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# Temperature as main driver of the calcium carbonate accumulation during the Paleocene-Eocene transition at ODP site 1209 (North Pacific)

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## Résumé

The Paleocene-Eocene transition displayed several greenhouse gas-induced hyperthermal events, the best known being the Paleocene-Eocene Thermal Maximum (PETM; -56 Ma). The abrupt associated changes in environmental conditions may have deeply impacted coccolithophores which remains constitute a major component of deep-sea sediments. These single-celled algae are major players of the carbon cycle since, they consume CO<sub>2</sub> for photosynthesis, and produce calcite platelets named coccoliths. Knowing the dissolution dynamics of calcareous nannofossils throughout the water column is essential to produce realistic carbon budgets across hyperthermal events.

In this work, we analyze the ODP Site 1209 (North Pacific) to reconstruct accumulation fluxes of coccoliths reaching the ocean floor during the latest Paleocene to earliest Eocene. For this, we use a high-resolution record of extra-terrestrial <sup>3</sup>He-derived sedimentation rates. We compared the obtained fluxes to different proxies of dissolution (planktonic foraminifera fragmentation and coarse fraction) to disentangle the preservation and CaCO<sub>3</sub> accumulation (mainly represented by coccoliths) signals recorded in the studied strata.

Our findings challenge the widely accepted model previously proposed for hyperthermal events, assuming that the CaCO<sub>3</sub> accumulation is mainly controlled by dissolution. Indeed, our results suggest that it exist a strong causal (?) relationship between CaCO<sub>3</sub> accumulation and the temperature for most of the Late Paleocene hyperthermal events.

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