

```
In [2]: 1
        2 import requests as r
        3 import pandas as pd
        4
        5 from datetime import date, datetime, timedelta
        6 from io import StringIO
```

### Build the URL

```
In [27]: 1 #assign variables to the pertinent parts of the URL
        2 base = "https://ndawn.ndsu.nodak.edu/"
        3
        4 format1 = 'get-table.csv'
        5 format2 = "table.csv"
        6
        7 station = "?station=78&station=111&station=98&station=142&station=138&station=9&station=10&station=118&station=5
        8
        9 endDate = date.today().isoformat()
       10 beginDate = (date.today()-timedelta(days=30)).isoformat()
       11
       12 date_var = "&quick_pick=&begin_date="
       13
       14

In [28]: 1 #put it all together
        2 download = str(base + format2 + station + date_var + beginDate + "&end_date=" + endDate)
        3
        4 print(download)
```

https://ndawn.ndsu.nodak.edu/table.csv?station=78&station=111&station=98&station=142&station=138&station=9&station=10&station=118&station=56&station=11&station=12&station=58&station=13&station=84&station=55&station=7&station=87&station=14&station=15&station=96&station=16&station=137&station=124&station=17&station=85&station=140&station=134&station=18&station=136&station=65&station=104&station=99&station=19&station=129&station=20&station=101&station=81&station=21&station=97&station=22&station=75&station=2&station=139&station=23&station=62&station=86&station=24&station=89&station=126&station=93&station=90&station=25&station=83&station=107&station=77&station=26&station=70&station=127&station=27&station=132&station=28&station=29&station=30&station=31&station=102&station=32&station=119&station=4&station=80&station=33&station=59&station=105&station=82&station=34&station=72&station=135&station=35&station=76&station=120&station=141&station=109&station=36&station=79&station=71&station=37&station=38&station=39&station=130&station=73&station=40&station=41&station=54&station=69&station=113&station=128&station=42&station=43&station=103&station=116&station=88&station=114&station=3&station=64&station=115&station=67&station=44&station=133&station=106&station=100&station=121&station=45&station=46&station=61&station=66&station=74&station=60&station=125&station=8&station=47&station=122&station=108&station=5&station=48&station=68&station=49&station=50&station=91&station=117&station=63&station=51&station=6&station=52&station=92&station=112&station=131&station=123&station=95&station=53&station=57&station=110&variable=ddavt&year=2021&ttype=daily&&quick\_pick=&begin\_date=2021-03-19&end\_date=2021-04-18

```
In [30]: 1 #make sure the URL works
        2 r.get(download)
        3
        4 ndawndata = r.get(download)
```

Out[30]: <Response [200]>

### Open the CSV with Pandas

```
In [31]: 1 open("table.csv", "wb").write(ndawndata.content)
```

Out[31]: 202761

```
In [45]: 1 pd.read_csv('table.csv')
```

Out[45]:

	Station Name	Latitude	Longitude	Elevation	Year	Month	Day	Avg Temp	Avg Temp Flag
0	NaN	deg	deg	ft	NaN	NaN	NaN	Degrees F	NaN
1	Ada	47.3211	-96.5139	910	2021.0	3.0	19.0	40.395	NaN
2	Ada	47.3211	-96.5139	910	2021.0	3.0	20.0	50.546	NaN
3	Ada	47.3211	-96.5139	910	2021.0	3.0	21.0	42.461	NaN
4	Ada	47.3211	-96.5139	910	2021.0	3.0	22.0	35.165	NaN
...	...	...	...	...	...	...	...	...	...
3926	Zeeland	46.013378	-99.687587	2070	2021.0	4.0	13.0	24.417	NaN
3927	Zeeland	46.013378	-99.687587	2070	2021.0	4.0	14.0	31.173	NaN
3928	Zeeland	46.013378	-99.687587	2070	2021.0	4.0	15.0	37.556	NaN
3929	Zeeland	46.013378	-99.687587	2070	2021.0	4.0	16.0	36.441	NaN
3930	Zeeland	46.013378	-99.687587	2070	2021.0	4.0	17.0	37.587	NaN

3931 rows × 9 columns

### Find the average temps and georeference the station points

```
In [ ]: 1 with arcpy.EnvManager(scratchWorkspace=r"C:\Users\celia\Documents\ArcGIS\Projects\GIS5572_Lab4\GIS5572_Lab4.gdb"
        2     arcpy.conversion.TableToTable(r"C:\Users\celia\Documents\GitHub\GIS5572\Lab4\data\table.csv", r"C:\Users\cel
```

```
In [ ]: 1 #calculate the mean temperature for each station
        2 arcpy.analysis.Statistics("stations", r"C:\Users\celia\Documents\ArcGIS\Projects\GIS5572_Lab4\GIS5572_Lab4.gdb\s
```

```
In [ ]: 1 #use the statistics table, which is grouped by station, to map the points
        2
        3 arcpy.management.XYTableToPoint("stations_Statistics3", r"C:\Users\celia\Documents\ArcGIS\Projects\GIS5572_Lab4\
```

### Compare and Contrast Interpolation Processes

```
In [ ]: 1 #kriging
        2 arcpy.ddd.Kriging("stations_Statistics3_XYTableToPoint", "MEAN_Avg_Temp", r"C:\Users\celia\Documents\ArcGIS\Proj
```

```
In [ ]: 1 #IDW
        2 arcpy.ddd.Idw("stations_Statistics3_XYTableToPoint", "MEAN_Avg_Temp", r"C:\Users\celia\Documents\ArcGIS\Projects
```

```
In [ ]: 1 #Global Polynomial Interpolation with elevation
        2 arcpy.ga.GlobalPolynomialInterpolation("stations_Statistics3_XYTableToPoint", "MEAN_Avg_Temp", None, r"C:\Users\
```