



## **Is there 1.5 million-year old ice near Dome C, Antarctica?**

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Ice sheets provide exceptional archives of past changes in polar climate, regional environment and global atmospheric composition. The oldest deep ice drilled in Antarctica has been retrieved at EPICA Dome C (Antarctica), reaching 800,000 years. Retrieving an older paleoclimatic record from Antarctica is one of the biggest challenges of the ice core community. Here, we use a combination of internal isochrones identified with airborne radar and ice-flow modeling to estimate the age of basal ice along radar transects in the Dome C area. We find that old ice likely exist in two regions. The first one is a bedrock relief  $\sim 40$ km South-West of Dome C along the ridge to Vostok. The second one is 10-20 km North-East of Dome C, in a region where the geothermal heat flux is smaller. Moreover, we invert three glaciological quantities: the surface accumulation rate, the geothermal heat flux and the exponent of the Liboutry velocity profile. Our work also demonstrates the utility of combining radar observations with ice flow modelling to accurately represent the true nature of ice flow in the centre of large ice sheets.