

Bio-, carbon isotope and cyclo-stratigraphy of the Albian-Cenomanian Boundary Event in southern Tibet

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During the Albian-Cenomanian the Earth was marked by profound changes in the climatic and oceanographic state that are recorded in sedimentary successions on a global scale. Carbon isotopic records of this time interval are well established in the western Tethys, Atlantic and Pacific Ocean, but have not yet been reported from the eastern Tethys. Here we firstly documented the biostratigraphic, chemostratigraphic and cyclostratigraphic characteristics of the uppermost Albian–lowermost Cenomanian interval of the Youxia section (eastern Tethys, today cropping out in southern Tibet). Based on nannofossil biozones (UC0–UC1) and the $\delta^{13}\text{C}$ curve, the Albian-Cenomanian Boundary Event (ACBE) was identified and correlated with that of the western Tethys and the Atlantic Ocean. In the Youxia section, $\delta^{13}\text{C}$ values for this interval mainly range from 0‰ to 1.3‰ with a maximum of 1.31‰ and a minimum of -0.03‰. Compared to representative sections in other continents, four subevents of the ACBE carbon isotope curve were distinguished and separated by four peaks, i.e., a, b, c and d. Additionally, we used spectral analyses on the closely-spaced measurements of calcium carbonate content of the rocks at Youxia section. The Milankovitch short eccentricity (~100ka) and precession cycles (22.2ka) are well defined and suggest that orbital variations have modulated depositional processes. Thus, we could estimate the duration of the ACBE together with all the subevents. The duration of the whole ACBE is estimated with ~ 311ka together with ~233ka for OAE1d. The recognition of the ACBE from Tethys Himalaya can improve our understanding of the Tethys and global carbon cycle changes during the mid-Cretaceous.