

Pitfalls in using the geochronological information from the EarthChem Portal for Precambrian time-series analysis

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Improvements in analytical techniques over the past decades have led to an exponential growth of scientific data. The EarthChem Portal is the most comprehensive and popular open access online database in Earth sciences. This portal “*operates a suite of data systems that assist geoscientists with accessing, sharing, and using geochemical, petrological, and geochronological data*”. It gives users the capacity to search several dataset repositories (PetDB, SedDB, GEOROC, NavDat and DARWIN). In recent years, the EarthChem Portal has been used for numerous studies that applied time-series analysis to track Earth's history and evolution over the past 4 billion years. A presumption of such studies is that the ages assigned to the samples are generally precise and accurate. Here, we investigate the age data reported in the EarthChem Portal. We show that only 17% of the samples recorded in the EarthChem Portal have a reported age with a relative age range of less than 5%, and only ~3% of the samples can be used to investigate Precambrian global events. Our analyses show that careful filtering is mandatory before applying the data to time-series analysis to avoid reaching erroneous conclusions based on faulty results. (paper recently published in Precambrian Research as Short Communication

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