



A >400 kyrs archive of sedimentation in Scladina cave (Belgium)

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Scladina Cave, near the Meuse River in Belgium, is well-known for its well preserved Neanderthal fossils and stone tools. Cave research started in the 1970's, when archeological findings near the entrance of the cave initiated a long-running excavation programme in the -at that time- almost completely sediment-infilled cave.

Over the past decades, a wealth of mammal fossils, stone tools, and a mandible of a Neanderthal child were found, and the complex sedimentary context of the cave strata was reconstructed in high detail.

Crucial to understanding the cave stratigraphy is the construction of an absolutely dated age model. Until recently, this age model was based on a number of OSL ages, pollen stratigraphy and a few U-series ages on flowstone and stalagmite calcite. These U-series ages, however, had much lower precision than can be obtained by modern MC-ICP-MS techniques.

In this study, we present new and more precise U-series ages for the major flow stone levels in Scladina Cave (upper stratigraphical sequence), and two flowstone levels from Sous-Saint-Paul Cave (lower stratigraphical sequence). The oldest flow stone layer dates back to > 400 ka, and the youngest represents the Holocene. The age model shows that flow stone formation typically occurred during warm climate conditions. These findings help to improve the existing age model for Scladina Cave significantly, and place better constraints on the age of individual fossils, and fossil assemblages in the cave.