Devonian land-sea interactions: evolution of ecosystems and climate, IGCP 499

Editorial of the Special Volume

Knowledge about behaviour and development of ecosystems and climate in the geologic past is one of the most interesting tasks for future geological/palaeontological research because our knowledge of past ecosystems and climate is at best rudimentary. The further we look back, the greater the uncertainties. Therefore, it is essentially needed for the understanding of Earth's history and palaeobiodiversity. The Devonian period is one of the most interesting systems in Earth history because it was a time of global greenhouse climates, lacking any significant ice shields, and was characterized by extensive shallow marine and continental lowland areas and a wide range of different habitats is preserved in the sedimentary record. Following the work of numerous individuals and regional groups which have been established in IGCP 421, led by John Talent and Raimund Feist, a group of scientists proposed a new successor project (Devonian land-sea interactions: evolution of ecosystems and climate, IGCP 499) in 2004 in order to develop a better understanding of marine and terrestrial ecosystems, climate change and the influence on sedimentation not only in terrestrial but also marine realms (Königshof *et al.* 2004).

A major event of IGCP 499 took place from July 25–August 9, 2005 in SW Siberia. In the tradition of successful joint meetings and field trips of Devonian IGCP projects and the international Subcommission on Devonian Stratigraphy (SDS) a very successful meeting was held at the Institute of Petroleum Geology, United Institute of Geology and Mineralogy of the Russian Academy of Sciences, Siberian Branch in Novosibirsk. The meeting, which included a splendid field trip to the South of West Siberia (July 26–August 6, 2005) and well-organized technical sessions (August 7–8, 2005), was run by a great group from Novosibirsk under the guidance of E.A. Yolkin, A.V. Kanygin, N.K. Bakharev, N.G. Izokh and O.T. Obut. The meeting was entitled "Devonian Terrestrial and Marine Environments: From Continent to Shelf" (DECONS).

The field trip led the participants to various Devonian outcrops in the Salair, Rudny Altai, and Gorny Altai regions yielding a great variety of rocks in different facies settings (from nearshore/terrestrial to open marine conditions) and from the Lower to the Upper Devonian. Four field camps had to be set up by the perfectly working team. Vivid discussions arose when especially the non-Russian participants studied the successions which often comprised very unusual facies in respect to their own experiences (*e.g.*, substantial parts of Lower Devonian in calcareous facies, marine/terrestrial transitions – or even terrestrial strata – at levels new to many participants, *etc.*).

About 75 scientists presented 35 oral lectures and 44 posters dealing with topics spanning the entire Devonian and different aspects such as stratigraphy, sedimentology/facies, palaeontology, palaeoecology, palaeogeography, events, isotopes, regional geology and correlations of all kinds of rocks generated under different environmental settings. The results of the conference were issued as an abstract book edited by Yolkin *et al.* (2005). Later on, the organizers and the project leader invited participants to submit extended abstracts and papers on subjects of the lectures but it was a pity that we have not been able to cover more subjects for several reasons. Some papers dealing with this conference will be published elsewhere. Below we shortly introduce the different contributions, in the order in which they are assembled in this special issue.

In the first paper Gordon Baird & Carlton Brett (2008) give an updating and discussion on the Late Givetian Taghanic Bioevents in New York State. The comprehensive data set provides a special focus on faunal-facies successions in different facies settings. The next paper by Olga Obut & Tatyana Shcherbanenko (2008) deals with Frasnian radiolarian fauna from the Rudny Altai. They describe a variety of 26 species assigned to 11 genera.

Peter Carls *et al.* (2008) present arguments for a redefinition of the basal Emsian stage boundary. This important paper will hopefully lead to intensive discussions and finally will help to solve this problem.

Olga Artyushkova & Victor Maslov (2008) present a contribution from the southern Urals with a focus on regional geology and stratigraphy.

The next paper by Mena Schemm-Gregory (2008) provides new phylogenetic and taxonomic data on the important delthyridoid spiriferids and their palaeobiogeographic relevance. Her results are based on detailed side-by-side comparison of the type species of the genera with a special focus on the micro-ornamentation.

The paper by Olga Mesentseva is another contribution to the knowledge of the Devonian of the Salair-Altai region. Based on the occurrence of treptostrome bryozoans and their variety, T-R cycles on regional scale are presumed.

The next two papers concern regional geology and stratigraphy. Crinoids have been analysed by Alena Kurilenko & Nikolay Kulkov (2008) in terms of biostratigraphy and regional correlation of Devonian deposits of eastern Transbaikalia. The paper by Geliy Fedoseev (2008) provides new geochronological data from the Minusa Basin, West Siberia. Both contributions are important because they improve our knowledge of areas for which there is sparse information.

Jau-Chyn Liao *et al*. (2008) describe a Devonian section in the Spanish Pyrenees focussing on biostratigraphy and facies.

Infraspecific variability of muscle scars and post-larval shell morphology of Early Devonian gastropods are described in the contribution by Jiří Frýda and co-workers (2008). The detailed work is an important contribution to ontogeny, functional morphology and mode of life.

Finally, Martin Valent & John Malinky (2008) describe an Early Devonian hyolithid with a special focus on the origin of shell pigmentation.

The papers that have been selected for this special issue of the Bulletin of Geosciences represent mainly contributions presented at the conference. The papers fall approximately in two categories: contributions providing biostratigraphical, palaeobiogeographical and palaeoecological data and others have a focus on regional geology, but all of them are contributions to the IGCP 499 representing the variety of topis and disciplines within the project.

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Guest editors

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