

Reviews

Tectonic Atlas of Poland — Państwowy Instytut Geologiczny: 1 map in 4 sheets 1:500 000, 8 inset maps; Warszawa

J. ZNOSKO (ed.)

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Only shortly after having published the *Palaeogeographic Atlas of Poland* the Polish Geological Institute now presents a new, comprehensive structural atlas. The *Tectonic Atlas of Poland* consists of one main map (*The Tectonic Map*) in four sheets at a scale 1:500 000 and 8 inset maps (tectonic units of Poland, 1:4 Millions, Mohorovicic discontinuity in Poland, 1:4 Millions, the density of surface heat flow in Poland, 1:4 Millions, the main photolineaments in Poland, 1:4 Millions, the terranes in the Sudetes 1:1.5 Millions, and the distribution of structural complexes of sedimentary cover, 1:750 000).

Basically there are two ways to show regional structures in different structural levels in maps. Either the structures of the different levels are shown in different maps with depth iso-contours lines, subcrop maps and structural sketches. The other way, conventionally followed in Central and Eastern European countries, is to project all facts and data into a single map. This is quite demanding for all the constructors, the cartographers and the readers. Such a projection into a single map has now been presented by Znosko, the editor and his crew. This map is not made for a superficial glance. The reader has to become familiar with the legend, the symbols and its logic and has to train his eyes in order to properly read and realise all the petrological, lithological and structural details. Yet this compressed way of display is able to highlight inter-connections, which otherwise would not become evident.

Different colour intensity have been chosen to mark the contrast between the hard rocks at the surface in the Carpathians, the Sudetes and the Holy Cross Mountains (bright colours with black litho-symbols) and the Polish Lowlands (covered colours and "negative", white litho-symbols). The colours themselves characterise the age of deformation and consolidation of the respective basement (pre-Cadomian, Cadomian, Caledonian, Variscan, Mesozoic or Tertiary). These basic colours are shaded according to the depth of the top of the respective basement, litho-symbols indicate lithofacies, petrology and rank of metamorphism. Additional iso-contour lines in different colours mark the depth of selected horizons in the overburden (base productive Carboniferous, base Zechstein, base Triassic, base Upper Cretaceous and base Neogene). Important structures in the basement and in the overburden (fold structures, salt structures) and dislocations of regional and super-regional importance (Caledonian front, Variscan front) complete the picture. An important source of information are the numerous boreholes with their stratigraphic sections. Even for those, who are trained in the west and who are not too familiar with this form of display this makes it possible to "filter" isolated information from the map, e.g. a depth contour map of the base Zechstein. Detailed special maps have been added like the structural map

of the Holy Cross Mountains, the Carpathian Klippe zone in the Carpathians and the Tatras.

Included in the atlas are six inset maps: the map of the **structural units of Poland** summarises roughly the content of the structural map and names the most important structural units. The map of the **depth of the Moho** is based on the work of Guterch *et al.*, that means mainly on refraction seismic studies. Important dislocations of the Moho are clearly visible along the Teisseyre-Tornquist Zone in a deep graben with 50–60 km depth. The map of the **surface heat flow density** after Plewa shows marked anomalies (up to 90 mW/m²) the area of the Mid-Polish Swell, inverted in Santonian times and further anomalies on the pre-Cambrian East European Platform along the T-T line.

The map of the **photolineaments** differentiates between elements geologically confirmed and not. The map of the **terranes in the Sudetes** reflects the opinion of Cymerman and Grocholski.

The map of the **distribution of structural complexes in the sedimentary cover** completes the main map by indicating the subcrop lines of the following sedimentary units: Lower Vendian, Cambro-Silurian, Devonian, Carboniferous, Upper Rotliegend, Zechstein, Triassic, Triassic evaporites, Jurassic, Lower Cretaceous and Neogene. At first glance, the map appears puzzling, but it is easy to select the present day distribution of the main stratigraphic units.

To organise, construct and execute in detail a tectonic map of such a vast and complex area like Poland must be regarded as the coronation of regional geological work. It combines the love for details, the affection to single bore hole sections the proud of dating a stratigraphic sequence and the interpretation of a petrological analysis with the ability to recognise broad structural connections and frameworks. Only few experienced scientists, with knowledge of generations of geologists stored in their heads like in a "database" are capable to do this. It is appreciated, that the authors have strictly stuck to facts and have not given way to the temptation to display unproven and hypothetical theories. This may be regretted by some researchers but it makes the map sustainable in the future.

The reader misses an explanatory text describing the structural development of Poland, but this hopefully may come in future. It would have been a great advantage, if those maps had been complemented with maps which already exist in a comparable scale: the map of the magnetic total intensity and the beautiful relief map of the Bouguer gravity field in Poland. Being allowed to compare geophysical and structural data always is always of specific value. The identifications of lithological units on the East European Platform as well as in the Variscan realm obviously are based on geological interpretation of detailed potential measurements.

Nevertheless Znosko and his co-workers have created an atlas packed with facts, which makes our understanding of the structural framework of Central Europe advance a big step. Until this day, we, the western neighbours, haven't been able to present a similar comprehensive compilation. The management of the Polish Geological Institute with this atlas has demonstrated, that a geological survey, apart from solving water and waste disposal problems, has the obligation to investigate continuously over decades the geology and structure of a country, as well as to collect, harmonise and adequately publish the data and results, be it old-fashioned or not. The Polish administration is still aware of this duty. Our congratulations may cross the Odra river.

Hannover, the 22nd of March

Franz Kockel