Greenland isotope and black carbon data

GEOG - 6960

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“A once-in-a-lifetime chance to cross Greenland”

modified trucks were equipped with winches, 44-inch-tall tires, and glacier bars to catch them if they tumbled into a crevasse. The trucks were modified to burn jet fuel, which doesn’t freeze at extremely low temperatures.

Expedition across Greenland

Team of seven
Greg Miller (former CEO of Utah Jazz)
Dr. Jon Solberg (Medical Doctor & snow samples)

“We had to decide whether to continue or go back...we had no way to know if the storm would last a day, a week or a month.”
- Solberg

81.29 degrees north
Made it further north than any motorized land-based vehicle has ever traveled

“This had never been done before, and likely will never be done again,” Soldberg said.

“It was a logistical challenge and an endurance test. It was white darkness. We were in complete whiteouts. We drove off-road following GPS coordinates, and worried we would run into each other when visibility was poor.”

“we realized that camping wasn’t feasible... and the hot food froze to the plates. We ate a lot of Snicker bars and HoHos, and we still lost weight. We resorted to sleeping in the vehicles and driving around the clock in shifts.”

A very cold Cold War

The expedition spent hours exploring an abandoned Cold War radar station (DYE-2)

Abandoned in 1988

“There was a frozen ham on the table, bread being mixed in the kitchen, prescriptions written in the infirmary,” Solberg said. “It’s unbelievable. The furniture is still in place.”

Source:
http://blogs.und.edu/und-today/2018/08/on-top-of-the-world/

Study Area


Sample
186
Sample
120
Sample
148
Sample
12
10
Sample
180
Sample
178
Sample
92
Sample
79
Sample
87

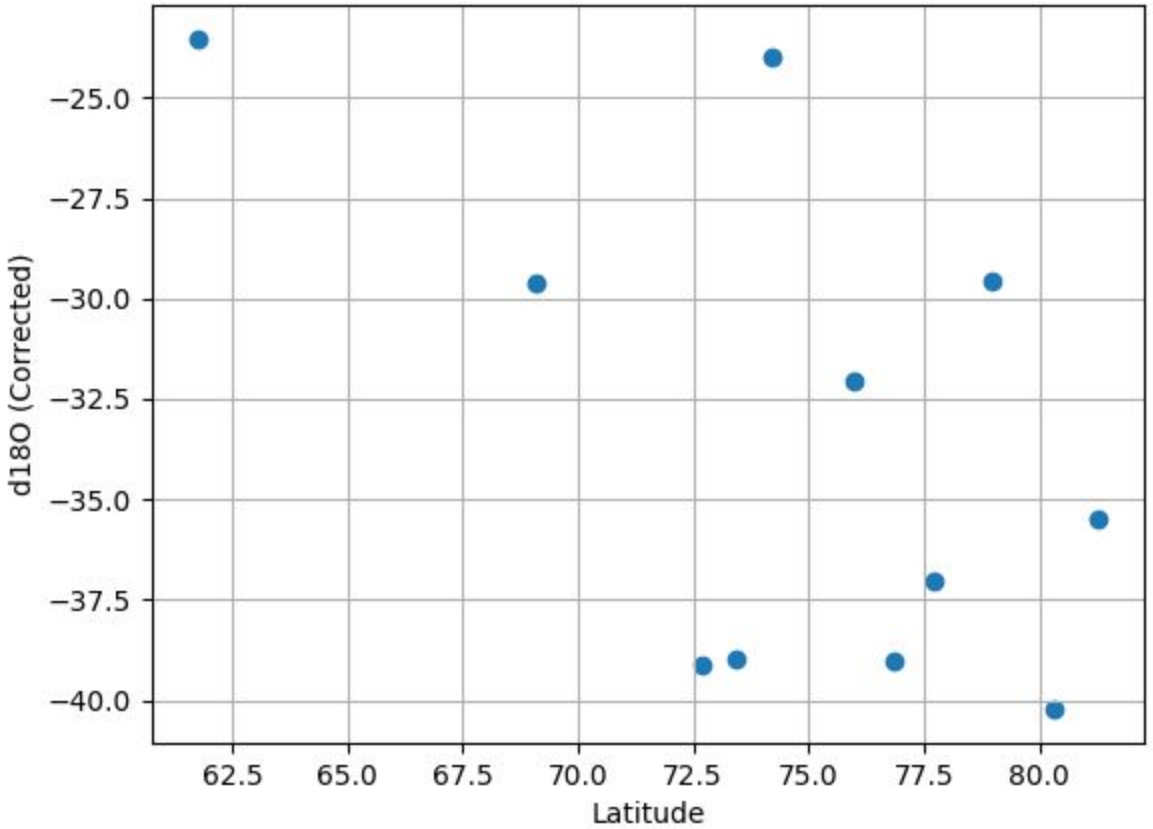
https://images.app.goo.gl/us6REyMBxUpB1K4q8

Greenland Dataset

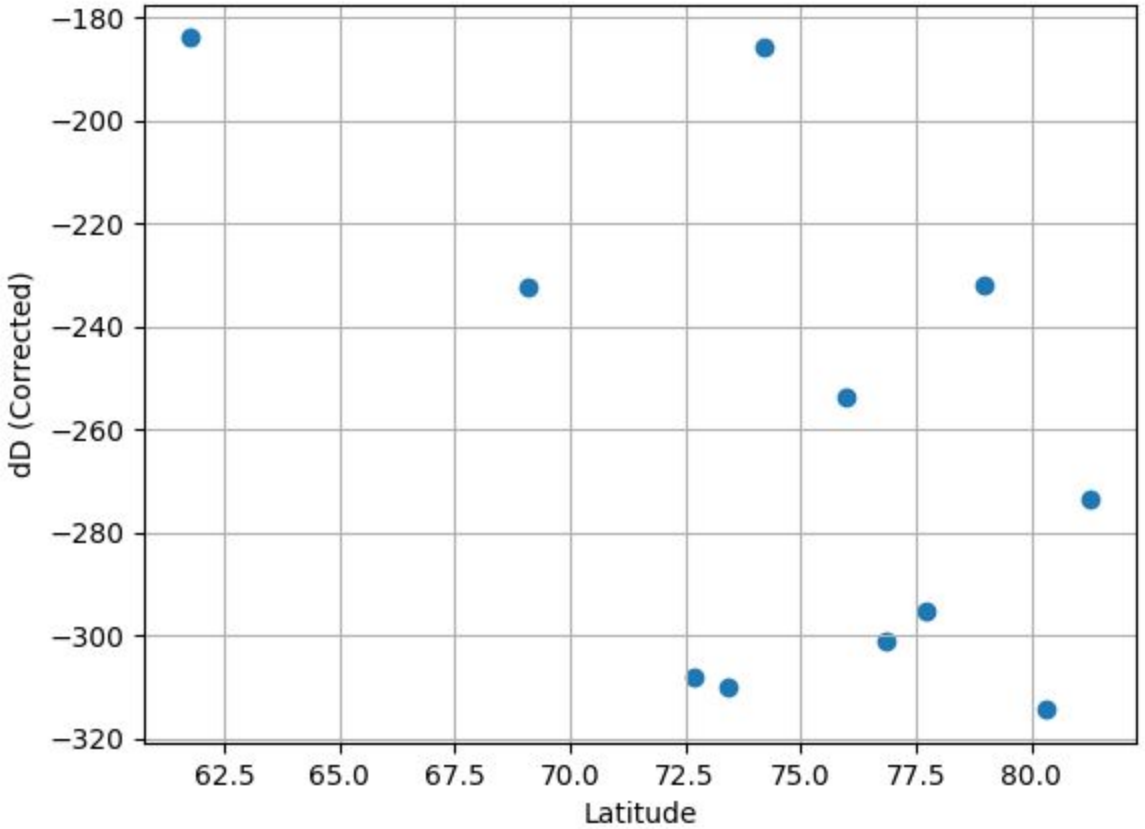
- Date
- Lat/Lon
- Elevation
- Black carbon concentration (ug/L)
- BC RMSE (from model)
- dO18
- dD
- D-excess
- Snow temp (Celcius)
- Notes (from sampling)

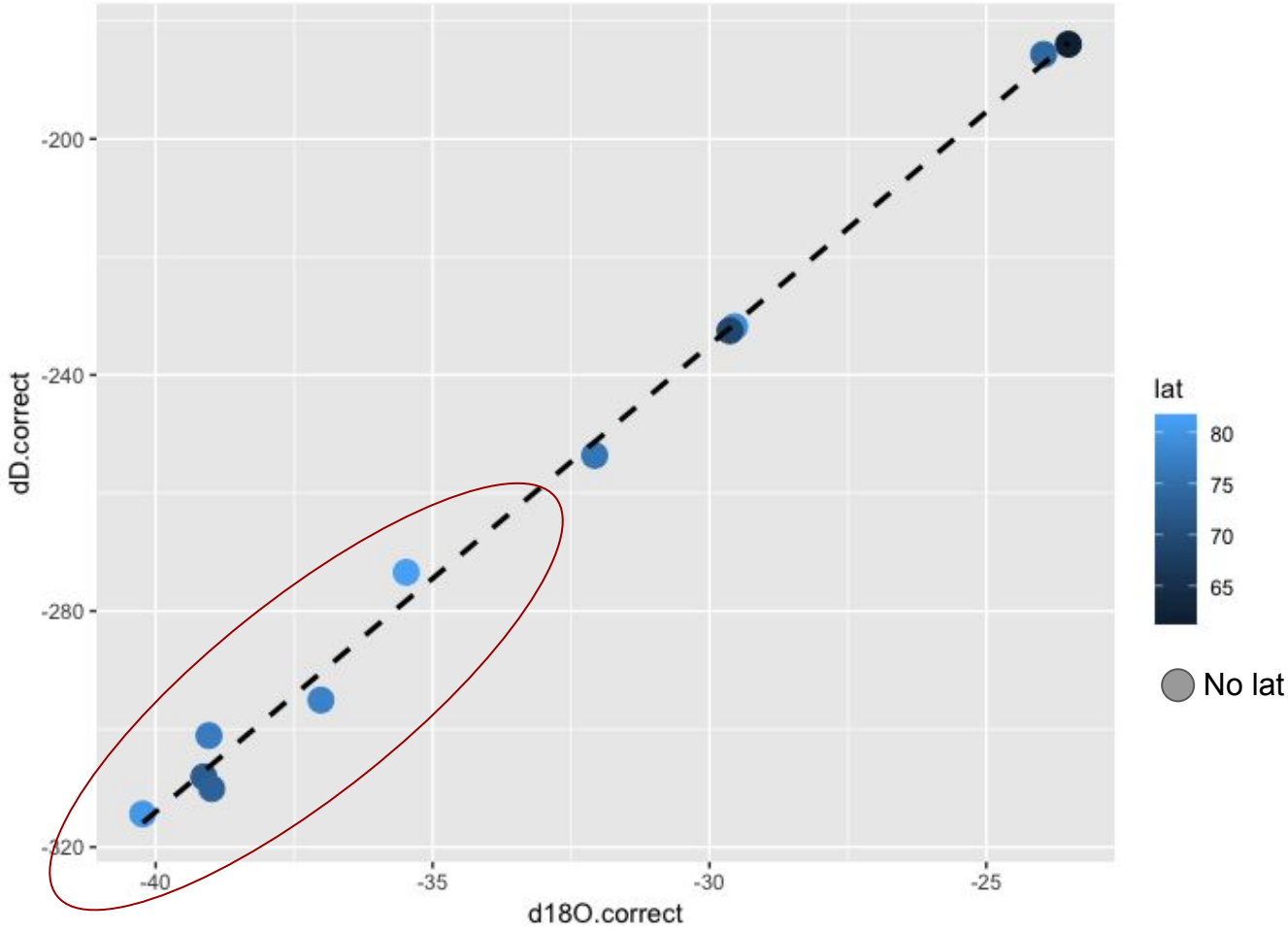
Sample	Date	long	lat	elev.ft	elev.m	snow.temp	Notes	cnt.s	Duration.s	Count	ug.L	rmse BC	d18O.correct	d18O.sigma	d18O.method	dD.correct
180	43164	-35.000526	75.999895	NA	2542	-19	soft snow	48.17464115	418	20137	3.339539673	1.09	-32.07322536	0.060335175	Curve-fail	-253.6285163
148	26/4/18	-43.842803	78.976109	8075	NA	-26	sastrugi*	53.488	375	20058	3.562902569	1.09	-29.5446986	0.004905443	Curve	-231.8119028
186	30/4/18	-48.486472	81.288962	NA	553	-15	tip of glacier	89.79220779	231	20742	5.08905829	1.09	-35.476164	0.016413282	Mix	-273.4537746
87	20/4/18	46.219715	61.748863	NA	NA	-11	NA	37.08502773	541	20063	2.873354676	1.09	-23.51735948	0.016275356	Curve	-183.9617387
178	23/4/18	-24.814908	74.207942	7490	NA	-30	sastrugi*	37.54748603	537	20163	2.892795491	1.09	-23.9649953	0.008024581	Curve	-185.6821682
120	30/4/18	-45.23	80.327853	NA	1969	-28	NA	31.08217054	645	20048	2.62100666	1.09	-40.23531487	0.008543074	Curve	-314.3900533

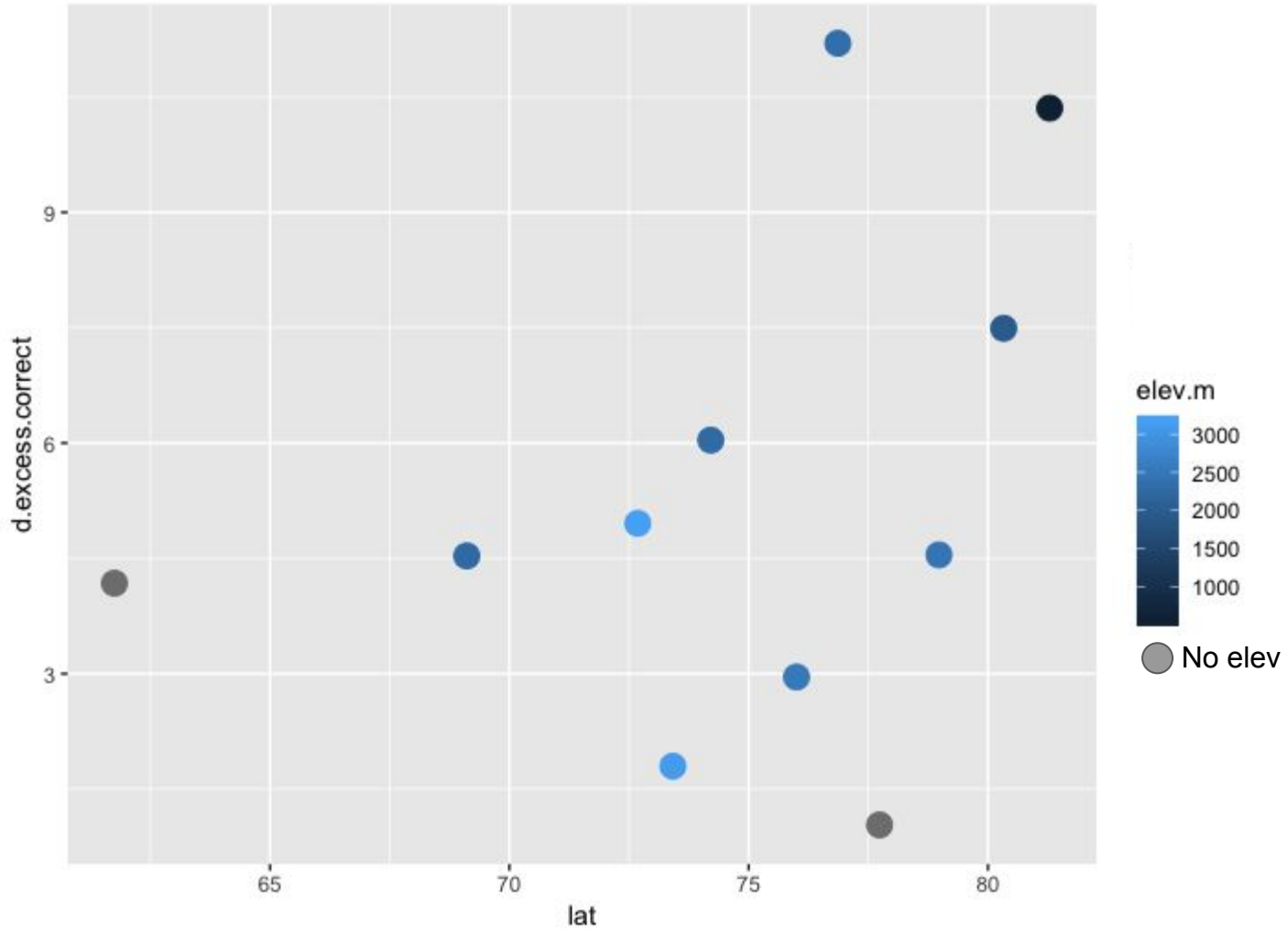
d18O (Corrected)
count 11.000000
mean -33.510625
std 6.142949
min -40.235315
25% -39.013386
50% -35.476164
75% -29.587800
max -23.517359



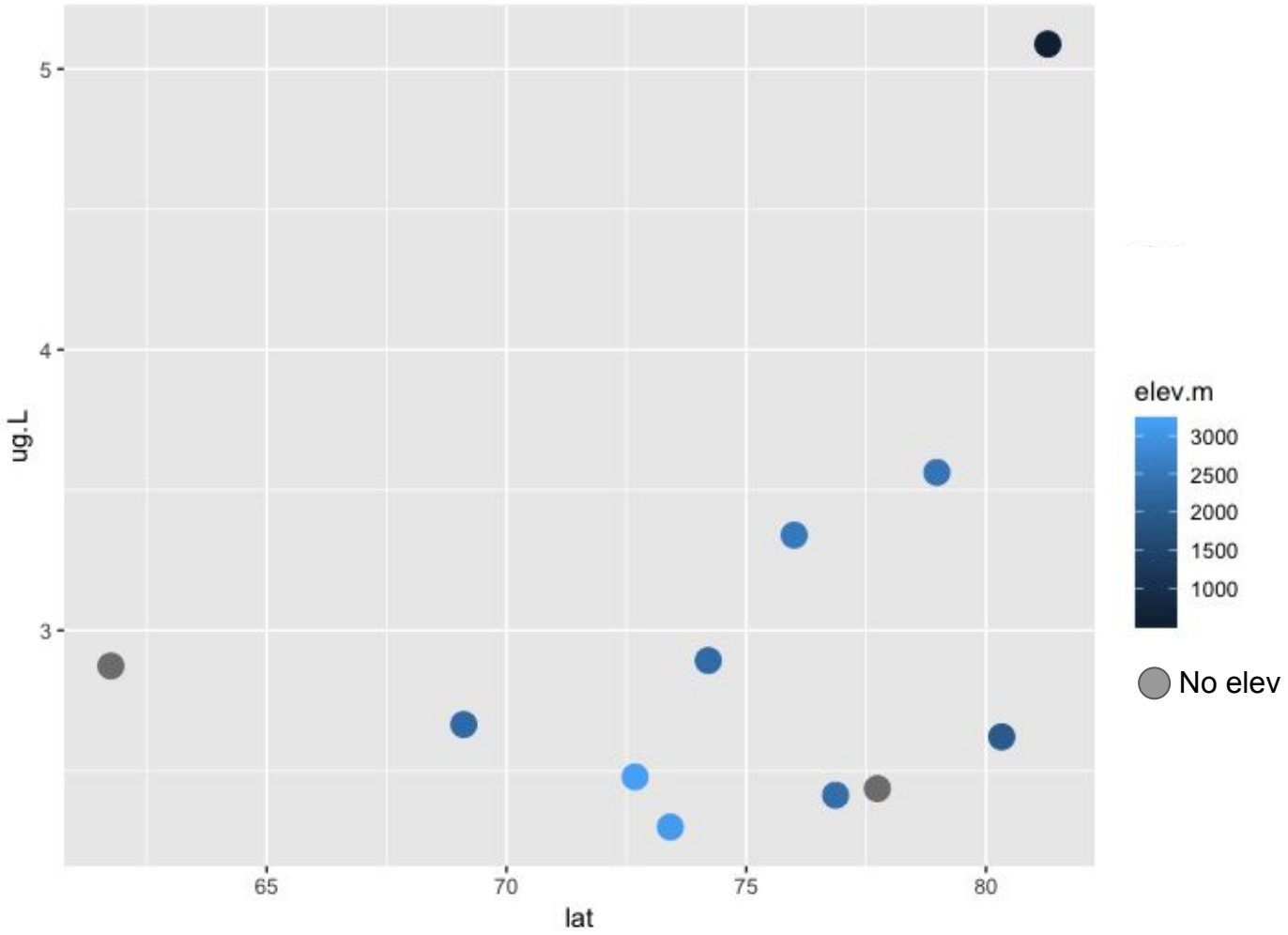
dD (Corrected)
count 11.000000
mean -262.713776
std 48.682006
min -314.390053
25% -304.603791
50% -273.453775
75% -232.163439
max -183.961739



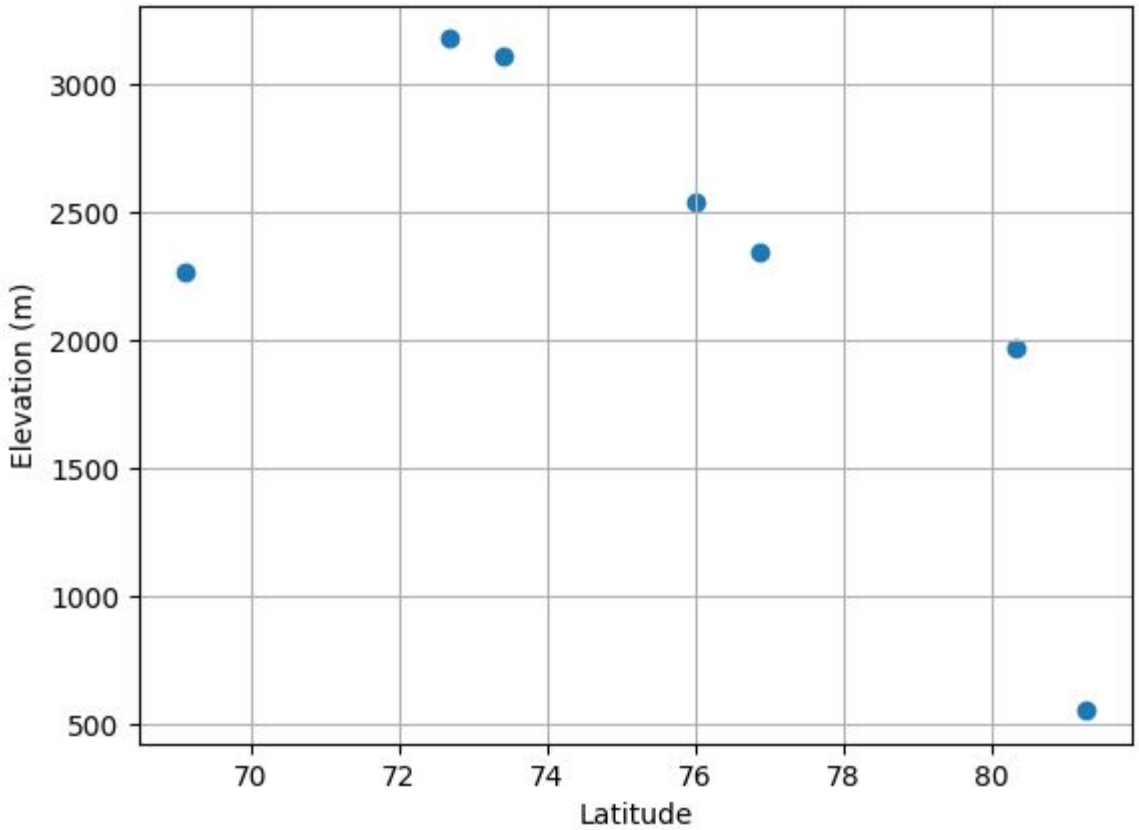

dD.correct
-200
-240
-280
-320
-40
-35
-30
-25
d18O.correct
lat
80
75
70
65
No lat


d.excess.correct
9
6
3
65
70
75
80
lat
elev.m
3000
2500
2000
1500
1000
No elev

Black carbon concentration (ug/L)



The End


Elevation (m)
3000
2500
2000
1500
1000
500
70
72
74
76
78
80
Latitude

BC Particle Count

count	11.000000
mean	20155.636364
std	201.507455
min	20047.000000
25%	20060.500000
50%	20072.000000
75%	20150.000000
max	20742.000000