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Progress on optimally recovering the water isotope signal in the deepest section of ice cores

Content

To recover very old climate information from ice core records, one needs to interpret the deepest part of an ice core. Here, the layers of the ice are very thin and ice diffusion likely considerably affects the preservation of the water isotope signal.

This can be overcome by using deconvolution, however, this technique requires accurate estimates of the diffusion length, as well as very precise measurements. Here, we outline the progress in estimating the diffusion length, overcoming the statistical bias of existing methods, as well as considerations on the optimal measurement protocol and measurement techniques. We demonstrate our advances on artificial data as well as on the isotope data of the oldest part of the Dome-C ice core.

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