

Eugen Seibold – a promoter of European marine geology*Jan Harff*

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Abstract On occasion of his 95th birthday, the German geologist and Professor Eugen Seibold (* May 15, 1918) is honoured for decades of active research, academic education and scientific management in marine geology as well as for his promotion of geoscientific research about the Baltic Sea. The first part on Professor Eugen Seibold deals with his scientific achievements, while the second part is a reprint of his 1965 pioneering article on the interaction between the Baltic Sea and the North Sea based on sedimentological studies from the Great Belt.

Keywords • *Eugen Seibold* • *Marine geology* • *Salt water inflow* • *Great Belt* • *Baltic Sea*

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INTRODUCTION

In 1964 – I was student of geology at the Geological Institute at the Humboldt University Berlin – Professor Eugen Seibold, at that time director of the Geological-Palaeontological Institute, University of Kiel, gave a lecture in Berlin about the dating of sub-recent sediments in the German Bight, North Sea, based on charcoal pieces exhausted by steamships in the nineteenth century. I was so impressed by the interaction of natural sciences and technical developments in seafaring that I decided to become a marine geologist. It took me almost 30 years to realize my plans. During these years, despite the fact that we have been living in two different parts of Germany separated by an impenetrable wall, I never lost track of Eugen Seibold. *Vom Rand der Kontinente* (Seibold 1973), *The Sea Floor* (Seibold 1982), *Das Gedächtnis des Meeres* (Seibold 1991) did belong to my permanent literature together with Serge von Bubnoff's *Grundprobleme der Geologie* (v. Bubnoff 1959). These books did influence the development of my research concepts in the analyses of ancient and modern sedimentary basins as well as my academic teaching.

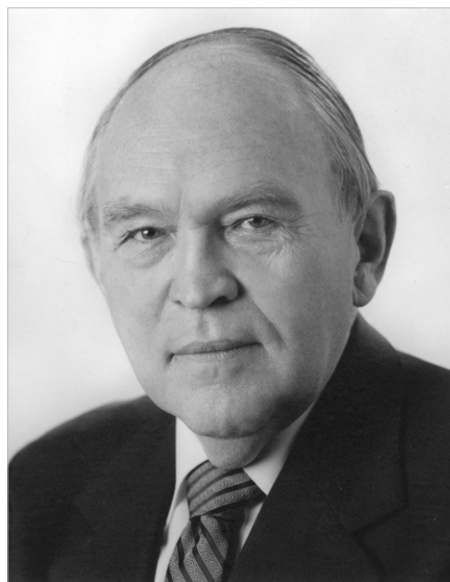


Fig. 1 Eugen Seibold in 1963. Photo courtesy of Geologenarchiv, Universitätsbibliothek Freiburg.

Therefore, it was my honor that the first scientist who followed my invitation for a lecture at the Institute for Baltic Sea Research in Warnemünde (IOW) where I had taken over the section chief position of marine

geology in 1992, was Eugen Seibold. I am still thankful to him that he did not only come for lecturing, but, that during very effective discussions he gave his advice for the development of scientific concepts that I elaborated over the years as Baltic Sea marine geologist. No wonder, that I accepted with pleasure the invitation of the Editor-in-Chief of *BALTICA*, to write the lead-in to the re-publication of the pioneering article by Eugen Seibold (1965) which nowadays could be considered as a *classic paper* in the Baltic Sea geology.

A LIFE FOR GEOLOGY AND SCIENTIFIC CO-OPERATION

Eugen Seibold was born on May 15, 1918 in Stuttgart. In 1937, he finished the highschool education and began his studies at *Hochschule für Lehrerbildung* (the College for Education Teachers) in Essling before he moved in 1938 to study natural sciences at the University of Tübingen. As so many young scientists at that time, he was not able to finish the studies because of the war. In 1939, he was drafted as a soldier and – wounded twice – he had to participate in World War II. Only in 1945, Eugen Seibold was able to continue his studies, and he completed in 1949 his academic education in geology and mineralogy at the University of Tübingen. In the same year, he joined as scientific assistant (assistant professor) the Geological Institute in Tübingen where he defended his PhD thesis in 1949. In 1951, Eugen Seibold received the Habilitation at the University of Tübingen and became Docent of geology and palaeontology at the Technical University Karlsruhe. In 1953, the University of Tübingen appointed him as *Ausserordentlicher Professor* for General and Applied Geology.

During the years in Tübingen, Eugen Seibold studied problems in regional tectonics in southern Germany and dealt with stratigraphic and sedimentological questions of the Mesozoic in Bavaria. He published his main findings in structural geology and sedimentology in 1951 and 1952. It should be mentioned that together with his wife, Ilse Seibold, he published remarkable results of their micropalaeontological studies in the Upper Jurassic of southern Germany (Seibold and Seibold 1960). In 1958, Eugen Seibold became full professor and director of the Geological-Palaeontological Institute and Museum, University of Kiel. During this time he published his main results in marine geosciences. Since 1985, as a Professor Emeritus, his scientific activities have continued unabated, particularly in co-operation with Ilse Seibold, producing new insights in earth sciences and their history. Seibold and Seibold (2003) stands for Eugen Seibold's latest phase in geoscientific research.

Eugen Seibold's main fields of research are marine geology of the Baltic Sea and the North Sea, the Indian Ocean, Persian Gulf, and the Atlantic Ocean. He served as chief scientist on numerous cruises with the German R/V *METEOR* and *SONNE*. He was co-chief scientist

on the drill ship *GLOMAR CHALLENGER* in the sea area off NW-Africa, for the Deep Sea Drilling Project Leg 4t (Abidjan-Malaga). Besides the world-wide regional research in marine geology (Seibold 1970, 1982, Seibold *et al.* 1971, 1977/1978), Eugen Seibold contributed extensively in current geological studies in the marine realm, but, also in Mesozoic sedimentology geological mapping campaigns in Germany.

Because of his wide-spanning scientific competence, his ability in multi-disciplinary thinking and clear presentation of complex scientific concepts, Eugen Seibold held several national and international positions in scientific organisations. Professor Seibold was President of the German Research Foundation (DFG) from 1980 to 1985. He served as President of the European Science Foundation (ESF) from 1984 to 1990, and he was the President of the International Union of Geological Sciences (IUGS) from 1980 to 1984. It would go beyond the space available here to mention all international and national awards that Professor Eugen Seibold was granted as well as memberships of national and international scientific academies.

EUGEN SEIBOLD AND BALTIC SEA RESEARCH

Eugen Seibold's article *Der Grosse Belt in seiner Bedeutung für die rezenten Sedimente der Ostsee* (Seibold 1965) stands for the period when he dealt, as professor at the University of Kiel, with problems in hydrography and geology of the North Sea and the Baltic Sea. He understood the Baltic Sea as a model for a semi-enclosed marginal sea in the humid realm and did describe this model in his basic publications in marine geology (Seibold 1973, 1982). In his article Seibold (1965), as one of the first, he explained the problems of water exchange between the Baltic and the North Seas, driving forces and oceanographic effects in a comprehensive way.

Eugen Seibold studied the Baltic basin as a natural laboratory for a variety of geological structures and key processes crucial for the understanding of the interaction between the hydrosphere, geosphere, and biosphere in basinal and coastal environments. Pratje (1948) and Ignatius *et al.* (1958) did show the role of the Baltic Sea sediments as proxies for the reconstruction of palaeoceanographic conditions. These findings served as background for Seibold's (1965) pioneering work on the interrelation between atmospheric driving forces, hydrographic conditions and sedimentological facies in the transit area between the Kattegat and the Baltic Sea.

The work on Baltic Sea marine geology by Eugen Seibold has paved the road for a multitude of new studies making the Baltic Sea probably the World's best studied area. The postglacial climate and environmental changes have been intensely studied based on sediment proxies from the Baltic Basin among others

by Ignatius *et al.* (1981), Winterhalter *et al.* (1981), Emelyanov (1994), Björck (1995, 2008), Sohlenius *et al.* (1996), Winterhalter (2001a), Repečka (2001), Andrén *et al.* (2001, 2002), Harff *et al.* (2001a, b), Emeis and Dawson (2003), Dippner and Voss (2004). Based on a multi-proxy approach, Harff *et al.* (2001a) subdivided the Late Pleistocene to Holocene sediments from the central Eastern Gotland Basin into physico-stratigraphic facies zones. Lower parts of the postglacial sediments represent mainly freshwater sediments accumulated in an isolated basin. At about 8,000 cal. years BP the system changed rapidly to a brackish-marine environment resulting in the accumulation of sediments with changing intensity of lamination.

Harff *et al.* (2001a, 2011) structured the brackish sediments into physico-stratigraphic facies zones and ascribe a change in lamination intensity to differences in oxygen supply to the bottom water during the deposition. Westman and Sohlenius (1999) and Sohlenius *et al.* (2001) did use diatom analyses and oxygen isotope measurements, to show that the changes from homogeneous to laminated layers coincide with variations in salinity. Recently, findings of Kabel *et al.* (2012) and Kuijpers *et al.* (2012) confirm Seibold's (1965) assumptions about driving forces of salt-water inflow to the Baltic Sea and its variability in time.

Most of the results in geomarine research of the Baltic basin published during the last decades are outcomes of international research projects dealing with interdisciplinary investigation of the Baltic Sea such as:

- BASYS: *Baltic Sea System Studies* financed 1994 to 1997 by the European Union (Winterhalter 2001a).
- GISEB: *GIS for Time/Space Modeling of Sediment Distribution as a Function of Changing Environment in the Baltic Sea* financed 2003 to 2007 by the German Ministry of Education and Science (Harff 2011).
- BONUS, Subproject INFLOW: *Holocene saline water inflow changes into the Baltic Sea, ecosystem responses and future scenarios* financed 2009 to 2011 by the European Union (Kabel *et al.* 2012).

Background and initiation of these research activities can be traced back among other scientific sources to Eugen Seibold's pioneering publication in 1965.

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