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Radiocarbon calibration curve IntCal and atmospheric $^{14}\text{CO}_2^*$

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A calibration curve IntCal has been applied for radiocarbon dating of terrestrial samples to correct fine variations of ^{14}C activity in the environment. The calibration curve has been constructed from precise determinations of ^{14}C levels in sample sequences (e.g. tree rings, lake varves, coral layers, etc.). The age determinations of these samples have been carried out using other dating methods (e.g. dendrochronology, varve chronology, U/Th dating). The resulting calibration curve is a relation between years of calibrated age (real age) and ^{14}C activity (usually reported in years BP of Conventional Radiocarbon Age, following generally accepted Stuiver-Polach convention). For this purpose, the IntCal13 (2013) curve has been constructed, a more precise version of previously published IntCal09. The headway of this curve seems to be close to the linear relation in millennia scales. Nevertheless, the time course of the curve can be complicated considerably, if the scale expands on centuries or decades. Four characteristic shapes of the IntCal13 substructures, and implying limitations and possibilities of radiocarbon dating will be described in our presentation. Likewise, responsible mechanisms, connected with changes of environmental carbon (CO_2) and ^{14}C ($^{14}\text{CO}_2$) transport, will also be discussed.

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