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MDPI

Supplementary Materials: Enhanced Viral Activity in the Surface Microlayer of the Arctic and Antarctic Oceans

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Table S1. Pearson correlation coefficient among all variables in the surface microlayer (SML) and in the subsurface microlayer (SSW) of the Arctic sea water. Significant values are in bold.

SML	VA	PA	VPR	PHP	VPL	RLC	%VMM	HNF	PNF	Temp	Sal	DOC	PO4	SiO4	NO3/NO2	NH4	Wind	UVB
VA	-	**0.621**	**0.434**	-0.05	-0.01	**0.630**	0.257	0.142	0.241	**0.436**	0.290	**0.798**	**0.567**	**0.703**	0.071	0.355	**-0.512**	0.386
PA	**0.621**		-0.361	0.376	0.089	**0.784**	0.416	0.223	0.224	0.248	**0.480**	**0.633**	**0.485**	**0.690**	**0.422**	0.251	-0.114	0.237
VPR	**0.434**	-0.361		**-0.483**	-0.158	0.325	0.104	-0.091	-0.028	-0.154	-0.279	0.014	0.113	0.073	-0.271	0.124	-0.306	0.254
PHP	-0.05	0.376	**-0.483**		0.012	0.142	0.270	**-0.536**	0.315	0.068	0.035	0.320	-0.092	0.146	0.326	0.355	0.205	-0.004
VPL	-0.01	0.089	-0.158	0.012		-0.032	-0.197	0.071	-0.113	0.240	0.176	-0.119	0.142	-0.052	**0.892**	0.345	0.124	0.318
RLC	**0.630**	**0.784**	0.325	0.142	-0.032		**0.890**	0.178	0.097	0.128	-0.001	**0.568**	0.315	0.504	0.316	0.359	**-0.798**	0.342
%VMM	0.257	0.416	0.104	0.270	-0.197	**0.890**		-0.052	-0.152	-0.322	-0.364	0.245	-0.129	0.171	0.157	0.061	-0.519	0.135
HNF	0.142	0.223	-0.091	**-0.536**	0.071	0.178	-0.052		**-0.578**	0.292	0.001	-0.466	0.329	-0.166	0.059	-0.262	-0.283	-0.202
PNF	0.241	0.224	-0.028	0.315	-0.113	0.097	-0.152	**-0.578**		0.306	0.407	**0.593**	0.404	**0.686**	0.229	0.394	-0.088	0.410
Temp	**0.436**	0.248	-0.154	0.068	0.240	0.128	-0.322	0.292	0.306		**0.593**	**0.442**	**0.767**	**0.435**	0.214	0.303	-0.379	**0.539**
Sal	0.290	**0.480**	-0.279	0.035	0.176	-0.001	-0.364	0.001	0.407	**0.593**		0.390	**0.560**	**0.542**	0.259	0.269	0.059	0.221
DOC	**0.798**	**0.633**	0.014	0.320	-0.119	**0.568**	0.245	-0.466	**0.593**	**0.442**	0.390		0.415	**0.889**	0.335	**0.486**	**-0.471**	0.261
PO4	**0.567**	**0.485**	0.113	-0.092	0.142	0.315	-0.129	0.329	0.404	**0.767**	**0.560**	0.415		**0.632**	0.388	0.345	**-0.531**	0.309
SiO4	**0.703**	**0.690**	0.073	0.146	-0.052	0.504	0.171	-0.166	**0.686**	**0.435**	**0.542**	**0.889**	**0.632**		0.301	0.259	-0.255	0.278
NO3/NO2	0.071	**0.422**	-0.271	0.326	**0.892**	0.316	0.157	0.059	0.229	0.214	0.259	0.335	0.388	0.301		0.266	-0.045	-0.020
NH4	0.355	0.251	0.124	0.355	0.345	0.359	0.061	-0.262	0.394	0.303	0.269	**0.486**	0.345	0.259	0.266	-	-0.076	0.280
Wind	**-0.512**	-0.114	-0.306	0.205	0.124	**-0.798**	-0.519	-0.283	-0.088	-0.379	0.059	**-0.471**	**-0.531**	-0.255	-0.045	-0.076		0.240
UVB	0.386	0.237	0.254	-0.004	0.318	0.342	0.135	-0.202	0.410	**0.539**	0.221	0.261	0.309	0.278	-0.020	0.280	0.240	

SSW	VA	PA	VPR	PHP	VPL	RLC	%VMM	HNF	PNF	Temp	Sal	DOC	PO4	SiO4	NO3/NO2	NH4	Wind	UVB
VA		0.253	**0.562**	0.165	0.217	0.197	0.147	-0.160	0.306	0.269	0.081	0.089	-0.101	0.226	-0.286	0.015	-0.152	0.391
PA	0.253		**-0.626**	0.386	0.459	0.194	-0.214	0.364	0.288	0.300	**0.496**	0.135	0.329	**0.613**	**0.489**	-0.023	-0.031	0.184
VPR	**0.562**	**-0.626**		-0.201	0.147	0.007	0.165	-0.446	-0.002	-0.254	0.395	0.046	-0.365	-0.358	**-0.646**	-0.102	-0.093	0.123
PHP	0.165	0.386	-0.201		-0.070	0.455	**0.709**	-0.098	**0.585**	0.226	0.130	0.218	0.033	0.108	0.274	-0.262	0.304	-0.264

VPL	0.217	0.459	0.147	-0.070		**0.701**	-0.076	-0.166	0.426	0.248	0.064	0.231	0.285	0.574	0.474	0.585	-0.441	0.594
RLC	0.197	0.194	0.007	0.455	**0.701**		**0.568**	-0.140	0.382	-0.071	-0.210	0.280	-0.402	0.306	0.105	0.057	-0.395	**0.890**
%VMM	0.147	-0.214	0.165	**0.709**	-0.076	**0.568**		-0.022	0.064	-0.250	-0.367	0.148	**-0.926**	-0.179	-0.353	-0.538	-0.085	0.661
HNF	-0.160	0.364	-0.446	-0.098	-0.166	-0.140	-0.022		**-0.508**	0.316	0.103	-0.373	0.257	-0.180	0.067	0.119	-0.199	-0.090
PNF	0.306	0.288	-0.002	**0.585**	0.426	0.382	0.064	**-0.508**		0.228	**0.524**	**0.675**	0.191	**0.731**	**0.546**	-0.239	0.219	**0.586**
Temp	0.269	0.300	-0.254	0.226	0.248	-0.071	-0.250	0.316	0.228		**0.761**	0.204	**0.523**	**0.423**	0.124	0.159	-0.285	0.423
Sal	0.081	**0.496**	0.395	0.130	0.064	-0.210	-0.367	0.103	**0.524**	**0.761**		0.295	**0.517**	**0.704**	0.354	0.071	0.071	0.242
DOC	0.089	0.135	0.046	0.218	0.231	0.280	0.148	-0.373	**0.675**	0.204	0.295		0.115	0.368	0.263	0.263	-0.177	0.418
PO4	-0.101	0.329	-0.365	0.033	0.285	-0.402	**-0.926**	0.257	0.191	**0.523**	**0.517**	0.115		0.323	**0.519**	**0.474**	-0.127	-0.144
SiO4	0.226	**0.613**	-0.358	0.108	0.574	0.306	-0.179	-0.180	**0.731**	0.423	**0.704**	0.368	0.323		**0.522**	-0.009	0.090	0.460
NO3/NO2	-0.286	**0.489**	**-0.646**	0.274	0.474	0.105	-0.353	0.067	**0.546**	0.124	0.354	0.263	**0.519**	**0.522**		0.258	-0.039	-0.052
NH4	0.015	-0.023	-0.102	-0.262	0.585	0.057	-0.538	0.119	-0.239	0.159	0.071	-0.038	**0.474**	-0.009	0.258		0.005	0.341
Wind	-0.152	-0.031	-0.093	0.304	-0.441	-0.395	-0.085	-0.199	0.219	-0.285	0.071	-0.177	-0.127	0.090	-0.049	0.005		0.360
UVB	0.391	0.184	0.123	-0.264	0.594	**0.890**	0.661	-0.090	**0.586**	0.423	0.242	0.418	-0.144	0.460	-0.052	0.341	0.360	

Table S2. Pearson correlation coefficient among all variables in the surface microlayer (SML) and in the subsurface microlayer (SSW) of Antarctic sea water. Significant values are in bold.

SML	**VA**	**PA**	**VPR**	**PHP**	**VPL**	**RLC**	**%VMM**	**HNF**	**PNF**	**Temp**	**Sal**	**DOC**	**PO4**	**SiO4**	**NO3/NO2**	**NH4**	**Wind**	**UVB**
VA	-	**0.517**	**0.906**	**0.665**	**0.636**	**0.874**	0.289	0.441	0.327	-	-	-	**-0.593**	-0.368	-0.204	0.142	**-0.423**	**-0.627**
PA	**0.517**		0.107	0.365	**0.787**	**0.700**	-0.061	0.667	0.692	-	-	-	-0.443	**-0.595**	-0.246	0.075	**-0.492**	-0.399
VPR	**0.906**	0.107		**0.592**	0.470	**0.892**	0.484	0.247	0.057	-	-	-	**-0.486**	0.152	-0.089	0.141	-0.249	-0.500
PHP	**0.665**	0.365	**0.592**		0.468	**0.970**	0.661	0.388	0.099	-	-	-	**-0.519**	-0.345	**-0.518**	**-**	-0.284	**-0.607**
VPL	**0.636**	**0.787**	0.470	0.468		0.569	-0.023	**0.987**	0.767	-	-	-	-0.422	-0.397	**-**	0.088	-0.643	-0.703
RLC	**0.874**	**0.700**	**0.892**	**0.970**	0.569		0.669	0.466	0.109	-	-	-	-0.420	-0.395	-	-	**-0.815**	**-**0.599
%VMM	0.289	-0.061	0.484	0.661	-0.023	0.669		0.001	-0.543	-	-	-	0.294	0.268	-	-	-0.600	-0.415
HNF	0.441	0.667	0.247	0.388	**0.987**	0.466	0.001		**0.801**	-	-	-	-0.299	-0.273	-	-	-0.584	-0.431
PNF	0.327	0.692	0.057	0.099	0.767	0.109	-0.543	**0.801**		-	-	-	-0.549	-0.527	**-**	-	-0.242	0.805

Temp	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Sal	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
DOC	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
PO4	**-0.593**	-0.443	**-0.486**	**-0.519**	-0.422	-0.420	0.294	-0.299	-0.549	-	-	-		-	-	-	0.084	0.110
SiO4	-0.368	**-0.595**	0.152	-0.345	-0.397	-0.395	0.268	-0.273	-0.527	-	-	-	**0.860**		-	-	0.063	-0.109
NO3+NO2	-0.204	-0.246	-0.089	**-0.518**	-	-	-	-	-	-	-	-	**0.865**	**0.747**		-	-0.045	0.562
NH4	0.142	0.075	0.141	-	0.088	-	-	-	-	-	-	-	0.186	-0.004	-0.290		-0.361	-0.506
Wind	**-0.423**	**-0.492**	-0.249	-0.284	-0.643	**-0.815**	-0.600	-0.584	-0.242	-	-	-	0.084	0.063	-0.045	-0.361		0.226
UVB	**-0.627**	-0.399	-0.500	**-0.607**	-0.703	-0.599	-0.415	-0.431	0.805	-	-	-	0.110	-0.109	0.562	-0.506	0.226	

SSW	**VA**	**PA**	**VPR**	**PHP**	**VPL**	**RLC**	**%VMM**	**HNF**	**PNF**	**Temp**	**Sal**	**DOC**	**PO4**	**SiO4**	**NO3+NO2**	**NH4**	**Wind**	**UVB**
VA		0.309	**0.934**	0.329	0.342	0.241	-0.167	0.487	-0.009	-0.043	**-0.505**	**0.542**	-0.377	-0.129	-0.003	0.093	**-0.508**	**-0.704**
PA	0.309		0.024	**0.577**	0.512	0.392	-0.021	0.244	-0.224	**0.445**	0.240	-0.141	-0.227	-0.328	-0.009	-0.391	-0.369	-0.222
VPR	**0.934**	0.024		0.133	0.272	0.180	-0.219	0.569	0.070	-0.217	**-0.645**	**0.647**	-0.320	-0.014	0.040	0.284	**-0.406**	**-0.715**
PHP	0.329	**0.577**	0.133		-0.119	-0.250	-0.481	**0.932**	0.608	0.044	-0.224	0.291	-0.140	-0.289	-0.174	0.283	0.000	-0.517
VPL	0.342	0.512	0.272	-0.119		0.313	0.111	-0.210	-0.264	-0.420	0.229	0.282	-0.350	-0.215	0.718	0.835	-0.098	0.506
RLC	0.241	0.392	0.180	-0.250	0.313		**0.912**	-0.581	**0.898**	-0.091	-0.066	0.422	-0.307	-0.238	0.142	-0.133	0.339	0.656
%VMM	-0.167	-0.021	-0.219	-0.481	0.111	**0.912**		-0.672	**-0.867**	-0.092	-0.171	0.104	-0.058	-0.100	-0.059	0.107	0.545	0.787
HNF	0.487	0.244	0.569	**0.932**	-0.210	-0.581	-0.672		**0.811**	-0.194	-0.197	0.499	-0.524	-0.400	-0.179	0.342	**-0.918**	-0.842
PNF	-0.009	-0.224	0.070	0.608	-0.264	**0.898**	**-0.867**	**0.811**		-0.210	-0.197	-0.030	-0.119	-0.151	-0.253	0.318	-0.700	-0.626
Temp	-0.043	**0.445**	-0.217	0.044	-0.420	-0.091	-0.092	-0.194	-0.210		0.336	-0.241	**0.425**	0.369	0.419	0.021	-0.070	-0.417
Sal	**-0.505**	0.240	**-0.645**	-0.224	0.229	-0.066	-0.171	-0.197	-0.197	0.336		**-0.697**	0.126	0.106	-0.013	**-0.874**	0.270	0.261
DOC	**0.542**	-0.141	**0.647**	0.291	0.282	0.422	0.104	0.499	-0.030	-0.241	**-0.697**		-0.112	0.097	0.079	-0.189	-0.045	-0.231
PO4	-0.377	-0.227	-0.320	-0.140	-0.350	-0.307	-0.058	-0.524	-0.119	**0.425**	0.126	-0.112		**0.781**	**0.935**	0.065	**0.400**	0.094
SiO4	-0.129	-0.328	-0.014	-0.289	-0.215	-0.238	-0.100	-0.400	-0.151	0.369	0.106	0.097	**0.781**		**0.784**	-0.167	0.312	-0.226
NO3+NO2	-0.003	-0.009	0.040	-0.174	0.718	0.142	-0.059	-0.179	-0.253	0.419	-0.013	0.079	**0.935**	**0.784**		-0.050	0.242	0.129
NH4	0.093	-0.391	0.284	0.283	-0.835	-0.133	0.107	0.342	0.318	0.021	**-0.874**	-0.189	0.065	-0.167	-0.050		-0.094	-0.296
Wind	**-0.508**	-0.369	**-0.406**	0.000	-0.098	0.339	0.545	**-0.918**	-0.700	-0.070	0.270	-0.045	**0.400**	0.312	0.242	0.094		0.226

UVB	**-0.704**	-0.222	**-0.715**	-0.517	0.506	0.656	0.787	-0.842	-0.626	-0.417	0.261	-0.231	0.094	-0.226	0.129	-0.296	0.226