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## ***Interactive comment on* “Regional variability of acidification in the Arctic: a sea of contrasts” by E. E. Popova et al.**

### **Anonymous Referee #2**

Received and published: 21 March 2013

Numeric models produce a lot of results, but how accurate the fields of future properties are is often not reported. This is valid for this contribution where the modeled ocean acidification and calcium carbonate saturation state are presented for the Arctic Ocean and compared to that of the global oceans. As the horizontal resolution is large (1 degree) many relevant processes in the Arctic Ocean are not resolved. Also as far as I can read there is furthermore no input of chemical constituents, nutrients, DOM or POM, from land, which is one of the critical parts of the Arctic Ocean carbon cycle (and thus also AOA). Hence, without any sensitivity test presented for these model computations the results are not of any real value, which is especially valid for what is stated in the second bullet of the conclusions. If information on testing how the model is sensitive to parameterization of the physical processes (mixing, sea ice formation and melting including brine production, etc) is presented then this manuscript deserve

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a resubmission. Until this is done I cannot recommend publication.

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Interactive comment on Biogeosciences Discuss., 10, 2937, 2013.

**BGD**

10, C410–C411, 2013

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