

## **Late Cretaceous emergence of the Caribbean oceanic plateau and Panama volcanic arc and palaeogeographic implications**

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The Caribbean oceanic plateau is a large igneous province that formed at low latitude in the Pacific Ocean in the Late Cretaceous (ca. 90 Ma), before migrating between North and South Americas where it promoted nucleation of the modern Caribbean Plate through a series of arc inceptions and subduction initiation processes. Although ocean drilling and field observations in the Caribbean have shown that the plateau is predominantly composed of submarine lava sequences and sill complexes, recent field observations and geochemical results from accreted oceanic sequences in northern South America have revealed that the plateau also experienced a phase of subaerial volcanism associated with the formation oceanic islands in the Late Cretaceous [1]. This volcanic phase could have promoted the release of volcanic gases in the atmosphere and likely played a significant role in the palaeobathymetric evolution of the inter-American seaway, possibly reducing interoceanic deep-sea currents and causing an oceanic anoxic event in the Atlantic (OAE-3).

New field observations, geochemical data and age constraints from Panama additionally reveal that the Caribbean plateau formed a volcanic promontory upon which the Panama volcanic arc initiated to form an inter-American string of islands in the late Campanian (ca. 72 Ma). This result challenges the traditional view that the formation of the Isthmus of Panama took predominantly place during the Neogene. Instead, there is growing field-based evidence from Central America and South America that complex plume-subduction interaction controlled the emergence of plateau and arc volcanoes in the inter-American area since the Late Cretaceous. Possible palaeo-environmental and biotic effects of this evolution remain to be investigated in detail.

[1] Buchs et al. (2018), *EPSL*, v. 499, p. 62-73.