



## **Belgian cave entrance and rock-shelter sequences as palaeoenvironmental and palaeoclimatic data recorders: the example of the Walou cave multi-proxy study.**

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Despite abundant sites and numerous archaeological excavations, the knowledge of Belgian cave entrance and rock-shelter sequences is still poor from geological and palaeoecological points of view. A systematic program of detailed stratigraphic recordings associated with different palaeoenvironmental analyses has recently been undertaken in close collaboration with researchers from different disciplines. The objective was to better understand the sedimentary dynamics of these fillings and to test their potential as recorders of Quaternary climatic variations. The microstratigraphic study of the Walou Cave sequence illustrates this approach. The multi-proxy study of this cave identified several clear climatic signals. The validity of these signals and the type of environment were confirmed by palynology and anthracology which, moreover, helps specify the types of vegetation characteristic of the different stages of the filling process. Furthermore, tephrostratigraphy together with the excellent correlation with the loess sequences of Middle Belgium gave this exceptional recording a coherent chronostratigraphic context, supported by radiocarbon and thermoluminescence dates as well as archaeology and palaeontology. The sedimentary and palaeoe-

ological records of Walou ranges from the Holocene down to the Pre-Wechselian and includes the Late-Glacial, Pleni-Glacial, Early-Glacial and probably Eemian. Walou cave presents the most complete and best documented Upper Pleistocene sequence available for all the Belgian caves.

These results lead to interesting prospects for research work in this type of environment. Accurate interpretations of sedimentary dynamics, palaeoenvironment and chronostratigraphy will lead to interesting applications for other disciplines involved in the study of these types deposits, particularly archaeology, palaeoanthropology and palaeontology. For example, they could contribute to a better understanding of the context of the numerous prehistoric occupations that distinguish Belgian caves. Moreover, the elaboration of a reference sequence for cave entrances and rock-shelters by correlation with different records could also allow the re-examination of the stratigraphic and palaeoenvironmental data from past excavations.