

## Ice cores: 800,000 years and beyond

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The European Project for Ice Coring in Antarctica recovered an ice core extending back 800,000 years (800 ka) in time. This shows the pattern of glacial cycles with a typical 100 ka years periodicity, with the deepest glacials about 9°C colder than present. Interglacials vary in character: there is a significant change at around 450 ka, with older cycles showing weaker interglacial character. CO<sub>2</sub> shows a remarkably similar pattern to Antarctic climate. Almost all constituents show a strong glacial-interglacial pattern, although non-sea-salt sulfate and ammonium, both connected to marine biological productivity, show a rather flat flux across such cycles. The Dome Fuji ice core, drilled in parallel, shows that the main features are observed across the continent and have a wide significance. I will discuss the current status of these records, and set them in the context of marine and terrestrial records covering the same period. This will allow a discussion in terms of the contrasting patterns of each glacial and interglacial, with some thoughts about what controls the observed patterns of climate.

Now the global ice core community would like to collect older ice, reaching into the 40 ka cycles that marine sediments tell us occurred earlier in the Quaternary. I will discuss the aims of the International Partnership for Ice Core Sciences (IPICS) oldest ice project, and consider progress towards choosing potential sites where old ice might have persisted.