NumPy, SciPy, matplotlib

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Intro

- Python as a scientific calculator
- Matplotlib
- NumPy, SciPy

Code samples

- All examples and these slides are available here: https://github.com/ChaoticRoman/numpy_scipy_matplotlib_workshop

  (Just google: `ChaoticRoman github`
  and clone `numpy_scipy_matplotlib_workshop` repo)

Installation

- **Windows:** anaconda.com
- **Linux:** use your package manager
- **MacOS:** install Python3, use pip3

Matplotlib showtime

- Simple to use
- Powerful: https://matplotlib.org/gallery.html

NumPy showtime

- `jupyter notebook numpy_basics.ipynb`
- User guide with tutorial: https://docs.scipy.org/doc/numpy/user/
- Reference: https://docs.scipy.org/doc/numpy/reference/

Let’s get some data to play with!

- Data: http://portal.chmi.cz/historicka-data/pocasi/praha-klementinum
- `load_data.py`
- `temperature.py`
- `temperature1.py`

Smoothing our data

- `moving_average.py`
- `temperature2.py`
- `temperature3.py`
- `precipitation.py`

Colorized 2D plots

- `year.py`
- `year2.py`
- `year3.py`

3D plots

- `year3D_1.py`
- `year3D_2.py`

SciPy showtime

- https://docs.scipy.org/doc/scipy-1.3.0/reference/

Future is up to you!

- Evolution of number of tropical days per year
  - Tropical day is a day with Tmax >= 30 °C
- Radial plot for temperatures over year
  - Maybe animated?
- Compare average year over 1850-1900 and 1968-2018
- Recreate any graph from http://portal.chmi.cz/files/portal/docs/meteo/ok/klimazmena/files/cc_chap10.pdf
- Anything other you are interested in

Thank you for attention!

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