



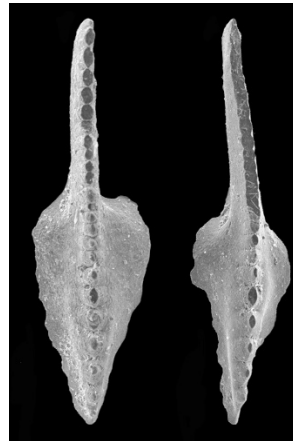
*INTERNATIONAL UNION OF
GEOLOGICAL SCIENCES
COMMISSION ON STRATIGRAPHY*

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**SUBCOMMISSION ON
DEVONIAN STRATIGRAPHY**

NEWSLETTER No. 39

**R.T. BECKER, Editor
Münster University,
Germany**



October 2024

ISSN 2074-7268

Annual Report for late 2023/summer 2024

The Münster Devonian Group is traumatized by the unexpected and sudden death of our Ph.D. student and good friend Stephan **HELLING** (see obituary). Only two months earlier, we lost our old friend Jürgen **BOCKWINKEL** with whom we shared so many remarkable Morocco trips. It is bizarre and frightening that both perished in a similar way by heart failure just from one minute to the next, as if switched off.

Among the positive highlights of the last year was the March field trip to Morocco with Mieke and Till, and jointly with Heiko **HÜNEKE** from Greifswald and his new research student Marcel **SCHLEMBACH**, a former Münster student. In the Tafilalt, we pursued contourite research (see **GIBB et al. 2024a, 2024b**), this time with a focus on the lower Emsian. For Mieke **LÖW**, who is now a full-time research assistant, a second focus were Frasnian sections with good goniatites but we also collected more pharciceratids and the F-F boundary at Rich Gaouz. Before driving down to the Anti-Atlas, we met our good old friend Ahmed **EL HASSANI** and Amine **TALIH**.



Fig. 1. Field meeting in the metamorphic limestone succession of the central Jebilet, March 2024. From left to right with A. **SOULAIMANI**, N. **LAZREQ**, A. **EL HASSANI**, M. **LÖW**, T. **SÖTE**, and A. **TALIH**.

In the Meseta, we sampled on a rainy day Ahmed's old Guenfoudia section in the Rabat-Tiflet Zone for microfacies and conodonts. Results will go into our planned third volume on the Moroccan Meseta, again to be published in the *Frontiers in Science and Engineering* journal of the Hassan II Academy of Science and

Technology of Morocco. Progress of the volume slowed down because of the completion of too many other manuscripts but we hope to get it done over the coming winter season.

In the central Jebilet, we met Nezha **LAZREQ** and Abderrahmane **SOULAIMANI** from Marrakech (Fig. 1), who had described in 2023 Upper Devonian conodont remains from strongly metamorphosed limestones that were always thought to be Viséan in age. In my long personal research history, I have never seen Upper Devonian limestones that were partly made of andalusite or garnets.

Based on older collections, a range of other Moroccan discoveries have just been published or have been submitted. These include Givetian plants from Oum el Jerane (**MEYER-BERTHAUD et al. 2024**), rare pharciceratoids that clarify the origin and early evolution of the superfamily (**BECKER submitted**), and new, rare goniatites and clymeniids from the Dasberg Event beds (to be submitted in November). An intensive survey of all published Anti-Atlas Devonian ammonoid faunas, unpublished thesis data and Münster collections, with more than 3.500 individual records from specific zones and localities, resulted in a high-resolution regional palaeodiversity analysis. It was presented at a special mollusk symposium in honor of the retiring Dieter **KORN** and Martin **ABERHAN** at the Museum für Naturkunde, Berlin, in spring 2024 (**BECKER 2024a**). A similar presentation will be given at the annual meeting of the Paläontologische Gesellschaft in Warsaw, Poland, in September. Peter **MÜLLER** is still waiting for the English translation of a joint manuscript on new top-Tournaisian (Erdbach Limestone equivalent) trilobites from the Jebel Begaa in the southeastern Tafilalt.

Research in the Rhenish Massif continued a focus on reefal facies and the dating of reef extinctions. Rare goniatites from a black shale immediately overlying the poorly studied Neandertal Reef (yes, the one with the famous early man living in karst caves) enabled a precise dating of the drowning event (**BECKER 2024c**). The annual conference of the *Oberrheinischer Geologischer Verein* took place in early

September in Münster. An excursion led through the thick Hönne Valley Reef and also showed the *Annulata* Event and Devonian-Carboniferous boundary in the condensed overlying pelagic succession. A field guide was published in their regular journal (BECKER et al. 2024). Together with Sven HARTENFELS and Sören STICHLING, Thomas examined several borehole cores of the Lhoist Germany/Rheinkalk through the upper reef and post-reefal nodular limestones, which expose a surprising complexity of thin black shale events. One core will be permanently transferred to Krefeld, one to Münster, where they will be available for detailed studies, jointly with David DE VLEESCHOUWER and students.



Fig. 2. A new oldest (basal Frasnian) species of *Acanthoclymenia* from black shales drowning the Neandertal Reef in the Bergisches Land (western Rhenish Massif).

Rhenish ammonoid work benefits considerably from material that is made available by amateur collectors, notably by Hartmut KAUFMANN. By a series of unlikely coincidences, we managed in spring 2024 to purchase a large part of the ammonoid collection of H. BOTTKE from the red iron limestones of the eastern Rhenish Massif. He was the mining geologist of the Adorf region and published goniatite and conodont faunal lists, mostly from the subsurface. (e.g., BOTTKE 1962, *Roemeriana*, **6**, 1965, *Beihefte zum Geologischen Jahrbuch*, **63**). Later, he joined the now closed institute at Clausthal-Zellerfeld in

the Harz Mts. We assumed that the Clausthal collection was transferred to Göttingen but in fact various original collections (including BOTTKE material) was simply ordered to be thrown away. Accidentally, it could be saved by a local amateur collector, who died this year and his widow offered the fossils and rocks, including many goniatites, for sale on the internet.

As a preparation for a planned project on the poorly understood global ammonoid extinctions within the Hembergian (middle Famennian, Upper Devonian III), the ammonoid-based definition of the Hembergian has been revised (BECKER 2024b). In parallel, the description of new Frasnian crinoid faunas from the Eifel Mts. and their stratigraphical context has now been published (BOHATY et al. 2024). I have not yet given up the hope that the voluminous book on the mid-European Variscides, which includes a detailed review of Devonian and Lower Carboniferous events, will be eventually published (BECKER 2024c); the manuscript was first written in 2021 but received an update in 2023.

Cooperation with **Ahmed ZEGHARI** from Algeria continued and after two rounds of reviews and corrections, there are now good prospects that the Lower Devonian siliciclastic microbialite paper will make it soon.

CM Zhor Sarah Aboussalam

Sarah continued her major effort to identify all new Moroccan conodonts (Fig. 3) and to document all microfacies thin-sections for the planned third Meseta volume. Some of the samples from the spring field trip have not yet been completed. In addition, she continues to identify conodonts for the contourite project of Heiko and the Greifswald Group, resulting in her co-authorships (e.g. GIBB et al. 2024a, 2024b). There are more Rhenish samples from reefal/postreefal outcrops, with results used in the Hönne Valley Guidebook (BECKER et al. 2024).

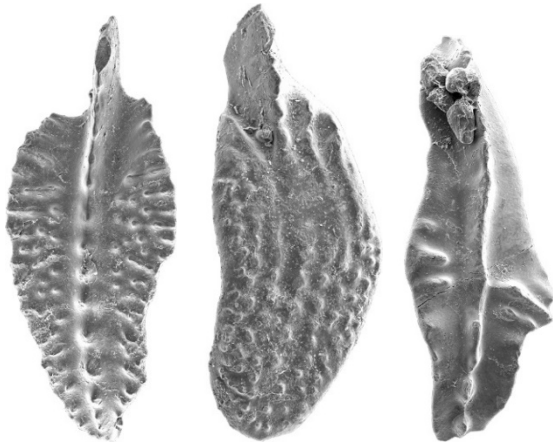


Fig. 3. Top-Givetian conodonts from Amdawar north of Dechra-Ait-Abdallah, eastern Western Meseta, Morocco.

CM Till SÖTE

Till has left geology/palaeontology for a very different full-time profession but is still living in the Münster region and co-supervising B.Sc./M.Sc. theses on Devonian topics, especially on ammonoids (e.g. the theses of Max GROßKLAUS and Alex KLEMENT). He took holidays to join our spring field trip in Morocco. At least three publications are waiting for Thomas to find the time for their completion: the upper Frasnian tornoceratids of Oued Mzerreb (Dra Valley, Morocco) and Ouidane Chebbi (eastern Tafilalt), and the lower Famennian goniatites of the Canning Basin.

Ph.D. students

After a long pause due to a change of his full-time position in environmental geology, **Stephan EICHHOLT** returned to the institute in evenings to finish his microfacies work on the Oulmes/Ain Jemaa reef in the Moroccan Meseta. Progress has been made and there should be a publication in the third Meseta volume, probably in the first half of 2025.

In the frame of his full-time position in the Geological Survey of NRW in Krefeld, **Sören STICHLING** continues mapping projects in the Devonian and Lower Carboniferous of the Rhenish Massive, with some focus on the reefs, not only of the Hönne Valley (the lingering Ph.D. project). For example, he will survey a planned bore hole through the Schwelm Reef.

Mieke LÖW completed her M.Sc. revision of upper Frasnian (pre-Kellwasser) mantioceratids from the Rhenish Massif, but more and more material became available, so that she will have to continue the topic in her new position as research assistant and Ph.D. student. She will deal in future with top-Frasnian (UD I-K/L) faunas from Büdesheim (Eifel), Bergisch Gladbach-Sand and traditional Rhenish localities (Martenberg, Beul), including *Crickites* from the Upper Kellwasser Limestone. During the spring field work in Morocco, she managed to collect good goniatites in all Frasnian localities, even in places that were thought to be poor in suitable material (Fig. 4). The Frasnian gephuroceratids of Morocco will form the second part of her Ph.D. project.



Fig. 4. Field photo of a large middle Frasnian *Manticoceras* in unusual siderite preservation from the previously unstudied succession overlying laterally the Hollard Mound at the eastern end of Hamar Laghdad.

M.Sc. Students

Alexander KLEMENT finished his project on the middle Famennian (Upper Devonian III) ammonoids of the WAPET H section in the Mt. Pierre region of the Kimberleys, Western Australia. All species, including a new *Pernoceras*, *Falcitornoceras* and raymondiceratid genus, were characterized by ontogenetic morphometry. But this was a difficult task due to the strong sparitization of inner and diagenetic corrosion of the outer whorls. Comparisons with contemporaneous

German species were made. Alex made sure to finish his Master since a position in environmental geology was already waiting for him.

After a long interruption because of her parallel non-geological professional career, **Lara HOLDERIED** will resume her project on Canning Basin Middle Frasnian goniatites, with plans to finish in 2025.

B.Sc. students

Max GROBKLAUS finished his project on the lower Frasnian *Koenenites-Hoeninghausia* fauna of Sadler Ridge in the Canning Basin. Based on detailed ontogenetic morphometry, the local representatives of both genera were refined and several morphotypes can be distinguished.

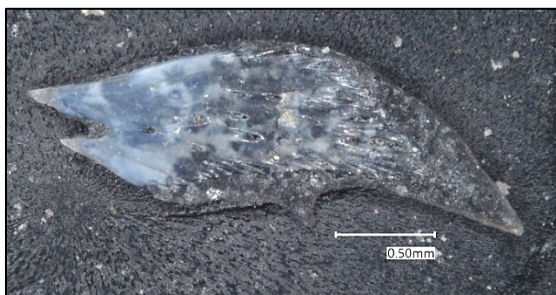


Fig. 5. Two strongly different palaeoniscid fish scales from the base of the northern Hofermühle Reef at Wusten (Velbert Anticline, northern Rhenish Massif).

Verena BUSCHHAUS finalized early in 2024 her project on the abundant actinopterygian scales and subordinate teeth/jaw parts of Wusten in the eastern part of the northern Hofermühle Reef of the northern Bergisches Land. We are aware that early actinopterygians had several different scales on parts of their body (Fig. 5), but the high amount of partly very different scale types suggests that several species of bony fishes once roamed the open, initial biostrome. Scales become rare in the main reefal succession.

Viola KÖNIG CASTRO submitted in March 2024 her thesis on two new phacopid species from the Taghanic Crisis Interval of Hassi Nebech, Tafilalt Basin, southern Morocco. One is probably a slightly atypical new species of *Cronierella*, the second a new genus and species with unusually large eyes. Viola started to write a publication on these.

Publications

Regular papers

- BECKER, R. T. (2024b). New ammonoid records and the definition of the base of the German Hemberg-Stufe (Famennian III, Upper Devonian). – *Palaeobiodiversity and Palaeoenvironments*, **104** (3): 683-705; doi.org/10.1007/s12549-024-00623-4.
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- BECKER, R. T. (2024d in press). Das Absterben des devonischen Neandertal-Riffes datiert durch seltene Goniatiten. - *Archäologie im Rheinland*, **2023**: 52-55.
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- MEYER-BERTHAUD, B., BERT, C., DECOMBEIX, A.-L., LACAND, M., MERLIN, R., BECKER, R. T., KLUG, C., EL HASSANI, A. & BAIDDER, L. (2024). The euphylliphytes of a new Givetian plant assemblage from the eastern Anti-Atlas, Morocco. – *Geobios*, **85**: 58-78; doi.org/10.1016/j.geobios.2023.12.008.
- WICHERN, N. M. A., BIALIK, O. M., NOHL, T., BECKER, R. T. & DE VLEESCHOUWER, D. (2024b). Decoding Deep-Time Rhythms: Probing the Limit of Stratigraphic Correlation in the Time-Specific Facies of the Late Devonian Usseln Limestone (Rhenish Massif, Germany). – *Geophysical Research Letters*, **51**: 11 pp.; doi.org/10.1029/2024GL109392.
- GROßKLAUS, M. (2023). Ammonoideen aus dem Unter-Frasnium des Canning Basin (NW-Australien) – Morphometrie, Taxonomie und biogeographische Vergleiche. – B.Sc. Thesis, 93 pp.
- KLEMENT, A. (2024). Ammonoideen aus dem mittleren Famennium des Canning Basin (NW-Australien) – Taxonomie, Biostratigraphie und paläobiogeographische Vergleiche. – M.Sc. Thesis, 152 pp.
- KÖNIG CASTRO, V. (2024). Phacopiden (Trilobita) aus dem Grenzbereich Mittel-Ober-Givetium von Süd-Marokko. – B.Sc. Thesis, 74 pp.
- LÖW, M. (2024). Ontogenetische Morphometrie, Taxonomie und Biodiversität der Gephuroceratidae (Ammonoidea) des Oberfrasniums im Rheinischen Schiefergebirge und Oberharz. – M.Sc. Thesis, 123 pp.

Abstracts

- BECKER, R. T. (2024a). Devonian ammonoid palaeodiversity in the Anti-Atlas – impact of data base, global events, and palaeoclimate. – In: NEUMANN, C. & HAMPE, O. (Eds.), *Mollusc palaeobiology, -ecology and evolution in a changing world. One-day symposium honouring the scientific contributions of Martin ABERHAN and Dieter KORN, Berlin, March 26, 2024*: 7-8.
- BECKER, R. T., ABOUSSALAM, Z. S., SAUPE, F. & HARTENFELS, S. (2023). Givetian to Tournaisian substages – significance, multi-disciplinary approaches, and GSSP potential in the Rhenish Massif (Germany). – *GeoBerlin 2023, Geosciences Beyond Boundaries – Research, Society, Future*, 3-7 September 2023, Abstracts (online): 1p.

Devonian theses

- BUSCHHAUS, V. M. (2024). Mitteldevonische Fischreste aus der Hofermühle-Formation von Wusten (Velberter Sattel, Bergisches Land). – B.Sc. Thesis, 77 pp.