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| Ber. Inst. Erdwiss. K.-F.-Univ. Graz | ISSN 1608-8166 | Band 14 | Graz 2009 |
| <i>Paleozoic Seas Symposium</i> | | Graz, 14-18 th September 2009 | |

Gravity and current induced resedimentation of a Devonian carbonate platform (Mt. Freikofel, Carnic Alps)

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During the last 3 years two field campaigns took place which were undertaken to carry out more detailed information on the sedimentological and stratigraphical composition of Mt. Freikofel (Carnic Alps). These investigations resulted in a log that measures approximately 55 m (section Bachelor) and a second one with 275 m (section Master – see Fig. 1). Additionally conodont samples were taken to define the age of the first profile.



Fig. 1: Peak of Mt. Freikofel with section orientation; line of sight ESE.

The sampled section ranges from the early *falsiovalis* Zone (*Mesotaxis asymmetrica*) to the early *hassi* Zone (*Palmatolepis hassi*) (STARK 2007). According to that, an interval of about 2.5 Ma (Givetian to middle Frasnian) is documented at Mt. Freikofel.

During our investigation of the facies and the depositional environment we used the classification and scheme of MULDER & ALEXANDER (2001) for marine gravity flows which is classically used for clastic resedimentation. Gravity flow deposits and sediments with a pelagic origin were diagnosed. The lithoclastic limestones which we observed within the section could be subdivided into resediments of hyperconcentrated density flows, concentrated density flows and turbidity currents according to distinctive sedimentary structures evident.

In Devonian times, the section was located at the proximal slope (according to WILSON 1975 in FLÜGEL 2004). Furthermore a reef fauna associated with pelagic fossils was identified. Sedimentary and microfacies analysis confirm this scheme. The sediment concentration within the ancient gravity flows is constantly reduced with gaining distance from the sections bottom. An equal development can be observed regarding the grain-size. In contrast to that, thickening upward of the beds is recognized towards the top of the section.

The composite of three measured sections shows several shifts in lateral extension. For example a gradual transition from grainstones to lithoclastic limestones with reef debris at the basal part of the section. Along the section the reef fauna (LISCHKA, SCHNELLBÄCHER 2007) was associated with pelagic fossils like cephalopods, foraminifers and tentaculites. Another transition shows a gradual change from lithoclastic limestones to mudstones in the upper part of the sections. Flow direction markers, pointing from Mt. Cellon to Pal Grande, were identified in two layers.

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Berichte des Institutes für Geologie und Paläontologie der Karl-Franzens-Universität Graz](#)

Jahr/Year: 2009

Band/Volume: [14](#)

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Artikel/Article: [Gravity and current induced resedimentation of a Devonian carbonate platform \(Mt. Freikofel, Carnic Alps\). 74-75](#)