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"DID EUROPE'S FOREST MANAGEMENT MITIGATE CLIMATE WARMING?" WE BELIEVE IT PROBABLY DID….

By Erwin Dreyer On 28 February 2016 In Editor's Choice, Opinion

Comments to the paper by Naudts et al., Science, February 2016: "Europe's forest management did not mitigate climate warming"

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We are a multidisciplinary group of scientists who devoted their research efforts to the forest for many years. We are very concerned by the international debate on the contribution of sustainable forest management to climate change mitigation.

Here we wish to inform the larger research community about our deep and converging criticism of the message delivered by the paper recently published in Science (Naudts et al. (2016) under the title "Europe's forest management did not mitigate climate warming". We also disagree with the communication in a number of media that accompanied this publication. The paper aims at showing that, over 250 years, the management of European forests has accumulated a significant carbon debt and induced a summer warming by changing the albedo due to the spread of conifers; it concluded that the policy of mitigation of climate change through reforestation and forest management risks failure.

The argument that we present below is drawn from an analysis of the paper itself; it also uses additional materials available online on the journal Science's website, as well as three papers signed previously by the same group of authors, which provide more details about the research.

Our concerns relate to the following main issues:

(1) The paper concludes a series of publications describing a complex methodological scaffolding to reconstruct the time-course of European forests since 1600; the method is based on a series of very strong assumptions, questionable and very impactful for the results, but nevertheless not discussed in the Science paper.

(2) Changes to the model "Orchidée" are described in Naudts et al (2015) ; despite the 30 pages of the paper, it is very difficult to grasp whether the model is adapted to forest policy applications using fine resolution spatial variations; while relying on relevant historical facts, the approach used to quantify them bases on quite acrobatic shortcuts (e.g., on wood consumption or on the state of European forests during the early demographic expansions); the speculative nature of the historical reconstruction is discussed in detail in McGrath et al (2015) which outlines the need of further developing a multidisciplinary approach to actually support the hypotheses put forward in the paper.

(3) The Science paper reports the results of these earlier papers, without repeating the precautions and restrictions imposed by the large uncertainties of the approach that were clearly outlined in McGrath et et al (2015) and in Naudts et al (2015).

(4) Given the scale of forest transitions undergone by European countries over the two last centuries, the authors' conclusion is strongly counter–intuitive; it should first feed a debate without trying to rush towards practical conclusions. For the record, we remind that such a

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discussion was developed after Michel Becker and his team at Inra Nancy advocated the occurrence of a significant increase in forest productivity during the twentieth century.

(5) The paper of Naudts et al (2016) leads implicitely to applications for decision making; interviews given to the general press made these applications very explicit. The authors do not seem fully aware that the research they conducted is somehow highly speculative: (i) the paper deals with the past changes in forests, while what is important for decision-making today is only the future of forests, starting from their current status and under historically unprecedented conditions; (ii) the paper discusses forest management by insulating the soil–forest-atmosphere system and therefore without taking into account the environmental impacts of the use of forest carbon compared to alternative sources of material and energy.

(6) about these potential applications, the decision about the choice of species and, more broadly, the selection of management methods (including non-management) requires an integrated assessment that includes the benefits of the substitution effect provided by the use of wood (very important in for climate change mitigation but not taken into account at all in the paper) and many other decision criteria (including industrial abilities and specific efficiencies of softwood and hardwood, the lifespan of their products …)

(7) Finally, the media-boiling produced around such over-interpreted results, presented under unreasonable and excessive titles, without the caution required in the statement of facts and in the discussion of the approach, all this seems to us more marketing than a desire to advance the social debate on new post-COP21 modes of production.

Our criticism echoes that expressed on the site ResearchGate by a group of German researchers from three universities with Jürgen Bauhus (professor of silviculture at Freiburg im Breisgau) as first author.

In conclusion, we believe that this paper, even if it takes into account all the information published earlier, does not provide convincing evidence in support of the political message it would like to convey. Given the complexity of the issues brought into play by the choice of forest management strategies for global challenges in the coming decades, we affirm the need for multidisciplinary and integrated studies and research, restoring and articulating all the dimensions of the phenomena. Several are ongoing and will feed, over the coming months, an open debate on forest policy and its consequence for the mitigation of climate change.

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See also the comments published by J. Bauhus, A. Bolte, M. Dieter, F. Lang, J. Rock & H Spellmann :
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