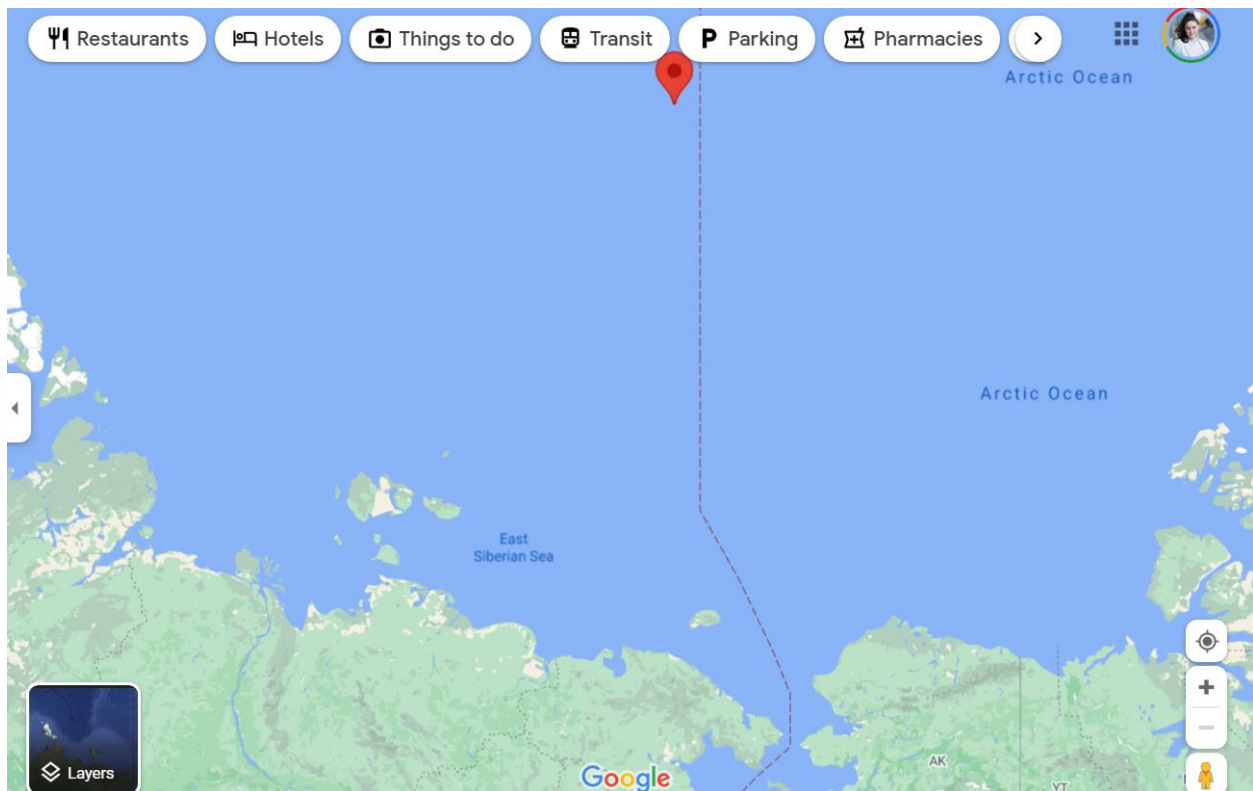


1- On the first page of your submission write in **BOLD** your student ID and the latitude and longitude of the grid assigned to you. Where about in Canada or Alaska your grid is located? Write it down in **BOLD**.

29689168

Longitude -176.875

Latitude **83.625**



Arctic Ocean North, between Russia and Alaska.

2- Download the data matrix and select the row which includes the data of your grid. Columns 4 onward includes the daily mean temperature (in degree Celsius data) from 1975-01-01 to 2016-12-31.

Lines 1-8

3- Using the daily temperature data, extract mean monthly temperature, extreme minimum monthly temperature (the daily temperature in the coldest day of the month), and extreme maximum monthly temperature (the daily temperature of the hottest day of the month). What is the coldest and hottest temperature values in the whole data period and the days they occurred (10%)?

Lines 20-68

Hottest: July 7, 2012

temp: 1.9930

year: 2012

month: 7

day: 7

Coldest: January 3, 1975

temp: -53.3760

year: 1975

month: 1

day: 3

4- Plot the timeseries for the three variables you extracted in part 3. Give appropriate title and label to each figure (10%).

Lines 70-92

5- Divide each of the timeseries into 12 separate series related to each Julian month (all Januarys together, all Februarys together and so on). Create a table that includes the statistical information (min, mean, median, mode, max, std) of the data in each Julian month (40%).

Lines 93-126

Table displayed in results.

	min	mean	median	mode	max	std
Jan (Mean)	-37.624	-30.789	-30.493	-37.624	-22.375	3.4269
Feb (Mean)	-37.941	-31.423	-31.039	-37.941	-23.805	3.1651
Mar (Mean)	-34.338	-29.425	-29.569	-34.338	-23.757	2.8908
Apr (Mean)	-25.044	-20.085	-20.488	-25.044	-13.528	2.9803
May (Mean)	-10.845	-6.8208	-6.8524	-10.845	-2.1919	2.3495
Jun (Mean)	-0.12494	0.51454	0.52595	-0.12494	0.96862	0.25481
Jul (Mean)	0.54318	0.83977	0.85798	0.54318	1.1748	0.17787
Aug (Mean)	-1.2736	-0.35785	-0.30862	-1.2736	0.32717	0.40816
Sep (Mean)	-13.024	-8.4619	-8.415	-13.024	-1.6784	2.3189
Oct (Mean)	-25.556	-19.213	-19.001	-25.556	-7.056	3.6619
Nov (Mean)	-32.626	-26.195	-26.474	-32.626	-16.379	3.546
Dec (Mean)	-34.48	-29.481	-29.685	-34.48	-23.242	2.5331
Jan (ExtMax)	-27.6	-18.346	-18.331	-27.6	-8.5822	4.8038
Feb (ExtMax)	-29.712	-21.044	-21.384	-29.712	-11.919	4.4244
Mar (ExtMax)	-28.11	-18.206	-18.371	-20.064	-8.7573	4.2698
Apr (ExtMax)	-17.173	-9.83	-10.466	-17.173	-1.6574	3.7689
May (ExtMax)	-5.2668	-0.31196	0.14942	-5.2668	1.0953	1.4684
Jun (ExtMax)	0.60525	1.1864	1.1504	0.60525	1.6955	0.2453
Jul (ExtMax)	0.88725	1.3496	1.3056	0.88725	1.993	0.26611
Aug (ExtMax)	0.29772	0.8818	0.83825	0.29772	1.3991	0.22257
Sep (ExtMax)	-3.9413	-0.95117	-0.8177	-3.9413	0.4438	0.96621
Oct (ExtMax)	-17.192	-9.7462	-9.617	-17.192	-1.7628	3.2098
Nov (ExtMax)	-23.072	-16.049	-16.409	-23.072	-5.22	4.3963
Dec (ExtMax)	-25.509	-17.778	-18.743	-25.509	-3.276	4.8899
Jan (ExtMin)	-53.376	-41.153	-40.233	-53.376	-29.821	4.7455
Feb (ExtMin)	-51.199	-41.905	-41.833	-51.199	-28.979	4.6505
Mar (ExtMin)	-47.731	-39.731	-39.61	-47.731	-30.932	3.9057
Apr (ExtMin)	-42.698	-30.725	-29.942	-42.698	-21.708	5.2589
May (ExtMin)	-21.484	-15.072	-15.4	-21.484	-6.4358	3.2037
Jun (ExtMin)	-6.0474	-0.98141	-0.34414	-6.0474	0.52117	1.5161
Jul (ExtMin)	-0.10044	0.37598	0.37229	-0.10044	0.94248	0.18809
Aug (ExtMin)	-9.0743	-4.0948	-3.7464	-9.0743	-1.1688	1.8512
Sep (ExtMin)	-28.982	-19.25	-19.089	-28.982	-3.0908	5.0865
Oct (ExtMin)	-41.819	-29.243	-29.004	-41.819	-16.272	5.1722
Nov (ExtMin)	-45.165	-35.057	-35.298	-45.165	-23.807	4.1948
Dec (ExtMin)	-48.882	-39.207	-38.666	-48.882	-32.816	3.4804

6- Fit a line to each monthly timeseries. Plot the data along with the fitted line. Based on the slope of the line, decide whether the data in each month show an increasing or decreasing trend, or have no change in time. Based on your analyses, discuss how the climate is changing in the location you are studying (40%).

Lines 128-138*

See [function showpolyfittemp.m](#)

Here are the slopes of the lines for the polyfit of the graphs over 42 years of daily temperature data. It is evident that all the slopes are positive and increasing except for the Extreme MinT of July. The trend for July over 42 years is actually a slow decrease in temperature. Temperatures in this location have mostly increased over time.

Months	Mean T	ExtMax T	ExtMin T
{ 'Jan' }	0.097085	0.068441	0.12584
{ 'Feb' }	0.10111	0.10864	0.080141
{ 'Mar' }	0.11292	0.098661	0.086632
{ 'Apr' }	0.17865	0.16084	0.20829
{ 'May' }	0.10464	0.057463	0.10804
{ 'Jun' }	0.0057651	0.0032642	0.035432
{ 'Jul' }	0.0026102	0.0038148	-0.00074972
{ 'Aug' }	0.010655	0.0042756	0.063459
{ 'Sep' }	0.11154	0.019538	0.20421
{ 'Oct' }	0.22913	0.1506	0.27314
{ 'Nov' }	0.2088	0.21333	0.23326
{ 'Dec' }	0.12348	0.13553	0.13204