

## **Sedimentary markers of Ocean Plateau volcanism during the Cretaceous Oceanic Anoxic Events**

L.M.E. PERCIVAL<sup>1\*</sup>, L.R. TEDESCHI<sup>2,3</sup>, R.A. CREASER<sup>4</sup>, N. VAN HELMOND<sup>5</sup>, C. SNOECK<sup>1,6</sup>, V. DEBAILLE<sup>7</sup>, N. MATTIELLI<sup>8</sup>, C. BOTTINI<sup>9</sup>, E. ERBA<sup>7</sup>, S. GODERIS<sup>1</sup>, T.A. MATHER<sup>1</sup>, H.C. JENKYN<sup>10</sup>, P. CLAEYS<sup>1</sup>

<sup>1</sup>AMGC, Vrije Universiteit Brussel, Brussels, Belgium  
<sup>2</sup>Petrobras Petróleo Brasileiro S.A., Rio de Janeiro, Brazil  
<sup>3</sup>Department of Earth Sciences, University of Oxford, Oxford, UK  
<sup>4</sup>Department of Earth and Atmospheric Sciences, University of Alberta, AB, Canada  
<sup>5</sup>Department of Earth Sciences, Utrecht University, Utrecht, The Netherlands  
<sup>6</sup>G-Time Laboratory, Université Libre de Bruxelles, Brussels, Belgium  
<sup>7</sup>Department of Earth Sciences, University of Milan, Milan, Italy  
Presenting author (lawrence.percival@vub.be)

The Cretaceous Period saw numerous profound environmental perturbations, including the Early Aptian (~120 Ma) and Cenomanian–Turonian (~94 Ma) Oceanic Anoxic Events (OAEs). The causal mechanisms of these OAEs remain debated, but were likely linked to large-scale volcanic activity that occurred during the emplacement of ocean plateaus (e.g., Greater Ontong–Java and Caribbean plateaus) into/onto the oceanic crust. However, radiometric dating of these volcanics is hindered by the limited sampling of submarine ocean plateau rocks. Consequently, establishing a coincidence between the OAEs and volcanism relies on investigating volcanic markers in the sedimentary records of the associated climate/palaeoceanographic events. We present multiproxy records of mercury (Hg) contents, and osmium (Os) and lead (Pb) isotope ratios from several stratigraphic archives of both the Aptian and Cenomanian OAEs. Os-isotope ratios have previously been shown to reliably document volcanic activity and/or other basalt-seawater interactions in records of both OAEs. By contrast, Hg contents and Pb-isotope ratios show much more variation across different geographical areas, potentially due to local effects superimposed on a global signal. Moreover, Hg and Os trends do not reliably correlate for either event, and the Cenomanian OAE shows little evidence for Hg enrichment at all. These results suggest that the three proxies highlight different aspects of large-scale volcanism that operated at various times during the two OAEs.