

Interactive comment on “Process based model sheds light on climate signal of mediterranean tree rings” by R. Touchan et al.

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Received and published: 28 December 2011

General comments: I really enjoy reading this paper, it is clearly written with clear aims and it presents novel approach to interpretation of the climate-tree growth relationship. I find it particularly interesting because we all know the limitations of the simple linear models. Taking into account three key parameters (light, temperature, soil moisture (water)) authors succeeded to simulate tree-ring formation of the conifer species in particular year.

Regarding the clarity of the paper I would suggest that authors explain how cambium activity and cell production is taken into account – are this just constants in the model and model actually takes into account tree-ring widths, or did somebody actually measured cambium activity and counts cells in each ring.

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Please explain if the model was tested against the real cambium growth for that particular tree-species, and do we need to make some preliminary cambium dynamics studies in order to use the model on species that are not in the model's database?

More question than comment – can we expect similar good results in the environments where relationship between climate and tree-growth is not that high; or by taking into account all parameters of the VS model – can we actually expect better results in the environments where climate – growth relationship is not that pronounced?

Although this was already commented by other reviewer: it would be good to mention that VS model can be used for broadleaved trees as well.

Specific comments:

One reference is not complete:

Rossi, S., A. Deslauriers, J. Gričar, J.-W. Seo, C. Rathgeber, T. Anfondillo, H. Morin, T. Levanić, P. Oven, R. Jalkanen, 2008. Critical temperatures for xylogenesis in conifers in cold climates. *Global Ecology and Biogeography* 17:696-707.

Figures are ok, but if printed in black / white, there is potential problem with the visibility of the lines. Please take this into account and correct it somehow.

Interactive comment on Biogeosciences Discuss., 8, 11089, 2011.