

Interactive comment on “The climate in the Baltic Sea region during the last millennium” by S. Schimanke et al.

Anonymous Referee #3

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This paper presents a regional climate simulation for the last millennium. The authors briefly describe the simulated climate by the model. After that, they simulated Baltic Sea conditions for two 100yr periods (LIA and MCA) by using a ocean regional climate model one way coupled to the RCM. Additionally, they perform some sensitivity experiments consisting in varying the air temperature.

Although the paper is interesting and fits well in ongoing research on Baltic Sea response to changing climate, it has some caveats that should be clarified. On the other hand i think that the title of the article is not appropriate since it is no mentioned that it is a modeling study.

From my point of view i think it would be appropriate to present some more results about the climatology generated by the RCA, such as climatology in the present pe-
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riod, relative changes of the studied periods respect to the present periods (temperature, precipitation and wind) and so on. Also a RCO simulation covering the present period and its comparison against simulations using "real conditions ERA" would be interesting and gives some insight about the experiments described.

Specific comments.

p1373 l25 This time step is to big compared to other RCMs, even with the Regional Ocean Model. Is it the output recording time?

p1375 l24 It is the solar forcing as in ECHO-G model?

p1376 l6-10. The authors apply a bias correction to RCA output in temperature and wind speed. From my point of view one of the advantages of dynamical downscaling is that the outputs are physically consistent. By doing this bias correction, this consistency could be lost. On the other hand, it would be useful to describe some statistics such as mean value of this bias correction. Also I understand that this bias correction is applied month by month so some dangerous steps are implicit in the forcing conditions to the RCO.

This comment is also applied to the sensitivity experiment RCO-3K.

Why do not use HOPE output as boundary conditions for the RCO?

What is the sense of performing experiment by changing the air temperature 3K if the maximum variation in figure 3 is of about 1.5K?

RCA simulations extend till near 2000. It would be of interest to see the temperature evolution during the last century in figure 3.

Figure 4 presents that NAO and temperature and sometimes perfectly coupled while in other periods not. Have the authors some explanation for that?

p1381 l5 Since you have a RCM with a high resolution, why do not compare with the Grahnan et al (2009). You should be able to isolate a similar area.

Figure 6. IS there any reason for the strong jump of runoff around 1700?

p1387 l25. It is the RCA in agreement with ECHO-G ? i.e. ECHO also simulate the same temperature evolution. From my point of view the added value of using the RCA should be shown. For example, change patters respect ECHO-G, etc.

Interactive comment on Clim. Past Discuss., 8, 1369, 2012.