

Introduction Python & Jupyter

Climate Risk Assessment Spring Semester 2026



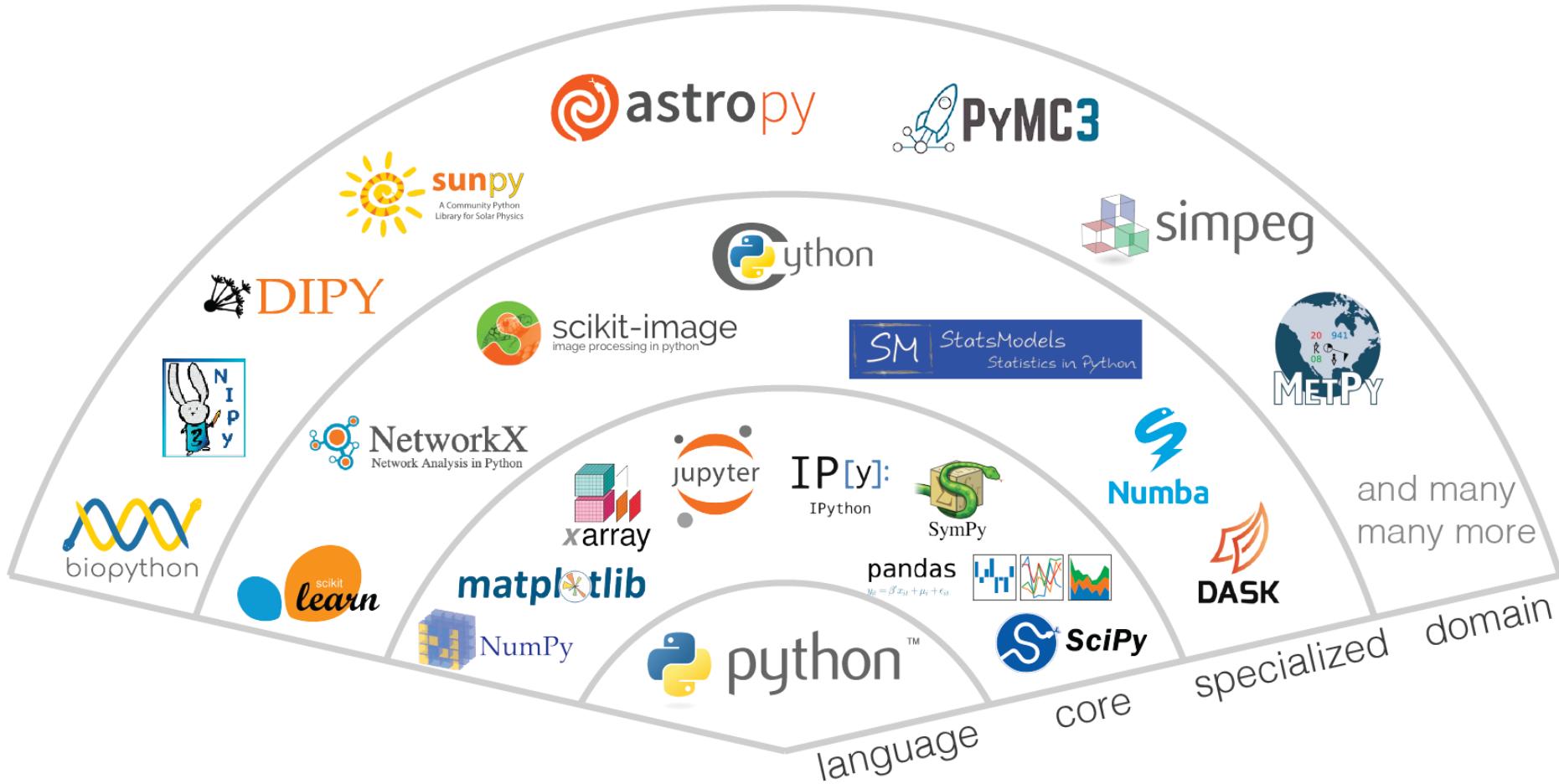
Program

- What is Python and why do we use it?
- How do we use Python and Jupyter in this course?
- Basic introduction to Python
 - Today:
 - Get everyone's Python installation running
 - Python Datatypes and Objects, interacting with Packages
 - Next Week: Numpy and Xarray

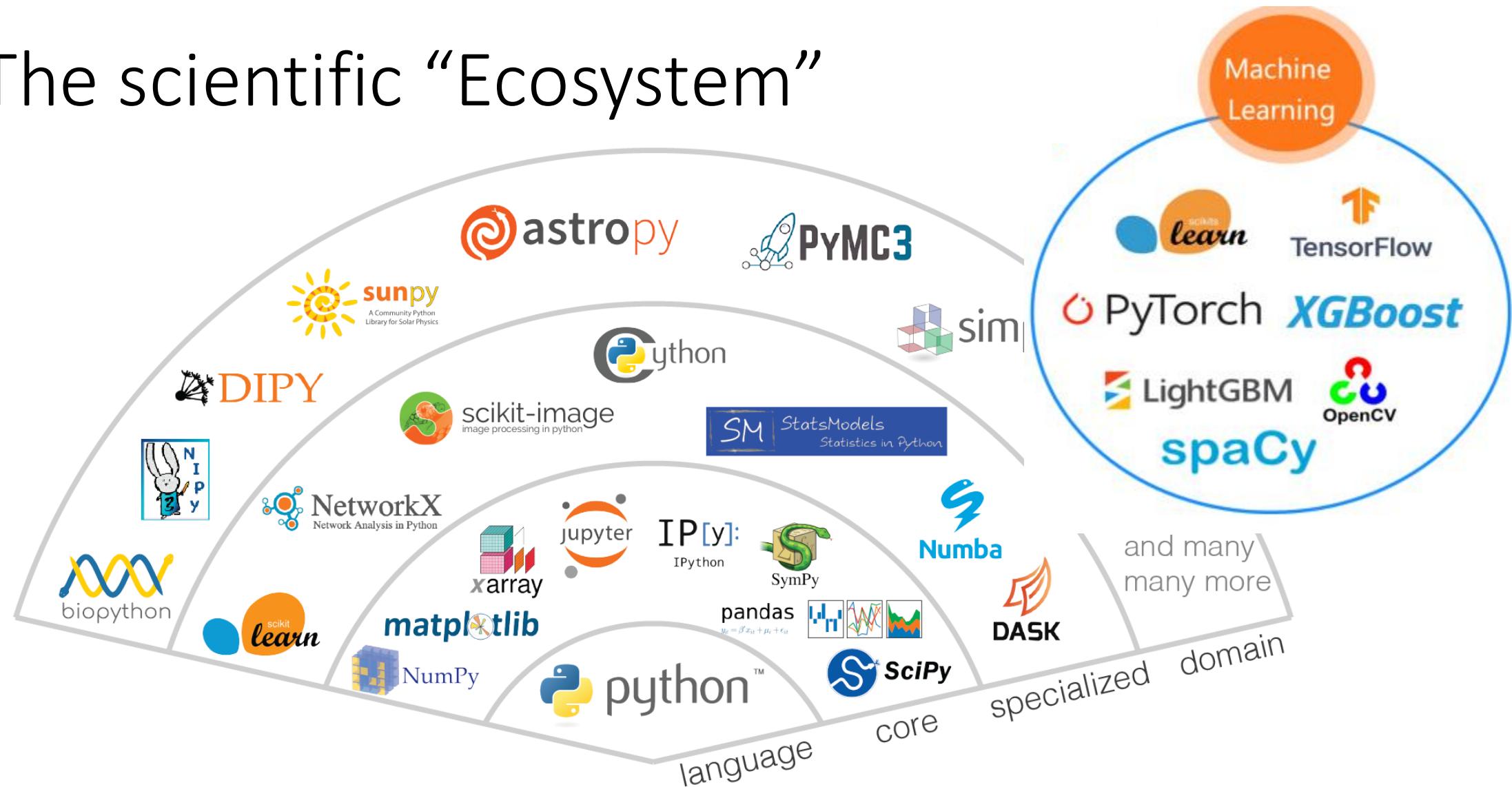
What is Python & Why do we use it?

- High level general-purpose programming language
- Emphasis on code readability (Indentation, English keywords)
- Multiparadigm & dynamic typing
- Extensive Standard Library and lots of scientific open source libraries

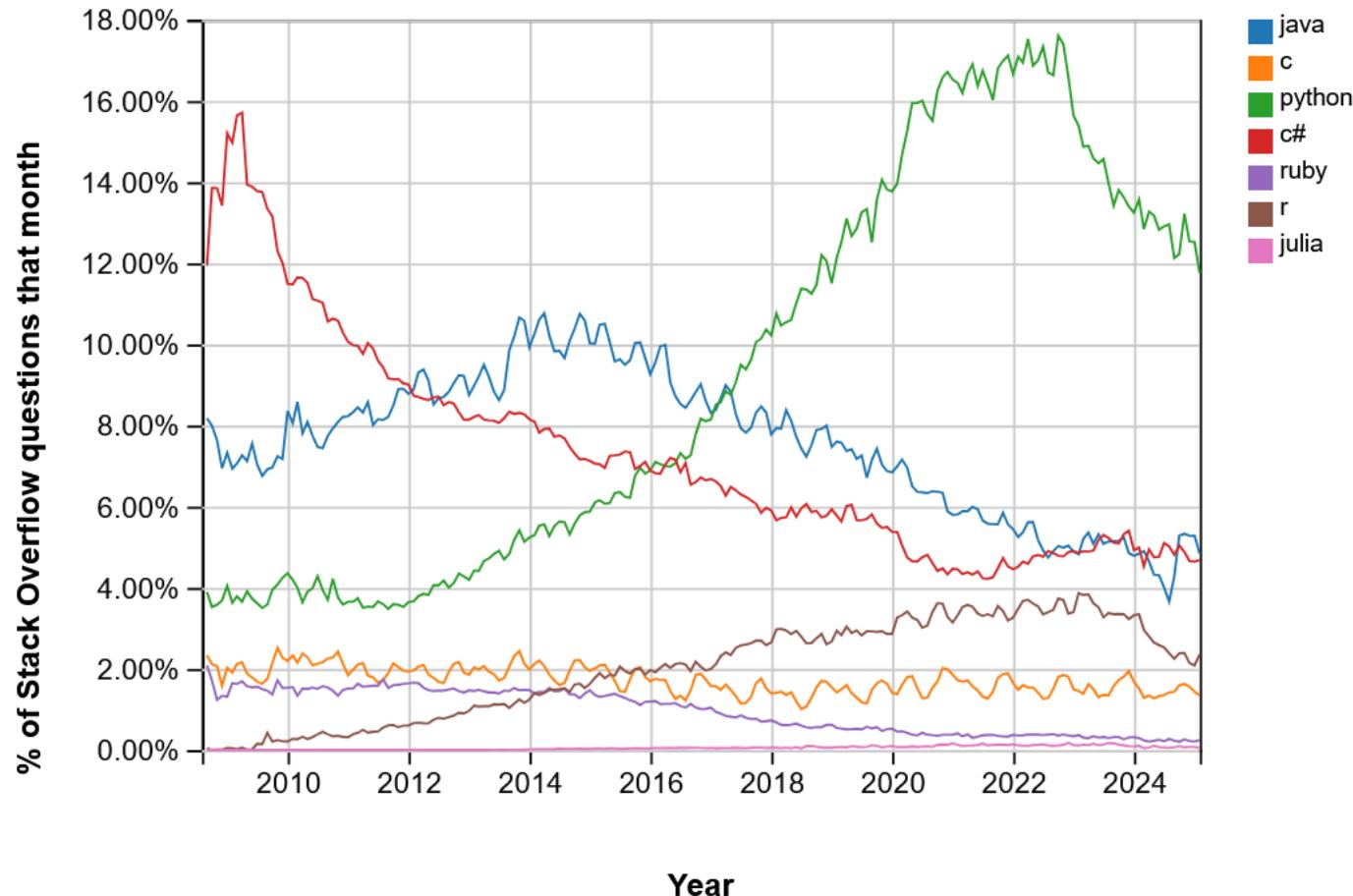
The scientific “Ecosystem”



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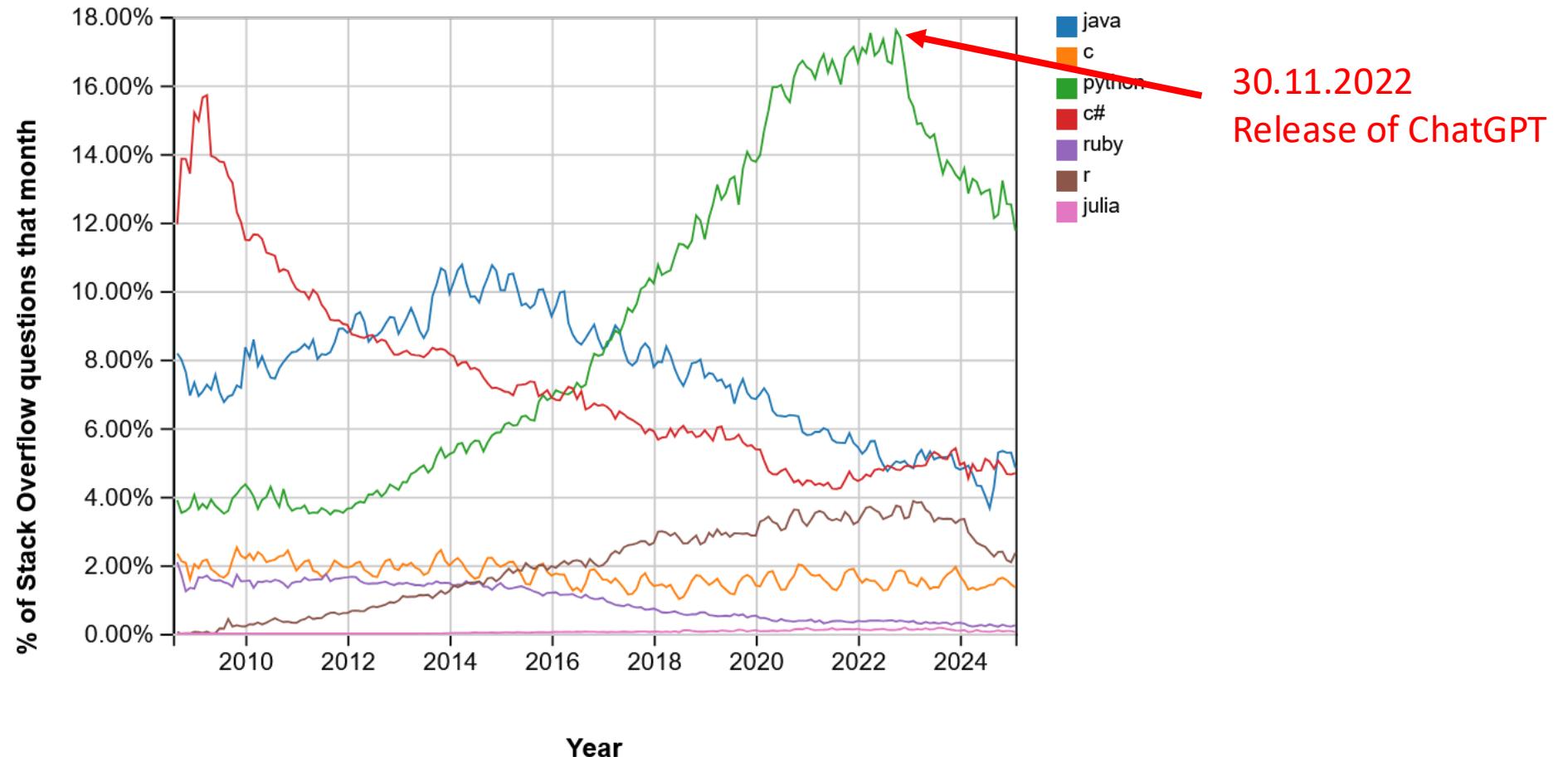


Currently one of the most popular languages



Source: <https://insights.stackoverflow.com>

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Use of AI Tools for Programming

- ChatGPT, Github Copilot, AlphaCode...
- Use them, but don't blindly trust them.
- Make sure you understand the code that you copy!

What is Jupyter?

- Jupyter: Open Source Software for **Interactive Computing**
- Available for multiple languages (Jupyter: **Julia, Python, R**)

```
a = 5  
b = 10  
  
c = a + b  
  
e = 5  
  
d = c + e
```

If I want to change **e**
everything will be recalculated

```
a = 5  
b = 10  
  
c = a + b
```

```
e = 5  
  
d = c + e
```

If I want to change **e**
Only the second cell must be calculated
c is stored in memory

Using Python on your own Computer

- Be mindful of resource usage!
 - Your laptop has limited processing power and memory
 - Windows: Task manager (ctrl + shift + Esc)
 - Linux: htop
 - Mac: Activity Monitor
- Back up your code! We can not help you restore the lost code...
 - Simple approach: Copy your work onto an external drive or a cloud
 - Advanced: use git for version control (recommended)

Use an IDE

An IDE (Integrated development environment) is a comprehensive text editor to write, test, debug and run your code in an easier way. Popular Python IDEs are:

- Vscode (used by many of us, resource intensive)
- Jupyter notebooks (Jupyter Lab) (simplest way to get started)
- Pycharm
- Spyder
- ...