



Psyplot: Interactive data analysis and visualization with Python

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The development, usage and analysis of climate models often requires the visualization of the data. This visualization should ideally be nice looking, simple in application, fast, easy reproducible and flexible. There exist a wide range of software tools to visualize model data which however often lack in their ability of being (easy) scriptable, have low flexibility or simply are far too complex for a quick look into the data. Therefore, we developed the open-source visualization framework psyplot that aims to cover the visualization in the daily work of earth system scientists working with data of the climate system. It is build (mainly) upon the python packages matplotlib, cartopy and xarray and integrates the visualization process into data analysis. This data can either be stored in a NetCDF, GeoTIFF, or any other format that is handled by the xarray package. Due to its interactive nature however, it may also be used with data that is currently processed and not already stored on the hard disk. Visualizations of rastered data on the glob are supported for rectangular grids (following or not following the CF Conventions) or on a triangular grid (following the CF Conventions (like the earth system model ICON) or the unstructured grid conventions (UGRID)). Furthermore, the package visualizes scalar and vector fields, enables to easily manage and format multiple plots at the same time. Psyplot can either be used with only a few lines of code from the command line in an interactive python session, via python scripts or from through a graphical user interface (GUI). Finally, the framework developed in this package enables a very flexible configuration, an easy integration into other scripts using matplotlib.