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Thermal maturity of the Paleozoic units in the southeastern part of the Bohemian Massif

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The Palaeozoic in the eastern part of the Bohemian Massif is regarded as a part of the Rhenohercynian Zone of the Variscan orogenic belt. The Palaeozoic sequences in south-eastern Moravia are known from deep boreholes below the Carpathian Foredeep and the overthrust of the West Carpathian Flysch Belt (Dudek, 1980).
The Aim of the study was to evaluate the amount of expected erosion and reconstruct subsidence history based on the set of calibrated 1D models. One-dimensional (1D) modelling was performed using PetroMod software 2014.2 (Schlumberger). The results are based on geological concept of the studied area, available well logs, and publically accessible data.
Thermal maturity of the organic matter was evaluated in the Upper Carboniferous sediments of the Rhenohercynian zone within the Variscan orogen in Moravia (eastern Czech Republic). Based on the pyrolysis RockEval data, all Upper Carboniferous samples belong to type II-III kerogen. The elevated numbers of hydrogen index proved that the source potential of the studied Carboniferous sediments was not spent in full during the Variscan tectogen. The coalification trends expressed as RockEval pyrolysis peak temperature (Tmax) and vitrinite reflectance (Rr) were evaluated and geothermal gradient described. In the Variscan foreland in the SSE the Rr values are typical of diagenetic conditions ranging from 0.5 - 1.2 %Rr with maximum palaeo-temperature of 80-130 °C.