

# WeatherPy

November 21, 2021

## 0.1 # WeatherPy

```
[103]: import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import requests
import time
import csv
from scipy.stats import linregress
from time import gmtime, strftime
from api_keys import weather_api_key
from citipy import citipy

output_data_file = "cities.csv"

# Range of latitudes and longitudes
lat_range = (-90, 90)
lng_range = (-180, 180)
```

## 0.2 Generate Cities List

```
[104]: lat_lngs = []
cities = []

# Create a set of random lat and lng combinations
lats = np.random.uniform(low=-90.000, high=90.000, size=1500)
lngs = np.random.uniform(low=-180.000, high=180.000, size=1500)
lat_lngs = zip(lats, lngs)

# Identify nearest city for each lat, lng combination
for lat_lng in lat_lngs:
    city = citipy.nearest_city(lat_lng[0], lat_lng[1]).city_name

    # If the city is unique, then add it to cities list
    if city not in cities:
        cities.append(city)

# Confirm sufficient count
```

```
len(cities)
```

[104]: 641

### 0.2.1 Perform API Calls

```
[105]: cities_df = pd.DataFrame({'City': cities})
cities_df['Latitude']=""
cities_df['Temperature']=""
cities_df['Humidity']=""
cities_df['Cloudiness']=""
cities_df['Wind Speed']=""
cities_df.head()
```

```
[105]:      City Latitude Temperature Humidity Cloudiness Wind Speed
0  chokurdakh
1    umm bab
2  quang ngai
3    gamba
4  bredasdorp
```

```
[106]: city_data = []

params = {}

print("Beginning Data Retrieval")
print("-----")

record_count = 1
set_count = 1

for index, row in cities_df.iterrows():
    url = "http://api.openweathermap.org/data/2.5/weather?
    ↪units=Imperial&APPID=" + weather_api_key

    city = row['City']
    params['q'] = city

    # Group cities in sets of 50
    if (index % 50 == 0 and index >= 50):
        set_count += 1
        record_count = 0

    print(f"Processing Record {record_count} of Set {set_count} | {city}")
    record_count += 1

try:
```

```

weather = requests.get(url, params=params).json()

city_lat = weather["coord"]["lat"]
city_lng = weather["coord"]["lon"]
city_temp = weather["main"]["temp_max"]
city_humidity = weather["main"]["humidity"]
city_clouds = weather["clouds"]["all"]
city_wind = weather["wind"]["speed"]
city_country = weather["sys"]["country"]
city_date = weather["dt"]

city_data.append({"City": city,
                 "Lat": city_lat,
                 "Lng": city_lng,
                 "Max Temp": city_temp,
                 "Humidity": city_humidity,
                 "Cloudiness": city_clouds,
                 "Wind Speed": city_wind,
                 "Country": city_country,
                 "Date": city_date})

except:
    print("City not found. Skipping...")

print("-----")
print("Data Retrieval Complete    ")
print("-----")

```

### Beginning Data Retrieval

```

-----
Processing Record 1 of Set 1 | chokurdakh
Processing Record 2 of Set 1 | umm bab
Processing Record 3 of Set 1 | quang ngai
Processing Record 4 of Set 1 | gamba
Processing Record 5 of Set 1 | bredasdorp
Processing Record 6 of Set 1 | qaanaaq
Processing Record 7 of Set 1 | ancud
Processing Record 8 of Set 1 | grand gaube
Processing Record 9 of Set 1 | punta arenas
Processing Record 10 of Set 1 | tilichiki
Processing Record 11 of Set 1 | illoqqortoormiut
City not found. Skipping...
Processing Record 12 of Set 1 | ushuaia
Processing Record 13 of Set 1 | vardo
Processing Record 14 of Set 1 | la sarre
Processing Record 15 of Set 1 | vangaindrano
Processing Record 16 of Set 1 | port said
Processing Record 17 of Set 1 | oum hadjer

```

Processing Record 18 of Set 1 | nikolskoye  
Processing Record 19 of Set 1 | abu dhabi  
Processing Record 20 of Set 1 | vallenar  
Processing Record 21 of Set 1 | saint-philippe  
Processing Record 22 of Set 1 | touros  
Processing Record 23 of Set 1 | rikitea  
Processing Record 24 of Set 1 | fairbanks  
Processing Record 25 of Set 1 | avarua  
Processing Record 26 of Set 1 | airai  
Processing Record 27 of Set 1 | rameshki  
Processing Record 28 of Set 1 | umm lajj  
Processing Record 29 of Set 1 | pangnirtung  
Processing Record 30 of Set 1 | mataura  
Processing Record 31 of Set 1 | porto novo  
Processing Record 32 of Set 1 | lebu  
Processing Record 33 of Set 1 | barrow  
Processing Record 34 of Set 1 | nizhneyansk  
City not found. Skipping..  
Processing Record 35 of Set 1 | busselton  
Processing Record 36 of Set 1 | east london  
Processing Record 37 of Set 1 | puerto ayora  
Processing Record 38 of Set 1 | svetlogorsk  
Processing Record 39 of Set 1 | longyearbyen  
Processing Record 40 of Set 1 | atuona  
Processing Record 41 of Set 1 | comrat  
Processing Record 42 of Set 1 | arman  
Processing Record 43 of Set 1 | mullaitivu  
City not found. Skipping..  
Processing Record 44 of Set 1 | tuktoyaktuk  
Processing Record 45 of Set 1 | salekhard  
Processing Record 46 of Set 1 | yellowknife  
Processing Record 47 of Set 1 | gasa  
Processing Record 48 of Set 1 | khani  
Processing Record 49 of Set 1 | kapaa  
Processing Record 50 of Set 1 | cape town  
Processing Record 0 of Set 2 | jamestown  
Processing Record 1 of Set 2 | lakes entrance  
Processing Record 2 of Set 2 | barentsburg  
City not found. Skipping..  
Processing Record 3 of Set 2 | bethel  
Processing Record 4 of Set 2 | lata  
Processing Record 5 of Set 2 | bluff  
Processing Record 6 of Set 2 | chilmari  
Processing Record 7 of Set 2 | talnakh  
Processing Record 8 of Set 2 | albany  
Processing Record 9 of Set 2 | hamadan  
Processing Record 10 of Set 2 | lagoa  
Processing Record 11 of Set 2 | hermanus

Processing Record 12 of Set 2 | bambous virieux  
Processing Record 13 of Set 2 | hualmay  
Processing Record 14 of Set 2 | maneadero  
Processing Record 15 of Set 2 | anshun  
Processing Record 16 of Set 2 | bojnurd  
Processing Record 17 of Set 2 | komsomolskiy  
Processing Record 18 of Set 2 | zhangjiakou  
Processing Record 19 of Set 2 | lacombe  
Processing Record 20 of Set 2 | samarai  
Processing Record 21 of Set 2 | sobolevo  
Processing Record 22 of Set 2 | dwarka  
Processing Record 23 of Set 2 | college  
Processing Record 24 of Set 2 | sao filipe  
Processing Record 25 of Set 2 | puerto del rosario  
Processing Record 26 of Set 2 | darhan  
Processing Record 27 of Set 2 | palabuhanratu  
City not found. Skipping..  
Processing Record 28 of Set 2 | zambezi  
Processing Record 29 of Set 2 | ilulissat  
Processing Record 30 of Set 2 | ginda  
Processing Record 31 of Set 2 | new norfolk  
Processing Record 32 of Set 2 | vaini  
Processing Record 33 of Set 2 | lasa  
Processing Record 34 of Set 2 | upington  
Processing Record 35 of Set 2 | dalbandin  
Processing Record 36 of Set 2 | margate  
Processing Record 37 of Set 2 | rankovce  
Processing Record 38 of Set 2 | cidreira  
Processing Record 39 of Set 2 | mar del plata  
Processing Record 40 of Set 2 | mokrous  
Processing Record 41 of Set 2 | belaya gora  
Processing Record 42 of Set 2 | kushiro  
Processing Record 43 of Set 2 | fortuna  
Processing Record 44 of Set 2 | saskylakh  
Processing Record 45 of Set 2 | savonlinna  
Processing Record 46 of Set 2 | sorland  
Processing Record 47 of Set 2 | ochsenfurt  
Processing Record 48 of Set 2 | bilibino  
Processing Record 49 of Set 2 | puerto narino  
Processing Record 0 of Set 3 | abnub  
Processing Record 1 of Set 3 | butaritari  
Processing Record 2 of Set 3 | norman wells  
Processing Record 3 of Set 3 | te anau  
Processing Record 4 of Set 3 | meulaboh  
Processing Record 5 of Set 3 | amalapuram  
Processing Record 6 of Set 3 | severo-kurilsk  
Processing Record 7 of Set 3 | amderma  
City not found. Skipping..

Processing Record 8 of Set 3 | muros  
Processing Record 9 of Set 3 | arraial do cabo  
Processing Record 10 of Set 3 | hasaki  
Processing Record 11 of Set 3 | lixourion  
Processing Record 12 of Set 3 | altamont  
Processing Record 13 of Set 3 | ponta do sol  
Processing Record 14 of Set 3 | puerto escondido  
Processing Record 15 of Set 3 | warqla  
City not found. Skipping...  
Processing Record 16 of Set 3 | sinnamary  
Processing Record 17 of Set 3 | botshabelo  
Processing Record 18 of Set 3 | gayny  
Processing Record 19 of Set 3 | gold coast  
Processing Record 20 of Set 3 | tambura  
Processing Record 21 of Set 3 | tasiilaq  
Processing Record 22 of Set 3 | richards bay  
Processing Record 23 of Set 3 | saldanha  
Processing Record 24 of Set 3 | san quintin  
Processing Record 25 of Set 3 | beloha  
Processing Record 26 of Set 3 | bonthe  
Processing Record 27 of Set 3 | novita  
Processing Record 28 of Set 3 | salym  
Processing Record 29 of Set 3 | abong mbang  
Processing Record 30 of Set 3 | bahia honda  
Processing Record 31 of Set 3 | mahebourg  
Processing Record 32 of Set 3 | provideniya  
Processing Record 33 of Set 3 | taolanaro  
City not found. Skipping...  
Processing Record 34 of Set 3 | mao  
Processing Record 35 of Set 3 | georgetown  
Processing Record 36 of Set 3 | kautokeino  
Processing Record 37 of Set 3 | selizharovo  
Processing Record 38 of Set 3 | khatanga  
Processing Record 39 of Set 3 | brae  
Processing Record 40 of Set 3 | alta floresta  
Processing Record 41 of Set 3 | hobart  
Processing Record 42 of Set 3 | flin flon  
Processing Record 43 of Set 3 | guamuchil  
Processing Record 44 of Set 3 | bajo baudo  
City not found. Skipping...  
Processing Record 45 of Set 3 | port elizabeth  
Processing Record 46 of Set 3 | isangel  
Processing Record 47 of Set 3 | cordoba  
Processing Record 48 of Set 3 | esperance  
Processing Record 49 of Set 3 | asau  
Processing Record 0 of Set 4 | sentyabrskiy  
City not found. Skipping...  
Processing Record 1 of Set 4 | wa

City not found. Skipping..  
Processing Record 2 of Set 4 | guiberoua  
Processing Record 3 of Set 4 | kodiak  
Processing Record 4 of Set 4 | katsuura  
Processing Record 5 of Set 4 | hithadhoo  
Processing Record 6 of Set 4 | thompson  
Processing Record 7 of Set 4 | cherskiy  
Processing Record 8 of Set 4 | pemangkat  
Processing Record 9 of Set 4 | naze  
Processing Record 10 of Set 4 | new richmond  
Processing Record 11 of Set 4 | marcona  
City not found. Skipping..  
Processing Record 12 of Set 4 | tsihombe  
City not found. Skipping..  
Processing Record 13 of Set 4 | rheinau  
Processing Record 14 of Set 4 | bereda  
Processing Record 15 of Set 4 | buta  
Processing Record 16 of Set 4 | mozarlandia  
Processing Record 17 of Set 4 | cherepanovo  
Processing Record 18 of Set 4 | bathsheba  
Processing Record 19 of Set 4 | lompoc  
Processing Record 20 of Set 4 | miles city  
Processing Record 21 of Set 4 | belushya guba  
City not found. Skipping..  
Processing Record 22 of Set 4 | kahului  
Processing Record 23 of Set 4 | kitimat  
Processing Record 24 of Set 4 | poum  
Processing Record 25 of Set 4 | balabac  
Processing Record 26 of Set 4 | floriano  
Processing Record 27 of Set 4 | belokurikha  
Processing Record 28 of Set 4 | dikson  
Processing Record 29 of Set 4 | san cristobal  
Processing Record 30 of Set 4 | luba  
Processing Record 31 of Set 4 | potsdam  
Processing Record 32 of Set 4 | ler  
Processing Record 33 of Set 4 | leningradskiy  
Processing Record 34 of Set 4 | murgab  
Processing Record 35 of Set 4 | nome  
Processing Record 36 of Set 4 | visakhapatnam  
Processing Record 37 of Set 4 | bilma  
Processing Record 38 of Set 4 | ambulobe  
Processing Record 39 of Set 4 | sao jose da coroa grande  
Processing Record 40 of Set 4 | navahrudak  
Processing Record 41 of Set 4 | uwayl  
City not found. Skipping..  
Processing Record 42 of Set 4 | lima  
Processing Record 43 of Set 4 | srednekolymsk  
Processing Record 44 of Set 4 | castro

Processing Record 45 of Set 4 | torbay  
Processing Record 46 of Set 4 | kalabo  
Processing Record 47 of Set 4 | grindavik  
Processing Record 48 of Set 4 | husavik  
Processing Record 49 of Set 4 | ribeira grande  
Processing Record 0 of Set 5 | nichinan  
Processing Record 1 of Set 5 | dicabisagan  
Processing Record 2 of Set 5 | kawalu  
Processing Record 3 of Set 5 | merauke  
Processing Record 4 of Set 5 | oliveira dos brejinhos  
Processing Record 5 of Set 5 | axim  
Processing Record 6 of Set 5 | mount gambier  
Processing Record 7 of Set 5 | souillac  
Processing Record 8 of Set 5 | petrovsk-zabaykalskiy  
Processing Record 9 of Set 5 | chimbote  
Processing Record 10 of Set 5 | saleaula  
City not found. Skipping..  
Processing Record 11 of Set 5 | port lincoln  
Processing Record 12 of Set 5 | oyama  
Processing Record 13 of Set 5 | upernavik  
Processing Record 14 of Set 5 | slave lake  
Processing Record 15 of Set 5 | paradwip  
City not found. Skipping..  
Processing Record 16 of Set 5 | boshan  
Processing Record 17 of Set 5 | ongandjera  
Processing Record 18 of Set 5 | maputo  
Processing Record 19 of Set 5 | langham  
Processing Record 20 of Set 5 | bodden town  
Processing Record 21 of Set 5 | half moon bay  
Processing Record 22 of Set 5 | grand river south east  
City not found. Skipping..  
Processing Record 23 of Set 5 | iskateley  
Processing Record 24 of Set 5 | ambanja  
Processing Record 25 of Set 5 | kaitangata  
Processing Record 26 of Set 5 | saint-pierre  
Processing Record 27 of Set 5 | nizhniy kuranakh  
Processing Record 28 of Set 5 | port alfred  
Processing Record 29 of Set 5 | esmeraldas  
Processing Record 30 of Set 5 | sitka  
Processing Record 31 of Set 5 | otavi  
Processing Record 32 of Set 5 | vao  
Processing Record 33 of Set 5 | ucluelet  
Processing Record 34 of Set 5 | pangody  
Processing Record 35 of Set 5 | hilo  
Processing Record 36 of Set 5 | luangwa  
Processing Record 37 of Set 5 | alekseyevka  
Processing Record 38 of Set 5 | kalghatgi  
Processing Record 39 of Set 5 | eureka



Processing Record 40 of Set 5 | vaitupu  
City not found. Skipping...  
Processing Record 41 of Set 5 | awbari  
Processing Record 42 of Set 5 | saint george  
Processing Record 43 of Set 5 | verkhojansk  
Processing Record 44 of Set 5 | marquette  
Processing Record 45 of Set 5 | aksu  
Processing Record 46 of Set 5 | auki  
Processing Record 47 of Set 5 | high level  
Processing Record 48 of Set 5 | taltal  
Processing Record 49 of Set 5 | gwembe  
Processing Record 0 of Set 6 | steinbach  
Processing Record 1 of Set 6 | chara  
Processing Record 2 of Set 6 | trairi  
Processing Record 3 of Set 6 | mitchell  
Processing Record 4 of Set 6 | bandarbeyla  
Processing Record 5 of Set 6 | pangkalanbuun  
Processing Record 6 of Set 6 | zyryanka  
Processing Record 7 of Set 6 | dinsor  
City not found. Skipping...  
Processing Record 8 of Set 6 | kavieng  
Processing Record 9 of Set 6 | mineros  
Processing Record 10 of Set 6 | northam  
Processing Record 11 of Set 6 | palaikastron  
Processing Record 12 of Set 6 | iqaluit  
Processing Record 13 of Set 6 | vostok  
Processing Record 14 of Set 6 | astanajapura  
Processing Record 15 of Set 6 | mitsamiouli  
Processing Record 16 of Set 6 | bud  
Processing Record 17 of Set 6 | aquiraz  
Processing Record 18 of Set 6 | taoudenni  
Processing Record 19 of Set 6 | doka  
Processing Record 20 of Set 6 | tuatapere  
Processing Record 21 of Set 6 | ahipara  
Processing Record 22 of Set 6 | maldonado  
Processing Record 23 of Set 6 | mettur  
Processing Record 24 of Set 6 | lavrentiya  
Processing Record 25 of Set 6 | imeni poliny osipenko  
Processing Record 26 of Set 6 | san vicente  
Processing Record 27 of Set 6 | pravvia  
Processing Record 28 of Set 6 | tiksi  
Processing Record 29 of Set 6 | orje  
Processing Record 30 of Set 6 | okhotsk  
Processing Record 31 of Set 6 | kailua  
Processing Record 32 of Set 6 | puerto madryn  
Processing Record 33 of Set 6 | walvis bay  
Processing Record 34 of Set 6 | sexsmith  
Processing Record 35 of Set 6 | barabai

Processing Record 36 of Set 6 | ponoka  
Processing Record 37 of Set 6 | maceio  
Processing Record 38 of Set 6 | albanel  
Processing Record 39 of Set 6 | hami  
Processing Record 40 of Set 6 | muskogee  
Processing Record 41 of Set 6 | maravatio  
Processing Record 42 of Set 6 | inderborskiy  
City not found. Skipping..  
Processing Record 43 of Set 6 | chuy  
Processing Record 44 of Set 6 | san angelo  
Processing Record 45 of Set 6 | aborlan  
Processing Record 46 of Set 6 | caravelas  
Processing Record 47 of Set 6 | la rioja  
Processing Record 48 of Set 6 | olafsvik  
Processing Record 49 of Set 6 | ilebo  
Processing Record 0 of Set 7 | oulainen  
Processing Record 1 of Set 7 | victoria  
Processing Record 2 of Set 7 | faya  
Processing Record 3 of Set 7 | muncar  
Processing Record 4 of Set 7 | tigzirt  
Processing Record 5 of Set 7 | tuggurt  
City not found. Skipping..  
Processing Record 6 of Set 7 | codrington  
Processing Record 7 of Set 7 | constitucion  
Processing Record 8 of Set 7 | conceicao da barra  
Processing Record 9 of Set 7 | tarpon springs  
Processing Record 10 of Set 7 | senneterre  
Processing Record 11 of Set 7 | nara  
Processing Record 12 of Set 7 | stanghelle  
Processing Record 13 of Set 7 | port blair  
Processing Record 14 of Set 7 | tura  
Processing Record 15 of Set 7 | sechura  
Processing Record 16 of Set 7 | statesboro  
Processing Record 17 of Set 7 | castro verde  
Processing Record 18 of Set 7 | itajobi  
Processing Record 19 of Set 7 | concepcion del oro  
Processing Record 20 of Set 7 | moose factory  
Processing Record 21 of Set 7 | lalomanu  
City not found. Skipping..  
Processing Record 22 of Set 7 | hamilton  
Processing Record 23 of Set 7 | shimoda  
Processing Record 24 of Set 7 | anyksciai  
Processing Record 25 of Set 7 | gat  
Processing Record 26 of Set 7 | yambio  
Processing Record 27 of Set 7 | riyadh  
Processing Record 28 of Set 7 | mpulungu  
Processing Record 29 of Set 7 | salalah  
Processing Record 30 of Set 7 | vestmannaeyjar

Processing Record 31 of Set 7 | praia da vitoria  
Processing Record 32 of Set 7 | letlhakane  
Processing Record 33 of Set 7 | dekoa  
City not found. Skipping..  
Processing Record 34 of Set 7 | channel-port aux basques  
Processing Record 35 of Set 7 | tabou  
Processing Record 36 of Set 7 | jawhar  
Processing Record 37 of Set 7 | mys shmidta  
City not found. Skipping..  
Processing Record 38 of Set 7 | nguui  
City not found. Skipping..  
Processing Record 39 of Set 7 | boke  
Processing Record 40 of Set 7 | dangtu  
Processing Record 41 of Set 7 | rocha  
Processing Record 42 of Set 7 | ubinskoye  
Processing Record 43 of Set 7 | ossora  
Processing Record 44 of Set 7 | matanzas  
Processing Record 45 of Set 7 | vila velha  
Processing Record 46 of Set 7 | jiexiu  
Processing Record 47 of Set 7 | bengkulu  
Processing Record 48 of Set 7 | horstel  
Processing Record 49 of Set 7 | tarauaca  
Processing Record 0 of Set 8 | potiskum  
Processing Record 1 of Set 8 | storslett  
Processing Record 2 of Set 8 | gweta  
Processing Record 3 of Set 8 | ikwiriri  
Processing Record 4 of Set 8 | umzimvubu  
City not found. Skipping..  
Processing Record 5 of Set 8 | port moresby  
Processing Record 6 of Set 8 | virtsu  
Processing Record 7 of Set 8 | bolungarvik  
City not found. Skipping..  
Processing Record 8 of Set 8 | moron  
Processing Record 9 of Set 8 | faanui  
Processing Record 10 of Set 8 | evreux  
Processing Record 11 of Set 8 | batesville  
Processing Record 12 of Set 8 | tartagal  
Processing Record 13 of Set 8 | erzin  
Processing Record 14 of Set 8 | rodney  
Processing Record 15 of Set 8 | chapaevsk  
Processing Record 16 of Set 8 | patea  
Processing Record 17 of Set 8 | laguna  
Processing Record 18 of Set 8 | milingimbi  
City not found. Skipping..  
Processing Record 19 of Set 8 | taylorville  
Processing Record 20 of Set 8 | pochutla  
Processing Record 21 of Set 8 | somerset east  
Processing Record 22 of Set 8 | ovre ardal

Processing Record 23 of Set 8 | alofi  
Processing Record 24 of Set 8 | villaviciosa  
Processing Record 25 of Set 8 | evensk  
Processing Record 26 of Set 8 | christchurch  
Processing Record 27 of Set 8 | tokur  
Processing Record 28 of Set 8 | kinablangan  
Processing Record 29 of Set 8 | san miguel  
Processing Record 30 of Set 8 | portland  
Processing Record 31 of Set 8 | tapaua  
City not found. Skipping...  
Processing Record 32 of Set 8 | tshane  
Processing Record 33 of Set 8 | hobyo  
Processing Record 34 of Set 8 | avera  
Processing Record 35 of Set 8 | luleburgaz  
Processing Record 36 of Set 8 | irbil  
Processing Record 37 of Set 8 | cootamundra  
Processing Record 38 of Set 8 | carnarvon  
Processing Record 39 of Set 8 | nata  
Processing Record 40 of Set 8 | geraldton  
Processing Record 41 of Set 8 | tazovski  
Processing Record 42 of Set 8 | labutta  
City not found. Skipping...  
Processing Record 43 of Set 8 | adrar  
Processing Record 44 of Set 8 | klaksvik  
Processing Record 45 of Set 8 | paragominas  
Processing Record 46 of Set 8 | cumnock  
Processing Record 47 of Set 8 | cabo san lucas  
Processing Record 48 of Set 8 | chimoio  
Processing Record 49 of Set 8 | homer  
Processing Record 0 of Set 9 | veraval  
Processing Record 1 of Set 9 | castro-urdiales  
Processing Record 2 of Set 9 | chauk  
Processing Record 3 of Set 9 | yumen  
Processing Record 4 of Set 9 | chapais  
Processing Record 5 of Set 9 | marawi  
Processing Record 6 of Set 9 | samusu  
City not found. Skipping...  
Processing Record 7 of Set 9 | yerbogachen  
Processing Record 8 of Set 9 | kilimatinde  
Processing Record 9 of Set 9 | balimo  
City not found. Skipping...  
Processing Record 10 of Set 9 | henties bay  
Processing Record 11 of Set 9 | jacqueville  
Processing Record 12 of Set 9 | takoradi  
Processing Record 13 of Set 9 | rehoboth  
Processing Record 14 of Set 9 | lorengau  
Processing Record 15 of Set 9 | yakeshi  
Processing Record 16 of Set 9 | manzanillo

Processing Record 17 of Set 9 | rorvik  
Processing Record 18 of Set 9 | sioux lookout  
Processing Record 19 of Set 9 | cagayan de tawi-tawi  
City not found. Skipping..  
Processing Record 20 of Set 9 | kruisfontein  
Processing Record 21 of Set 9 | bossangoa  
Processing Record 22 of Set 9 | fairfield  
Processing Record 23 of Set 9 | juegang  
Processing Record 24 of Set 9 | kandrian  
Processing Record 25 of Set 9 | santa rosalia  
Processing Record 26 of Set 9 | bonavista  
Processing Record 27 of Set 9 | namanga  
Processing Record 28 of Set 9 | agadez  
Processing Record 29 of Set 9 | verkhnyaya inta  
Processing Record 30 of Set 9 | magdalena  
Processing Record 31 of Set 9 | atambua  
Processing Record 32 of Set 9 | seoul  
Processing Record 33 of Set 9 | kavaratti  
Processing Record 34 of Set 9 | stabat  
Processing Record 35 of Set 9 | saint anthony  
Processing Record 36 of Set 9 | nuuk  
Processing Record 37 of Set 9 | louisbourg  
City not found. Skipping..  
Processing Record 38 of Set 9 | ken caryl  
Processing Record 39 of Set 9 | turan  
Processing Record 40 of Set 9 | myitkyina  
Processing Record 41 of Set 9 | kalmunai  
Processing Record 42 of Set 9 | codajas  
Processing Record 43 of Set 9 | singlaraja  
Processing Record 44 of Set 9 | camacupa  
Processing Record 45 of Set 9 | coquimbo  
Processing Record 46 of Set 9 | labuhan  
Processing Record 47 of Set 9 | srivardhan  
Processing Record 48 of Set 9 | narsaq  
Processing Record 49 of Set 9 | saint-augustin  
Processing Record 0 of Set 10 | khorramshahr  
Processing Record 1 of Set 10 | derzhavinsk  
Processing Record 2 of Set 10 | urumqi  
Processing Record 3 of Set 10 | shirokiy  
Processing Record 4 of Set 10 | rapid valley  
Processing Record 5 of Set 10 | puerto suarez  
Processing Record 6 of Set 10 | adana  
Processing Record 7 of Set 10 | tiznit  
Processing Record 8 of Set 10 | abdanan  
Processing Record 9 of Set 10 | mehamn  
Processing Record 10 of Set 10 | bairiki  
Processing Record 11 of Set 10 | cap malheureux  
Processing Record 12 of Set 10 | brekstad

Processing Record 13 of Set 10 | nioro  
Processing Record 14 of Set 10 | tigil  
Processing Record 15 of Set 10 | guerrero negro  
Processing Record 16 of Set 10 | willowmore  
Processing Record 17 of Set 10 | muzhi  
Processing Record 18 of Set 10 | la ronge  
Processing Record 19 of Set 10 | hearst  
Processing Record 20 of Set 10 | cabra  
Processing Record 21 of Set 10 | prince rupert  
Processing Record 22 of Set 10 | san andres  
Processing Record 23 of Set 10 | ornskoldsvik  
Processing Record 24 of Set 10 | gonbad-e qabus  
Processing Record 25 of Set 10 | andenes  
Processing Record 26 of Set 10 | kamenskoye  
City not found. Skipping..  
Processing Record 27 of Set 10 | delta del tigre  
Processing Record 28 of Set 10 | samalaeulu  
City not found. Skipping..  
Processing Record 29 of Set 10 | aflu  
City not found. Skipping..  
Processing Record 30 of Set 10 | flinders  
Processing Record 31 of Set 10 | fort-shevchenko  
Processing Record 32 of Set 10 | garmsar  
Processing Record 33 of Set 10 | jinchang  
Processing Record 34 of Set 10 | djenne  
Processing Record 35 of Set 10 | saravan  
Processing Record 36 of Set 10 | celestun  
Processing Record 37 of Set 10 | sept-iles  
Processing Record 38 of Set 10 | kenai  
Processing Record 39 of Set 10 | satitua  
City not found. Skipping..  
Processing Record 40 of Set 10 | yaan  
Processing Record 41 of Set 10 | binzhou  
Processing Record 42 of Set 10 | natick  
Processing Record 43 of Set 10 | sumbawa  
City not found. Skipping..  
Processing Record 44 of Set 10 | gibara  
Processing Record 45 of Set 10 | krumbach  
Processing Record 46 of Set 10 | ozernovskiy  
Processing Record 47 of Set 10 | sabha  
Processing Record 48 of Set 10 | mahajanga  
Processing Record 49 of Set 10 | saint-georges  
Processing Record 0 of Set 11 | mayo  
Processing Record 1 of Set 11 | noshiro  
Processing Record 2 of Set 11 | dingle  
Processing Record 3 of Set 11 | tefe  
Processing Record 4 of Set 11 | cayenne  
Processing Record 5 of Set 11 | mocambique

City not found. Skipping..  
Processing Record 6 of Set 11 | igarka  
Processing Record 7 of Set 11 | kaukauna  
Processing Record 8 of Set 11 | lazaro cardenas  
Processing Record 9 of Set 11 | atar  
Processing Record 10 of Set 11 | rio de janeiro  
Processing Record 11 of Set 11 | paita  
Processing Record 12 of Set 11 | sedelnikovo  
City not found. Skipping..  
Processing Record 13 of Set 11 | bisira  
Processing Record 14 of Set 11 | matamoros  
Processing Record 15 of Set 11 | broome  
Processing Record 16 of Set 11 | tautira  
Processing Record 17 of Set 11 | alice springs  
Processing Record 18 of Set 11 | senanga  
Processing Record 19 of Set 11 | am timan  
Processing Record 20 of Set 11 | martapura  
Processing Record 21 of Set 11 | kaiyuan  
Processing Record 22 of Set 11 | vila franca do campo  
Processing Record 23 of Set 11 | aswan  
Processing Record 24 of Set 11 | csepreg  
Processing Record 25 of Set 11 | yelizovo  
Processing Record 26 of Set 11 | tuy hoa  
Processing Record 27 of Set 11 | palana  
Processing Record 28 of Set 11 | zavetnoye  
Processing Record 29 of Set 11 | ngukurr  
City not found. Skipping..  
Processing Record 30 of Set 11 | cruden bay  
City not found. Skipping..  
Processing Record 31 of Set 11 | miedzyrzecz  
Processing Record 32 of Set 11 | san ignacio  
Processing Record 33 of Set 11 | puerto concordia  
Processing Record 34 of Set 11 | riachao  
Processing Record 35 of Set 11 | rongcheng  
Processing Record 36 of Set 11 | camopi  
Processing Record 37 of Set 11 | namtsy  
Processing Record 38 of Set 11 | kudahuvadhoo  
Processing Record 39 of Set 11 | mount isa  
Processing Record 40 of Set 11 | robertsport  
Processing Record 41 of Set 11 | pacific grove  
Processing Record 42 of Set 11 | puerto leguizamo  
Processing Record 43 of Set 11 | chiniot  
Processing Record 44 of Set 11 | semirom  
Processing Record 45 of Set 11 | mindelo  
Processing Record 46 of Set 11 | asayita  
City not found. Skipping..  
Processing Record 47 of Set 11 | rungata  
City not found. Skipping..

Processing Record 48 of Set 11 | sakaraha  
Processing Record 49 of Set 11 | sawtell  
Processing Record 0 of Set 12 | shu  
Processing Record 1 of Set 12 | sena madureira  
Processing Record 2 of Set 12 | itoman  
Processing Record 3 of Set 12 | helong  
Processing Record 4 of Set 12 | san nicolas  
Processing Record 5 of Set 12 | san antonio  
Processing Record 6 of Set 12 | yashkul  
Processing Record 7 of Set 12 | pritzwalk  
Processing Record 8 of Set 12 | kegayli  
City not found. Skipping..  
Processing Record 9 of Set 12 | fukue  
Processing Record 10 of Set 12 | russell  
Processing Record 11 of Set 12 | san juan  
Processing Record 12 of Set 12 | fulacunda  
City not found. Skipping..  
Processing Record 13 of Set 12 | katete  
Processing Record 14 of Set 12 | glomfjord  
Processing Record 15 of Set 12 | kamenka  
Processing Record 16 of Set 12 | attawapiskat  
City not found. Skipping..  
Processing Record 17 of Set 12 | wilmington  
Processing Record 18 of Set 12 | bardiyah  
Processing Record 19 of Set 12 | denpasar  
Processing Record 20 of Set 12 | petropavlovsk-kamchatskiy  
Processing Record 21 of Set 12 | zima  
Processing Record 22 of Set 12 | coahuayana  
Processing Record 23 of Set 12 | ketchikan  
Processing Record 24 of Set 12 | pevek  
Processing Record 25 of Set 12 | luderitz  
Processing Record 26 of Set 12 | bubaque  
Processing Record 27 of Set 12 | kungurtug  
Processing Record 28 of Set 12 | dire dawa  
Processing Record 29 of Set 12 | camacha  
Processing Record 30 of Set 12 | wahiawa  
Processing Record 31 of Set 12 | bur gabo  
City not found. Skipping..  
Processing Record 32 of Set 12 | tsienyane  
City not found. Skipping..  
Processing Record 33 of Set 12 | osakarovka  
Processing Record 34 of Set 12 | huilong  
Processing Record 35 of Set 12 | nosy varika  
Processing Record 36 of Set 12 | berlevag  
Processing Record 37 of Set 12 | verkhniy avzyan  
Processing Record 38 of Set 12 | muswellbrook  
Processing Record 39 of Set 12 | gijon  
Processing Record 40 of Set 12 | yuzhno-yeniseyskiy



City not found. Skipping..  
Processing Record 41 of Set 12 | itarema  
Processing Record 42 of Set 12 | swellendam  
Processing Record 43 of Set 12 | basco  
Processing Record 44 of Set 12 | aksarka  
Processing Record 45 of Set 12 | luorong  
Processing Record 46 of Set 12 | nikolayevsk-na-amure  
Processing Record 47 of Set 12 | dukat  
Processing Record 48 of Set 12 | san patricio  
Processing Record 49 of Set 12 | pandan  
Processing Record 0 of Set 13 | jaque  
Processing Record 1 of Set 13 | port hardy  
Processing Record 2 of Set 13 | cuenca  
Processing Record 3 of Set 13 | karratha  
Processing Record 4 of Set 13 | vila  
Processing Record 5 of Set 13 | rock falls  
Processing Record 6 of Set 13 | valparaiso  
Processing Record 7 of Set 13 | conde  
Processing Record 8 of Set 13 | cam ranh  
Processing Record 9 of Set 13 | khagrachari  
City not found. Skipping..  
Processing Record 10 of Set 13 | hay river  
Processing Record 11 of Set 13 | sur  
Processing Record 12 of Set 13 | yulara  
Processing Record 13 of Set 13 | okha  
Processing Record 14 of Set 13 | boa vista  
Processing Record 15 of Set 13 | thiruvananthapuram  
Processing Record 16 of Set 13 | jalu  
Processing Record 17 of Set 13 | riohacha  
Processing Record 18 of Set 13 | bulolo  
Processing Record 19 of Set 13 | grand centre  
City not found. Skipping..  
Processing Record 20 of Set 13 | keti bandar  
Processing Record 21 of Set 13 | ruatoria  
City not found. Skipping..  
Processing Record 22 of Set 13 | severnyy  
Processing Record 23 of Set 13 | atka  
City not found. Skipping..  
Processing Record 24 of Set 13 | langsa  
Processing Record 25 of Set 13 | ust-ilimsk  
Processing Record 26 of Set 13 | tranas  
Processing Record 27 of Set 13 | cervo  
Processing Record 28 of Set 13 | maloy  
Processing Record 29 of Set 13 | praia  
Processing Record 30 of Set 13 | kattivakkam  
Processing Record 31 of Set 13 | lodwar  
Processing Record 32 of Set 13 | barcelos  
Processing Record 33 of Set 13 | klyuchi

```

Processing Record 34 of Set 13 | inta
Processing Record 35 of Set 13 | genhe
Processing Record 36 of Set 13 | floro
Processing Record 37 of Set 13 | sarangani
Processing Record 38 of Set 13 | xuanzhou
Processing Record 39 of Set 13 | yarada
Processing Record 40 of Set 13 | pisco

```

```

-----
Data Retrieval Complete
-----

```

## 0.2.2 Convert Raw Data to DataFrame

```
[107]: cities_pd = pd.DataFrame(city_data)
       cities_pd.head()
```

```
[107]:
```

	City	Lat	Lng	Max Temp	Humidity	Cloudiness	Wind Speed	\
0	chokurdakh	70.63	147.92	-26.28	96	98	4.59	
1	umm bab	25.21	50.81	57.00	76	1	11.41	
2	quang ngai	15.12	108.80	73.78	78	44	9.28	
3	gamba	-2.65	10.00	78.87	84	93	0.98	
4	bredasdorp	-34.53	20.04	55.40	76	67	1.12	

	Country	Date
0	RU	1580089003
1	QA	1580089046
2	VN	1580089046
3	GA	1580089047
4	ZA	1580089047

```
[108]: cities_pd.to_csv(output_data_file, index_label="City_ID")
```

## 0.2.3 Plotting the Data

### Latitude vs. Temperature Plot

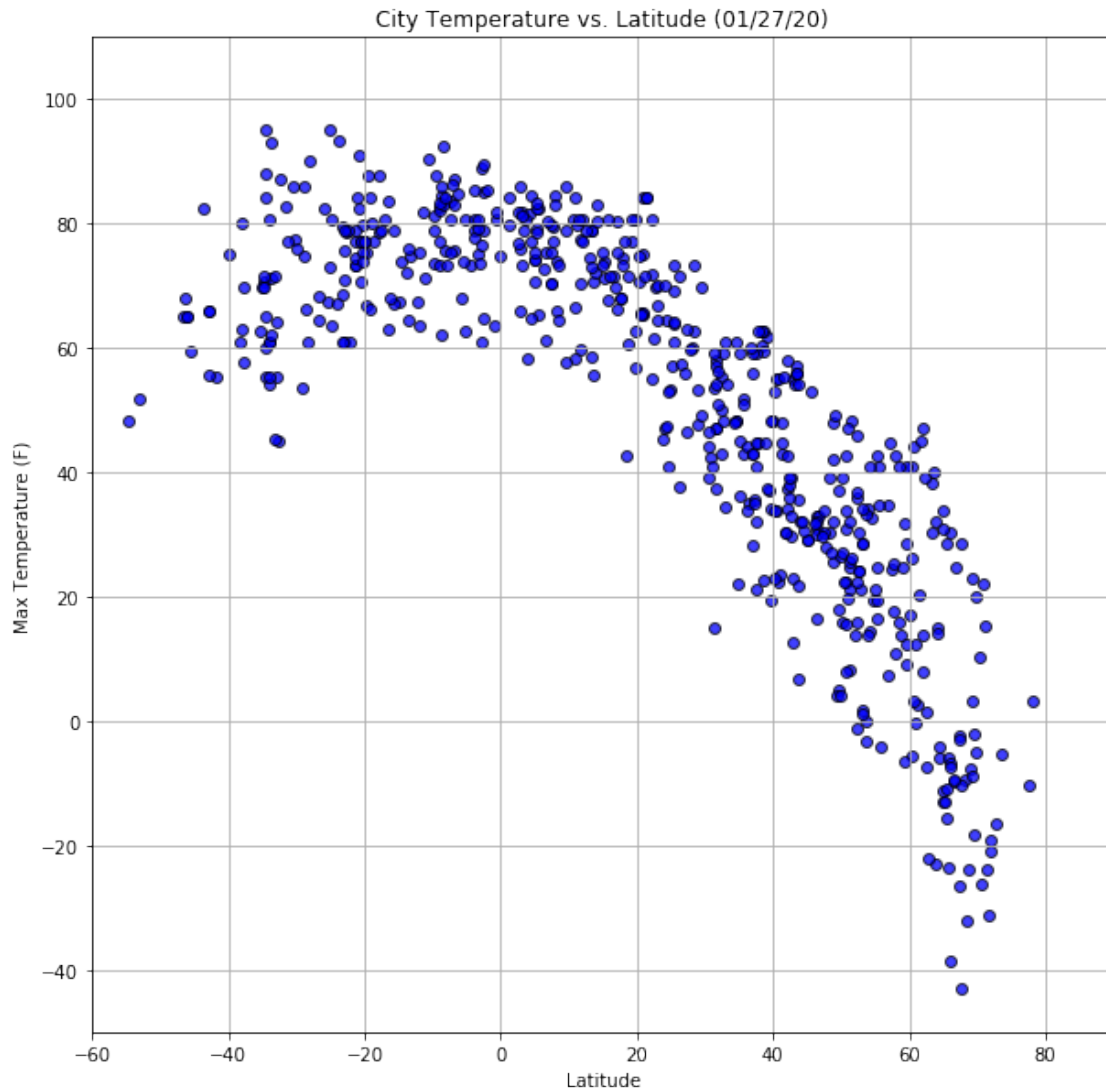
```
[109]: fig = plt.figure(figsize=(10,10))
       ax1 = fig.add_subplot(1,1,1)

       ax1.scatter(cities_pd['Lat'], cities_pd['Max Temp'], c='blue',
       ↪marker='o', edgecolors="black", alpha=0.75)

       plt.xlabel("Latitude")
       plt.ylabel("Max Temperature (F)")
       plt.title('City Temperature vs. Latitude (' + strftime("%x", gmtime()) + ')')
       plt.ylim(-50, 110)
       plt.xlim(-60, 90)

       plt.grid()
```

```
plt.savefig('latvstemp.png')
plt.show()
print("This analysis is showing the relationship between city temperature and
↳latitude. One can see that the closer to 0 (the equator), the hotter the
↳temperature.")
```



This analysis is showing the relation ship between city temperature and latitude. One can see that the closer to 0 (the equator), the hotter the temperature.

### Latitude vs. Humidity Plot

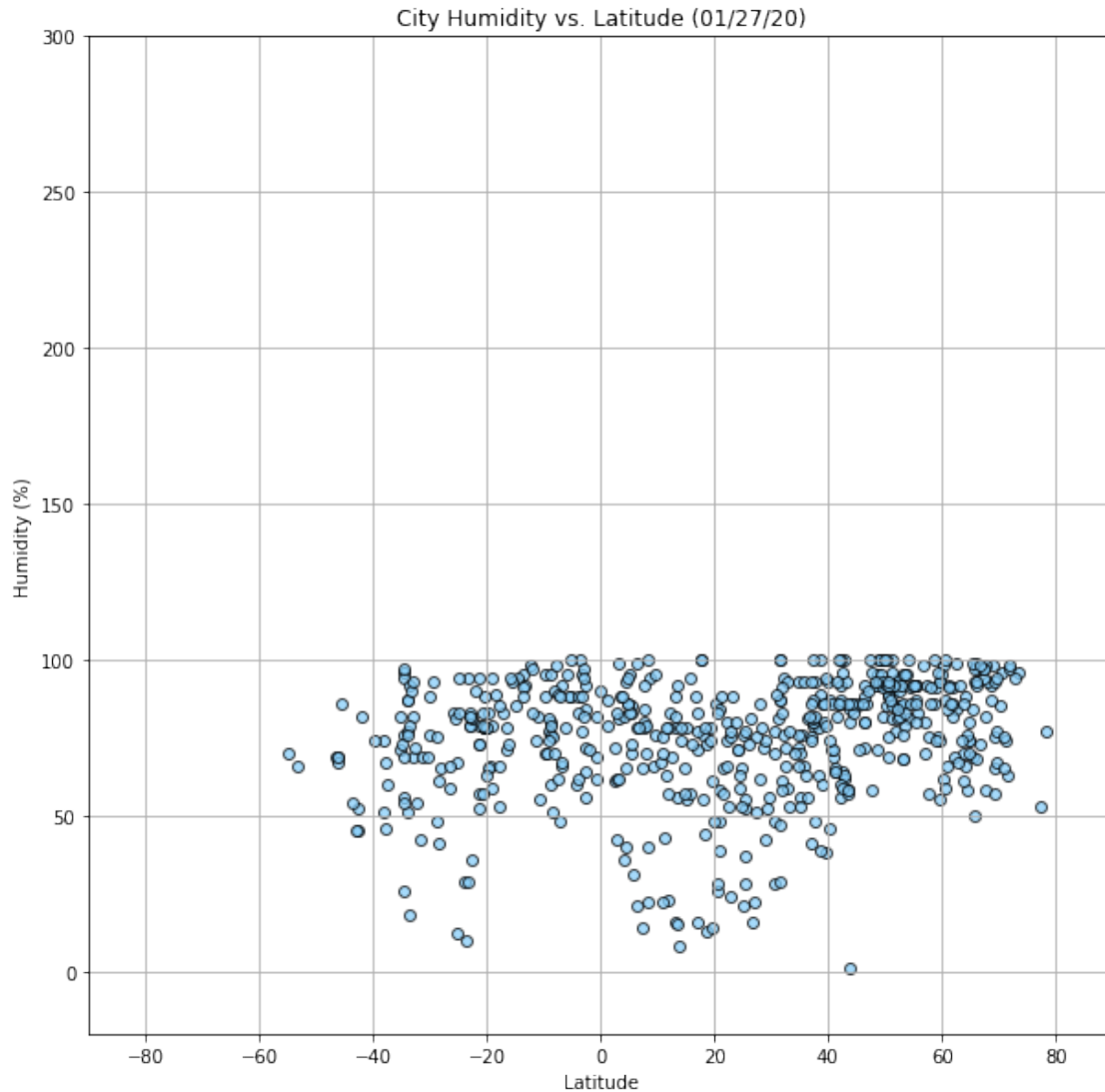
```
[110]: fig = plt.figure(figsize=(10,10))
ax1 = fig.add_subplot(1,1,1)

ax1.scatter(cities_pd['Lat'], cities_pd['Humidity'], c='lightskyblue',
            ↪marker='o',edgecolors="black", alpha=0.75)

plt.xlabel("Latitude")
plt.ylabel("Humidity (%)")
plt.title('City Humidity vs. Latitude (' + strftime("%x", gmtime()) + ')')
plt.ylim(-20, 300)
plt.xlim(-90, 90)

plt.grid()

plt.savefig('latvshum.png')
plt.show()
print("This analysis is showing the relationship between city humidity and
      ↪latitude. One can see that latitude doesn't seem to have an effect on
      ↪humidity.")
```



This analysis is showing the relation ship between city humidity and latitude. One can see that latitude doesn't seem to have an effect on humidity.

### Latitude vs. Cloudiness Plot

```
[111]: fig = plt.figure(figsize=(10,10))
ax1 = fig.add_subplot(1,1,1)

ax1.scatter(cities_pd['Lat'], cities_pd['Cloudiness'], c='blue',
            ↪marker='o',edgecolors="black", alpha=0.75)

plt.xlabel("Latitude")
plt.ylabel("Cloudiness(%)")
plt.title('City Cloudiness vs. Latitude (' + strftime("%x", gmtime()) + ')')
```

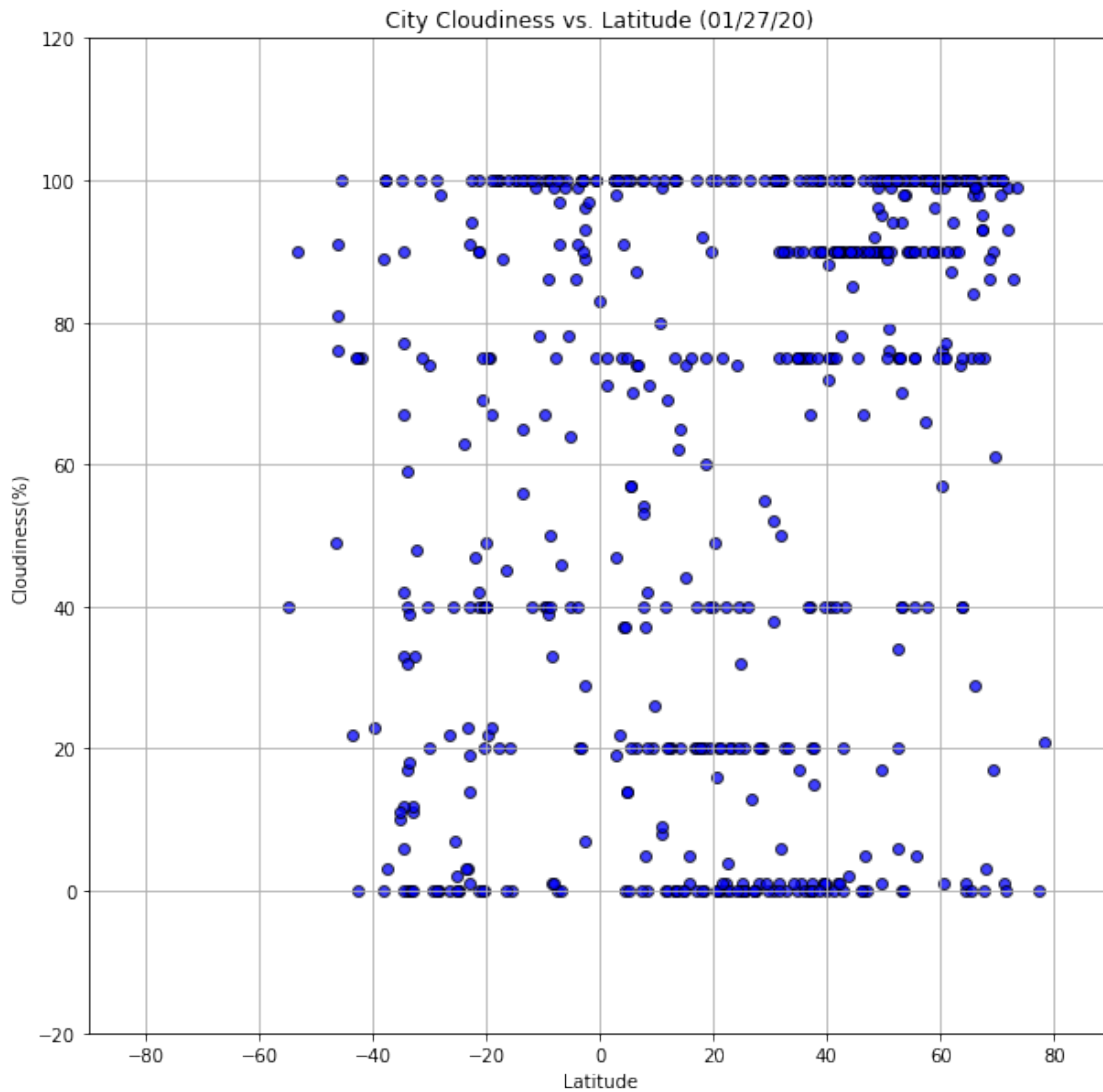
```

plt.ylim(-20, 120)
plt.xlim(-90, 90)

plt.grid()

plt.savefig('latcloud.png')
plt.show()
print("This analysis is showing the relationship between city cloudiness and_
→latitude. One can see that latitude doesn't seem to have an effect on_
→cloudiness.")

```



This analysis is showing the relation ship between city cloudiness and latitude. One can see that latitude doesn't seem to have an effect on cloudiness.

### Latitude vs. Wind Speed Plot

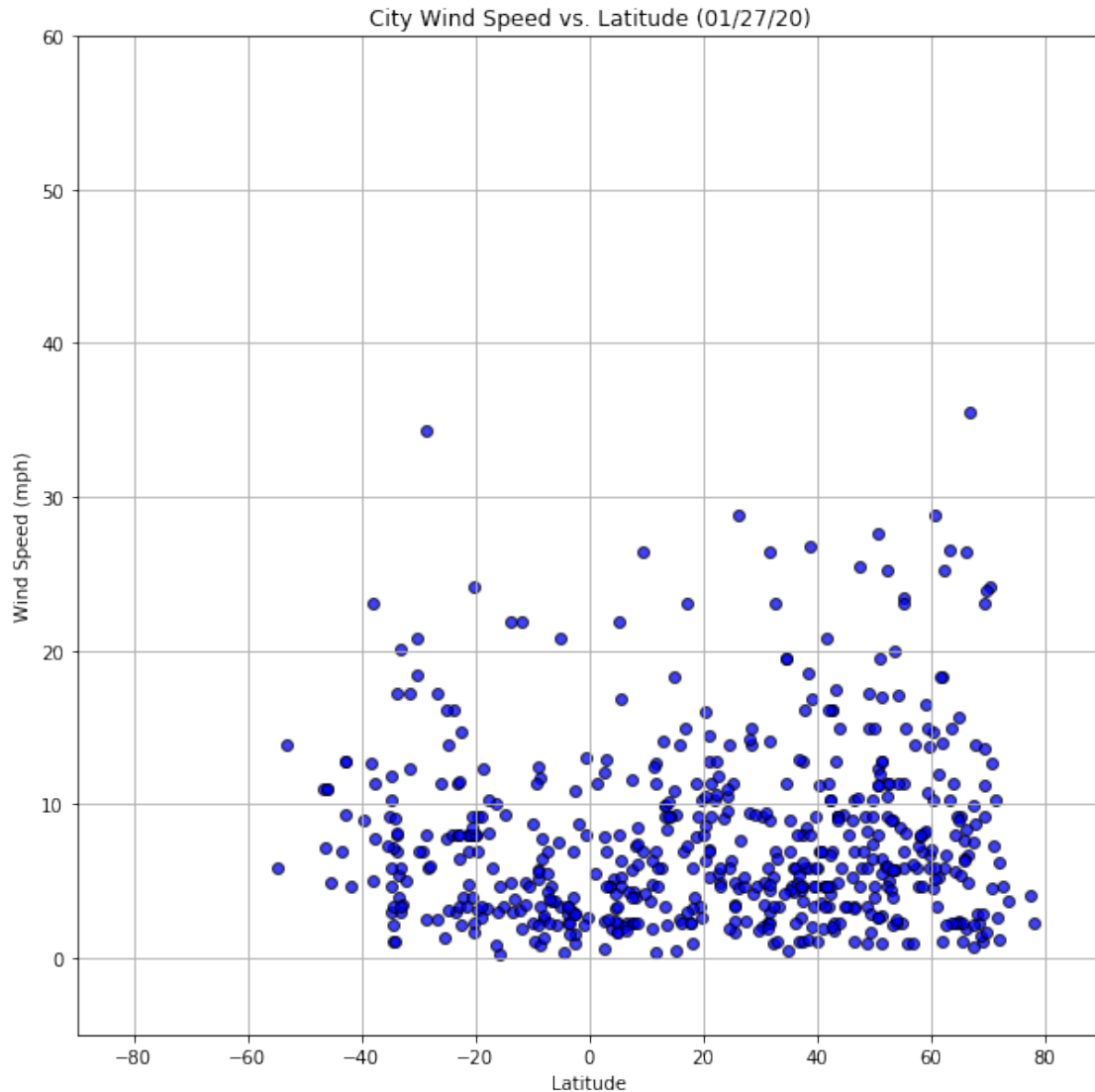
```
[112]: fig = plt.figure(figsize=(10,10))
ax1 = fig.add_subplot(1,1,1)

ax1.scatter(cities_pd['Lat'], cities_pd['Wind Speed'], c='blue',
           ↪marker='o',edgecolors="black", alpha=0.75)

plt.xlabel("Latitude")
plt.ylabel("Wind Speed (mph)")
plt.title('City Wind Speed vs. Latitude (' + strftime("%x", gmtime()) + ')')
plt.ylim(-5, 60)
plt.xlim(-90, 90)

plt.grid()

plt.savefig('latwind.png')
plt.show()
print("This analysis is showing the relationship between city wind speed and
     ↪latitude. One can see that latitude doesn't seem to have an effect on wind
     ↪speed.")
```



This analysis is showing the relation ship between city wind speed and latitude. One can see that latitude doesn't seem to have an effect on wind speed.

### 0.3 Linear Regression

```
[113]: northern = cities_pd.loc[(cities_pd["Lat"] >= 0)]
southern = cities_pd.loc[(cities_pd["Lng"] < 0)]
```

#### Northern Hemisphere - Max Temp vs. Latitude Linear Regression

```
[114]: x_values = northern['Lat']
y_values = northern['Max Temp']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
```



```

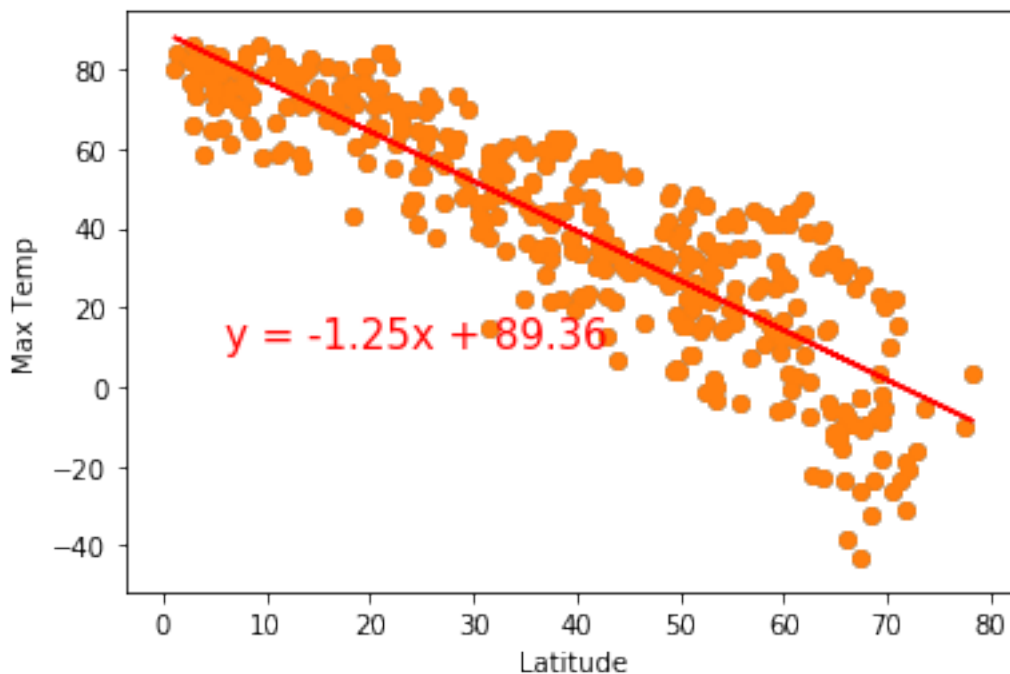
plt.ylabel('Max Temp')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept
line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

print(f"The r-squared is: {rvalue}")
plt.savefig('reg1.png')
plt.show()

```

The r-squared is: -0.8752788328924239



### Southern Hemisphere - Max Temp vs. Latitude Linear Regression

```

[115]: x_values = southern['Lat']
y_values = southern['Max Temp']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
plt.ylabel('Max Temp')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept

```

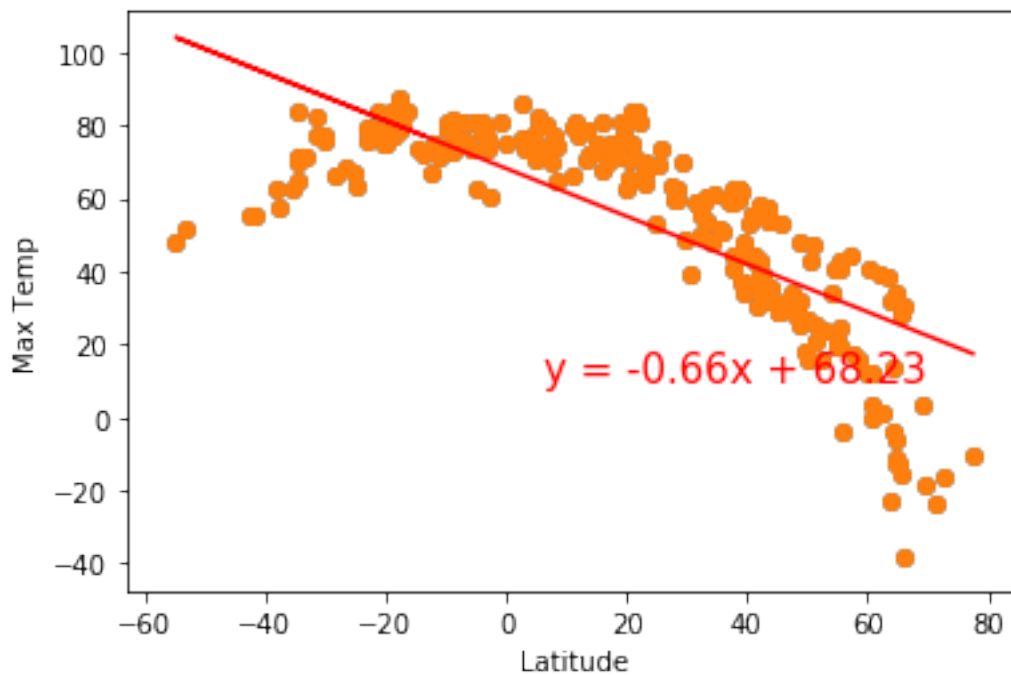
```

line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

print(f"The r-squared is: {rvalue}")
plt.savefig('reg2.png')
plt.show()

```

The r-squared is: -0.7605703223941274



### Northern Hemisphere - Humidity (%) vs. Latitude Linear Regression

```

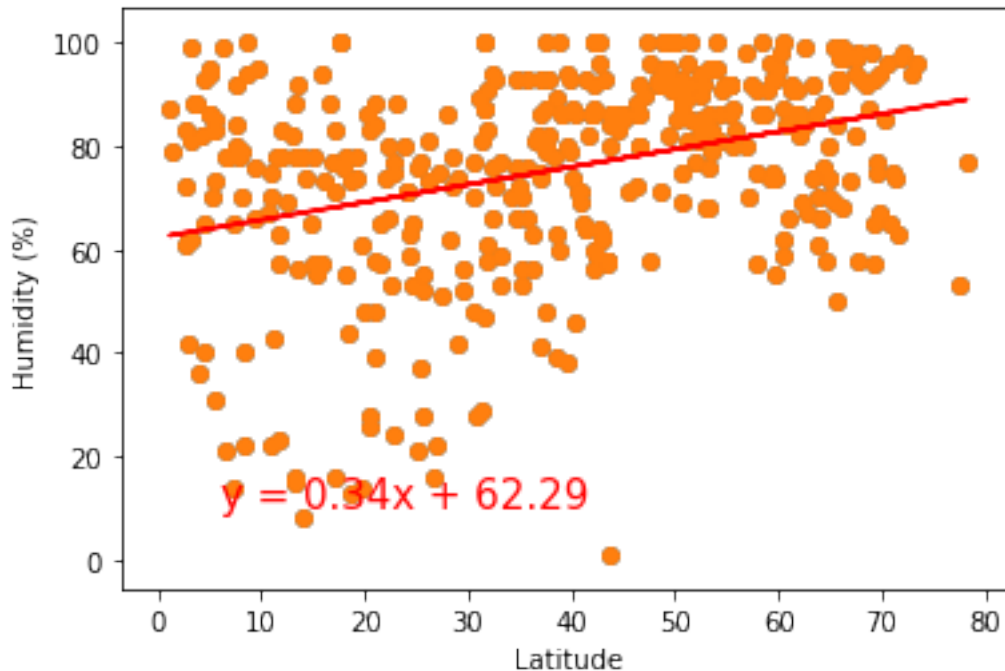
[116]: x_values = northern['Lat']
y_values = northern['Humidity']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
plt.ylabel('Humidity (%)')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept
line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

```

```
print(f"The r-squared is: {rvalue}")
plt.savefig('reg3.png')
plt.show()
```

The r-squared is: 0.3441218380650057



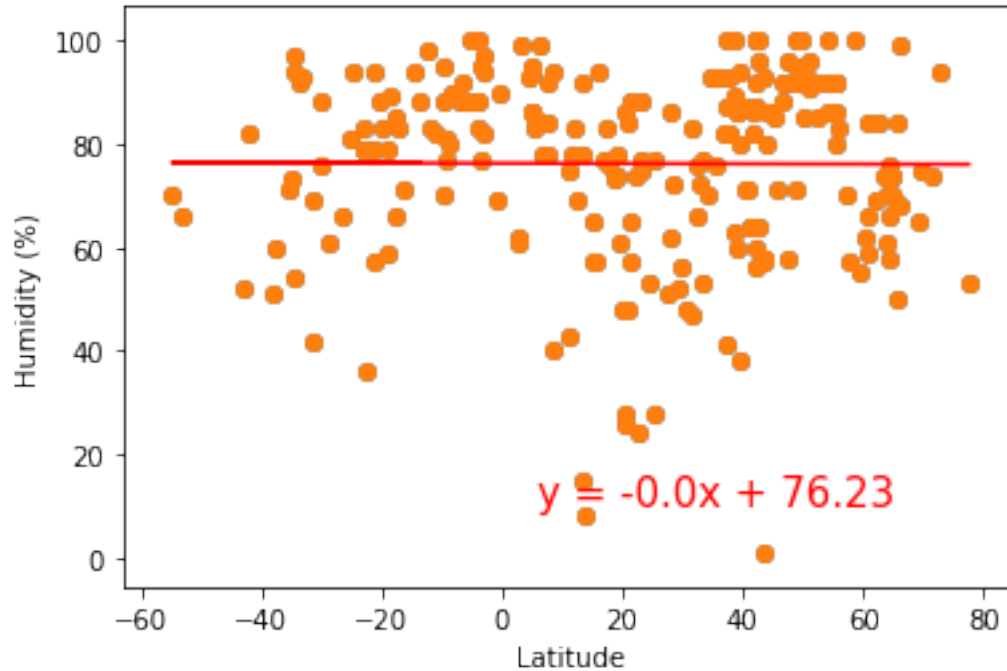
### Southern Hemisphere - Humidity (%) vs. Latitude Linear Regression

```
[117]: x_values = southern['Lat']
y_values = southern['Humidity']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
plt.ylabel('Humidity (%)')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept
line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

print(f"The r-squared is: {rvalue}")
plt.savefig('reg4.png')
plt.show()
```

The r-squared is: -0.004356120781049244



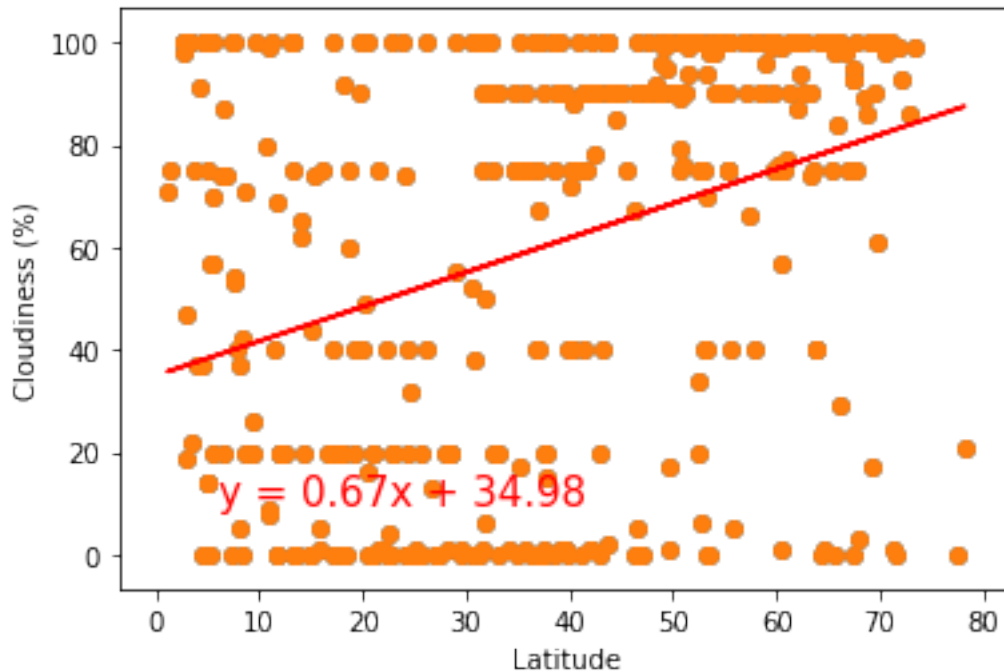
### Northern Hemisphere - Cloudiness (%) vs. Latitude Linear Regression

```
[118]: x_values = northern['Lat']
y_values = northern['Cloudiness']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
plt.ylabel('Cloudiness (%)')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept
line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

print(f"The r-squared is: {rvalue}")
plt.savefig('reg5.png')
plt.show()
```

The r-squared is: 0.3397691107455802



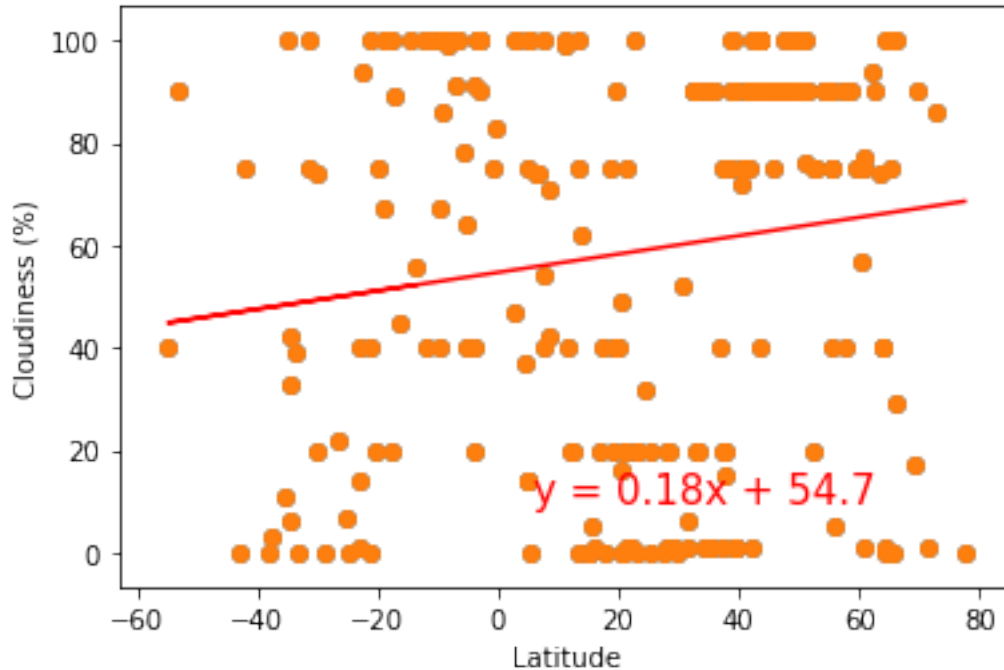
### Southern Hemisphere - Cloudiness (%) vs. Latitude Linear Regression

```
[119]: x_values = southern['Lat']
y_values = southern['Cloudiness']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
plt.ylabel('Cloudiness (%)')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept
line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

print(f"The r-squared is: {rvalue}")
plt.savefig('reg6.png')
plt.show()
```

The r-squared is: 0.1456033574925132



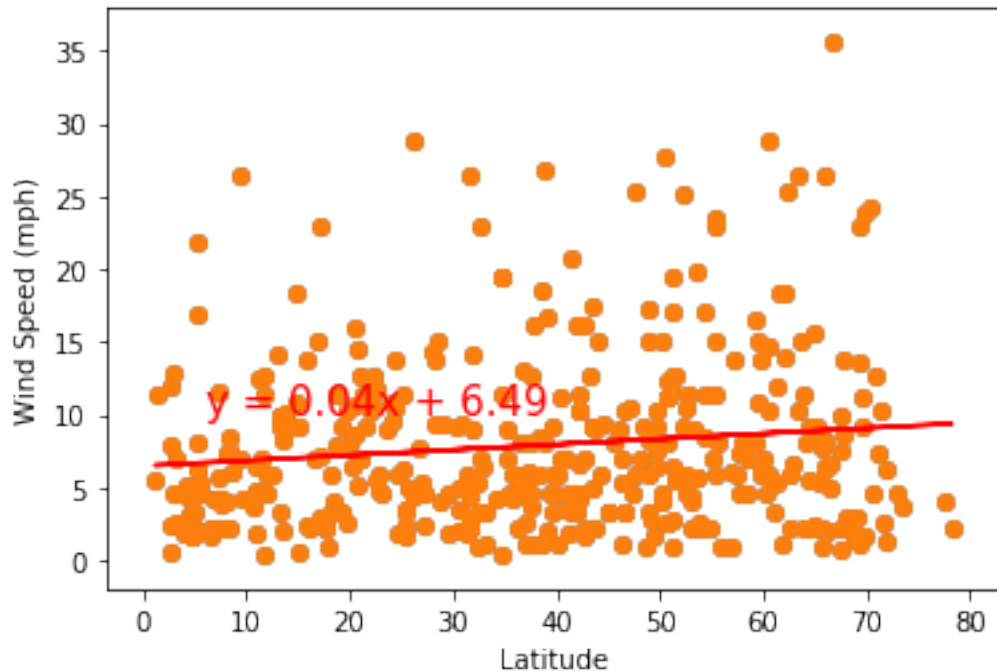
### Northern Hemisphere - Wind Speed (mph) vs. Latitude Linear Regression

```
[120]: x_values = northern['Lat']
y_values = northern['Wind Speed']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
plt.ylabel('Wind Speed (mph)')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept
line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

print(f"The r-squared is: {rvalue}")
plt.savefig('reg7.png')
plt.show()
```

The r-squared is: 0.12436611225075085



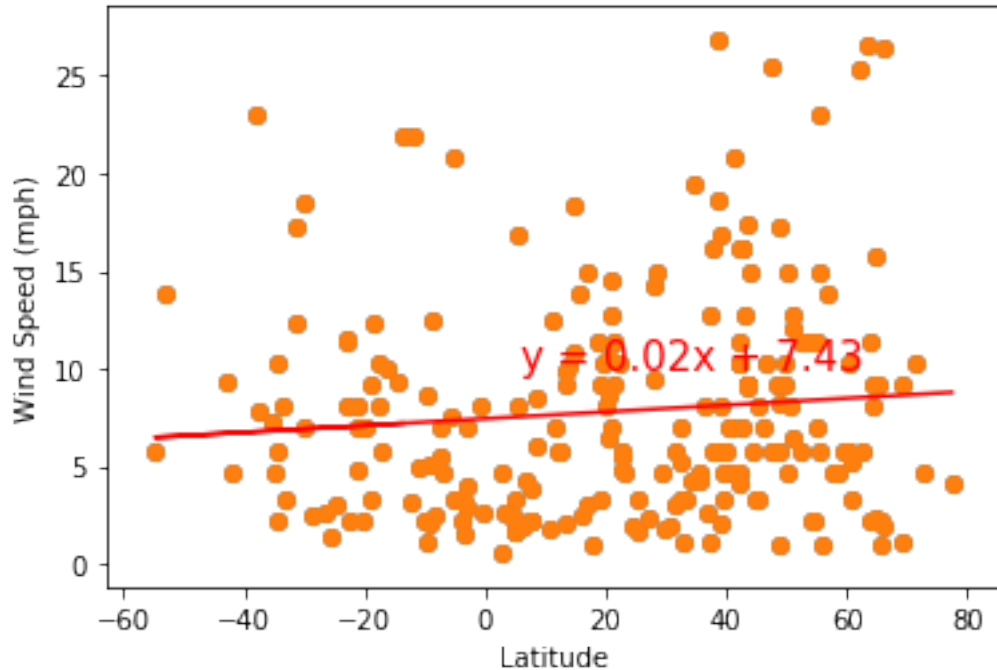
### Southern Hemisphere - Wind Speed (mph) vs. Latitude Linear Regression

```
[121]: x_values = southern['Lat']
y_values = southern['Wind Speed']
plt.scatter(x_values,y_values)
plt.xlabel('Latitude')
plt.ylabel('Wind Speed (mph)')

(slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
regress_values = x_values * slope + intercept
line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))
plt.scatter(x_values,y_values)
plt.plot(x_values,regress_values,"r")
plt.annotate(line_eq,(6,10),fontsize=15,color="red")

print(f"The r-squared is: {rvalue}")
plt.savefig('reg8.png')
plt.show()
```

The r-squared is: 0.0952435257155008



```
[ ]: # Could have also used this function to create Linear Regression plots
def plot_linear_regression(x_values, y_values, title, text_coordinates):

    (slope, intercept, rvalue, pvalue, stderr) = linregress(x_values, y_values)
    regress_values = x_values * slope + intercept
    line_eq = "y = " + str(round(slope,2)) + "x + " + str(round(intercept,2))

    plt.scatter(x_values,y_values)
    plt.plot(x_values,regress_values,"r-")
    plt.annotate(line_eq,text_coordinates,fontsize=15,color="red")
    plt.xlabel('Latitude')
    plt.ylabel(title)
    print(f"The r-squared is: {rvalue}")
    plt.show()
```

## 1 Observations

- If the cities generated were truly random, then it appears that there are more cities in general on the northern hemisphere.
- It is fairly rare for cities to experience wind speeds of more than 20mph.
- Latitude does not necessarily have a big impact on the humidity or cloudiness of a city according to the linear regression analyses.
- As expected, the weather becomes significantly warmer as one approaches the equator (0 Deg. Latitude). More interestingly, however, is the fact that the southern hemisphere tends to be



warmer this time of year than the northern hemisphere. This may be due to the tilt of the earth.

- There is no strong relationship between latitude and cloudiness. However, it is interesting to see that a strong band of cities sits at 0, 80, and 100% cloudiness.
- There is no strong relationship between latitude and wind speed. However, in northern hemispheres there is a flurry of cities with over 20 mph of wind.