

# ***Interactive comment on “Reply to Comment on “Using multiple observationally-based constraints to estimate climate sensitivity by Annan and Hargreaves (2006)” by Henriksson et al. (2010)” by J. D. Annan and J. C. Hargreaves***

**S. Henriksson**

svante.henriksson@fmi.fi

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(submitted on behalf of all the coauthors)

In our Comment article, we did not claim that in (Annan and Hargreaves, 2009; hereinafter AH09), the economical argument was the only argument used in justifying the prior. The exact quote from our paper is "In particular, anticipated economic damages caused by climate change cannot be used as arguments for estimation of the prior." In AH09, section 3.1 (Ignorant prior), it is said: "the uniform priors which have been

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widely used represent beliefs that in our opinion are extreme and difficult to justify. [...] Perhaps more importantly, the probability assigned to high values of  $S$  has a dominant effect on the expected cost of climate change, due to the strong rise in economic losses that accompany increases in temperature." This, to us, certainly reads as using arguments about economic damages of climate change for estimation of the prior (and specifically, for dismissing certain priors). If such argumentation is not even needed, then why present it in the first place?

Regarding our sensitivity calculation, it is a demonstration of how dominating the LGM constraint is in the end result of Annan and Hargreaves (2006). Therefore we do not suggest that 6 degrees is an upper limit for climate sensitivity but rather that the calculations should be redone to obtain a reliable estimate.

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Interactive comment on Clim. Past Discuss., 7, 431, 2011.

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