

## THE RECORD OF DEVONIAN REEFS OF THE CARNIC ALPS (AUSTRIA) AS DEDUCED FROM SLOPE DEPOSITS

Susanne POHLER\* & Hans Peter SCHÖNLAUB\*\*

\* Marine Studies Programme, University of the South Pacific, Suva, Fiji; [pohler\\_s@usp.ac.fj](mailto:pohler_s@usp.ac.fj)

\*\* Geologische Bundesanstalt, Rasumofskygasse 23, A-1031 Vienna, Austria; [schhp@cc.geolba.ac.at](mailto:schhp@cc.geolba.ac.at)

The carbonates of the Carnic Alps span the entire Devonian period and preserve a record of shelf, proximal and distal slope and basin facies. The narrow shelfedge appears to be missing and is presumably tectonized or buried. In this project an attempt has been made to reconstruct margin architecture through analyses of shelf and slope deposits. Analysis of the shelf deposits enables distinction between open and rimmed shelf margins and analysis of clast composition of the slope deposits gives clues to the nature of the source area.

A reefal margin has been postulated for the Carnic Alps carbonate platform based on the presence of debris sheets in slope deposits of the Cellon and Rauchkofel Nappes. However, analyses of the clast composition indicate that reef-derived clasts are rare in many units and that fine-grained wackestone and mudstone lithoclasts dominate. Reef-derived clasts intermittently occur in debris sheets from late Emsian onward through Middle Devonian and Frasnian times and are limited to certain areas. High abundances of reef-derived lithoclasts occur at Mts. Freikofel and Findenigkofel.

These findings imply that either the source area contained reefal buildups only in some places or that the source area was not everywhere and always the shelf margin but a deeper ramp or upper slope with finer-grained sediments.

The nature of shelf- and slope deposits imply the following succession of reefal or other marginal buildups.

1. Lochkovian: The large amount of crinoidal debris in the upper Lochkovian suggests that barriers of crinoidal debris formed along the shelf/ or ramp edge where waves began interfering with bottom sediments. Mudmounds probably lined the slope in deeper water.
2. Pragian: The shelf sediments contain patch reefs with numerous stromatoporoids. Coarse crinoidal limestone with large, fibrous cement-lined cavities suggests the presence of crinoidal mounds.
3. Emsian: Only the Hohe Warte Limestone contains appreciable amounts of potential reefbuilders which did not achieve much relief above the seafloor. None of this lithology can be found in the slope deposits which are generally fine-grained with few reef-derived bioclasts. Shelf lithologies point to existence of an open margin without reef barrier.
4. Eifelian/Givetian: Clast composition of slope deposits indicates presence of stromatoporoid reefs at the shelf margin with up to 70 cm large stromatoporoid heads and *Stachyodes* fragments.
5. Frasnian: Stromatoporoid reefs are preserved on the shelf with large stromatoporoids and compound tabulate corals.
6. Famennian: No reef record but some lithologies suggest presence of mudmounds. One horizon with crinoidal debris („Strunian”?)