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Berriasian Magnetic Stratigraphy in Northern Calcareous Alps (Tirolicum, Northern Calcareous Alps)

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A b s t r a c t

In contrast to the Western Carpathians, magnetic stratigraphy in the Tithonian–Berriasian has not been applied in the Northern Calcareous Alps (NCA). All formerly investigated sections in the NCA are localized in the Tirolic units and reveal multiphase, syntectonic remagnetization (Pueyo *et al*. 2007). However, our results from a Tithonian–Berriasian deep-water succession in the Salzburg area confirmed preservation of primary magnetization (Grabowski *et al*. 2017). Detailed sampling of relatively undeformed latest Tithonian to Early Valanginian succession (Krische *et al.* 2013) was performed in the Leube quarry SW of Salzburg. Here we present the results from the middle to upper Berriasian part of the succession, 130 m thick (= upper part of the Oberalm Formation and lower part of the Schrambach Formation). Magnetite is the main magnetic mineral in the studied section. However several horizons in the succession are enriched in hematite. Magnetic fabric reveals a simple compactional pattern with bedding parallel foliation and weak lineation in the SE–NW direction. Characteristic component of magnetization of dual polarity with unblocking temperature spectra between 400-550°C was isolated during thermal demagnetization. In combination with high-resolution biostratigraphy the magnetization component could be interpreted as primary and attributed to the magnetozones M17r to M14r (close to the Berriasian/Valanginian boundary). The magnetostratigraphic interpretation correlates perfectly with calpionellid and ammonite age dating (Krische *et al.* 2013, Bujtor *et al.* 2013) as well as with newly obtained high resolution δ^{13}C curve. It must be concluded that remagnetization of Mesozoic sedimentary rocks in the NCA (Pueyo *et al*. 2007) was not complete. Due to the fact that in this part of the NCA relatively thick deep-water successions were deposited in contrast to the mostly condensed sections in the Western Tethyan realm there is an enormous potential for application of magnetic stratigraphy and to refine our knowledge of this still controversial early Alpine orogenic events on the base of multiproxy studies.

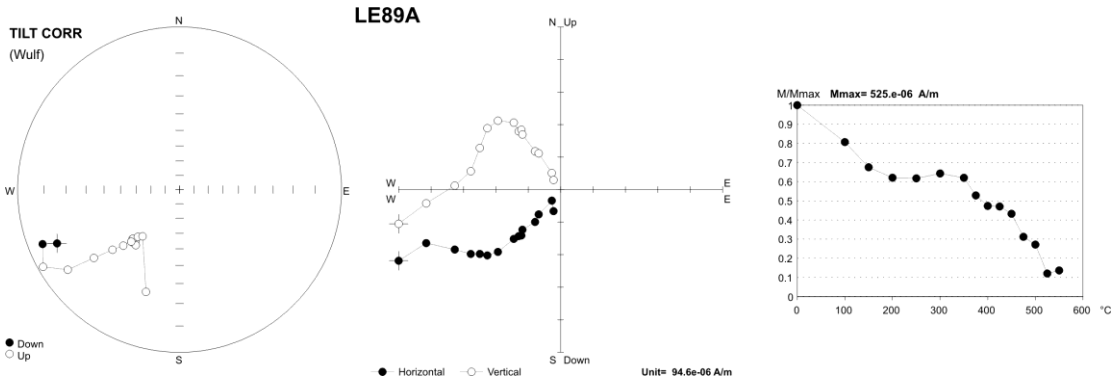

Fig. 1. Thermal demagnetization of typical specimen with reversed polarity. Left: stereographic projection of demagnetization path (after bedding correction); middle: orthogonal projection of demagnetization path (after bedding correction); right: NRM intensity decay during thermal treatment.

Keywords: magnetostratigraphy, Western Tethys, Eastern Alps, Early Cretaceous.

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