

MM14A-0286 - Phytoplankton Community Structure Across a Fjord in the West Antarctic Peninsula



Withdrawn

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16:00 - 18:00



SDCC - Poster Hall C-D

Abstract

The West Antarctic Peninsula (WAP) is considered vulnerable to warming, yet we still know little about the molecular diversity of the phytoplankton inhabiting WAP fjords. We examined phytoplankton community structure during two WAP expeditions using 16S rRNA gene V1-V2 amplicon sequencing, phylogenetic analyses and flow cytometric cell enumeration. Samples were collected from Andvord Bay in austral spring and fall (2015-2016). While abundant taxa in plastid-derived amplicons included prasinophyte and prymnesiophyte algae, the majority of samples were dominated by either cryptophyte or stramenopile amplicons. The stramenopiles consisted of diatoms, dictyochophytes, pelagophytes, and bolidophytes, and made up the bulk of the phytoplankton amplicons during fall, a period when phytoplankton cell counts were low. In contrast, spring phytoplankton counts ranged up to 10,204 cells/mL and most stations were dominated by cryptophytes (up to 3,088 cells/mL) which formed 12.5% of cytometry-based cell counts at the surface. Cryptophytes within the *Geminigera/Teleaulax* clade had the highest relative plastid amplicon abundances (up to 90%) at the majority of inner bay stations, with diatoms increasing in the outer bay and strait. Characterization by 16S and 18S full-length gene sequencing and electron microscopy revealed that these cryptophytes are different from cultured taxa and morphologically characterized Antarctic chryptophytes. Both the relative cryptophyte amplicon abundance, as well as the flow cytometric based cryptophyte cell abundance, showed a positive correlation with chlorophyll concentration ($r=0.51$, $p\text{-value}<0.05$, and $r=0.59$, $p\text{-value}<0.05$, respectively). Thus it appears that one of the key phytoplankton taxa in this sensitive environment may be a previously uncharacterized species, whose ecological and biogeochemical role should further be examined.

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