



Share of foraminifera derived carbon in sediments of Northern European and Svalbard fiords.

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One of the main subjects at the centre of discussions regarding modern global warming is the global carbon cycle. Although the topic is heavily studied, some questions still remain unanswered. One of them is the quantitative role of marine calcifying organisms in the processes of carbon burial. Our research tries to answer how one group of these organisms- Foraminifera, contribute to sedimentary carbon pool of six selected fiords. Three of those fiords are located in Svalbard (Isfjorden, Wijdefjorden, Rjipfiorden), three in Norway (Hjeltefjorden, Raunefjorden, Balsfjorden) reflecting different sedimentation and thermal conditions. According to Smith et al. (2015) fjords are “hot spots” for burial and long-term storage of carbon. Although they account for < 0.1% of the world ocean surface area, organic carbon is being buried there much faster than in any other marine system, making up to 11% of the global carbon burial. However, the sedimentary inorganic carbon was rarely included in the investigations (e.g., Smeaton et al., 2016), as recently the main scientific focus was oriented towards organic carbon burial regarded as the main link between the surface carbon reservoirs and long-term carbon storage in marine sediments (e.g., Keil, 2015; Norði et al., 2016; Koziorowska et al., 2016; Woulds et al., 2016; Sauer et al., 2016; Cui et al., 2016).

Our main research goal was to quantify the share of both organic and inorganic carbon locked in foraminiferal tests in the fjords of Northern Europe and Svalbard. By integrating the data on foraminiferal species composition, abundance and test size with carbon concentration we estimated how the environmental variables impact the foraminiferal carbon share. The most striking of our results was that foraminiferal inorganic carbon makes up over 90 % of total inorganic sedimentary carbon pool in fiords of southern Norway.

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