that a possible influx of H_2O-rich fluids occurred after peak metamorphism. This study suggests that during contact metamorphism of the protolith of skarns from Garby Izerskie, CO_2 and H_2O behaved as "initial value components" whose activities were controlled by reactions within local systems.

Rb–Sr whole-rock dating of calc-silicate rocks from Garby Izerskie shows that this metamorphism was connected with Karkonosze granitoids of Variscan age, yielding an age of 302(?)–333 ± 4 Ma. The Karkonosze intrusion generated thermal fronts in its cover. These thermal fronts outstripped of the Karkonosze intrusion in time and were the source of heat causing contact metamorphism in the Izera area.

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Two-dimensional Computer Model of Subsidence, Erosion and Thermal History of the Nesvačilka Trough, Eastern Bohemian Massif

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The evolution of sedimentary basins situated on the eatstern margin of the Bohemian Massif underwent a complex evolution consisting of several subsidence and uplift phases. Computer program for two-dimensional simulation of sedimentary and diagenetic processes was applied to show the changing geometry of the basins situated on the Bruno-Vistulian crystalline basement and to estimate the original thickness of the partly eroded units.

The model starts with import of the digital seismic section where the horizons and unconformities are marked. In the next step, the age, lithology and physical properties are attributed to the individual sedimentary bodies. The most complex step is the restoration of the eroded units. Several features give evidence that the Upper Carboniferous strata were thicker than those preserved. An abrupt change in the trend of the diagenetic parameters, such as porosity, vitrinite reflectance, and pyrolytic data, is observed at the Jurassic/ Paleozoic boundary. The absolute values of these parameters are used to calibrate the modelled pre-erosional thickness of Namurian to Westphalian, Upper Jurassic, and Eocene strata.

The modelling results are shown as a series of the restored 2-D section at time of the most important events from the Paleozoic subsidence and thrusting through Jurassic rifting, Late Cretaceous erosion of a submarine canyon, Paleogene deposition and Early Miocene emplacement of the nappes of the Carpathian Flysch Belt.

Detailed Geological Documentation of the Jakubčovice Quarry; Moravian-Silesian Culm

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The active quarry at Jakubčovice nad Odrou (basal part of the Hradec–Kyjovice Fm., Upper Viséan) has been many times an object of excursions and research. The quarry was recently chosen as the largest and best exposed outcrop for complex research during the geological survey on the map sheet 1:25,000 Odry (25–121). Altogether nine benches were studied, with the lengths of sections on individual levels ranging between 50 and 600 m. The walls were documented from the viewpoint of lithostratigraphy, sedimentology, sedimentary petrology and structural geology. The principal results of the survey are presented below.

Lithostratigraphy and sedimentology:

Thick-bedded to massive-bedded greywackes (sandstones) represent deposits of the overbank facies association. They are interbedded with more sandstone-dominated lithologies of the amalgamated channel and sheet facies association. We suppose, in accordance with Hartley and Otava (in print), an axial turbidite system fed from the southern part of the basin. The paleocurrent reconstruction was derived from relatively rare bedding planes with flute casts and tool marks. Such bedding planes represent also horizons correlative across all benches. Paleocurrent indicators show a predominant S/SW to N/NE transport direction, approx. 25 % of marks are swung to NNW. The results agree with regional distribution of paleoflow indicators presented in the synthesis of Kumpera and Martinec (1994).

All levels locally display fine-grained laminated facies, the thickness of which does not exceed first tens of metres. This facies comprises parallel-laminated fine- to very fine-grained sandstones, siltstones and mudstones. Fine-grained sandstones

and siltstones are thought to record deposition from dilute, low-density turbidity currents. Mudstones represent hemipelagic background fallout of sediment from the water column (Hartley and Otava, in print).

The most distinct markers at the upper levels of the quarry are lenticular bodies of gravel-sized conglomerates. The horizons are slightly dislocated (by less than 1 m) along a steep southerly (194/84) dipping normal fault. The conglomerates reach several metres in thickness at the top of the quarry and pinch out at fourth bench from the top.

Sedimentary petrology:

The fine-grained conglomerates have a typical composition with higher amount of quartz pebbles, volcanoplutonic rocks, metagranitoids and gneisses. The qualitative composition of sand-sized fraction is similar, maybe somewhat enriched in metasediment and sediment clasts. The assemblage of translucent heavy minerals was defined as garnet-dominated with zircons, apatites, tourmaline and rutile. The analysis of detrital garnet assemblage proved high affinity to the Upper Viséan Myslejovice Fm. of the Drahany part of the basin (exposed further SW). This is in accordance with the paleocurrent reconstruction.

Structural geology:

The general structural pattern of the area is well visible on the walls and has been interpreted by geologists many times and in many different ways (Rajlich, Synek, Schulmann, Grygar, Kumpera, Dvořák, Krejčí). The folds are characterized by long intervals (limbs) of strata dipping west at low to medium angles and by short overturned limbs dipping steeply west. The axes of the east-vergent folds mostly dip gently SSW, dips to the NNE are less frequent. The described primary fold structures are often disturbed by westerly dipping distinct dislocations.

The cleavage is relatively indistinct, often missing. The study of magnetic anisotropy in all parts of the folds proved the sedimentary origin of the anisotropy (Hrouda et al., in print).

Paleostress analysis was based on the study of faults with kinematic indicators (striae). Program BRUTTE3 (Hardcastle and Hills 1991) was used for computation of parameters of the reduced stress tensor. A heterogeneous population of fault-slip data was measured and several different paleostress fields were determined by its analysis. One of them, the stress field with s_1 axis dipping NW or NNW and with high dip angles of s_3 axis (50 to 60 degrees), is comparable with the results of paleostress analysis carried out in the quarry at Heřmánky (NW–SE orientation of s_1 axis) west of Jakubčovice (Havíř, in print).

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Lithostratigraphic and Structural Polarity of the Devonian and Carboniferous Formations – Moravosilesian Zone, Bohemian Massif

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The almost west-east structure and litofacies polarity of the Carboniferous formations of the Moravosilesian Variscan foredeep and coal-bearing basins has been largely respected till now (e.g., Kumpera 1983; Dvořák 1994; Dopita et al. 1997 etc.). It is usually presented as an eastward (foreland-ward) lithofacies thinning and eastward decrease in deformation. Easterly polarity trend is very simply derived from the dominant NNE-SSW strike of the main fold-thrust system.

Earlier, we noted (Grygar and Vavro 1995) that thinning polarity of the Lower Carboniferous Culm facies in the area of the Upper Silesian Basin is southeasterly, not easterly (also Havlena 1982), i.e. clockwise rotated by approx. 45° relative to the eastward polarity of the structure. Very similar thinning to the SE can be observed also for the Devonian carbonate facies (e.g., Chlupáč 1994; Hladil 1994). Also the onset of the Culm flysch facies over carbonate one follows approximately a SW-NE to -ENE trend (not the trend NNE-SSW), which can be considered subparallel to the main thrust and fold system. A consequence of this state is the spindle-shaped (subtriangular) framework of the foredeep and coal-bearing molasse, widely open to the NE.

All the above mentioned inconsistencies reflect, in our opinion, a dextral rotation of the Brunovistulian foreland relative to the northeastward thust Variscan accretionary wedge during the Viséan and Upper Carboniferous late-Variscan collision.

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