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Freshwater mussels accurately store oxygen and carbon isotope ratios and other chemical information of their ambient water in growth increments in their shells. As such they form archives for past river hydrology.

In this study the relationship between water and shell chemistry in the rivers Rhine and Meuse is monitored by placing living mussels in cages in the rivers. Each of these rivers shows a specific pattern in isotope ratios during the year due to water sources (rainwater and melt water) and mixing proportions. For further calibration of the methods several 20<sup>th</sup> century shells will be analysed and data compared with instrumental data. Subsequently Holocene shells (5000-1000 y BP) from archaeological contexts will be analysed and evolution of river discharge and precipitation patterns will be established.

This project is part of the BSIK "Climate for space" program focusing on: Modeling and reconstructing precipitation and flood frequency in the Meuse catchment during the late Holocene.