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Microbial Seasonality in the Arctic and Antarctic Oceans

The oceans harbor an immense diversity of microbes, assembling into distinct communities over time and space. Autonomous technologies are a key asset for examining microbiome dynamics over seasonal and environmental gradients. My talk presents findings on microbial dynamics across polar day and night in the Arctic and Antarctic Oceans, along with personal insights from life and work aboard a polar icebreaker.

In the Arctic Fram Strait, we discovered a recurrent, annual succession of microbial modules, each harboring unique taxonomic and metabolic signatures – illustrating a finely tuned ecological landscape. In the Antarctic Weddell Sea, phytoplankton blooms coincided with marked export of organic aggregates and specific microbiomes, fueling the biological carbon pump. Similarities between Arctic and Antarctic indicate overarching, bi-polar principles of seasonality. Together, this evidence establishes fundamental insights into the structuring of marine microbiomes in the changing polar oceans.