Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09029, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09029
EGU General Assembly 2008

Phosphorus and carbon burial and climatic changes in Cretaceous oceanic anoxic events.

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Oceanic Anoxic Events (OAEs) are described as an interruption of normal pelagic sediment deposition by several distinct intervals of widespread oceanic anoxia (Schlanger & Jenkyns, 1976; Jenkyns, 1980; Arthur *et al*., 1990). Each episode is characterized by finely laminated organic carbon rich sediments deposited under oxygen depleted conditions coinciding with a positive shift in ∂^{13}C isotope excursion (Scholle & Arthur, 1980). During the Middle and Upper Cretaceous three major OAEs are described (Jenkyns, 1980): OAE 1 (Aptian-Albian), OAE 2 (Cenomanian-Turonian boundary) and OAE 3 (Coniacian-Santonian). The main goal of the present research is to get a better understanding of mechanisms which triggered these OAEs, and particularly the paleoclimatic conditions which characterized the onset of major anoxic events and their evolution. Recent work (Mort *et al*., 2007) demonstrated that the OAE 2's onset was triggered by a significant increased in phosphorus burial generally linked to transgressive and greenhouse conditions. This augmentation leads to bottom water anoxia by increasing of productivity and sustaining it in a positive feedback loop. More oxic conditions return may be explained by several factors as increased aridity, organic carbon burial in black shales and CO_2atm reduction in nutrient availability. However the climatic fluctuations that triggered the onset and the end of OAEs are still poorly understood. We propose to investigate and compare two Cretaceous OAE events, at the Cenomanian-Turonian and Coniacian-Santonian transitions, which present respectively different level of anoxia: from intense and abrupt to moderate and gradual. Each OAE event will be investigate in different paleogeographic area at different paleodepths. Preliminary data including Stable isotopes, Phosphorus and Car-

bon accumulations from Tibet, Mexico, Venezuela and Spain from the two intervals will be presented. These data give us some keys to understand the P and Corg accumulation during OAE at larger scale (the whole Tethys), and finally the links for the understanding global oceanic anoxic events mechanisms.

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