

## A simple approach to field sampling ice cores for stable water isotope analysis

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With the advent of laser spectroscopic methods, stable water isotope analysis of ice cores can now be performed in the field with minimal sample preparation, extremely low sample consumption, and high measurement precision. This development enables continuous assessment of ice core drilling progress through real-time water isotope profiles, offering significant advantages to deep ice core operations allowing for real time adjustments to drilling, processing, and logistics.

We present a simple and effective sampling approach based on a brass violin maker's plane mounted in a custom-designed 3D-printed holder. The brass plane accommodates a variety of blades, while the holder ensures efficient and user-friendly handling of both the core and the collected sample. The design accounts for the practical workflow of ice core processing lines and the needs of field personnel.

The plane has been successfully used at Little Dome C during the 2023–2024 and 2024–2025 Antarctic field seasons, contributing valuable isotope data during the transition into the oldest (>1 million-year-old) ice. It has also been used at EastGRIP ice core camp in 2024 and Müller Ice Cap in 2025. Its reliability, simplicity, and low-cost construction make it an appealing solution for real-time field sampling in remote ice core campaigns.

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