EGU22-3797
https://doi.org/10.5194/egusphere-egu22-3797
EGU General Assembly 2022
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Can glendonites be used as palaeothermometers?

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Glendonites are pseudomorphs after the mineral ikaite found throughout the geological record since the Palaeoproterozoic, often during cooling or glaciation episodes. This, and the apparent temperature dependency of ikaite on low temperatures to nucleate and grow, led to glendonites being considered low-temperature proxies. However, subsequent laboratory work has shown that ikaites, and therefore fossil glendonites, may not require near-freezing temperatures to nucleate and grow. The occurrence of glendonites in sediments deposited during Greenhouse times, and the lack of glendonites during some icehouse periods of Earth's climate history appears to support a theory that glendonites are more dependent on local chemical conditions than temperature. We present a database of clumped isotope paleothermometry temperatures from glendonites aged Permian to Recent, and discuss the implications of these reconstructed temperatures in the context of glendonites as a palaeothermometer, and the complication of diagenetic overprinting in ancient glendonites.