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The Silurian-Devonian Boundary in the Rifugio Lambertenghi Fontana III Section (Wolayer area, Carnic Alps, Italy)

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In the Carnic Alps one of the most complete Palaeozoic sedimentary successions is exposed at the Italian-Austrian border. Deposition was almost continuous from Upper Ordovician to Permian. Silurian and Lower Devonian sediments are irregularly distributed within the Carnic Chain, from the Monte Cocco area at the East, to Lake Wolayer at the West. In general, the outcrops are quite small, mainly on the Italian side, with the only exception of Mt. Cocco and La Valute areas.

The Rifugio Lambertenghi Fontana III (RLF III) Section is located just South of Lake Volayer. The area is well known for the abundant outcrops of Upper Ordovician to Devonian sediments which formed mainly in shallow water environments.

The RLF III Section exposes about 15 m of grey-reddish “*Orthoceras* limestones”. The section is subdivided into two parts, separate by a covered interval of about 10 m.

The lower part (samples RLF III 4-3A) consists of about 4 m of brown-reddish micritic limestone, with a few fossils remains (mainly brachiopods and crinoids); it can be referred to lower Pridoli thanks of the occurrences of *Oz. snajdri* and *Oz. eosteinhornensis* s.s..

However, this abstract focuses on the upper part of the section, which includes the Silurian/Devonian boundary. Lithologies here show an irregular alternation of grainstones and wackestones-packstones. Crinoids are always very abundant, brachiopods are common. Rare nautiloid cephalopods and trilobites have been observed in some levels. A very shallow water environment can be suggested for the deposits in this upper part of the section.

Seventeen conodont samples were collected and processed with the conventional formic acid technique. All investigated levels were productive and about 1200 conodont elements were recovered. The state of preservation is generally quite good, even when a few elements are broken or slightly deformed. The conodont colour is dark brown, corresponding to a Colour Alteration Index of 3.5-4. In general the lower part of the section, up to level RLF III 2, is richer in conodonts (up to 110 elements/kg), whereas abundance strongly decreases in the upper part (1-13 elements/kg), in connection to the shallower depositional environment.

Twenty taxa, belonging to ten genera (*Belodella*, *Coryssognathus*, *Dapsilodus*, *Icriodus*, *Oulodus*, *Ozarkodina*, *Panderodus*, *Pseudooneotodus*, *Wurmiella* and *Zieglerodina*) were discriminated.

Wurmiella excavata and *Panderodus unicastatus* are very abundant in the lower part of the section. *Belodella*, both *B. anomalis* and *B. resima* are constantly present.

It is difficult to precisely locate the Silurian/Devonian Boundary. Due to the scarcity of the fauna in the upper part of the section there is a wide biostratigraphic frame:

1. *Icriodus hesperius*, an index taxon of the basal Devonian, occurs only at very top of the section in sample RLF III 1;
2. *Ozarkodina confluens* (= *Oz. typica* sensu MURPHY *et al.* 2004) is limited to Silurian. It has its last occurrence in sample RLF III 1W.

However, we tentatively place the boundary between samples RLF III 1K and 1B (Fig. 1) based on the $\delta^{13}\text{C}$ record in the section:

The carbon isotope data suggest to locate the S/D boundary in the upper part of the prominent $\delta^{13}\text{C}$ shift, between samples RLF III 1K and 1B, and just before the $\delta^{13}\text{C}$ values reach their maximum. This basal Devonian “plateau”-like peak in the carbon curve is known also from the Prague Basin (BUGGISCH & MANN 2004: fig. 2). The characteristic 2‰ shift in $\delta^{13}\text{C}$ starts in the latest Pridoli and the position of the S/D boundary within the rising limb of the carbon peak is documented from different peri-Gondwana locations (BUGGISCH & MANN 2004) and from Laurentia (SALTZMAN 2002).

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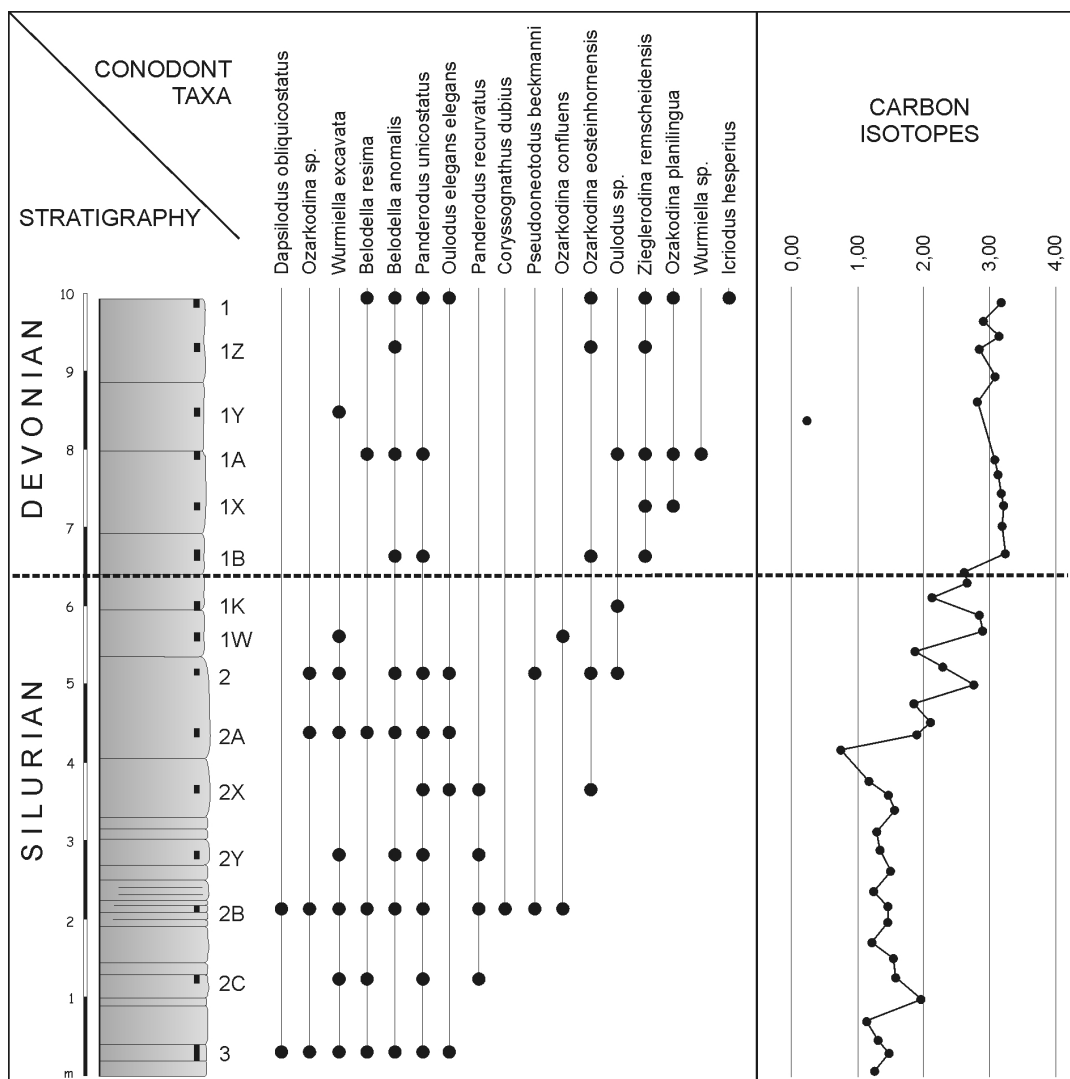


Fig. 1: Stratigraphic log, conodont distribution and $\delta^{13}\text{C}$ data from the Rifugio Lambertenghi Fontana III Section.