Carbon cycle and climate change during the Mesozoic

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Mesozoic is known to have been a warm and equable climate. The emergence of carbonate-secreting-plankton around the middle Jurassic would have affected the atmospheric CO2 level through the carbon cycle because pelagic carbonates have a higher probability of being thermally decomposed followed by CO2 degassing to the atmosphere. However, it is not well known the timing and extent of transfers of carbonates from shallow to pelagic in the past.

We developed a model consider carbonate deposition both in shallow and deep water environments, and carbon fluxes between the mantle and the surface.

The result suggests that precipitation of pelagic carbonate would have resulted in warming through subduction of oceanic plate followed by metamorphism and volcanism during the Mesozoic and Cenozoic.