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Causal or casual link between the rise of nannoplankton calcification and a tectonically-driven massive decrease in Late Triassic atmospheric CO_2?

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On the basis of a global carbon-climate numerical model, we reconstructed atmospheric carbon dioxide concentrations over the first 60 million years of the Mesozoic. Our analysis indicates that PCO_2 declined from more than 3000 ppmv to less than 1000 ppmv, with a drastic drop during the Late Triassic. The fast northward drift of Pangaea exposed a large continental surface to warm and humid equatorial climate, thus promoting CO_2 consumption through weathering. This massive drawdown of atmospheric CO_2 is consistent with sedimentological and geochemical data of the rock record and correlates with the primary radiation of calcareous nannoplankton, a biological revolution shifting the global carbonate sink from shallow water environments to the open oceans. Our numerical model shows that at time, tectonics, via weathering, increased the pH of the oceanic surface waters by 0.3 units, corresponding to a 50 % decrease in H^+ concentration. This may have provided the ultimate environmental trigger which unlocked the newly oxidized Mesozoic open oceans to pelagic nannobiocalcification.