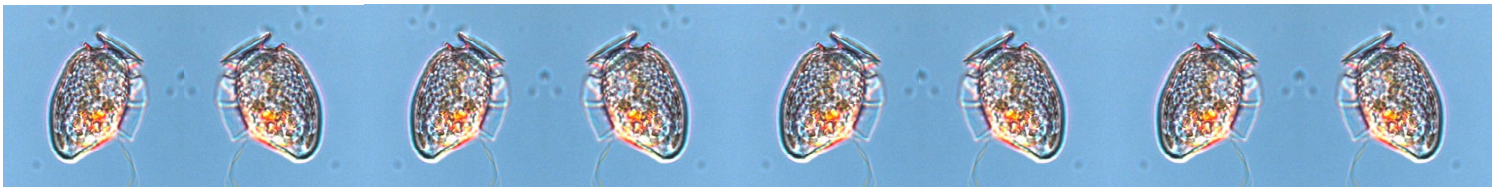

Length of time series is crucial when evaluating the effect of Climate change on Phytoplankton community.

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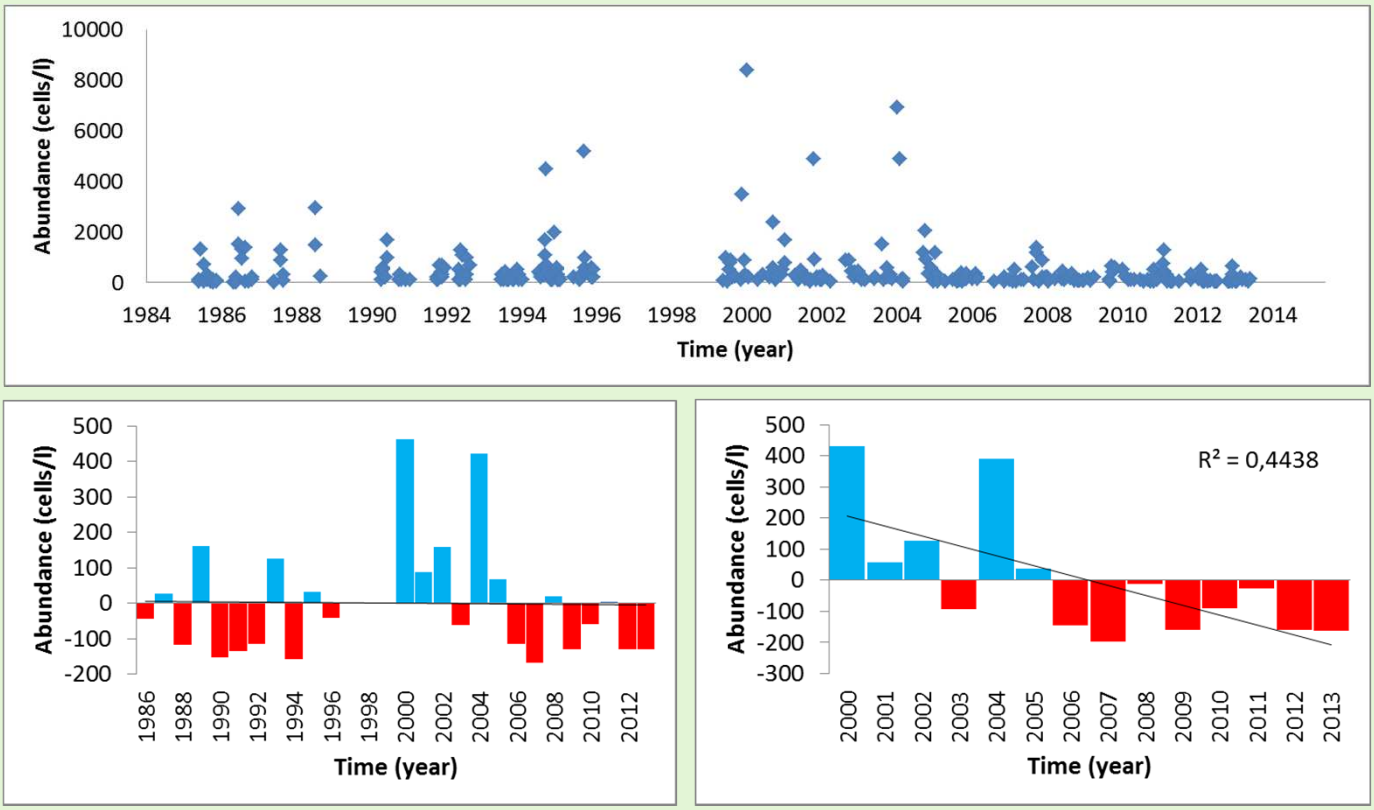
Background

Climate change is considered to be a rapid process but its effect on its environment can still be difficult to evaluate due to a stochastic environment. The length of the time series is therefore crucial when evaluating effects of climate change on the occurrence of phytoplankton species. The possibility that climate change leads to increased algal blooms and enhanced occurrence of toxic species is here evaluated. We present 25 years of monitoring data for *Dinophysis acuminata* and evalutate the possibility of increased abundance in time as a consequence of climate change.

Results



Figures The top figure present abundance of *D. acuminata* in water samples (integrated 0-10m) that has been collected at station Släggö The figures below present the same data but the mean abundance of *D. acuminata* for each year compared to an overall mean of the time period. A blue bar indicate that that year had on average a higher mean abundance compared to the overall mean of the period and a red bar indicate a lower abundance than normal for the period.

Conclusions

The necessary length of time series to evaluate effect of climate change is dependent on the variability of the system. The phytoplankton community is very variable and the temporal sampling frequency low. Even with a quite long time series, in this case of 25 years, it is difficult to find any long term trends in the occurrence of *D. acuminata* over years. A shortening of the dataset on the other hand implies a decrease in the occurrence of *D. acuminata*. It is therefor crucial to continue the monitoring effort at existing sampling stations to reveal the eventual effects of climate change.

Method

Data from the Swedish monitoring program were used The sampling frequency at the selected station Släggö at the mouth of the Gullmarsfjord, Swedish Skagerrak coast, is twice a month .Phytoplankton samples were preserved using Lugols and analysed using the Utermöhl method. The toxin producing dinoflagellate *Dinophysis acuminata* was selected as a model organism. Abundance from each sampling occasion were averaged for each sampling year and compared over years. Data is publically accessible from the Swedish Oceanographic Data Centre at SMHI (www.smhi.se).