Jupyter Notebooks, the PmagPy Software Package and the Magnetics Information Consortium (MagIC) Database

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Abstract

Magnetics Information Consortium (MagIC), hosted at http://earthref.org/MagIC, is a database that serves as a Findable, Accessible, Interoperable, Reusable (FAIR) archive for paleomagnetic and rock magnetic data. It has a flexible, comprehensive data model that can accomodate most kinds of paleomagnetic data.The PmagPy software package is a cross-platform and open-source set of tools written in Python for the analysis of paleomagnetic data that serves as one interface to MagIC, accommodating various levels of user expertise. It is available through github.com/PmagPy. Because PmagPy requires installation of Python and the software package, there is a speed bump for many practitioners on beginning to use the software. In order to make the software and MagIC more accessible to the broad spectrum of scientists interested in paleo and rock magnetism, we have prepared a set of Jupyter notebooks, hosted on jupyterhub.earthref.org which serve a set of purposes. 1) There is a complete course in Python for Earth Scientists, and 2) a set of notebooks that introduce PmagPy (importing the software package from the github repository). These notebooks illustrate how to conduct statistical analyses, synthesize create data and create data visualizations of the type that are typically included in papers in the field. The notebooks also demonstrate how to prepare data from the laboratory for the MagIC database. This pathway gives additional tools to researchers so that they can satisfy data archiving requirements from NSF and publishers such as AGU.

Jupyter Notebooks, the PmagPy Software Package and the Magnetics Information Consortium (MagIC) Database

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