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Discussions

Interactive comment on "Changing seasonality of the Baltic Sea" *by* M. Kahru et al.

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We thank the reviewer for encouraging comments and a number of good ideas. The question of whether there is a secular trend or a state change is a good one. We are not aware of any statistical tools how to distinguish between these two but it is certainly an interesting problem. As the reviewer mentions, switching between different satellite sensors is a major technical problem in interpreting time series including multiple sensors. This was the central topic in our previous paper (Kahru and Elmgren, 2014) that consolidated results from a series of different satellite sensors. As we showed in that paper, switching from the low-sensitivity AVHRR sensors to the high-sensitivity ocean color sensors involves some unavoidable differences between the detected cyanobacteria accumulations (primarily in detecting weak accumulations) but we were able to show consistency in estimates of the major accumulations that drive the interannual differences. With SST the impact of the sensor to sensor differences is much smaller

than the observed changes and therefore it is not such a problem. The reviewer points out the important question of the uncertainty in the timing estimates. We have thought a lot about that topic and even designed some Monte Carlo experiments to create statistical estimates of the uncertainty as a function of many involved variables. However, this work is a still in early planning and depends on pending funding for a student to perform the calculations. We will discuss this problem in the revised manuscript. Considering that most changes in timing were quite drastic, we are confident that the uncertainties are much smaller than the detected change. We are also considering the use of couples biogeochemical-physical models to evaluate some of the observed features. We appreciate the reviewer's informative criticism on our use of P-values in our statistical analysis and will revise the statistical estimates accordingly.

Interactive comment on Biogeosciences Discuss., 12, 18855, 2015.