

code to Create a temperature and precipitation chart using Python on Google Colab

_____one year _____

```
import matplotlib.pyplot as plt

# Sample data (replace with your data if needed)
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']
precipitation = [0.0, 0.0, 2.21, 0.0, 0.0, 2.08, 0.32, 1.12, 0.22, 27.79, 0.06, 0.11] #
Precipitation in mm
temperature = [16.96, 18.62, 18.2, 18.65, 19.24, 20.39, 20.43, 21.27, 21.83, 21.33, 19.73,
18.3] # Actual temperature data (°C)

# Create the figure and axis
fig, ax1 = plt.subplots(figsize=(10, 6))

# Left axis (precipitation)
bars = ax1.bar(months, precipitation, color='skyblue', alpha=0.7, label='Precipitation (mm)')
ax1.set_ylabel('Precipitation (mm)', color='blue')
ax1.set_ylim(0, max(precipitation) + 10) # Adjust maximum limit for precipitation
ax1.tick_params(axis='y', labelcolor='blue')

# Right axis (temperature)
ax2 = ax1.twinx()
line, = ax2.plot(months, temperature, color='red', marker='o', linestyle='-', label='Temperature
(°C)')
ax2.set_ylabel('Temperature (°C)', color='red')
ax2.set_ylim(0, max(temperature) + 5) # Adjust maximum limit for temperature
ax2.tick_params(axis='y', labelcolor='red')

# Add a title
plt.title('Température moyenne et précipitations à Fès en 2019', fontsize=14)

# Add legends for both precipitation and temperature
plt.legend([bars, line], ['Precipitation (mm)', 'Temperature (°C)'], loc='upper left',
bbox_to_anchor=(0.75, 0.95), fontsize=10)

# Adjust layout
fig.tight_layout()

# Show the plot
plt.show()
```

_____several years _____

```
import matplotlib.pyplot as plt
import numpy as np
```

```

# Years data
years = ['2000', '2001', '2002', '2003', '2004', '2005', '2006', '2007', '2008', '2009', '2010',
'2011', '2012', '2013', '2014', '2015', '2016', '2017', '2018', '2019', '2020', '2021', '2022']

# Temperature data (23 values to match 23 years)
temperatures = [18.29, 19.73, 19.73, 19.74, 20.01, 19.819, 19.48, 19.75, 19.82, 20.67,
19.87, 19.78, 19.8, 19.38, 19.63, 19.77, 20.01, 18.99, 19.2, 19.96, 19.35, 19.89, 19.50] #
Added 19.50 for the last year

# Precipitation data
precipitations = [26.50, 5.29, 22.55, 53.40, 64.71, 61.99, 48.22, 15.93, 22.44, 6.41, 93.72,
7.80, 41.23, 32.59, 25.80, 41.90, 29.05, 20.82, 143.83, 10.76, 57.06, 1315.74, 53.42]

# Create the plot
fig, ax1 = plt.subplots(figsize=(12, 6))

# Plot temperature curve
color_temp = 'tab:red'
ax1.set_xlabel('Years')
ax1.set_ylabel('Temperature (°C)', color=color_temp)
temp_line, = ax1.plot(years, temperatures, color=color_temp, marker='o',
label='Temperature')
ax1.tick_params(axis='y', labelcolor=color_temp)

# Add second axis for precipitation
ax2 = ax1.twinx()
color_precip = 'tab:blue'
ax2.set_ylabel('Precipitation (mm)', color=color_precip)
precip_bars = ax2.bar(years, precipitations, color=color_precip, alpha=0.6,
label='Precipitation')
ax2.tick_params(axis='y', labelcolor=color_precip)

# Combine legends
lines = [temp_line, precip_bars[0]] # Only take the first bar for the legend
labels = ['Temperature', 'Precipitation']
ax1.legend(lines, labels, loc='upper left')

# Additional settings
plt.title('Température et précipitations à Dakhla entre 2000 et 2022')
plt.grid(axis='x', linestyle='--', alpha=0.7)
plt.tight_layout()

# Show the plot
plt.show()

```