

In the Late Devonian there was one of the greatest mass extinctions in the history of Phanerozoic. It was associated with the states of oxygen deficiency in the marine environment. On the Frasnian/Famennian boundary many marine organisms become extinct. Some of the surviving animals had dwarfed. It should be noted that the phenomenon of dwarfing was not previously observed in crinoids (Crinoidea) in this interval. Studies on many living or fossil animals show that the oxygen-poor environment can lead to the size reduction of organisms. Animals that survived extinction are often smaller than their ancestors. This is an adaptation of organisms in response to the deterioration of environmental conditions. The main task of this project is to answer the question if the Late Devonian Anoxic Events (associated with low oxygen levels) had an impact on changes in body size of crinoids. For this purpose, measurements will be carried out on crinoids from the rich collection of Frasnian-Tournaisian deposits. Made measurements would undergo a variety of statistical tests. This would answer the question of how crinoids responded to changing environmental conditions both at the level of variability of species as well as the size and shape of these organisms. It is planned to carry out fieldwork in various profiles of Upper Devonian-Lower Carboniferous in the Holy Cross Mountains and in Czech Republic, Germany, Romania and Slovenia. In addition, other groups of echinoderms would be also studied as well as museum collection of Natural History Museum in London. This would allow for better understanding how the invertebrate animals responded to environmental changes in the Late Devonian. The results of the research have potentially great importance for the understanding of mass extinctions in the geological past. In accordance with the principle that "no one can predict the future without a thorough knowledge of the past," the resulting data would allow better anticipate upcoming changes associated with ocean acidification and progressive anoxia.