VacationPy

Starter Code to Import Libraries and Load the Weather and Coordinates Data

In [1]:
```
# Dependencies and Setup
import hvplot.pandas
import pandas as pd
import requests
import json

# Import API key
from api_keys import geoapify_key
```

In [2]:
```
# Load the CSV file created in Part 1 into a Pandas DataFrame
city_data_df = pd.read_csv("output_data/cities.csv")

# Display sample data
city_data_df.head()
```

Out[2]:

	City_ID	City	Lat	Lng	Max Temp	Humidity	Cloudiness	Wind Speed	Country	Date
0	0	grytviken	-54.2811	-36.5092	2.19	98	100	3.12	GS	1686167174
1	1	punta arenas	-53.1500	-70.9167	4.06	75	20	6.69	CL	1686167174
2	2	axum	14.1245	38.7244	17.59	69	100	3.10	ET	1686167174
3	3	rio guayabal de yateras	20.3667	-75.0167	28.82	64	58	2.39	CU	1686167174
4	4	arkhangel'sk	64.5401	40.5433	2.69	77	4	1.52	RU	1686167091

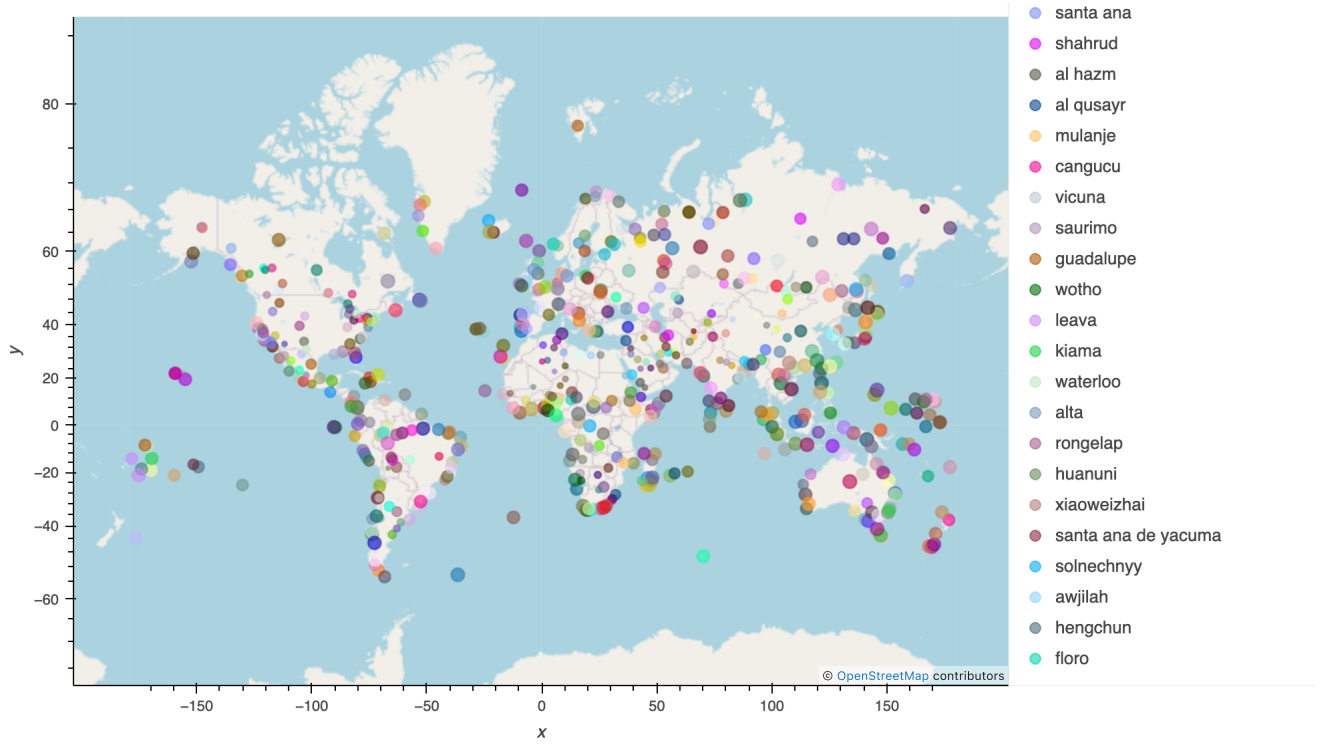
Step 1: Create a map that displays a point for every city in the `city_data_df` DataFrame. The size of the point should be the humidity in each city.

In [3]:
```
%%capture --no-display

# Configure the map plot
map_plot_1 = city_data_df.hvplot.points("Lng",
    "Lat",
    geo=True,
    tiles = "OSM",
    frame_width = 700,
    frame_height = 500,
    color="City",
    alpha= 0.6,
    hover=True,
    hover_cols="all",
    use_index=False,
    size="Humidity",
    scale= 1)

# Display the map
map_plot_1
```

Out[3]:



Step 2: Narrow down the `city_data_df` DataFrame to find your ideal weather condition

In [4]:
```
# Narrow down cities that fit criteria and drop any results with null values
ideal_weatherdf = city_data_df.loc[(city_data_df['Max Temp'] <= 30) &
                                   (city_data_df['Max Temp'] >= 18) &
                                   (city_data_df['Wind Speed'] < 10) &
                                   (city_data_df['Cloudiness'] < 10) &
                                   (city_data_df['Humidity'] < 70)]
print(len(ideal_weatherdf))
```

```
35
```

In [5]:
```
# Drop any rows with null values
ideal_weatherdf.dropna()

# Display sample data
ideal_weatherdf.head()
```

Out[5]:

	City_ID	City	Lat	Lng	Max Temp	Humidity	Cloudiness	Wind Speed	Country	Date
18	18	port mathurin	-19.6833	63.4167	24.95	64	3	8.29	MU	1686167177
39	39	muynoq	43.7683	59.0214	25.38	50	3	2.72	UZ	1686167180
42	42	port saint john's	-31.6229	29.5448	21.96	44	0	2.82	ZA	1686167180
44	44	fale old settlement	-9.3852	-171.2468	28.60	68	7	3.35	TK	1686167180
81	81	antsohihy	-14.8796	47.9875	23.41	66	0	3.33	MG	1686167185

Step 3: Create a new DataFrame called `hotel_df`.

In [6]:
```
# Use the Pandas copy function to create DataFrame called hotel_df to store the city, country, coordinates, and humidity
hotel_df = ideal_weatherdf.iloc[:,[1,8,2,3,5]].copy()

# Add an empty column, "Hotel Name," to the DataFrame so you can store the hotel found using the Geoapify API
hotel_df["Hotel Name"]=''

# Display sample data
hotel_df.head()
```

Out[6]:

	City	Country	Lat	Lng	Humidity	Hotel Name
18	port mathurin	MU	-19.6833	63.4167	64	
39	muynoq	UZ	43.7683	59.0214	50	
42	port saint john's	ZA	-31.6229	29.5448	44	
44	fale old settlement	TK	-9.3852	-171.2468	68	
81	antsohihy	MG	-14.8796	47.9875	66	

Step 4: For each city, use the Geoapify API to find the first hotel located within 10,000 metres of your coordinates.

In [7]:
```
# Set parameters to search for a hotel
radius = 10000
params = {'categories':'accommodation.hotel',\
          'filter':'',\
          'bias':'',\
          'apiKey':geoapify_key,\
          'limit':1}

# Print a message to follow up the hotel search
print("Starting hotel search")

# Iterate through the hotel_df DataFrame
for index, row in hotel_df.iterrows():
    # get latitude, longitude from the DataFrame
    lon = row['Lng']
    lat = row['Lat']

    # Add filter and bias parameters with the current city's latitude and longitude to the params dictionary
    params["filter"] = f'circle:{lon},{lat},{radius}'
    params["bias"] = f'proximity:{lon},{lat}'

    # Set base URL
    base_url = "https://api.geoapify.com/v2/places"


    # Make and API request using the params dictionaty
    name_address = requests.get(base_url, params=params)

    # Convert the API response to JSON format
    name_address = name_address.json()

    # Grab the first hotel from the results and store the name in the hotel_df DataFrame
    try:
        hotel_df.loc[index, "Hotel Name"] = name_address["features"][0]["properties"]["name"]
    except (KeyError, IndexError):
        # If no hotel is found, set the hotel name as "No hotel found".
        hotel_df.loc[index, "Hotel Name"] = "No hotel found"

    # Log the search results
    print(f"{hotel_df.loc[index, 'City']} - nearest hotel: {hotel_df.loc[index, 'Hotel Name']}")

# Display sample data
hotel_df
```

```
Starting hotel search
port mathurin - nearest hotel: Escale Vacances
muynoq - nearest hotel: Lala
port saint john's - nearest hotel: Outback Inn
fale old settlement - nearest hotel: No hotel found
antsohihy - nearest hotel: Escale
port shepstone - nearest hotel: The Spot Backpackers'
scottburgh - nearest hotel: Blue Marlin Hotel
hami - nearest hotel: Хами
turaif - nearest hotel: العودة
belyy yar - nearest hotel: No hotel found
stettler - nearest hotel: Heartland Lodge
kamina - nearest hotel: Hôtel DG
smithers - nearest hotel: Sunshine Inn Hotel
sault ste. marie - nearest hotel: Holiday Inn
minas de marcona - nearest hotel: No hotel found
richards bay - nearest hotel: Bon Hotel Waterfront
laguna - nearest hotel: Holiday Inn Express & Suites
arraial do cabo - nearest hotel: No hotel found
orchard homes - nearest hotel: Broadway Inn
al jawf - nearest hotel: No hotel found
villa hidalgo - nearest hotel: No hotel found
nanticoke - nearest hotel: No hotel found
khamis mushait - nearest hotel: No hotel found
sar-e pul - nearest hotel: No hotel found
peace river - nearest hotel: New Ridge Inn
buena vista - nearest hotel: Red Roof Inn Saginaw
toliara - nearest hotel: Ambary
rakops - nearest hotel: Rakops River Lodge
pueblo nuevo - nearest hotel: No hotel found
cleveland - nearest hotel: Renaissance Cleveland Hotel
n'djamena - nearest hotel: فندق آسيا
dawson creek - nearest hotel: Comfort Inn
al qusayr - nearest hotel: No hotel found
mulanje - nearest hotel: No hotel found
waterloo - nearest hotel: Delta Waterloo
```

Out[7]:

	City	Country	Lat	Lng	Humidity	Hotel Name
18	port mathurin	MU	-19.6833	63.4167	64	Escale Vacances
39	muynoq	UZ	43.7683	59.0214	50	Lala
42	port saint john's	ZA	-31.6229	29.5448	44	Outback Inn
44	fale old settlement	TK	-9.3852	-171.2468	68	No hotel found
81	antsohihy	MG	-14.8796	47.9875	66	Escale
87	port shepstone	ZA	-30.7414	30.4550	41	The Spot Backpackers'
115	scottburgh	ZA	-30.2867	30.7532	36	Blue Marlin Hotel
136	hami	CN	42.8000	93.4500	15	Хами
139	turaif	SA	31.6725	38.6637	17	المودة
195	belyy yar	RU	53.6039	91.3903	59	No hotel found
212	stettler	CA	52.3168	-112.7186	36	Heartland Lodge
232	kamina	CD	-8.7386	24.9906	50	Hôtel DG
258	smithers	CA	54.7804	-127.1743	30	Sunshine Inn Hotel
281	sault ste. marie	CA	46.5168	-84.3333	38	Holiday Inn
290	minas de marcona	PE	-15.2119	-75.1103	61	No hotel found
291	richards bay	ZA	-28.7830	32.0377	56	Bon Hotel Waterfront
303	laguna	US	38.4210	-121.4238	57	Holiday Inn Express & Suites
304	arraial do cabo	BR	-22.9661	-42.0278	60	No hotel found
326	orchard homes	US	46.8633	-114.0484	40	Broadway Inn
358	al jawf	SA	29.5000	38.7500	18	No hotel found
360	villa hidalgo	MX	21.6667	-102.6000	15	No hotel found
378	nanticoke	US	41.2054	-76.0049	41	No hotel found
416	khamis mushait	SA	18.3064	42.7292	35	No hotel found
429	sar-e pul	AF	35.8333	66.1667	16	No hotel found
439	peace river	CA	56.2501	-117.2860	32	New Ridge Inn
502	buena vista	US	43.4203	-83.8986	37	Red Roof Inn Saginaw
511	toliara	MG	-23.3500	43.6667	51	Ambary
522	rakops	BW	-21.0167	24.3333	25	Rakops River Lodge
524	pueblo nuevo	MX	23.3833	-105.3833	33	No hotel found
525	cleveland	US	41.4995	-81.6954	32	Renaissance Cleveland Hotel
534	n'djamena	TD	12.1067	15.0444	69	فندق آسيا
537	dawson creek	CA	55.7666	-120.2362	26	Comfort Inn
547	al qusayr	SY	34.5091	36.5798	55	No hotel found
548	mulanje	MW	-16.0316	35.5000	60	No hotel found
556	waterloo	CA	43.4668	-80.5164	32	Delta Waterloo

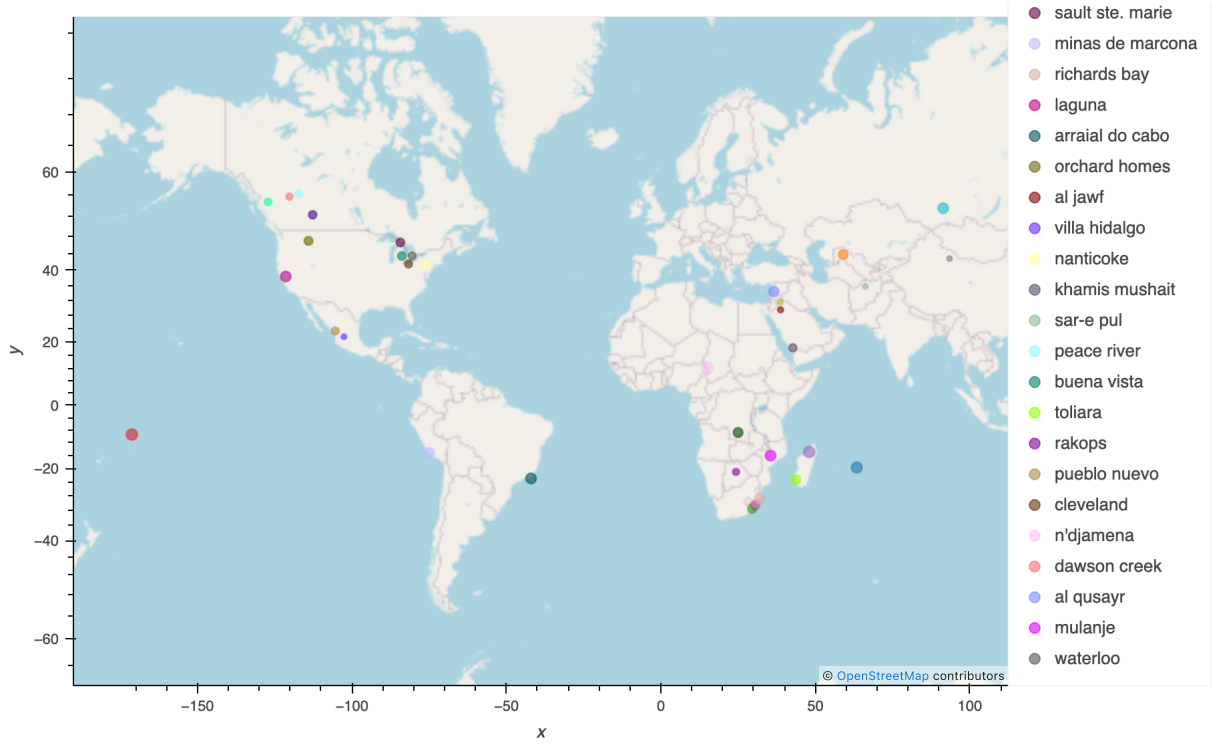
Step 5: Add the hotel name and the country as additional information in the hover message for each city in the map.

In [8]:
```
%%capture --no-display

# Configure the map plot
map_plot_2 = hotel_df.hvplot.points("Lng",
            "Lat",
            geo=True,
            tiles = "OSM",
            frame_width = 700,
            frame_height = 500,
            color="City",
            alpha=0.6,
            hover=True,
            hover_cols="all",
            use_index=False,
            size="Humidity",
            scale= 1)

# Display the map
map_plot_2
```

Out[8]:


sault ste. marie
minas de marcona
richards bay
laguna
arraial do cabo
orchard homes
al jawf
villa hidalgo
nanticoke
khamis mushait
sar-e pul
peace river
buena vista
toliara
rakops
pueblo nuevo
cleveland
n'djamena
dawson creek
al qusayr
mulanje
waterloo
60
40
20
0
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−40
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y
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−100
−50
0
50
100
x
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In [ ]: