



Automated Synchronization of Ice Core Records

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An important component of ice core dating is the synchronization of records, allowing cores to be placed on to a common chronology. Air records can be synchronized using CH₄ or d18O_{atm}, for example; the occurrence of volcanic events can be used in the ice matrix. Until now, tie points between cores have been selected visually. With the goal of improving reproducibility, objectivity and efficiency, we propose an automated synchronization method. In the framework of the probabilistic dating model IceChrono, we replace manual tie points with a residual term that is symmetric between a given pair of series. This allows record synchronization to be included in the formulation of an optimized common chronology.