SUMMARY

The following summary covers the main points in the three published scientific papers composing the doctoral thesis:

(1) **H. Kiersnowski**, T.M. Peryt, A. Buniak & Z. Mikołajewski, From the intra-desert ridges to the marine carbonate island chain: middle to late Permian (Upper Rotliegend–Lower Zechstein) of the Wolsztyn–Pogorzela high, west Poland. – Geological Journal, v. 44, no. 2, p. 319-335, 2010.

(2) **H. Kiersnowski,** Late Permian aeolian sand seas from the Polish Upper Rotliegend Basin in the context of palaeoclimatic periodicity. – In: Gąsiewicz, A. & Słowakiewicz, M. (eds.), Palaeozoic Climate Cycles: Their Evolutionary and Sedimentological Impact. Geological Society, London, Special Publications, v. 376, p. 431-456, 2013.

(3) **H. Kiersnowski** & A. Buniak, Sand sheets interaction with aeolian dune, alluvial and marginal playa beds in Late Permian Upper Rotliegend setting (western part of the Poznań Basin, Poland). – Geological Quarterly, v. 60, no. 4, p. 771-800, 2016.

The thesis presents results of research on clastic Permian deposits in Poland in reference to the beds of this age in Europe, especially to the sediments filling the Southern Permian Basin. These deposits represent the red-bed facies (referred to as the Rotliegend), generally with little exceptions, being biostratigraphically the barren strata. The following research methods have been used to understand their development in space and time: litho- and allostratigraphy, cyclo- and climatostratigraphy, chemo- and magnetostratigraphy as well as sequence stratigraphy in conjunction with palaeogeography and geomorphology and isotopic dating. This research and sedimentological analysis have been dealing with the rocks available in the core material (and their rare analogies in natural exposures). In other cases, well logs have been the base of study, and in addition the results of petrological and petrophysical studies have been of substantial help.

The first publication presents the analysis of the distribution of Rotliegend sedimentary lithofacies (alluvial and aeolian sediments) around the Wolsztyn-Pogorzel palaeo-High, conditioned by syndepositional tectonic movements and changes of the palaeoclimate. In the second paper the results of sedimentological and palaeoclimatic analyses of deposits of the Upper Rotliegend of the Polish basin are presented in comparison with similar analyses from the Southern Permian Basin. The hypotheses concerning the determinants of the cyclical development and disappearance of Late Permian deserts in the context of supraregional fluctuations of palaeoclimate are presented. An asset of this work is the first link of the Rotliegend aeolian depositional system in the area of the Polish

Permian basin with previously published models of Permian deserts from the Dutch-British and North-German regions. In the third paper the results of sedimentological and lithofacial analyses mainly concerning the environment of aeolian sedimentation were presented with a special reference to the sand sheets which are very significant in the Rotliegend aeolian depositional system. The sediments of this aeolian subfacies are poorly known and have not yet been analyzed in the Polish Rotliegend basin.

In each of these publications, the author used his own methodological ideas and research hypotheses, aiming to synthesise research and to understand complex relationships of geological and palaeoclimatic processes recorded in the pages of the geological history of Rotliegend, as a chapter of a Great Book of Earth History.