

Spathian (Lower Triassic) ammonoids from western USA (Idaho, California, Utah and Nevada)

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The Early Triassic marine deposits are distributed over a large area in the Western United State and are very rich in ammonoids. The detailed bed by bed study of their stratigraphic distribution allowed us to present a new very precise biochronological framework of the Spathian stage (Middle to Late Olenekian).

Nineteen new ammonoid species belonging to the genera *Pseudosvalbardiceras* ?, *Prohungarites*, *Silberlingeria*, *Bajarunia*, *Hemilecanites*, *Arctomeekoceras*, *Xenoceltites*, *Nordophiceratoides*, *Sibirites*, *Columbites*, *Hellenites* and *Svalbardiceras* and eighteen new spathian ammonoid genera (*Courtillotoceras*, *Yvesgalleticeras*, *Marcouxia*, *Jeanbesseiceras*, *Tapponnierites*, *Gaudemerites*, *Deweveeria*, *Ceccaisculitoides*, *Coscaites*, *Eschericeratites*, *Carteria*, *Goricanites*, *Tardicolumbites*, *Cowboyiceras*, *Nordophiceratoides*, *Glabcolumbites*) have been described in a recent preliminary report by Guex et al. (2005) on the basis of unpublished material collected in the western USA (Idaho, Utah, Nevada and California). In addition, one new genus (*Rudolftruempyiceras*) and four new species are also described in the present work. The precise stratigraphic description of the collected sections is given in the present Memoir and the stratigraphic distribution of 88 species belonging to 51 genera is established herein. Twenty-three new biochronological horizons are defined thanks to these new data. The Cowboy Pass section (Utah) records a very interesting terrestrial (red beds and very shallow water deposits) transition between the marine Late Smithian and the Earliest Spathian faunas. That worldwide short lived regression followed by a major transgression fits the model proposed by Guex et al. 2001 and Morard et al. 2003 for the Pliensbachian - Toarcian transition: major volcanic SO₂ emissions generating a short but major cooling and glaciation associated with an important sea level fall and large scale emersions, followed by a warming inducing a transgressive episode with some anoxic deposits.