# Isotope characteristics of primary and secondary carbonates in the Paleoproterozoic Zaonega Fm, NW Russia

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Archean and Proterozoic transition was a turbulent period resulting in the establishment of modern type Earth after the Great Oxidation Event (GOE) around 2.3 Ga. GOE was followed by the largest disturbance in the global carbon cycle – the Lomagundi-Jatuli Event (LJE) from 2.22-2.06 Ga [1]. In the aftermath of LJE first significant accumulation of organic matter, the Shunga Event (SE) can be traced globally [2]. One of the best localities to study both of these events in one rock succession is in the Paleoproterozoic Onega basin, NW Russia where the transition from the LJE to SE, observed in the Tulomozero carbonates and overlying Zaonega black shales, has been widely studied to reconstruct the ancient global carbon cycle [2;3]. Rocks in Onega basin recording these events are considered well preserved and maintaining the environmental isotope signal of these times.

In this contribution we present high resolution O, C, and Sr isotope data on the carbonate beds in the upper part of the Zaonega Formation. By combining the isotope data with detailed lithological and mineralogical characterization we assess the extent of secondary fluid driven recrystallization processes and the preservation of the isotope signal in carbonate beds. Our results show that the whole sequence has suffered from hydrothermal fluid alteration and recrystallization. The best preserved, possibly primary, isotopic signal is found in the central parts of the carbonate beds, whereas the recrystallization and dedolomitization rates increase progressively towards the margins of the beds accompanied by significant shifts in isotope signatures.

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