Supplement of Atmos. Chem. Phys., 19, 3007–3024, 2019
https://doi.org/10.5194/acp-19-3007-2019-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Concentrations, composition, and sources of ice-nucleating particles in the Canadian High Arctic during spring 2016

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Supplemental Information

S1 Back trajectories

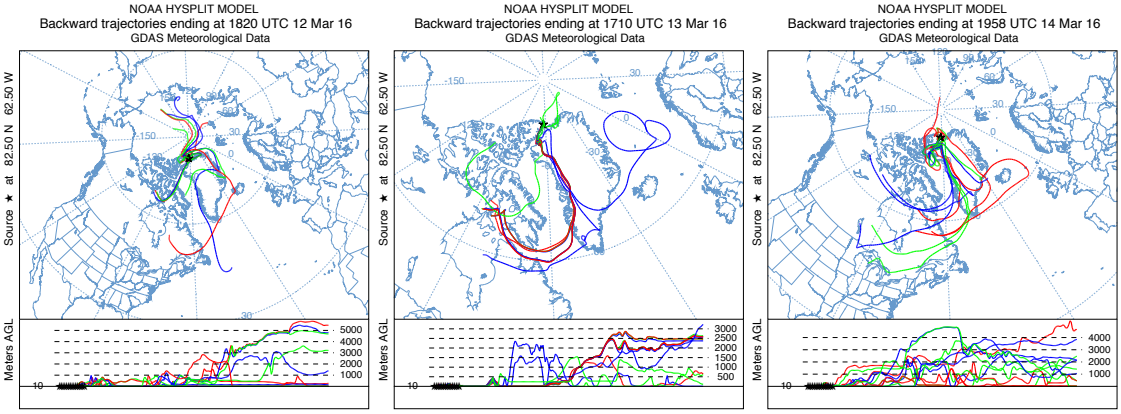
For each high-volume (i.e. quartz filter) sampling period (~ 24h), 10-day back trajectories were calculated using the HYSPLIT4 (Hybrid Single-Particle Lagrangian Integrated Trajectory) model of the NOAA Air resources Laboratory (Stein et al., 2015). The GDAS (Global Data Assimilation System) 1º meteorological data were used as input. Back trajectories were initiated at the beginning of each quartz filter sampling period and at every 2h until the end of the sampling period. The initiation height was 10m a.g.l.. The results are shown in Fig. S1.

References:

Stein, A. F., Draxler, R. R., Rolph, G. D., Stunder, B. J. B., Cohen, M. D. and Ngan, F.: NOAA's HYSPLIT Atmospheric Transport and Dispersion Modeling System, Bull. Am. Meteorol. Soc., 96(12), 2059–2077, doi:10.1175/BAMS-D-14-00110.1, 2015.

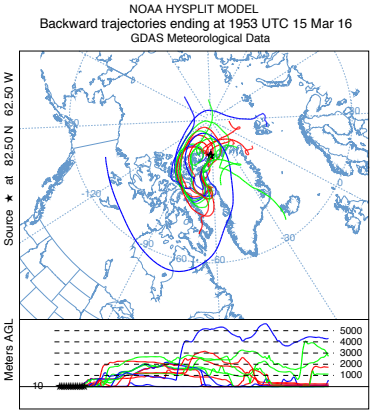
Table S1. Results of linear correlation analysis between the INP number concentrations (at freezing temperatures of -15, -20, and -25 ºC) and meteorological parameters measured in this study. *R* is the correlation coefficient, *P* is the probability value (two tailed), and the sample number is 16.

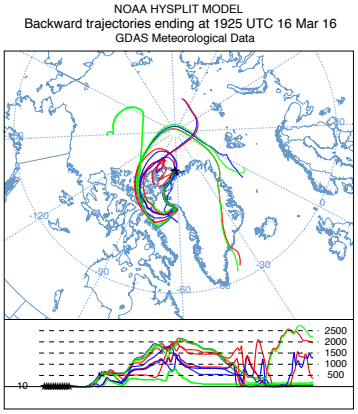
	INP number concentrations (L^{-1})					
	-15 ºC		-20 ºC		-25 ºC	
Meteorological parameters	*R*	*P*	*R*	*P*	*R*	*P*
Ambient temperature (ºC)	<0.01	0.99	0.17	0.52	0.26	0.33
Ambient RH (%)	0.07	0.80	0.15	0.59	0.45	0.08
Wind direction (degree)	-0.04	0.87	-0.16	0.56	-0.10	0.72
Wind speed (km/h)	0.07	0.80	0.24	0.38	-0.07	0.80

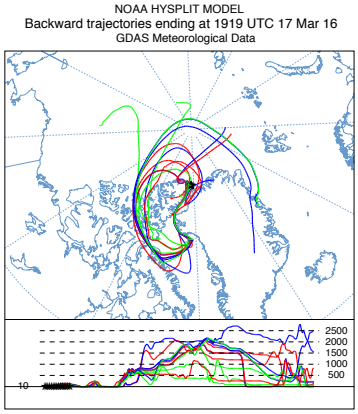

NOAA HYSPLIT MODEL
Backward trajectories ending at 1820 UTC 12 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
5000
4000
3000
2000
1000
10

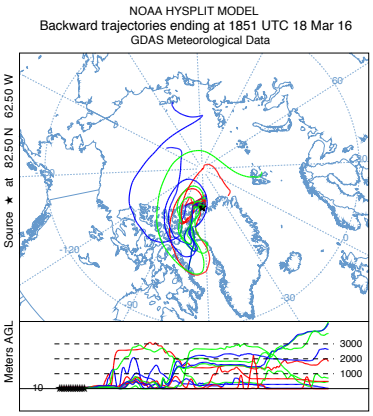
NOAA HYSPLIT MODEL
Backward trajectories ending at 1710 UTC 13 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
3000
2500
2000
1500
1000
500
10

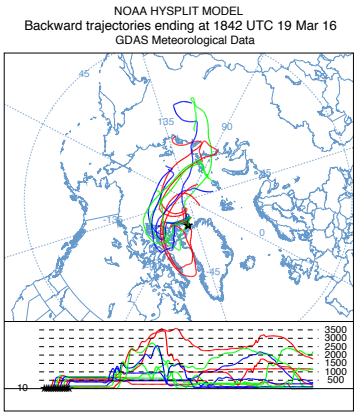
NOAA HYSPLIT MODEL
Backward trajectories ending at 1958 UTC 14 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
4000
3000
2000
1000
10

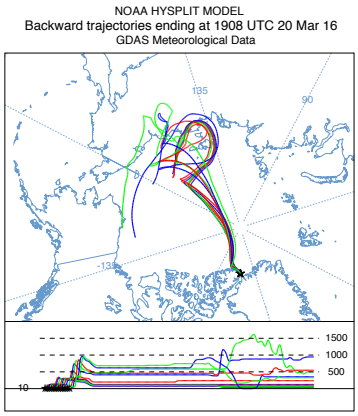

NOAA HYSPLIT MODEL
Backward trajectories ending at 1953 UTC 15 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
5000
4000
3000
2000
1000
10


NOAA HYSPLIT MODEL
Backward trajectories ending at 1925 UTC 16 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
2500
2000
1500
1000
500
10


NOAA HYSPLIT MODEL
Backward trajectories ending at 1919 UTC 17 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
2500
2000
1500
1000
500
10


NOAA HYSPLIT MODEL
Backward trajectories ending at 1851 UTC 18 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
3000
2000
1000
10


NOAA HYSPLIT MODEL
Backward trajectories ending at 1842 UTC 19 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
3500
3000
2500
2000
1500
1000
500
10


NOAA HYSPLIT MODEL
Backward trajectories ending at 1908 UTC 20 Mar 16
GDAS Meteorological Data
Source ★ at 82.50 N 62.50 W
Meters AGL
1500
1000
500
10

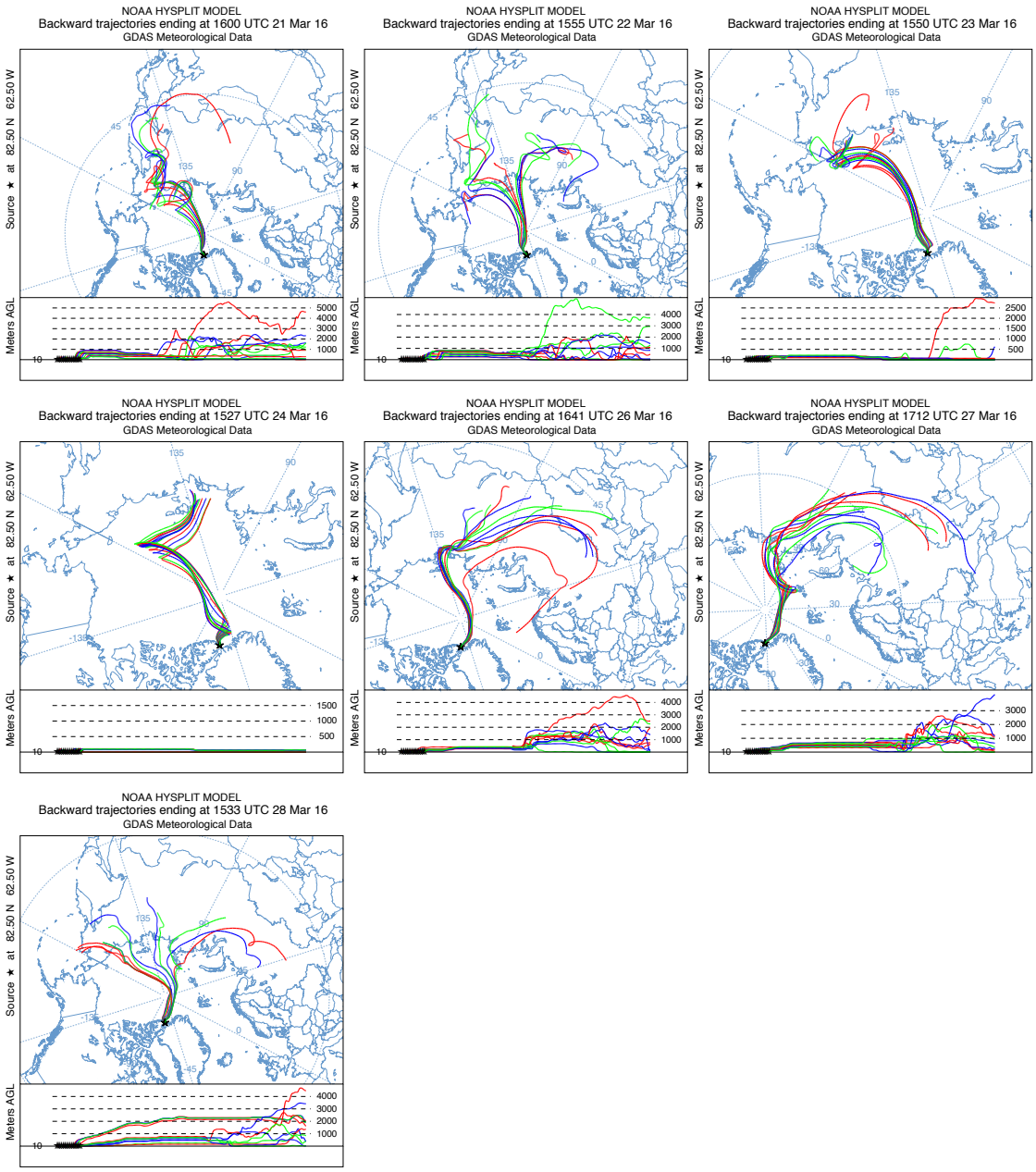


Figure S1. The 10-day HYSPLIT back trajectories for each quartz filter sample. The back trajectories were calculated at the beginning and for every 2h during each 24h sampling period. Each panel represents one sample, and the black stars represent the sampling site. Global Data Assimilation System (GDAS) meteorological data at $1^{\circ} \times 1^{\circ}$ spatial resolution were used as input to calculate the back trajectories using HYSPLIT.