indicates a short time-break between the tectono-thermal event and the beginning of the diastrophic sedimentation. This data indicates a high rate for the exhumation process and its synchronous onset across the Bohemian Massif. The orogenic complexes studied were related to the Eo-Variscan tectono-thermal event that included HP metamorphism.

All the associated basins with the sequences mentioned above were formed independently from the main Moravo-Silesian Sudetian foreland basin, opposite to the hinterland, late orogenic collapse basin system, of early Bretonian phase (Hartley and Otava, 2001).

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PolyLX – the MATLAB™ Toolbox for Quantitative Analysis of Microstructures

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The textural analysis is a powerful, but underused tool of petrostructural analysis. This technique can answer some questions dealing with surface energies, grain nucleation, grain growth and duration of metamorphic and magmatic cooling events as long as appropriate thermodynamical data for studied mineral exist. This technique also allows systematic evaluation of degree of preferred orientations of grain boundaries in conjunction with their frequencies. This may help to better understand the mobility of grain boundaries and precipitations or removal of different mineral phases.

The quantitative textural analysis concerns detailed and precise description of grain sizes, grain shapes, grain boundaries as well as preferred orientations of grain and grain boundaries. We introduce a new open platform, object-oriented MATLAB™ toolbox PolyLX providing several core routines for data exchange, visualization and analysis of microstructural data, which can be run on any platform supported by MATLAB™.

Grain and grain boundary shape: Shape is extremely difficult property to measure, or even to define in a precise manner. Perhaps this is why there are so many proposed shape measures, none of which has been proved as entirely satisfactory. A shape measure should possess several desirable properties. Obviously, objects with different shapes should yield different measures, and similarly shapes should yield similar values regardless of the size or orientation of the object. Unfortunately, a shape measure possessing these properties may be a chimera; it has been proven that no single measure can be unique to only one shape. Therefore, there is a wide spectrum of single value measuring methods available in PolyLX toolbox.

Grain and grain boundary preferred orientation: To obtain data of preferred orientation, several techniques are implemented in PolyLX toolbox. The most general one is method of analysis matrix of inertia. This method can be applied on individual grains or boundaries as well as on a set of grains or grain boundaries. In latter case, the result is weighted by size of objects, which is welcome in specific tasks and differs from the results obtained from orientation analysis based on histograms (rose diagrams) or Fisher distribution. Another group of routines using approach of direction dependent projection of grain or grain boundaries (PAROR, SURFOR and PARIS) and advertised by Pannozo (1983) are fully implemented.

Spatial statistics: One of the most important aspects of quantitative texture analysis is description of spatial characteristics of grains or grain boundaries. PolyLX contains several routines dealing with spatial distribution of grains or grain boundaries (grain density method, nearest neighbour analysis, spatial pattern index) or evaluating deviation from random distribution (contact frequency and contact area methods).

Crystal size distributions: PolyLX offers implementation of method to construct the CSD plots using technique described by Peterson (1996).

Strain analysis: Several techniques to estimate strain are available. Classical ones as Rf/f, centre-to-centre method and Harvey and Fergusson (1981) as well as some of their recent modifications like DTNNM (Mulchrone, 2000) or area weighted Rf/f are implemented.