

The Cenomanian-Turonian Boundary and its Bio-Recovery After Mass Extinction in Southern Tibet

Wan Xiaoqiao¹, Hallam A.², Wignall P.³ and Zhao Wenjin¹. ¹China University of Geosciences, Beijing, China; ² School of Sciences, University of Birmingham, UK; ³. Department of Earth Sciences, University of Leeds, UK

In southern Tibet, macrofossils can not be used to define the Cenomanian/Turonian boundary due to their rare preservation. The present study has identified three planktonic foraminiferal zones around the boundary. The C/T boundary has been placed within the *W. archaeocretacea* Zone. It is indicated by the first occurrence of *Helvetoglobotruncana praehelvetica* and the change of faunas. It marks a bio-event occurred at the boundary.

Global mass extinction and bio-recovery occurred during the Cenomanian-Turonian transition and its affects have been documented in the Tethys Himalayan region. This event is recorded in the Lengqingre and Xiawuchubo Formations of southern Tibet. The former, characterized by its high organic carbon content, is a group of dark shale with marl intercalations, and the latter shows a series of rhythms of greenish gray shale and marl. This transition section contains the *R. cushmani*, *W. archaeocretacea* and *H. helvetica* Zones. The Cenomanian/Turonian boundary is in the *W. archaeocretacea* Zone at the uppermost part of the Lengqingre Formation..

Foraminiferal fossils are well preserved in the strata and are dominated by planktonic taxa. The mass extinction in the region occurred stepwise in the upper *R. cushmani* Zone and lower *W. archaeocretacea* Zone. Bio-recovery happened in the upper *W. archaeocretacea* and *H. helvetica* Zones of the base Turonian, where the abundance of foraminifera fluctuates in 11 rhythms.

The recorded changes of foraminifera represent stressful environmental conditions. Increasing oxygen depletion caused stepped extinction or temporary disappearance at the top of Cenomanian. Contraction and weakening of the oxygen-minimum zone from early Turonian allowed the recolonisation of new fauna. Abundance fluctuations of foraminifera are sensitive palaeoceanographic indicators responding to changing palaeotemperature, salinity, nutrient and oxygen conditions. The 11

abundance fluctuations in the recovery interval of Turonian may reflect the Milankovitch cycles.