



## **Accurate radiocarbon age estimation using “early” measurements: a new approach to reconstructing the Paleolithic absolute chronology**

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This paper presents new correction approaches for "early" radiocarbon ages to reconstruct the Paleolithic absolute chronology. In order to discuss time-space distribution about the replacement of archaic humans, including Neanderthals in Europe, by the modern humans, a massive data, which covers a wide-area, would be needed. Today, some radiocarbon databases focused on the Paleolithic have been published and used for chronological studies. From a viewpoint of current analytical technology, however, the any database have unreliable results that make interpretation of radiocarbon dates difficult. Most of these unreliable ages had been published in the early days of radiocarbon analysis. In recent years, new analytical methods to determine highly-accurate dates have been developed. Ultrafiltration and ABOx-SC methods, as new sample pretreatments for bone and charcoal respectively, have attracted attention because they could remove imperceptible contaminates and derive reliable accurately ages. In order to evaluate the reliability of “early” data, we investigated the differences and variabilities of radiocarbon ages on different pretreatments, and attempted to develop correction functions for the assessment of the reliability. It can be expected that reliability of the corrected age is increased and the age applied to chronological research together with recent ages. Here, we introduce the methodological frameworks and archaeological applications.