



Czech University of Life Sciences Prague

Faculty of Environmental Sciences

GLOBAL CLIMATIC CHANGES IN THE EARTH'S PAST AND THEIR INFLUENCE ON EVOLUTION OF LIFE

Team introduction:

The effects of current and future climate changes on global ecosystems represent a critical issue in modern science. However, modeling of future climate changes and their influence on global ecosystems is difficult without knowledge of past climate changes. The geological record provides abundant evidence that climate as well as overall biodiversity have varied throughout Earth's history.

The scientific team at the Department of Environmental Geosciences of the Faculty of Environmental Sciences focuses on study of rapid global changes in the Earth's past that substantially influenced the overall biodiversity of the Paleozoic marine ecosystem. This multidisciplinary research has included different geochemical, paleontologic, sedimentologic and geophysical methods and it has been conducted on different paleocontinents. The data obtained on the paleoenvironment as well as on biodiversity development before, during, and after global crises have been used for testing of different evolutionary, paleoclimatic and paleoecologic hypotheses. Our research has resulted in many new paleoecological observations and models as well as description of several dozens of new fossil species.

Team members:

The team consists of experienced academic researchers, assisted by PhD students. Members of the research team are:

Docs:

Jiří Frýda, Head of team (contact email: fryda@fzp.czu.cz)

PhD students:

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5 most significant recent publications by team members:

Frýda J. 2012: Phylogeny of Paleozoic gastropods inferred from their ontogeny, 395-435. In: Earth and Life – Global Biodiversity, Extinction Intervals and Biogeographic Perturbations Through Time, John A. Talent (Ed.), Series: International Year of Planet Earth, Springer, DOI 10.1007/978-90-481-3428-1_12, 1100pp.

Manda Š., Štorch P., Slavík L., Frýda J., Kříž J. & Tašáryová Z. 2012: Graptolite, conodont and sedimentary record through the late Ludlow Kozłowski Event (Silurian) in shale dominated succession of Bohemia. – Geological Magazine 149, 3: 507 – 531. DOI:10.1017/S0016756811000847

Seuss B., Nützel A., Scholz H. & Frýda J. 2012: The Paleozoic evolution of the gastropod larval shell: larval armor and tight coiling as a result of predation-driven heterochronic character displacement. – Evolution & Development 14, 2: 212-228. DOI: 10.1111/j.1525-142X.2012.00536.x

Frýda J. & Ferrová L. 2011: The oldest evidence of non-coaxial shell heterostrophy in the Class Gastropoda. – Bulletin of Geosciences 86(4): 765–776.

Loydell D.K. & Frýda J. 2011: At what stratigraphical level is the mid Ludfordian (Ludlow, Silurian) positive carbon isotope excursion in the type Ludlow area, Shropshire, England? - Bulletin of Geosciences 86(2): 197–208.

Applied outcomes of the research and further potential applications of the research:

- Due to the fact that this is basic research, the results are not yet available.



Keywords: *global climatic changes; paleozoic; biodiversity; evolution*