

ACC022-02

会場:展示ホール7別室1

時間: 5月28日14:00-14:15

気泡のO₂/N₂を用いたドームふじ氷床コアの年代決定

Accurate chronology of the Dome Fuji deep ice core based on O₂/N₂ ratio of trapped air

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Chronology of the first Dome Fuji deep ice core for the past 340 ka had been improved by orbital tuning of measured O₂/N₂ to calculated local summer insolation, with accuracy better than ~2 ka. The O₂/N₂ ratio is depleted relative to the atmosphere because of physical fractionation during bubble close-off, and the amplitude of this fractionation is linked to the magnitude of snow metamorphism, which in turn is controlled by local summer insolation. It permits comparisons between Antarctic climate, greenhouse gases, astronomically calculated orbital parameters, and radiometrically-dated sea level and monsoon records. Here, we completed the measurement of O₂/N₂ ratio for the second Dome Fuji ice core from 2,400 m to 3,028 m (340-700 ka) at ~2 ka resolution, with much improved core storage practice and mass spectrometry. In particular, the core had been stored at about -50 °C until the day of air extraction except during transportation, in order to prevent molecular-size dependent fractionation due to gas loss during storage. The precision of the new O₂/N₂ data set is improved by a factor of 3 over the previous data from the first core. Clear imprint of local insolation is recognizable in the O₂/N₂ data towards the deepest depths. We will present the new chronology based on the orbital tuning of O₂/N₂ data, and discuss climatic implications.