Goldschmidt 2025 Abstract
https://doi.org/10.7185/gold2025.28403

Past, present and future of the carbonate I/Ca proxy

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The iodine-to-calcium ratio in marine carbonates was first proposed as a proxy for ocean oxygenation conditions 15 years ago. Iodine redox chemistry predicts high iodate in well-oxygenated waters and rapid iodate reduction in anoxic/suboxic conditions. I/Ca in carbonates reflects the ambient iodate level in seawater, hence high I/Ca should indicate oxygenated conditions and vice versa. This proxy has been applied across a wide range of time intervals and sample types. Despite the simplicity in the concept of the proxy, there are potential pitfalls in interpreting I/Ca rock records. Several areas of new findings in recent years are noteworthy and relevant to this proxy, e.g., marine chemistry, diagenetic screening, modeling. This talk aims to review the history, current developments and future directions of the I/Ca proxy.