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Proposal for a candidate GSSP for the base of the Rhaetian stage at Steinbergkogel (Salzkammergut, Austria)

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The Steinbergkogel section near Hallstatt, Salzkammergut, Austria is proposed as candidate GSSP for the Norian-Rhaetian boundary (NRB) with the boundary defined in bed 111 of section A, 2m20 above section base by the FAD of *Misikella posthernsteini*. This definition follows the boundary recommendation of the NRB Task Force of the Subcommittee on Triassic Stratigraphy. The Steinbergkogel exposes a pelagic basin facies of red and gray Middle Norian to Lower Rhaetian Hallstatt Limestone with a rich ammonoid and conodont fauna. Accompanying biostratigraphic boundary markers are the FA of *Misikella koessensis*, the FA of the ammonoids *Paracochloceras suessi* and of *Sagenites* s.str.

Despite the overall rare occurrence of *Misikella posthernsteini* in the early Rhaetian, Bed 111 further shows a distinct conodonts frequency change from *Epigondolella* to *Misikella* dominance as a valuable proxy for the boundary. An identical, time-correlative shift in conodont biofacies is seen in the Steinbergkogel quarry sections B and C and in various Tethyan sections from Germany (Berchtesgaden), Austria (Hallstatt, Dachstein, Hernstein), Slovakia (S. Brezova), Turkey (Oyuklu; Mersin), Oman (Musandam; Sumeini, Baid and Al Aqil) and Indonesia (Timor).

The FAD of *M. posthernsteini* occurs 40 cm higher up than the FA of *Misikella hernsteini*. Just below the FO of *Misikella hernsteini* is the LO of *Metasibirites*, a widespread late Norian ammonoid genus and the worldwide disappearance of *Monotis* (*M. salinaria/subcircularis* in low palaeolatitudes and *M. ochotica* group in the Boreal). Very rare coccolith spp were observed below the Norian-Rhaetian boundary. They increase in abundance just above the FAD of *Misikella posthernsteini* where the first *Crucirhabdus minutus* was also recorded. Above the FAD of *M. posthernsteini* is also the FA of the dinoflagellate cyst *Rhaetogonyaulax rhaetica*, which can be here lithologically controlled, followed by the disappearance of the “Norian” palynomorphs.

Between the FA of *M. hernsteini* and the FAD of *M. posthernsteini* lies a magnetic polarity reversal, ending a relatively long normal polarity interval, which can be recognized in other Tethyan magnetostratigraphies whereas, unfortunately, a clear correlation with the lacustrine Newark magnetostratigraphy remains ambiguous. The $\delta^{13}\text{C}_{\text{carb}}$ record is well preserved and shows no significant variations around the boundary.

The Austrian Salzkammergut region fulfills essential requirements for a Rhaetian GSSP: i) A lithologically uniform boundary interval, good exposure conditions in an old abandoned quarry and location on public land in a mountainous forested area in an UNESCO world heritage site assure long-time preservation and accessibility, ii) the area is well known for diverse Norian-Rhaetian low palaeolatitude invertebrate faunas (cephalopods, bivalves, gastropods, brachiopods, reefal organisms) found in different bathymetric and facial environments; iii) knowledge of their temporal and spatial distribution is now well advanced and a high-resolution correlation framework of the relevant pelagic biomarkers (ammonoids, conodonts) linked to abiotic stratigraphic tools such as stable isotopes and magnetostratigraphy has been achieved; iv) the multistratigraphical approach allows a correlation with the geochronologically constrained Pucara Group in northern Peru where the NRB is dated to around 205,5 my, and in the future hopefully with the astrochronologically tuned time scale of the Newark basin.