

## **An early diagenetic deglacial origin for basal Ediacaran ‘cap dolostones’**

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The beginning of the Ediacaran Period (~635 Ma) is marked by a conspicuous dolostone that caps Marinoan glacial deposits worldwide. This dolostone contains enigmatic sedimentary and geochemical features whose relationship to the global glaciation and hothouse aftermath remain debated. Despite its global extent, the cap dolostone exhibit large geochemical variability even within a single basin. Previous models have evoked mixing in the water column to explain this geochemical variability. However, covariation between calcium and magnesium isotopic values in cap dolostone successions worldwide is consistent with early dolomitization of aragonite in fluid- versus sediment-buffered conditions. These results suggest that the geochemical features of cap carbonates, including large excursions in carbon isotopes, is a product of local diagenetic processes expressed globally in continental margin environments following the last Snowball Earth.