The impact of temperature rise on viruses of the picoplankton community in the Adriatic Sea

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Viruses are an important and dynamic component of the marine microbial community. They are shaping microbial populations by lysing the host cells and thus are changing the biogeochemical nutrient cycling. The rise of sea surface temperature caused by the global warming could have a significant effect on viral population and their interaction with the marine microbial community. This could affect the way carbon is exported through the microbial food network. Modified laboratory dilution experiments that allow estimates of viral lysis on marine picoplankton (bacteria, *Prochlorococcus*, *Synechococcus*, picoeukaryotes) under *in situ* and 3°C above *in situ* temperatures were performed at seasonal scale. Viral lysis removed 14-94% day^{-1} of bacterial standing stock, 3-135% day^{-1} of *Prochlorococcus* standing stock, 0.9-30% day^{-1} of *Synechococcus* standing stock, and 0.2-17% day^{-1} of picoeukaryote standing stock. Rates of viral lysis on picoplankton were more pronounced in the warmer months (July and November), particularly for the autotrophic picoplankton groups (especially *Synechococcus* and picoeukaryotes) that were significant hosts for viral infection. However, the largest part of the total picoplankton biomass loss through the viral lysis was related to bacteria (48-98%). A rise in temperature of 3°C increased the both, picoplankton biomass production and the amount of lysed picoplankton biomass, especially autotrophic hosts. These results suggest that the global warming could increase the virus-mediated flux of picoplankton carbon toward the pool of dissolved organic matter.

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