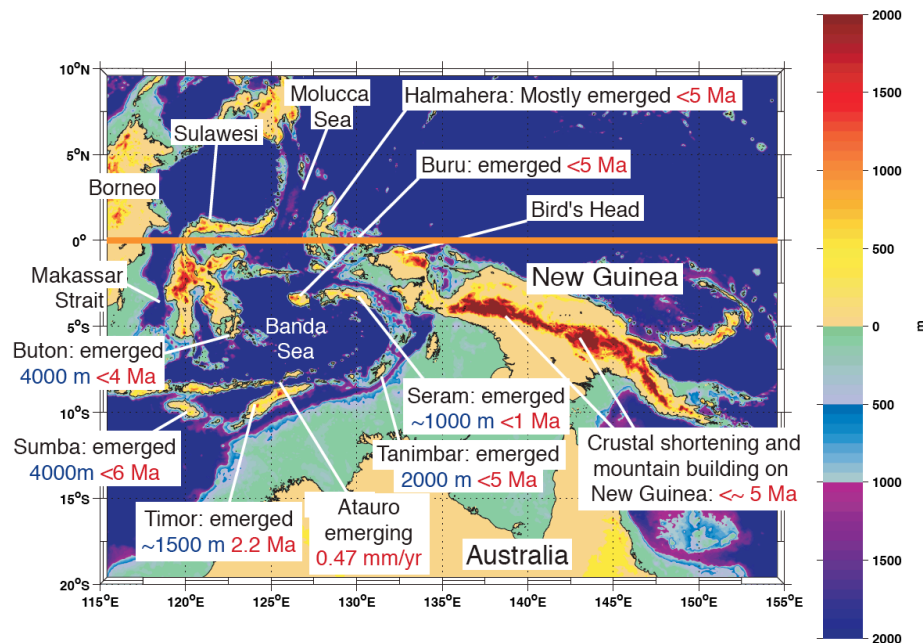


# The Growth of the Maritime Continent, with No Help From the Isthmus of Panamá, as the Trigger for Recurring Ice Ages

Peter Molnar

Department of Geological Sciences

Cooperative Institute for Research in Environmental Sciences (CIRES)



**Abstract:** The change from little ice in the Northern Hemisphere to recurring Ice Ages at  $\sim 2.7$  Ma is part of a gradual cooling over millions of years and that correlates with a gradual warming of the eastern Pacific Ocean surface water (from more El Niño-like to more La Nina-like SSTs). I argue first that the emergence of Isthmus of the Panamá (or closing of the Central American Seaway) played, at most, a negligible role in this transition to recurring Ice ages; it is a red herring. In particular the Great America Biotic Interchange at  $\sim 3$  Ma, does not mark the emergence of Isthmus of the Panamá, which may have occurred closer to 20 Ma, but is a climatic consequence of ice sheets on Canada. I contend instead that the emergence of islands in the Maritime Continent enhanced rainfall there; islands seem to be attractors of rainfall. Ascent of warm air, associated with enhanced rainfall, heated the upper troposphere over the Maritime Continent, which in turn strengthened the Walker Circulation. The strengthened Walker Circulation then cooled the eastern tropical Pacific. The cooled eastern Pacific shortened Canadian summers and prevented melting of its previous winter snowfall. Voilà, Ice Sheets formed.

