

Temporal and spatial variability of surface mass balance at Dome Fuji, East Antarctica, by the stake method from 1995 to 2006

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The Surface mass balance (SMB) at Dome Fuji ($77^{\circ}19'S$, $39^{\circ}42'E$; 3,810 m a.s.l.), East Antarctica, was measured using a 36-stake farm (100 x 100 m with 20m intervals between stakes) from 25 January 1995 to 9 January 2007. Average SMB for the farm during the period was $27.1 \pm 1.8 \text{ kg m}^{-2} \text{ yr}^{-1}$. We observed 3 to 5 year oscillations of SMB. The 1995 to 2006 average was in good agreement with the annual average SMB from AD 1259 to 1993, estimated from volcanic signals in the Dome Fuji ice core. Thus, we inferred that the annual SMB from 1995 to 2005 at Dome Fuji did not change substantially from the AD 1259 to 1993 average. We consider that temporal and spatial variability of the SMB and missing annual layers at Dome Fuji discussed in this paper are common in areas with low snow accumulation, such as the interior Antarctic ice sheet. For these reasons, great caution must be exercised in the detailed interpretation of ice cores from inland regions of Antarctica.