1960-1990) in the ECHO-G simulations ERIK1 and ERIK2. These simulations only differ in the initial condition.