15 ka of change in accumulation rate is only 90% of that predicted by Whillans (1981) because in this model the position of the outer edge of the ice sheet is controlled and this limits elevation changes of the ice sheet. For a 10% increase in accumulation rate from Wisconsinan to Holocene values, the ice sheet at Dome C has thinned by 110 m owing to post-Wisconsinan rise in sea-level and has thickened by approximately 35 m owing to post-Wisconsinan increase in accumulation rate, resulting in a total thinning of about 75 m over the last 15 ka.

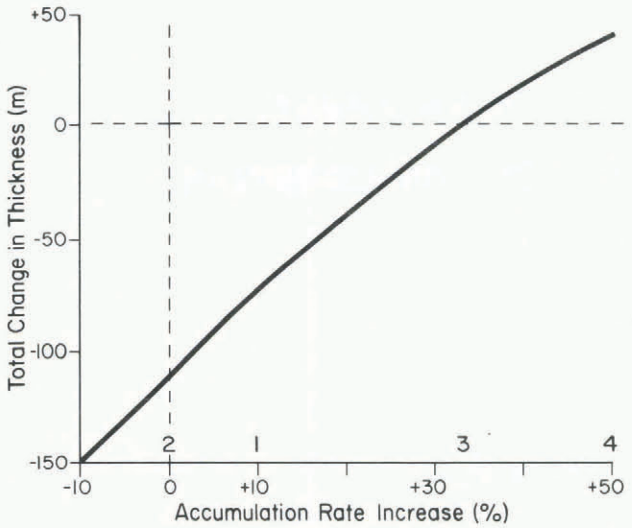

Fig.1. Total thickness change at Dome C over the last 15 ka owing to sea-level rise and to a step increase in accumulation rate 15 ka BP. Approximate percentage increases in accumulation rate from Wisconsinan-maximum to modern values are: (1) about 10% increase calculated by John Bolzan (personal communication 1983), (2) little change in accumulation rate, based on microparticle data of Thompson and others (1981), (3) 33% increase (Lorius and others 1984), (4) 50% increase (Robin 1977).

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ON LONG-PERIOD INTERNAL OSCILLATIONS IN A SIMPLE CLIMATE MODEL WITH AN ICE SHEET

(Abstract)

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We review numerical modeling studies of long-period oscillations which are inherent in ice-sheet physics. Such studies are relevant to the 100 ka component found in proxy ice volume time series. We show that earlier results which were suggestive of low-frequency oscillations now appear to be an artifact of nonlinear numerical instabilities in the models. Some specific sources of such numerical instabilities arising from the integration of the highly nonlinear equations in ice sheet models are mentioned. At present, the best numerical ice sheet/climate model does not appear to display a tendency to low frequency self-sustained oscillations.

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