

Brandenburgische Geowiss. Beitr.	Kleinmachnow	8 (2001), 1	S. 3-4	
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Introduction

The study of young geodynamic processes is of great interest. This is motivated by its importance for forecasting of hazards like earthquakes, the siting of large engineering constructions (nuclear power stations, coast protection and coastal engineering, water-storage reservoirs, etc.). However, detailed geodynamic investigations were mainly performed within mobile seismoactive areas. Neogeodynamic phenomena observed within rather stable intraplate regions have not been adequately studied yet.

The genesis of the Baltic Sea depression is still one of the debatable problems in the geology of Europe. Therefore, investigations concerning the neogeodynamic status of the Baltic Sea Depression and adjacent areas was the main aim of IGCP-Project Nr. 346 (Neogeodynamica Baltica). Guided by R. G. GARETSKY, E. A. LEVKOV † (Belarus) und G. SCHWAB †, W. STACKEBRANDT (Germany) an international group of geoscientists¹ from Denmark, Germany, Poland, Belarus, Latvia, Lithuania, Russia, and Ukraine was engaged in 1994 to 1998 with clarifying either the endogen (neotectonic) or exogen (glaciogenic and erosional) genesis of the Baltic Sea depression.

The results of this neogeodynamic project were figured in a set of eight maps (see enclosures) characterising the neotectonic status of the Baltic Sea depression and its southern surrounding (northern Central Europe and western East Europe). Three of the maps were compiled on a scale 1 : 1 500 000 (showing the amplitudes of the vertical movements of the neotectonic stage, the base of Quaternary deposits, and the recent position of the surface of marine Holsteinian beds), and five maps on a scale of 1 : 5 000 000 (showing recent vertical movements, stresses, epicentres of earthquakes, Moho discontinuity and neotectonic zoning):

Main maps (scale 1 : 1 500 000):

- (1) Vertical movements since the beginning of Rupelian stage (map 1)
Coordination: KARABANOV, LUDWIG, SCHWAB
- (2) Base of Quaternary deposits of the Baltic Sea depression and adjacent areas (map 2)
Coordination: KARABANOV, LUDWIG, SCHWAB
- (3) Recent position of surfaces of Holsteinian interglacial marine and limnic sediments, and of Saalian glacial river terraces (map 3)
Coordination: LUDWIG

Additional maps (scale 1 : 5 000 000):

- (4) Recent vertical movements (map 4)
Coordination: FRISCHBUTTER, SCHWAB, STROMEYER, LEMGO
- (5) Direction of recent maximal stress (map 5)
Coordination: GRÜNTAL
- (6) Epicenter map of tectonic earthquakes (maps 6)
Coordination: GRÜNTAL
- (7) Depth of Mohorovicic discontinuity (map 7)
Coordination: AIZBERG, GARETSKY, KARATAEV, SCHWAB
- (8) Neotectonic Subdivision (map 8)
Coordination: AIZBERG, GARETSKY, KARABANOV, KOCKEL, LEVKOV, LUDWIG, LYKKE-ANDERSEN, OSTAFICZUK, PALI-JENKO, SCHWAB, ŠLIAUPA, STACKEBRANDT

The neogeodynamic activity has been derived from **reference horizons**. For map one the base of Early Oligocene deposits (Rupelian and other correlated layers) has been selected as the main reference horizon mostly widespread and reliably identified in the section. No younger Tertiary plain meets these criteria. The duration of the neotectonic stage (Early Oligocene until the Recent) is estimated at 35 - 37 million years. Marine Rupelian sediments are preserved over most territories of northern Central Europe investigated in the project, but in the other parts they lacked primary or were removed by subsequent erosion respectively exaration. In the Danish sector of the North Sea and in the central part of the Jutland Peninsula the base of the Viborg formation (37 million years), correlated with Rupelian deposits, was taken as a reference horizon to determine the amplitudes of the neotectonic movements, and south of the Danish basin the base of the Branden clay formation (Upper Oligocene) above partly eroded Eocene, is a nearly contemporaneous reference horizon.

In the eastern part of the region the top of the Kharkov suite of marine Lower Oligocene deposits (see Fig. 1 in LUDWIG, this volume) was selected for neogeodynamic reconstructions.

All the mentioned reference horizons are not strictly synchronous, however, the time differences can be ignored because of the weak relief, low tectonic activity in the Early Oligocene and a small thickness of Lower Oligocene sediments in the eastern part of the studied area. In the Carpathian foredeep the sedimentation started only in the Miocene, following the compression in the Carpathian orogenic belt

and combined with uplifting of the Carpathians. As to areas without Oligocene and Neogene sediments the amplitudes of neogeodynamic activities were judged by indirect evidences.

The reference level for map two is the base of Quaternary sediments although there are some limitations in the accuracy and because of its strong exogenic reworking (see STACKEBRANDT et al., this volume).

Generally, the amplitudes of the vertical movements, that means the differences between the original position of the reference plains and their recent position both related to the present sea level, were established with elimination of atectonic factors (e. g. salt diapirism, subsrosion, glaciogenic disturbances a. s. o.) respectively with corrections made for lowering of the original surface due to erosion, exaration and other atectonic factors.

Regions with a high neogeodynamic activity are for example the movements in the southwestern part of Scandinavia, the grabens in the central part of the Baltic Sea, and the more or

less fault controlled Central European Subsidence Zone of northern Central Europe.

In the following manuscripts only brief descriptions of the main features of the eight maps and the most important results of the investigations of the international group are presented. A more complete explanation to the set of maps showing the detailed regional data, and the conclusions fom them will be published by the Polish partners (GARETZKY et al.). All institutes and specialists of the states incorporated into the project - Belarus, Denmark, Germany, Latvia, Lithuania, Poland, Russia and Ukraine – are listed on the maps. Parallel to this publication in the Brandenburgische Geowissenschaftliche Beiträge this abridged explanation together with the neogeodynamic set of maps likewise will be published in volume **35** (NF) 2001 of the Abhandlungen des Naturwissenschaftlichen Vereins Hamburg.

During the project realization some new questions arose as to the activity of older intraplate block structures and some aspects to interactions of endogenic and exogenic processes were found. They remain open for further investigations.

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