



On the age of the Jurassic-Cretaceous boundary

Luis Lena (1), Victor Ramos (2), Marcio Pimentel (3), Beatriz Aguirre-Urreta (2), Maximiliano Naipauer (2), and Urs Schaltegger (1)

(1) Section des Sciences de la Terre et de l'Environnement, Département de Géologie, Université de Genève, Suisse, (2) Instituto de Estudios Andinos Don Pablo Groeber, Universidad de Buenos Aires, Buenos Aires, Argentina, (3) Institute of Geosciences, Universidade de Brasília, Brasília, DF, Brasil

Calibrating the geologic time is of utmost importance to understanding geological and biological processes throughout Earth history. The Jurassic-Cretaceous boundary has proven to be one of the most problematic boundaries to calibrate in the geologic time. The present definition of the Jurassic-Cretaceous boundary still remains contentious mainly because of the dominant endemic nature of the flora and fauna in stratigraphic sections, which hinders an agreement on a GSSP. Consequently, an absolute and precise age for the boundary is yet to meet an agreement among the community. Additionally, integrating chemical, paleomagnetic or astronomical proxies to aid the definition of the boundary has also proven to be difficult because the boundary lacks any abrupt geochemical changes or recognizable geological events.

However, the traditional *Berriasella jacobi* Subzone is disregarded as a primary marker and the use of calpionellids has been gaining momentum for defining the boundary. The Jurassic Cretaceous boundary in the Vaca Muerta Fm. in the Nuequen Basin of the Andes is a potential candidate for the boundary stratotype because of its high density of ammonites, nannofossils and interbedded datable horizons. Consequently, the Jurassic-Cretaceous boundary is very well defined in the Vaca Muerta Fm. On the basis of both ammonites and nannofossils. Here we present new high-precision U-Pb age determinations from two volcanic ash beds that bracket the age of the Jurassic-Cretaceous boundary: 1) ash bed LLT_14_9, with a $^{206}\text{Pb}/^{238}\text{U}$ age of ~ 139.7 Ma, which is 2 meters above Jurassic-Cretaceous boundary based on the *Argetinoceras noduliferum* (Early Berriasian) and *Substeueroceras Koeneni* (Late Tithonian) ammonites zone; and 2) bed LLT_14_10, with an age of ~ 140.1 Ma, located 3m below the J-K boundary based on last occurrence of the nannofossils *N. kamptneri minor* and *N. steinmanni minor*. Therefore, we propose that the age of the Jurassic-Cretaceous boundary should be close to ~ 140 Ma, which is in conflict with the currently set age of ~ 145 Ma. Therefore, this suggests a revision of the age of the Jurassic-Cretaceous boundary.