EVENT

Science: EAE - Python for Earth Sciences

Last updated 21/11/2023 **Duration** 15 hours

Details

Graduate Research: Excellence in Research & Teaching

Python is a high level programming language with a lot of external packages that provide excellent tools for data analytics and visualisation. The most well known are numpy, scipy, matplotlib and pandas. There are also packages for specific application to Earth science/geospatial tasks such as geopandas, rasterio, mplstereonet, cartopy.

This course is aimed as an introductory course to python for earth scientists and will provide a basic overview of python. The course will cover the following topics:

- Setting up a python environment using anaconda for windows, Mac or Linux.
- Finding and installing existing python libraries – tips on how to find relevant libraries for your research
- Overview of basic python data types
- Introduction to programming logic
- Using jupyter notebooks
- Numpy data structures
- Numpy tips and tricks for quick data manipulation
- Introduction to pandas and geopandas
- Introduction to matplotlib and mplstereonet
- Making maps using rasterio, geopandas and cartopy
- Use python to automate and record data manipulation so that your science is reproducible and open

The aim of this course is to provide you with the skills to be able to navigate package documentation and adapt examples to your own research problems.

Learning Outcomes:

At the end of this activity learners will be able to:

1) Use the python programming language to import and manipulate their geospatial and Earth Science specific data sets.
2) Find suitable python libraries for your own research interests.
3) Produce automated and reproducible workflows for data analysis and visualisation.

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