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Title of Talk:

Can mesozooplankton organisms adapt to the changing chemical composition and degradation in food quality caused by ocean acidification?

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We investigate the direct and indirect effects of ocean acidification (OA) on mesozooplankton. We thereby take into account both ecological and genetic aspects, thus looking at changes in population structure of selected copepod species as well as signs of local adaptation in small, large and natural experimental settings. In a first step we carried out a study to investigate the effect of OA on a small scale. We cultured the copepod *Acartia tonsa* under two different CO₂ concentrations (200 and 800ppm), and fed them algae cultured under the two conditions in a full factorial design. We observed that copepods which had been exposed to the higher CO₂ concentration developed slower, but that the indirect effect of high CO₂ (changes in food stoichiometry) seemed much more important than the direct effect.

During a mesocosm experiment we took regular plankton samples which will be used to perform population genetic studies to investigate differences in species composition and genotype frequency between populations suffering under OA and those exposed to present-day CO₂ conditions. If OA causes a selective pressure, there should be changes in the biodiversity and genotype frequency.

Additionally, we aim for an understanding of the impact of high CO₂/lower pH on the fitness of mesozooplankton organisms. We hypothesize that organisms can adapt to the changed chemical composition of the water and to the degradation in food quality. To detect those adaptations and furthermore to investigate the heritability as well as the evolutionary effect of OA we carried out transplant experiments with *Pseudocalanus acuspes* from the mesocosms.