



Terminations VI and VIII (~ 530 and ~ 720 kyr BP) tell us the importance of obliquity and precession in the triggering of deglaciations

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The main variations of ice volume of the last million years can be explained from orbital parameters by assuming climate oscillates between two states: glaciations and deglaciations (Parrenin and Paillard, 2003; Imbrie et al., 2011) (or terminations). An additional combination of ice volume and orbital parameters seems to form the trigger of a deglaciation, while only orbital parameters seem to play a role in the triggering of glaciations. Here we present an optimized conceptual model which realistically reproduce ice volume variations during the past million years and in particular the timing of the 11 canonical terminations. We show that our model loses sensitivity to initial conditions only after ~ 200 kyr at maximum: the ice volume observations form a strong attractor. Both obliquity and precession seem necessary to reproduce all 11 terminations and both seem to play approximately the same role. More precisely, obliquity plays a fundamental role in the triggering of termination VI (~ 530 kyr BP), while precession plays a fundamental role in the triggering of termination VIII (~ 720 kyr ago).