



## **Microbial use of gas phase organic compounds in the surface ocean**

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Large diffusive air-sea fluxes of gas-phase organic carbon (GOC) have been identified, indicating that the ocean may be a major sink for these compounds. However, little is known about the fate of these GOC compounds entering the surface ocean. We report efficient use of atmospheric GOC by marine prokaryotes at different locations in the NE Subtropical Atlantic Ocean, the Arctic Ocean and the Mediterranean Sea. Our results indicate that between 2 to 27% of the prokaryotic carbon demand was supported by GOC. Between 1 and 94% of the GOC entering the ocean was consumed by prokaryotes depending on locations, thus sustaining a disequilibrium, which drives the transfer of GOC from the atmosphere into the ocean. The magnitude of this, previously unnoticed, microbial GOC utilization stresses the need for incorporating the oceanic uptake of gaseous organic carbon into the global carbon budget.