Contamination of the Arctic reflected in microbial metagenomes from the Greenland ice sheet - DTU Orbit (24/11/2018)

Contamination of the Arctic reflected in microbial metagenomes from the Greenland ice sheet: Letter

Globally emitted contaminants accumulate in the Arctic and are stored in the frozen environments of the cryosphere. Climate change influences the release of these contaminants through elevated melt rates, resulting in increased contamination locally. Our understanding of how biological processes interact with contamination in the Arctic is limited. Through shotgun metagenomic data and binned genomes from metagenomes we show that microbial communities, sampled from multiple surface ice locations on the Greenland ice sheet, have the potential for resistance to and degradation of contaminants. The microbial potential to degrade anthropogenic contaminants, such as toxic and persistent polychlorinated biphenyls, was found to be spatially variable and not limited to regions close to human activities. Binned genomes showed close resemblance to microorganisms isolated from contaminated habitats. These results indicate that, from a microbiological perspective, the Greenland ice sheet cannot be seen as a pristine environment.

General information
State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, Department of Bio and Health Informatics, Department of Biotechnology and Biomedicine, Metagenomics, DTU Multi Assay Core, Geological Survey of Denmark and Greenland, Chr. Hansen AS, Clinical-Microbiomics ApS, Charles University
Contributors: Hauptmann, A. Z. E. L., Sicheritz-Pontén, T., Cameron, K. A., Bælum, J., Plichta, D. R., Dalgaard, M. D., Stibal, M.
Number of pages: 10
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Environmental Research Letters
Volume: 12
Issue number: 7
Article number: 074019
ISSN (Print): 1748-9326
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 4.83 SJR 2.436 SNIP 1.538
Web of Science (2017): Impact factor 4.541
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 4.74 SJR 2.71 SNIP 1.624
Web of Science (2016): Impact factor 4.404
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 4.51 SJR 2.704 SNIP 1.535
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 3.91 SJR 2.177 SNIP 1.446
Web of Science (2014): Impact factor 3.906
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 4.06 SJR 2.304 SNIP 1.671
Web of Science (2013): Impact factor 4.09
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 3.65 SJR 2.122 SNIP 1.541
Web of Science (2012): Impact factor 3.582
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1