

Ten years characteristics of surface mass balance at Dome Fuji, East Antarctica from 1995 to 2005 by a 36-stake method

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Present day surface mass balance was investigated for ten years, from 25 January 1995 to 16 January 2005, by a 36-stake method at Dome Fuji Station, East Antarctica (77,19,01S, 39,42,11E; 3,810 m a.s.l.). We found that the average surface mass balance during the ten years was 23.0 ± 4.6 mm / yr in water equivalent. Negative annual surface mass balance occurred at 33 points during the entire period (total 360 points; 36 point x 10 years). It means, at 9.2 percentage of stakes no annual accumulation occurred. These negative surface mass balances at each stake point are all compensated by the successive three years' snow accumulation except the negative surface mass balance occurred in 2004. This observational fact suggests that three years accumulation is the maximum resolution, to which we can confidently rely on for Dome Fuji ice core from a viewpoint of spatial variability of recent snow accumulation at Dome Fuji.

We suggest that, for deep ice cores retrieved from inland sites of East Antarctica, there may be a common problem, that is, over-amplification or disappearance of short term signals. We suggest that we must be very careful to interpret yearly scale events in inland ice cores.