A Digital end-to-end solution for FAIR Geochemistry Data, from Field Collection to Publication

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In this presentation we introduce a suite of free applications to curate FAIR, consistent, clean and easily available geochemistry data for the research and industry communities alike. The creation of data starts with sample collection in the field and the assigning of an unique global IGSN identifier. These samples are then stored along with any subsequent analytical data in detailed geochemical data models allowing easy visualisation and publishing of acquired datasets. This unique solution for geochemistry data has been developed by Lithodat Pty Ltd in conjunction with the AuScope Geochemical Network (AGN), consisting of Australian geochemical laboratories from Curtin University, The University of Melbourne, Macquarie University and the Australian National University and can be publicly accessed via the AusGeochem web platform.

Using our fully integrated field application (Fig.1), users can enter and store all sample details on-the-fly in the cloud during field collection. The field application has an integrated offline functionality which enables users to delay data upload until they regain internet access. The researchers can log into their account on the browser-based AusGeochem platform (Fig.2) and view or edit all collected samples.

After performing subsequent geochemical analyses on the sample, those results, including analytical metadata, can be stored in the relational database. Once uploaded, data can be geospatially interrogated within AusGeochem, via data analytics, technique-specific dashboards and graphs. Data can then be shared with collaborators, downloaded in multiple formats and made public, enabling FAIR data for the research community.

Having all data stored in a clean and curated relational database with very detailed data models gives researchers free access to large amounts of structured and normalised data. This helps researchers develop new technologies by using machine learning and automated data integration in numerical models. In addition, having all metadata, such as, ORCIDs from involved researchers, funding sources, grant numbers and laboratories enables the quantification and quality assessment of research projects over time.
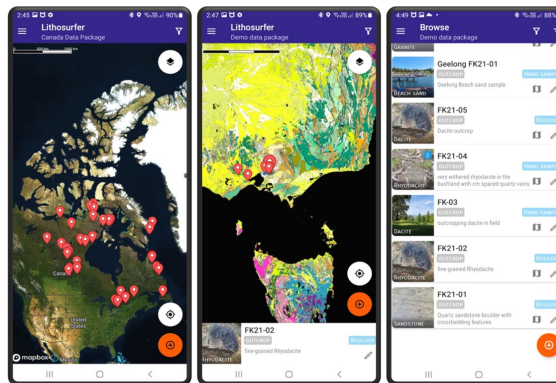
Fig.1

Fig.2