

A single web-interface to access, visualise and model data from multiple geo- and cosmochemical databases.

DOMINIK C. HEZEL¹, PREMKUMAR ELANGO VAN²,
KERSTIN A LEHNERT³, MARTHE KLÖCKING⁴, ADRIAN
STURM⁵ AND HORST MARSCHALL⁶

¹Goethe-Universität Frankfurt

²Astute Digital Solutions Ltd

³Lamont-Doherty Earth Observatory, Columbia University

⁴Göttingen University

⁵Göttingen State and University Library

⁶FIERCE (Frankfurt Isotope & Element Research Center),
Goethe University Frankfurt

Presenting Author: premkumar.elangovan@gmail.com

The past few years have seen significant mergers or collaborations among major geochemical and cosmochemical databases such as EarthChem, GeoROC, Astromat, or MetBase. Together with data systems/infrastructures such as EPOS-MSL or AusGeochem, the OneGeochemistry (onegeochemistry.org) initiative was founded, with the goal of unifying geochemical standards, vocabularies, and making geochemical data FAIR. These data systems represent millions of data points and are the main structured data containers for all existing geo- and cosmochemical data.

The MetBase database was equipped with a graphical web-interface that allowed simple data selection and visualisation in various plots together with direct literature access to the selected data. The MetBase database has recently been merged with the Astromat (<https://www.astromat.org>) database. Further, the web-interface has been completely overhauled and expanded with two fundamental changes to the web-interface that significantly advance its versatility: (i) it now connects not only to MetBase (now Astromat), but to multiple databases. Currently, Astromat and GeoROC (<https://georoc.eu>) are connected to the web-interface. In the next step, AusGeochem will be added, and technically there is no hindrance to adding additional databases. (ii) The web-interface now has a new technical foundation (Python Streamlit), as well as a new graphical user interface (GUI). Now, a user first selects, filters, and collects data across multiple databases and stores them in individual datasets. These data can then be visualised, used in predefined models such as mixing or fractional crystallisation models, or can be downloaded. The advantage of this stepwise approach is that the data manipulation (i.e., visualisation, modelling, etc.) is modular, i.e., it is very simple to add further manipulation tools, such as additional plots or models. Thereby, the new web-interface becomes the ideal and swift exploration tool for geo- and cosmochemical databases. It also provides a potential teaching tool for students. Comprehensive and targeted data selection for download are best done using the individual database website tools.