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A regularly maintained, quality-filtered geochronology database for Phanerozoic large igneous provinces

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Studying the ages of large igneous provinces (LIPs) has been crucial for constraining the duration of these exceptional magmatic events and deciphering their temporal relationship with associated geological events. A significant number of radio-isotopic dating analyses (e.g., $^{40}Ar/^{39}Ar$, U-Pb) have been conducted for LIPs over the past several decades, but these dating results have often been directly accepted and propagated into the literature for geological interpretations, regardless of their reliability and precision. Here we firstly present a systematic compilation of all published $^{40}Ar/^{39}Ar$ and U–Pb age determinations for the eighteen Phanerozoic large igneous provinces. Each of these ages was then critically evaluated and quality-filtered for its statistical robustness and precision [1]. An easily accessible, online database (https://shorturl.at/kIQT5) containing both originally published and quality-filtered geochronology data was created and has been regularly maintained when new geochronological results of Phanerozoic LIPs are published. We encourage researchers to inform the authors of their newly published ages that have not been updated in the database, and recommend that only the filtered, robust and precise ages in the database be used when studying the timing of these magmatic events and their tectonic, metallogenic, and environmental implications.

[1] Jiang, Jourdan, Olierook & Merle (2023), *Earth-Science Reviews* 237, 104314.