



## **Effects of rising temperature and pCO<sub>2</sub> on bacterial degradation processes in marine systems**

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The amount of CO<sub>2</sub> being stored in the ocean is mainly controlled by the balance between primary production, calcification and microbial decomposition of organic matter. Recent studies demonstrated effects of rising temperature and pCO<sub>2</sub> on phytoplankton cells and related changes in the biogeochemistry of particulate matter. However, little is known about the potential influence of climate change on microbial activities and degradation processes. We tested the effects of increasing temperature and decreasing pH on the degradation of organic matter in a series of chemostat- and batch-experiments with natural phytoplankton communities (dominated by diatoms or coccolithophores) as degradable organic matter. First results showed that rising temperature as well as seawater acidification affected bacteria abundance and growth rates, and also the potential degradation of organic matter as derived from changes in the activities of polysaccharide- and protein-degrading exoenzymes (e.g. beta-glucosidase, leucine-aminopeptidase). Variations in the microbial degradation activity during our experiments were related to changes in the biogeochemistry of dissolved and particulate organic matter. These findings show the necessity to include the response of marine bacteria to climate changes when estimating the future carbon cycle.