

Towards a formally defined Campanian Stage: correlations, potential GSSPs and boundary markers

Gale, A.¹

1) University of Portsmouth, Portsmouth, UK, E-mail: andy.gale@port.ac.uk

The criterion for definition of the base of the Campanian remains problematical. In the 1984 Cretaceous Stage boundaries symposium (Copenhagen, Denmark) numerous fossil markers for the base of the stage were suggested, included the extinction of the crinoid *Marsupites*, the last occurrence of *Dicarinella asymetrica* (i.e. the base of the *Globotruncanita elevata* Zone), the first occurrence of *Aspidolithus* (now *Broinsonia*) *parcus*. In recent practice, workers in Boreal chalks have tended to use the *Marsupites* extinction as an informal boundary marker, whereas Tethyan workers have used the *D. asymetrica* extinction to mark the base of the Campanian. The Geological Timescale 2012 took the base of Chron 33R to mark the base of the stage; this is known to occur close to the LO of *D. asymetrica* and the FO of *Broinsonia parca expansa* from the Bottacione Gorge, Gubbio and Austria. What was not clear, however, was the correlation between the Tethyan micropalaeontological datums and the *Marsupites* extinction. This is now made possible using the ¹³C_{carb} called the δ distinctive double positive excursion in “Santonian-Campanian Boundary Event”, which has now been found in the UK, northern Germany and Gubbio, Italy, and demonstrates that the extinction of *Marsupites* falls a little beneath the top of Chron 33N. It is proposed that the reversal is taken as a boundary marker in the Bottacione Gorge (GSSP), with secondary markers including the Santonian-Campanian Boundary Event, planktonic forams (extinction of *D. asymetrica*) and the FO of various *Broinsonia* spp. and sspp. Correlation of the Santonian–Campanian boundary is further confused by the widespread presence of an hiatus, often of large magnitude (millions of years), close to or at the base of the Campanian as here defined. This is present across the Gulf Coast of the USA, and has been found widely in the Anglo-Paris Basin, and Western Australia. Because this hiatus truncates the top of Chron 33N and the range of *Dicarinella asymetrica*, and because the *Globotruncanita elevata* Zone is so long (c. 4 myr), sections can have a 3 million + year gap, but still be biostratigraphically “complete”.