

Terrestrial and Marine Sources of Ice Nucleating Particles in the Eurasian Arctic

Guangyu Li^{1*}, André Welti², Arianna Rocchi³, Germán Pérez Fogwill², Manuel Dall'Osto³, and Zamin A. Kanji¹

¹Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland

²Finnish Meteorological Institute, Helsinki, Finland

³Department of Marine Biology and Oceanography, Institute of Marine Sciences (ICM, CSIC), Barcelona, Spain

*Now at: Department of Carbon Emissions and Environmental Evolution, Deqing Academy of Satellite Applications, Deqing, China

Correspondence: Guangyu Li (lgy526462219@gmail.com) and Zamin A. Kanji (zamin.kanji@env.ethz.ch)

Appendix

Table A1. Correlation coefficients calculated between INP concentration in the ambient air (N_{INP}) and corresponding fog water ($N_{\text{INP, fog}}$), BT aerosolized ($N_{\text{INP, BT}}$), and seawater ($N_{\text{INP, SW}}$) at selected freezing temperatures. Only N_{INP} at the same temperature is correlated. r value in the bold text represents results with statistical significance ($p < 0.05$). r value with * denote moderate correlation ($0.3 < |r| < 0.7$), and with ** indicate strong correlation ($|r| > 0.7$)

	$N_{\text{INP}} (T = -10 \text{ }^\circ\text{C})$	$N_{\text{INP}} (T = -15 \text{ }^\circ\text{C})$	$N_{\text{INP}} (T = -20 \text{ }^\circ\text{C})$
$N_{\text{INP, fog}} (T = -10 \text{ }^\circ\text{C})$	0.4*	-	-
$N_{\text{INP, fog}} (T = -15 \text{ }^\circ\text{C})$	-	0.449*	-
$N_{\text{INP, fog}} (T = -20 \text{ }^\circ\text{C})$	-	-	0.8**
$N_{\text{INP, SW}} (T = -15 \text{ }^\circ\text{C})$	-	0.022	-
$N_{\text{INP, SW}} (T = -20 \text{ }^\circ\text{C})$	-	-	-0.075
$N_{\text{INP, BT}} (T = -15 \text{ }^\circ\text{C})$	-	0.405*	-
$N_{\text{INP, BT}} (T = -20 \text{ }^\circ\text{C})$	-	-	0.847**

Table A2. Sample information for seawater (SML and SSW) collected off the research vessel *Akademik Tryoshnikov*.

Seawater sample	Longitude (°E)	Latitude (°N)	Sampling time (UTC)
SML (SSW)_01	76.67	79.60	14/08/2021 12:00
SML (SSW)_02	99.45	79.95	26/08/2021 05:00
SML (SSW)_03	99.45	79.95	26/08/2021 05:00
SML (SSW)_04	101.63	79.27	27/08/2021 12:00

Table A3. Information for CTD water samples used for BT experiments. The unit for salinity is the practical salinity unit (PSU).

CTD station #	Longitude (°E)	Latitude (°N)	Class	Salinity (PSU)
CTD_032	65.7147	81.0011	MIZ/ice-pack	33.2663
CTD_036	64.3415	82.1657	MIZ/ice-pack	32.4621
CTD_040	64.3236	82.8329	MIZ/ice-pack	32.6291
CTD_049	75.0146	81.9994	MIZ/ice-pack	33.4738
CTD_060	92.0993	81.3992	MIZ/ice-pack	33.1445
CTD_068	95.6964	81.6344	MIZ/ice-pack	32.5423
CTD_073	98.0109	80.4291	MIZ/ice-pack	32.9783
CTD_075	96.9458	80.1735	MIZ/ice-pack	33.2801
Land_075BIS	96.32	79.43	Island water bodies	11.58
Land_078	99.40508	79.96155	Island water bodies	0
Land_080	101.588	79.284	Island water bodies	29.42
CTD_089	103.8413	79.6741	Open ocean	32.0718
CTD_106	99.9998	78.797	Close to island	29.8059
CTD_109	98.6654	77.76	Close to island	14.5673
CTD_114	101.6472	77.2887	Close to island	14.4459
CTD_117	82.5441	77.4212	Open ocean	29.716