

3.2.4. Stop 5 – Vinz and Cellon formations

The ascent to Mt. Freikofel starts along a NW-SE trending fault, which marks the transition from the Rauchkofel Fm. to the Vinz Fm. After the fault, at an elevation of 1642 m and coordinates N 46°36'00.3" E 12 58'31.3", the upper part of the Vinz Fm. is exposed (Fig. 15). This unit consists of two interlayered facies (BANDEL, 1972; SCHÖNLAUB, 1985; KREUTZER, 1992; SCHNELLBÄCHER, 2010; PONDRELLI et al., 2015b): (1) medium dark grey, thin to medium bedded, wackestones to packstones and (2) medium dark grey, medium to thick bedded, poorly sorted coral- and stromatoporoid-bearing rudstones (more rarely floatstones) and grainstone matrix; sometimes rudstones shows a fining upward trend up to grainstones. The base of this succession, right after the fault, belongs to the Eifelian Stage (PERRI & SPALLETTA, 1998), but the base of the Vinz Fm., dated elsewhere as Emsian (PONDRELLI et al., 2015b), is not exposed here.

The succession shows a thickening and coarsening upward trend which characterises the transition to the following Cellon Fm. (Figs. 11, 12, 15), which has been dated as lower Givetian. The Cellon Fm. consists of medium dark grey, very thick bedded, poorly sorted, coral- and stromatoporoid-bearing rudstones and subordinate floatstones with clasts up to ~40 cm of diameter and grainstone matrix; sometimes rudstones show a fining upward trend up to grainstones. Locally the base of the bed shows inverse grading with laminated grainstones passing to floatstone/rudstones. However, the deposits are mostly disorganised. The Cellon Fm. deposited in correspondence of the maximum extension of the reefal facies (BANDEL, 1972; SCHÖNLAUB, 1985; KREUTZER, 1992; SCHNELLBÄCHER, 2010).

The wackestone to packstone facies represent a pelagic depositional setting, while the breccia deposits represent gravitative-driven flows reworking shallow water, mostly reef-derived materials. This in turn implies the establishment of a reef and a slope connecting the shallow water environment with the basin. The base of the Vinz Fm. probably corresponds to a physiographic change of the basin from ramp-type to a rimmed shelf margin (BANDEL, 1972).

3.2.5. Stop 6 – Top of Mt. Freikofel

Walking along the path to the summit of the mountain, we will cross the Cellon Fm. up to the Freikofel Fm (Figs. 11, 12, 16). The transition has been dated as lower Givetian (PONDRELLI et al., 2015c).

A phosphorite-rich horizon (BANDEL, 1972) is present about 9 meters below the top of Cellon Fm. The transition to the Freikofel Fm. is marked by a progressive decrease, although with some fluctuations, of the breccia facies. The Freikofel Fm. consists of three well-bedded facies: (1) medium dark grey, medium to thick bedded, lithoclastic rudstones (subordinately floatstones) sometimes showing fining upward grading; matrix consists of grainstone (subordinately wacke-/packstone); (2) medium dark grey, thin to medium bedded grainstones and subordinate packstones locally showing fining upward grading; planar and subordinate cross lamination is present; (3) very thin to thin bedded, moderate pink to grey mud-/wackestones (BANDEL, 1972; SPALLETTA & VAI, 1984; SCHÖNLAUB, 1985; KREUTZER, 1992; SCHNELLBÄCHER, 2010; PAS et al., 2014).

The Freikofel Fm. was formed at the slope of a carbonate apron (SCHNELLBÄCHER, 2010; PAS et al., 2014). Deposits of hyperconcentrated and concentrated density flows and turbidity flows predominate. Thin interbeds of pelagic sediments are rarely preserved.