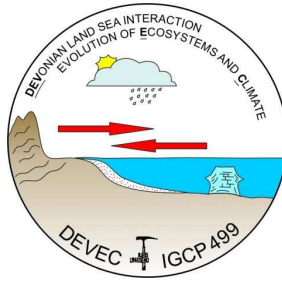


**Subcommission on Devonian Stratigraphy  
and  
IGCP 499 Devonian Land Sea Interaction:  
Evolution of Ecosystems and Climate**

**Eureka, Nevada, 9-17 September 2007**

**Program and Abstracts**



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Devonian Global Change: compelling changes in the Devonian world, highlighting new findings in the terrestrial and marine biomes: fish, invertebrates, plants, terrestrial vertebrates, global warming, mass extinction, bolide strikes, and global correlation.

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## AFTERMATH OF THE LATE FRASNIAN MASS EXTINCTION ON BRACHIOPODS AND CORALS IN THE NAMUR-DINANT BASIN (SOUTHERN BELGIUM)

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### ORAL

Due to their diversity and their abundance in the Frasnian communities, brachiopods and corals are prime tools for highlighting the extinction events related to the late Frasnian mass extinction whose causes are still disputed [1]. Both phyla have been studied in detail within the Namur-Dinant Basin (Namur and Dinant synclinoria, Vesdre area) which corresponds to the historical type area of the Frasnian and Famennian stages. The latter was located on the south-eastern margin of Laurussia during Devonian time. In the course of the Frasnian, the facies succession reflected a ramp setting with a mixed siliciclastic-carbonate sedimentation and several breaks of slope as well as the development of carbonate mound levels in its distal part (southern flank of the Dinant Synclinorium) [2] whereas the lower Famennian is represented by argillaceous sediments deposited mainly offshore on a shallow platform [3].

In the Namur-Dinant Basin, Frasnian brachiopod decline occurred in three steps within the interval spanning the Lower *rhenana* Zone to the *linguiformis* Zone. Most brachiopod orders suffered severely and the major losses occurred at the top of the Upper *rhenana* Zone. These extinction episodes were linked principally to diachronous regional facies changes related to transgressions. Atrypids and pentamerids became extinct within the Upper *rhenana* Zone in the shallow parts of the basin (south-eastern and northern flanks of the Dinant Synclinorium, Philippeville Anticlinorium and Vesdre area) whereas they had already disappeared at the top of the Lower *rhenana* Zone in its distal part (southern border of the Dinant Synclinorium) [4], just before the deposition of the dark shales of the Matagne Formation indicative of hypoxic bottom conditions. However, these orders vanished in the *linguiformis* Zone in other areas of the world [5, 6]. In the Philippeville Anticlinorium, the *linguiformis* Zone yielded only productids (Chonetidina), rhynchonellids and lingulids. At present, only one surviving athyridid species (Lazarus taxon) is definitely recognized in the lower Famennian. Nevertheless, some productids, craniids and lingulids may have crossed the Frasnian/Famennian boundary but this still needs confirmation. Post-extinction brachiopod recovery was rapid in the basal Famennian but, despite their great abundance, their diversity was quite low. New cosmopolitan genera appeared at this time especially among the spiriferids, athyridids and rhynchonellids concomitantly with new species of pre-existing orthid and orthotetid genera.

The initial decline of the rugose corals within the Namur-Dinant Basin is recognized in the Lower *rhenana* Zone and corresponds to the extinction of the colonial disphyllids and to their replacement mainly by members of the family Phillipsastreidae [7]. This is probably related to a cooling of the sea water [8] and occurred prior to the Lower Kellwasser Event, which had no direct influence on the stratigraphic distribution of the corals and brachiopods. Just after this first crisis, the rugose corals were still abundant but their generic and specific diversity remained low. They disappeared, along with the tabulates, in the Upper *rhenana* Zone. In the investigated area, rugose corals were absent from the *linguiformis* Zone to the Middle (?)/Upper *crepida* zones in which rare small solitary forms re-appeared. It is only close to the base of the Strunian Substage that their recovery actually started [7]. Auloporids (Tabulata) have been observed in the Middle *triangularis* Zone.

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