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EFFECT OF UVR ON BIOGENIC SULFUR PRODUCTION BY ANTARCTIC MARINE MICROBES

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Ozone depletion has enhanced exposure of Antarctic marine microbes to biologically damaging ultraviolet-B radiation (UVBR, 280-320 nm). Increased UVBR exposure may influence the production of climatically active, biogenic sulfur compounds (dimethylsulfoniopropionate, dimethylsulfide and dimethylsulfoxide).

We exposed 650L tanks containing natural communities of Antarctic marine microbes to ambient solar radiation with differentially attenuated UVR at Davis Station, Antarctica. We found changes to sulfur production were due to indirect effects of UVB-exposure on protozoan grazing on bacteria and phytoplankton, and bacterial conversion of sulfur compounds. Direct inhibition of sulfur producers and/or photochemical conversion had little effect on sulfur concentrations.