sediment curve. This can be explained by a relative rise of sealevel, which enlarged the accomodation space for the sediments. Sedimentation in this part of the basin was controlled by the Bristol Channel Landmass (BCL), its sediments and facies–symmetries.

Only a speculative geometry for the southern basin margin can be reconstructed. Either the sediment masses were transported laterally in a drainage seaway in front of the Variscan thrust load, and/or the erosion– and transport–coefficients were very small and the south margin represents an underfilled foreland basin. This can be modeled with a thermally young (24 Ma) elastical lithosphere of ca. 30 km thickness yielding a deep and wide basin. The uplift of the BCL in the north can not be explained by the upwarp of a peripheral bulge, because sediment mass–balances demand an uplift of ca. 2km of the source area. This uplift is thought to have been a result either of inversed extensional faults, due to Variscan compression, or of the dextral Bristol Channel Fault System.

RETROGRADE FLUID EVOLUTION IN THE BOHEMIAN MASSIF (LOWER AUSTRIA)

H. HÖGELSBERGER

Greenpeace Austria, Auenbruggerg. 2, A–1030 Wien, Austria

The Lower Austrian part of the Bohemian Massif is represented by the Moldanubian Zone and the structurally underlying Moravian Zone. The Moldanubian Zone exibits a nappe–like structure. The various nappes can be distinguished by their distinct lithologies and metamorphic conditions. All of them experienced a retrograde overprinting, which was caused by the underthrusted Moravian Zone. Fluid inclusions are used to derive the fluid evolution during the retrogression. Four types of inclusions can be identified. Type 1 is most abundant and contains CO_2 with minor amounts of CH_4. Type 2 consists of $CO_2 + H_2O \pm CH_4$. The density of the carbon dioxide component in both types is generally low. Type 3 are moderate saline aqueous inclusions ($NaCl_{eq} < 10$ wt.%). $T_{H(L)}$–values range between < 100 and 375 °C. Type 4 is N_2– dominated. The homogenization of nitrogen is critical or into the vapour phase near the critical point.

All inclusions are hosted by quartz. They are arranged in trails or clusters, thus their origin is regarded as secondary. Apparently, there is no correlation between occurrence of the various types of fluid inclusions on one hand and the geological position and lithology of the host rocks on the other hand. Therefore the fluid composition seems to be triggered by external buffering. None of the inclusions represents the fluid of peak metamorphic conditions, but they record the cooling and uplift history of the rocks.

A model is proposed where fluids released from the Moravian Zone migrate into the overlying Moldanubian Zone to trigger retrograde hydration reactions. These reactions consume preferably water and cause a progressive H_2O–depletion of the fluid. This evolution leads finally to a CO_2–rich fluid. Inclusions of type 1–3 reflect the outlined development. N_2–rich inclusions are remnants of the youngest fluid that migrated through the rocks.

ARENITES OF THE LOWER DEVONIAN RHENISH BASIN (RHEINISCHES SCHIEFERGEBIRGE, FRG)

H.–G. HOLL

Geologisches Institut der Universität Bonn, Nussallee 8, D – 53115 Bonn, FRG

Depositional composition of arenites was studied from sediments of the Lower Devonian Rhenish Basin. Burial diagenesis up to very low grade metamorphic conditions were determined for these and for associated rocks. Modifying processes like alteration, cementation, pressure solution and dissolution of detrital material have to be taken into account for provenance interpretation.

Besides traditional petrographic methods like polarization microscopy, investigations using cathodoluminescense microscopy, electron microprobe analysis and SEM were included.

Cathodoluminescense allows a more detailed differentiation of monocrystal quartz grains. OWEN & CAROZZI (1986) used the ratio of brown– to blue–luminescing grains for their source area determinations. In this study, a ternary diagram with a more detailed subdivision of quartz luminescense (brown/blue/red colours) is very useful for more distinct provenance interpretation.

Electron microprobe analysis was applied for determination of authigenic and detrital minerals. Authigenic chlorites can be used for the reconstruction of burial temperatures (CATHELINEAU 1988). Detrital muscovites show partly phengite character, which can be explained with authigenic growth, vertical to the crystallographic c–axis. They provide the possibility of direct measurement of burial/tectonic pressure by application of phengite barometry (MASSONNE & SCHREYER 1987).

Clay cements investigated by SEM analysis complete the informations on dissolution and authigenic growth of the coarse detritus delivered to the Rhenish Basin.

References

Cathelineau, M. (1988): Cation site occupancy in chlorites and illites as a function of temperature. Clay Minerals 23 : 471–485

Massonne, H.J. - Schreyer, W. (1987): Phengite geobarometry based on the limiting assemblage with K–feldspar, phlogopite and quartz. Contr Mineral Petrol 96: 212–224

Owen, M.R. - Carozzi, A.V. (1986): Southern provenance of Upper Jackfork Sandstone, southern Ouachita Mountains: cathodoluminescense petrology. Geol Soc Am Bull 97: 110–115

AN ATTEMPT OF PALAEOGEOGRAPHICAL RECONSTRUCTIONS OF ROTLIEGEND (LOWER PERMIAN) BASINS IN CENTRAL EUROPE ON THE BASIS OF NEW PALAEOCONTINENTAL MAPS

V.M. HOLUB[1], K.R.G. STAPF[2]

[1] *Czech Geological Survey, Klárov 3, 11821 Prague 1., Czech Republic*

[2] *Johannes Gutenberg–Universität, Institut f. Geowissenschaften, 55099 Mainz, Germany*

In the present paper, a new attempt of palaeogeographical reconstructions of Lower Permian Rotliegend basins in Central Europe on the basis of new palaeocontinental maps has been made.

The region studied was situated approximately between 12 and 15° northern latitude during the Lower Permian. The climate was at this time tropical semi–humi to semi–arid. These changes were caused by the northward drift of Pangaea. Some sedimentary basins in Africa, the Chad Lake north of the equator for example or the Lake Tanganyika resp. the Lake Malawi south of the equator may seen as some actualistic examples.

The climatic changes during the Lower Permian carn be postulated through the differences within the sedimentological and fossil record. In the Lower Permian there were some lakes with partly coal seams, black shales and bituminous limestones. These lakes prove the importance of long existing and in some regions very extended water bodies. The coal seams indicate a rich vegetation which lasted for quiet a long time. The bitumen content within the black shales and the limestones is derived from a lot of algae and/or cyariobacteria. In the most cases, the lacustrine facies is situated above fluvial red beds. Both types of facies characterize fluvial to lacustrine cycles. In the course of the Rotliegend gentle changes in some regions to alluvial fan deposits and playa sediments can be observed. In other regions were rapid changes in this development. The alluvial fan deposits and the playa sediments bear no fossils with the exception of some tetrapod foot prints. This fact may be used as an additional proof for semi–arid conditions in the Upper Rotliegend.

THE INNER STRUCTURE OF THE BOHEMIAN MASSIF

J. HOLUBEC

Geological Institute of Czech Academy of Sciences, Rozvojová 135, 16500 Praha 6, Czech Republic

The inner structure of the Bohemian Massif is defined on the basis of systematic geological, aeromagnetic and gravity investigations performed during last 30 years. An update tectonic concept was created.

The structure of the basement of the Bohemian Massif is a product of Danubian (Hudsonian), Cadomian and Variscan orogenies. Three geotectonic cycles are separated by panregional unconformities.

The Danubian orogeny produced segments trending NW–SE. In Central Europe they are designated as the Bohemian NW and the Bavarian. They build up an ancient Svecofennian basement of Central Europe and crop on the surface e. g. in the Moldanubicum, Erzgebirge and Góry Sowie. The segments display inner arcuate arrangement. In the Šumava Mts. the segments are straight, in Cen–