The Geological Thinking of Eduard Suess (1831 – 1914) between Basic Research and Application: An Introduction

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The year 2014 is devoted to the memory of Eduard Suess, the internationally most recognized Austrian geologist. On April 26, 1914, Eduard Suess died and he released an incredibly voluminous work after a long time as scientist, professor at the University of Vienna and as a politician. Consequently, the Austrian Earth Science community including the Austrian Geological Society devoted the year 2014 to celebrate the long-term achievements of Eduard Suess. The European Geosciences Union devoted the General Assembly 2014 to “The Face of the Earth” in memory of Eduard Suess magnum opum, and a book was published illustrating major aspects of the work of Eduard Suess (Hofmann et al., 2014). The biannual meeting Pangeo Austria 2014 in Graz, September 2014, is also celebrating the memory of Eduard Suess. Finally, this issue of the Austrian Journal of Earth Sciences contains a number of contributions to important scientific achievements of Eduard Suess.

Eduard Suess was not only a great scientist, but has many merits as an applied geologist. He started his career as a consultant for the regulation of the Danube River, which regularly flooded the lower located parts of Vienna. Later, he became also a politician and was a member of the city council of Vienna as well as of the parliament of the state of Lower Austria. In this function, aiming to avoid infections through local groundwater supplies, he forced to plan the spring water supply of Vienna by an aqueduct-supported, ca. 95 km long pipeline from the Hochschwab area.

This celebration volume contains contributions to various scientific aspects of Eduard Suess. In what he calls an illustrated 'short guide' of contributions to global tectonics by Eduard Suess, Şengör (2014) describes the type of methodology applied by Suess to understand the evolution of continents and in particular of mountain ranges, and the importance of horizontal movements.

Brückl and Hammerl (2014) give an overview on the present-day knowledge of the deep structure of Eastern Alps. Since the achievements of Eduard Suess were often described in various previous volumes, Neubauer (2014a) focuses on the development of research on the structure and tectonic development of the Eastern Alps since the initial important papers of Suess.

In the year 1888, Suess introduced the term "eustatic movements" referring to the global synchroneity of marker events in marine successions of the Earth history. Wagreich et al. (2014) introduce the term “limno-eustatic” to describe the effect of water volumes that are bound to groundwater and lake storage on sea-level fluctuations.

Suess recognized the peculiar geology of eastern Africa and recognized its graben structure, which forms now one of the building blocks of plate tectonics. Ring (2014) gives an up-to-date view on the East African rift structure noting the development since the discovery of Eduard Suess.

The definition of Gondwana-Land was an important long-term contribution of Eduard Suess, based on Permian plant fossils. Neubauer (2014b) describes that pieces of Gondwana were accreted to future Europe before the Permian during Palaeozoic times, illustrating the changes of the term Gondwana in the last nearly 140 years.

More than 25 years ago, and based on the findings of Eduard Suess, Şengör developed Suess´s idea of the peculiar nature of the Altai Mountain ranges, called Altaids by Suess, and equated this orogenic belt to a large extent to island arc systems of plate tectonics. The Altaid orogenic belt stretches from southeastern Ural Mts. via Altay Mountains in central Inner Asia to the east, Manchuria (here with basement gneisses, close to the Pacific Ocean). Suess noted several distinct

features different from other mountain ranges, e.g., the abundance of slates. The term Altaids got partly lost in the international literature, and the mountain range is now often called Central Asian orogenic belt. Kröner and Rojas-Agramonte (2014) give a general view on the development of the Altaids/ Central Asian Orogenic Belt, with main emphasis on the differences to the original redefinitions of Şengör as mainly Paleozoic island arc systems published since ca. 25 years ago as more and more small microcontinental pieces were detected. In their closing voluminous paper, Şengör et al. (2014) give a detailed update on all the units forming the building blocks of the Altaids providing a frame, in which future work can build on.

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