



Rhaetian magnetostratigraphy from the Southern Alps (Italy): constraints on the Triassic chronology

G. Muttoni (1), Dennis V. Kent (2), F. Jadoul (1), M. Rigo (3), and M. T. Galli (1)

(1) Dipartimento di Scienze della Terra, Università di Milano, via Mangiagalli 34, 20133 Milano, Italy, (2) Department of Geological Sciences, Rutgers University, Piscataway, New Jersey 08854, USA, and Lamont-Doherty Earth Observatory, Palisades, New York 10964, USA, (3) Dipartimento di Geoscienze, Università di Padova, Via Giotto, 1 I-35137 Padova, Italy

The Triassic is a ~50 m.y.-long period of relevant radiative adaptation of marine and continental life bracketed between two major extinction events, yet only two of the eight stage boundaries that define its chronology have been thus far ratified by the International Commission on Stratigraphy, i.e. the base of the Induan Stage and the base of the Ladinian Stage. We contribute to the issue of the duration of the Rhaetian by presenting magnetostratigraphic and biostratigraphic data from two Tethyan marine sections (Brumano and Valcava) from the Southern Alps, Italy. Paleomagnetic data from Brumano and Valcava show a complex multicomponent structure with inferred primary dipolar directions carried mainly by magnetite. The base of the Rhaetian is constrained by conodont biostratigraphy whereas the base of the Hettangian by pollen biostratigraphy. We exploit the opportunity provided by these new data to undertake a general discussion on the correlation of Tethyan and Boreal magneto-biostratigraphies from the literature to the Newark Basin sequence with the aim to contribute to improve our understanding of the Late Triassic time scale.

Data from Brumano and Valcava are correlated to magneto-biostratigraphic data from Pizzo Mondello, Silicka Brezova, Kavaalani, Kavur Tepe, Bolucektasi Tepe, St Audrie's Bay, and the Newark Basin in order to constrain the chronology of the Late Triassic from the Carnian–Norian boundary to the Rhaetian–Hettangian (Triassic–Jurassic) boundary. In brief, we confirm the position of the Triassic–Jurassic boundary in the Newark sequence immediately above Newark magnetozone E23r and just below the oldest Orange Mountain lavas dated at ~202 Ma, and constrain the age of the Norian–Rhaetian boundary to within Newark magnetozone E21 at ~205 Ma.