EXPOSE

In order to define what’s, the planned work for mini project about creating and parameterizing a small ecosystem model based on specific research paper (Contrasting Controls on Microzooplankton Grazing and Viral Infection of Microbial Prey) there are some questions to be answered and titles to be investigated.

**Why we are doing this? We want to understand the fate of biomass produce by phytoplankton**

Why phytoplankton are important? because they are starting point of marine biogeochemical cycles (Play role in carbon cycle) why they play an important role in carbon cycle? How they are controlled? there are factors to control this population its really difficult to go out the wild to measure then that’s why we look at it mathematically

Phytoplankton are abundant primary producers and play an important role in the fixation of carbon and inorganic nutrients and thus biogeochemical cycles. Why? What happens if we kill them via viruses?

Phytoplankton populations are controlled both by bottom up (nutrient, light, temperature) and top-down mechanisms (viral infection, zooplankton grazing) which can influence the “distribution” of biomass within an ecosystem. (H.W.Harvey et al 11 may 2009)

viruses (that affect phytoplankton) are an important factor that influences the balance of phytoplankton productivity, export production and food availability for higher trophic levels. We don’t know the quantity of virilizes then we basically guessing how rates effect this carbon cycle then that’s why we are using this NPZD model to see what happens to base food web if we change virilizes or if we change grazing rates or if change growth rate because of light ….

NPZD models can show the flow of biomass through the basic food web levels within an ecosystem (Garrett and Loder 1981) (Rucheng Tian et al 2015 ICES journal). We would like to create such a model (NPZD-V model) for the Baltic Sea to evaluate the role viruses play in this ecosystem, parametrization experiments of viral lysis and grazing experiments and more importantly integration into water body models of the Baltic Sea.

**Research questions**

How do different viral infection rates influence the model outcome?

How do different zooplankton grazing rates influence the model outcome?

How do different nutrient/temperature/light levels affect the model outcome?

What should be done with the planned work? relevance of the work being done

The whole work is to build a NPZD-V model in R, parametrize it and answering to research questions

-can start by drawing a diagram to indicate biomass flow through the compartements

-writing equations for different components and listing the parameters needed

-building the model in R

-literature search for parameters and parametrizing the model with constant parameters

-running the model