Week 7:
Basic Visualization

1. **Resources**
2. **Matplotlib & Jupyter**
3. **Anatomy of a Plot**
4. **Types of Plots**
5. **Outlook**

Resources

- Documentation of plt: https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.html
- Documentation of Axes: https://matplotlib.org/stable/api/axes_api.html
- Documentation of Figure: https://matplotlib.org/stable/api/figure_api.html
- Anatomy of Matplotlib: https://www.youtube.com/watch?v=6gdNUDs6QPc
- Python Data Science Handbook:

  jakevdp.github.io/PythonDataScienceHandbook/04.00-introduction-to-matplotlib.html

Matplotlib

Matplotlib: Visualization with Python

Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python.

Matplotlib makes easy things easy and hard things possible.

Matplotlib & Jupyter

Default Workflow in Plain Python:

import matplotlib.pyplot as plt

[... create a Figure object …]

plt.show()

→ GUI window pops up

Default Workflow in Jupyter Notebook:

import matplotlib.pyplot as plt

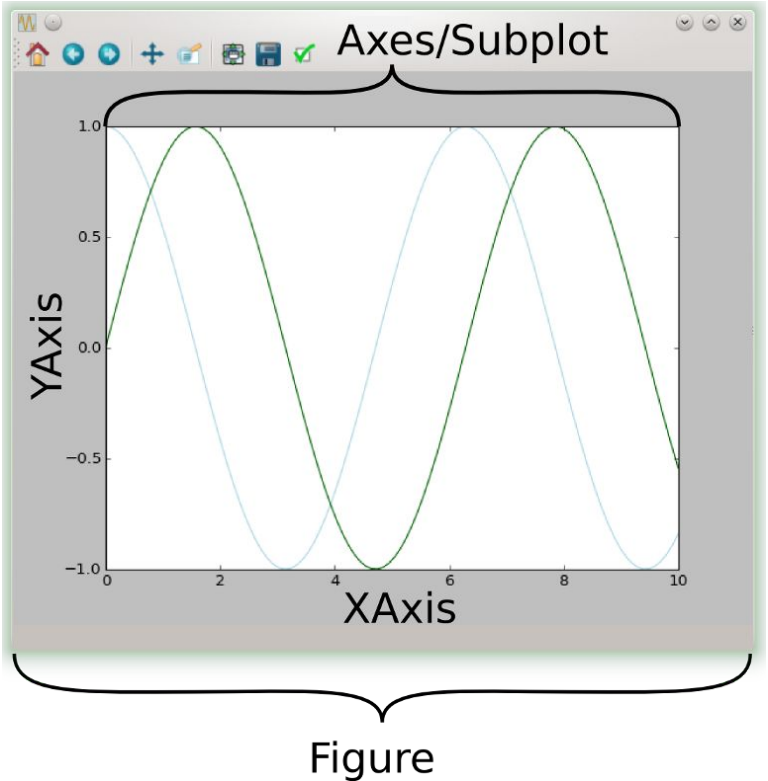
import matplotlib

%matplotlib inline

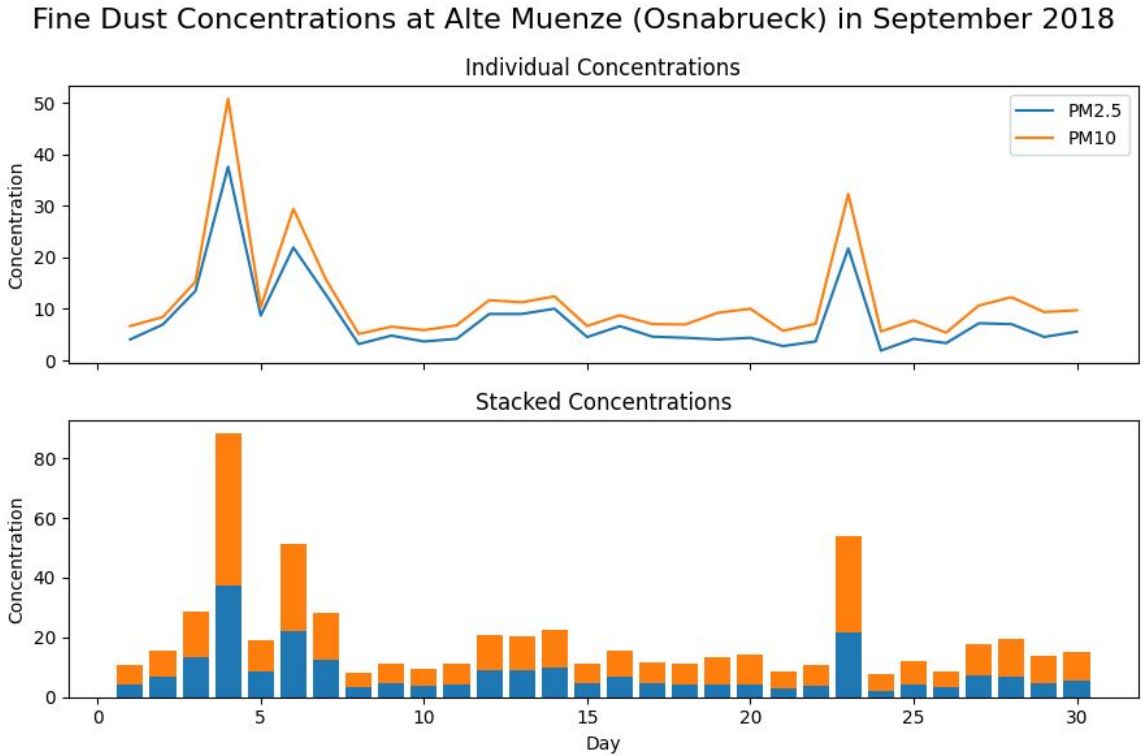
[... create a Figure object …]

→ Static image is embedded

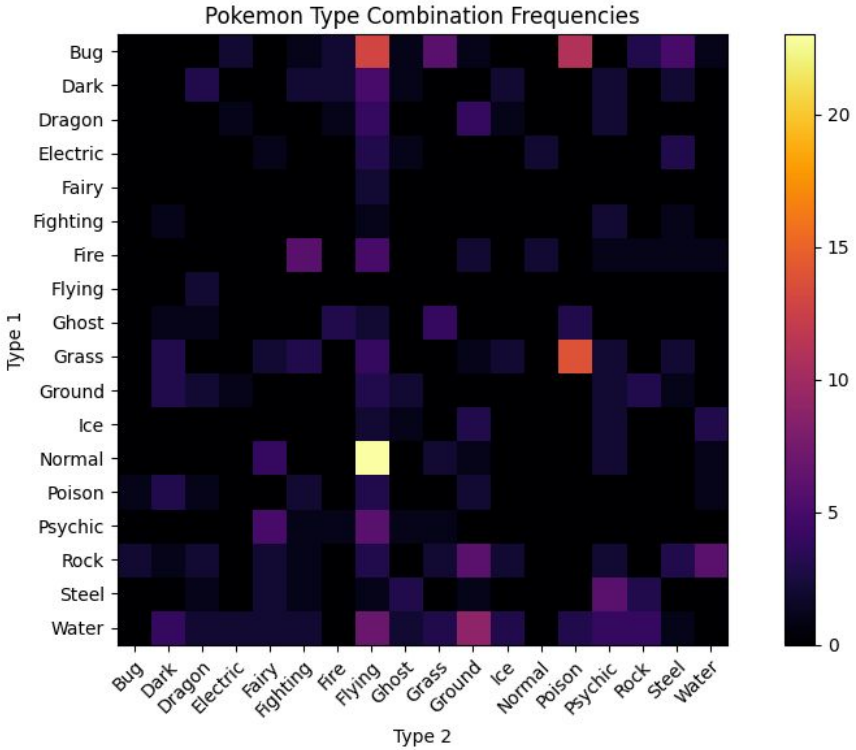
Anatomy of a Plot



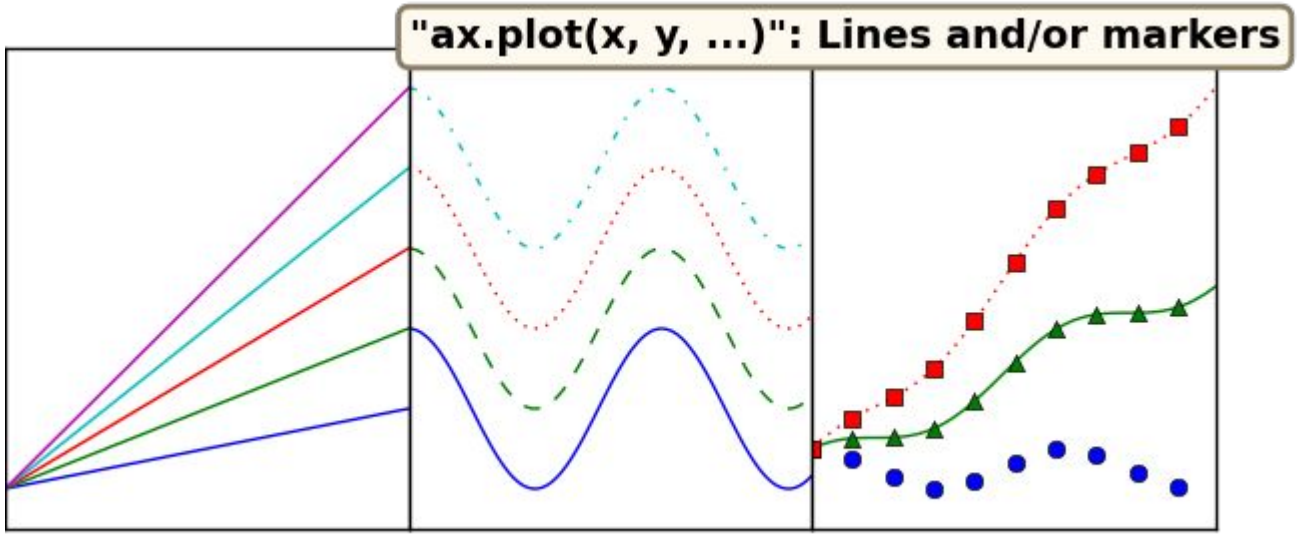
Anatomy of a Plot



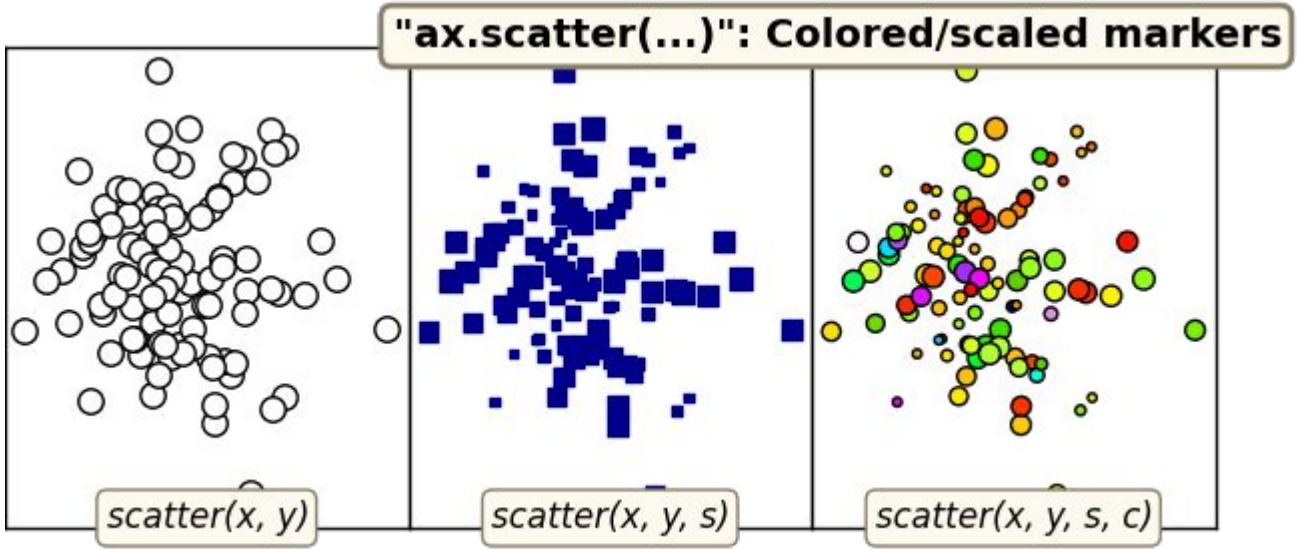
Anatomy of a Plot



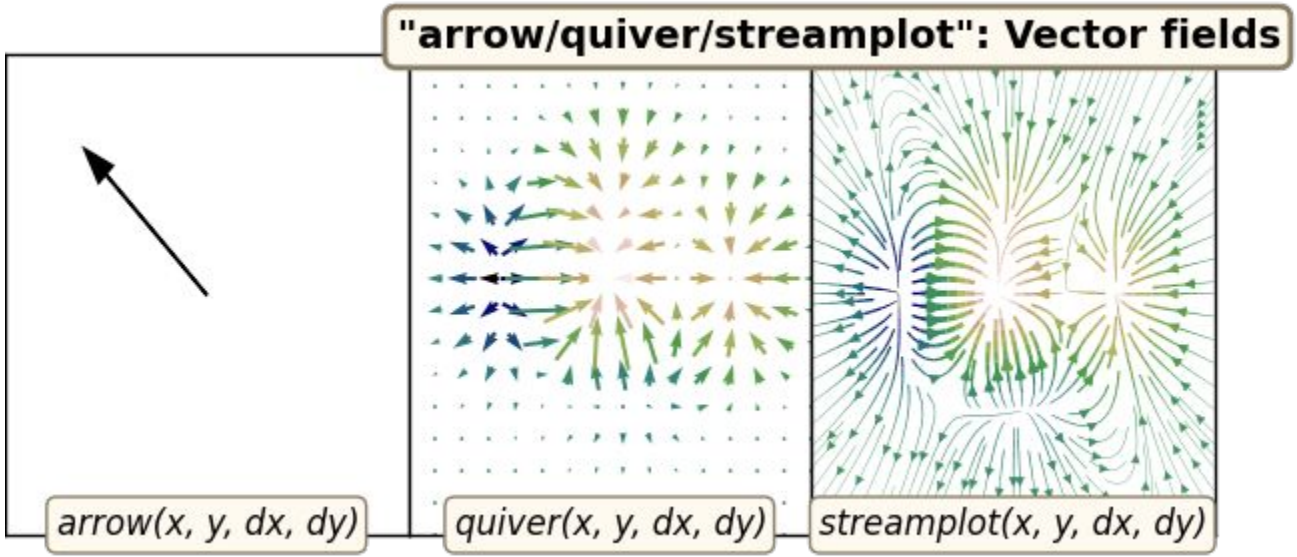
Types of Plots



Types of Plots



Types of Plots



Outlook

Matplotlib supports many more types of plots, notably:

- 3D Plots
- Animated Plots
- Interactive Plots

→ 3-Body Problem Simulation: https://www.youtube.com/watch?v=HPvbKpVSACw

→ L09 Advanced Visualization

The assignment link for 2021-homework07 can be found in a StudIP announcement