Key Papers

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DeSaedeleer, B., Crucifix, M., & Wieczorek, S. (2013). Is the astronomical forcing a reliable and unique pacemaker for climate? A conceptual model study. Climate Dynamics, 40(1-2), 273-294. doi:10.1007/s00382-012-1316-1

Paillard, D., & Parrenin, F. (2004). The Antarctic ice sheet and the triggering of deglaciations. Earth and Planetary Science Letters, 227(3-4), 263-271. doi:10.1016/j.epsl.2004.08.023

Saltzman, B.; Maasch, K. A. (1990). A first-order global model of late Cenozoic climatic change. *Transactions of the Royal Society of Edinburgh: Earth Sciences* 1990, *81*, 315–325.

Saltzman, B., & Maasch, K. A. (1991). A first-order global model of late Cenozoic climatic change II. Further analysis based on a simplification of CO2 dynamics. Climate Dynamics, 5(4), 201-210. doi:10.1007/bf00210005

Von der Heydt, A. S.; Ashwin, P.; Camp, C. D.; Crucifix, M.; Dijkstra, H. A.; Ditlevsen, P.; Lenton, T. M. (2021). Quantification and interpretation of the climate variability record. *Global and Planetary Change*, *197*, 103399.

Models

Simple Van Der Pol Oscillator

$$\frac{dx}{dt} = -(y + \beta - \gamma F(t))$$

$$\frac{dy}{dt} = -\alpha(\frac{y^3}{3} - y - x)$$

Paillard and Perrenin (2004)

$$\frac{dV}{dt} = (V_R - V)/\tau_V$$

$$\frac{dA}{dt} = (V - A)/\tau_A$$

$$\frac{dC}{dt} = (C_R - C)/\tau_C$$

$$V_R = -\epsilon C - \eta F(t) + \sigma$$

$$C_R = \alpha F(t) - \beta V + \gamma H(-S) + \delta$$

$$S = aV - bA + d$$

$$If\ S < 0,\ H = 1$$

$$If\ S \geq 0,\ H = 0$$

Saltzman & Maasch (1991)

$$\frac{dI}{dt} = \alpha_1 - \alpha_2 c\mu - \alpha_3 I - \alpha_2 \kappa_\theta \theta - \alpha_2 \kappa_R F(t)$$

$$\frac{d\mu}{dt} = \beta_1 - \beta_2 \mu + \beta_3 \mu^2 - \beta_4 \mu^3 - \beta_5 \theta$$

$$\frac{d\theta}{dt} = \gamma_1 - \gamma_2 I - \gamma_3 \theta$$

Saltzman & Maasch Departure (1990)

$$\frac{dX}{dt} = -X - Y - vZ - uF(t)$$

$$\frac{dY}{dt} = -pZ + rY + sZ^2 - wYZ - Z^2 Y$$

$$\frac{dZ}{dt} = -q(X + Z)$$