

# **CZECH IGCP NATIONAL COMMITTEE**

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## ***COMPREHENSIVE ANNUAL REPORT 2014***

Prague 2014



## CZECH IGCP NATIONAL COMMITTEE

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### COMPREHENSIVE ANNUAL REPORT

**2014**

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***Report Submission Date:***

**December 19<sup>th</sup>, 2014**

***Chairman Signature:***

## **1. Czech IGCP National Committee (2014-2015)**

*Chairman* RNDr. Radek MIKULÁŠ, CSc., DSc. (*Institute of Geology AS CR, v.v.i.*)

*Vice Chairman:* Doc. RNDr. Stanislav OPLUŠTIL, Ph.D. (*Faculty of Science, Charles University*)

*Secretary:* RNDr. Leona CHADIMOVÁ, Ph.D. (*Institute of Geology AS CR, v.v.i.*)

## **2. Members of the Czech IGCP National Committee (2014-2015)**

Doc. RNDr. Oldřich Fatka, CSc. (*Faculty of Science, Charles University, Prague*)

Doc. RNDr. Jindřich Hladil, DrSc. (*Institute of Geology AS CR, v.v.i., Prague*)

RNDr. Leona Chadimová, Ph.D. (*Institute of Geology AS CR, v.v.i., Prague*)

Doc. RNDr. Bohdan Kříbek, DrSc. (*Czech Geological Survey, Prague*)

RNDr. Štěpán Manda, Ph.D. (*Czech Geological Survey, Prague*)

RNDr. Radek Mikuláš, CSc., DSc. (*Institute of Geology AS CR, v.v.i., Prague*)

Doc. RNDr. Stanislav Opluštil, Ph.D. (*Faculty of Science, Charles University, Prague*)

RNDr. Jan Pašava, CSc. (*Czech Geological Survey, Prague*)

RNDr. Miloš René, CSc. (*Institute of Rock Structure and Mechanics AS CR, v.v.i., Prague*)

Mgr. Stanislava Vodrážková, Ph.D. (*Czech Geological Survey, Prague*)

RNDr. Anna Vymazalová, Ph.D. (*Czech Geological Survey, Prague*)

RNDr. Jaroslav Zajíc, CSc. (*Institute of Geology AS CR, v.v.i., Prague*)

### **3. Number and title of projects in which the Czech Republic has participated**

#### ***A/ Projects with project leaders from the Czech Republic***

##### **IGCP 575 – THE PENNSYLVANIAN TERRESTRIAL HABITATS AND BIOTAS IN**

##### **➤ SOUTHEASTERN EUROPE AND NORTHERN ASIA MINOR AND THEIR RELATION TO TECTONICS AND CLIMATE**

**Duration:** 2010-2014

**Project Leaders:** C. J. Cleal (UK), **S. Opluštil (Czech Republic)**, I. van Waveren (Netherlands), M. E. Popa (Romania), B. A. Thomas (United Kingdom)

**Czech Representative:** **S. Opluštil** ([oplustil@natur.cuni.cz](mailto:oplustil@natur.cuni.cz))

#### **The main activities and results of the project in 2014:**

This was the last year of the project and Czech representatives were focused on the field work, presentation of results at the workshop in Freiberg and conference in Padova, and also on preparation of publications.

- Based on a revision of the flora from the local museum in Jasenica, Slovenia, J. Pšenička and S. Opluštil started to work on a paper revising this flora. The paper is currently in progress and should be submitted by the end of 2014

- S. Opluštil and J. Pšenička accepted an invitation of Turkish colleagues Dr. Çağrı Yılmaz and Mustafa Yılmaz, geologists of the Hema Company that is building a new coal mine in the the Amasra coalfield. A small Czech team came in June to Amasra and during 14 days examined two boreholes and collected nearly 400 kg of samples. They are currently in the Czech Republic for subsequent analysis. These samples and observations made in Amasra represent an absolutely unique data set which is intended to be published in a collaborative paper with Turkish colleagues. The paper will include sedimentary history, climatic and fossil records and biostratigraphy of the Amasra coalfield, and will be finished in the first half of 2015.

- In July, S. Opluštil, K. Martínek, S. Štamberk participated in the organization of the international CPC (Carboniferous-Permian correlation) conference held in Freiberg, Germany. S. Opluštil presented a paper which also relates to the topic of the IGCP 575 Project (new radiometric data from the Late Palaeozoic basins of the Czech Republic and implication for calibration of regional substages and floristic biozones. S. Štamberk and K. Martínek also presented posters. Czech Representatives also organized a 2–day excursion for participants of the conference.

***The list of oral or poster presentations given at the Freiberg meeting:***

Opluštil, S. & Schmitz, M.: New high-precision U-Pb CA-TIMS zircon ages from the Late Paleozoic continental basins of the Czech Republic

Štamberg, S.: Fossiliferous Early Permian horizons of the Krkonoše Piedmont Basin and the Boskovice Graben (Bohemian Massif) in view of the occurrence of actinopterygians

Martínek, K., Šimůnek, Z., Drábková, J., Zajíc, J., Stárková, M., Opluštil, S., Rosenau, N. & Lojka, R.: Climatic changes in Stephanian C (uppermost Pennsylvanian): sedimentary facies, paleosols, environments and biota of the Ploužnice lacustrine system, Krkonoše Piedmont Basin, Czech Republic.

***The list of publications related to the project in 2014 (published or in press):***

Opluštil, S., Pšenička, J., Bek, J., Wang, J., Feng, Z., Libertín, M., Šimůnek, Z., Bureš, J. & Drábková, J. (2014). T<sup>0</sup> peat-forming plant assemblage preserved in growth position by volcanic ash-fall: A case study from the Middle Pennsylvanian of the Czech Republic. *Bulletin of Geosciences* 89(4), 773–818

Šimůnek, Z., Bureš, J. (in press). Dispersed cuticles and conducting tissue of Sphenophyllum Brongniart from the Westhalian D of Kalinovo, Donets Basin, Ukraine. *Geologia Croatica*.

***Further activities related to the IGCP 575 project:***

Although 2014 was the last year of the IGCP575 Project, international contacts and cooperation established in previous years within the IGCP framework will have an impact on activity of part (at least) of the Czech IGCP575 representatives.

First of all, there will be a general effort to participate in a preparation of a common publication summarising the results achieved by the whole international IGCP 575 team. Preparation of this publication is planned for 2015. Manuscript of this collective output should be finished by the end of 2015.

Among the most important achievements concerning international cooperation is that established between the Turkish colleagues Çağrı Yilmaz and Mustapha Yilmaz from the Hema Company in Amasra and the Czech team. It is expected that this cooperation will continue in future years and besides the social impact it is believed that from scientific point of view will result in new high resolution biostratigraphic data of the Amasra coalfield and on sedimentological studies of the Pennsylvanian succession and on mineralogical and geochemical studies of paleosols to decipher their paleoclimatic signature. Results will be

published in common publications with Turkish colleagues who will elaborate part of the data, mostly palynological and coal petrographical. Another visit is planned in late spring of 2015 when the Czech team will continue in borehole examination and sampling.

Finally, it is planned to study and revise the plant collections from Italian part of south-eastern Alps stored in Udine. This collection was already examined during the Udine IGCP workshop in 2013 when its good potential for a deeper revision was became evident. This revision was planned to be held in 2014, however, for various reasons was postponed to spring time of 2015. S. Opluštil, J. Pšenička and possibly Z. Šimůnek are intended to do the revision of the material.

**The list of the Czech participants in 2014:**

Doc. RNDr. Stanislav Opluštil, Ph.D. (sedimentology/basin analysis, lycophyte palaeobotany), Charles University, Prague

Jakub Prokop, Ph.D. (palaeoentomology), Charles University, Prague

Ing. Ivana Sýkorová, DrSc. (coal petrology), Institute of Rock Structure and Mechanics AS CR, v.v.i., Prague

RNDr. Josef Pšenička, Ph.D. (fern palaeobotany), West Bohemian Museum, Pilsen

RNDr. Zbynek Šimůnek, CSc. (gymnosperm palaeobotany), Czech Geological Survey, Prague

RNDr. Jana Drábková (palynology), Czech Geological Survey, Prague

RNDr. Stanislav Štamberk, CSc. (vertebrate palaeontology), Museum of Eastern Bohemia, Hradec Králové

RNDr. Jaroslav Zajíc, CSc. (vertebrate palaeontology), Institute of Geology AS CR, v.v.i., Prague

Mgr. Ivana Hradská (arachnids), West Bohemian Museum, Pilsen

➤ **IGCP 580 - APPLICATION OF MAGNETIC SUSCEPTIBILITY AS A PALEOCLIMATIC PROXY ON PALEOZOIC SEDIMENTARY ROCKS AND CHARACTERIZATION OF THE MAGNETIC SIGNAL**

**Duration:** 2009-2013 ( O.E.T in 2014)

**Project Leaders:** A-C. da Silva (Belgium), M.T. Whalen (USA), **J. Hladil (Czech Republic)**, D. Chen (China), S. Spassov (Belgium), F. Boulvain (Belgium), X. Devleeschouwer (Belgium)

**Czech Representative:** **L. Chadimová\*** ([chadimova@gli.cas.cz](mailto:chadimova@gli.cas.cz)),

\* *L. Koptíková has been since 2013 L. Chadimová*

### **The main activities and results of the project in 2014:**

Year 2014 was the last year of the project, on extended term, so most of activities were focused on the presenting of the results acquired within the project but also on continuation of acquiring new data, because several projects including petrophysical techniques and especially magnetic susceptibility studies are still running or has been launched in 2014.

1 Czech participant (L. Slavík, Institute of Geology AS CR, v.v.i.) took part and presented data at one international conference, joint meeting of IGCP 580 and 596 projects: "IGCP 596 & IGCP 580 Joint Meeting and Field-Workshop, International Symposium in Ulaanbaatar, Mongolia" which took place in Mongolia in August (August 5-18, 2014).

1 lecture was given here:

Slavík, L., Valenzuela-Ríos, J.I., Chadimová, L., Liao, J.-C., Hušková, A. & Calvo, H. (2014): Hi-res correlation of the Lochkovian-Pragian (Lower Devonian) sections in the key regions of peri-Gondwana.

- Special issue of Geological Society of London dedicated to IGCP580 was finished in 2014 (Magnetic susceptibility a window onto ancient palaeoenvironments) – 3 papers by Czech participants were accepted. J. Hladil and L. Chadimová cooperated as guest editors of the volume.

- Field work and high-resolution sampling for magnetic susceptibility measurements have continued in Central Pyrenées (Catalania) within the cooperation with the University in Valencia in Spain during autumn 2014 (L. Slavík, J.I. Valenzuela-Ríos, MSc. student A. Hušková). One section was studied (additional section to the Compte and Segre II sections which were studied in 2013): 11 m, 555 samples; Lochkovian – Pragian). Detailed petrophysical sampling together with refinement of conodont biostratigraphy and lithological characterization is realized within the project "Hi-resolution correlation and dating of Mid-Palaeozoic sedimentary sequences of Peri-Gondwana using integrated biostratigraphy and chemo-physical methods" (Project No. M100131201, Czech Academy of Sciences).

- Extended study on frequency dependent magnetic susceptibility of limestones across the mid-Ludfordian Silurian, mid-Ludfordian Lau event interval in the Prague Synform in the Barrandian Area (Czech Republic) have continued.

- L. Chadimová and J. Hladil (Institute of Geology AS CR, v.v.i.) cooperated within the post-doc project of Dr. Anne-Christine da Silva from Liège University in Belgium (leader of the post-doc project is Dr. Mark Dekkers from Utrecht University in Netherlands) – 2 field campaigns (July and November 2014) were realized in the Barrandina Area focused on the Pragian and Emsian

successions of limestones sampled for rock magnetic analyses (magnetic susceptibility measurements and cycle analyses).

- Field campaign for acquiring data on magnetic susceptibility across the Rhuddanian-Aeronian boundary (Silurian, Llandovery) in the Prague Synform within the project Czech Science Foundation (GA14-16124S: Refinement of lower Silurian chronostratigraphy: proposal of new GSSPs of the Aeronian and Homerian stages) was realized (L. Chadimová). 76 samples for MS and also ICP-MS analyses (trace and REE elements) were acquired at the Hlásná Třebáň section on the Prague Synform.

- O. Bábek from the Palacký University and his team have launched field campaign within the project Czech Science Foundation (GA 14-18183S: Sequence stratigraphy of Devonian bioevents – sea level changes at the transition from greenhouse to icehouse world) in the Barrandian Area (Lower Devonian including Lochkovian, Pragian and basal parts of the Emsian successions of the limestone beds) – 6 sections were studied (Koněprusy, Na Chlumu, Na Branžovech, Pod Barrandovem, Hvíždalka + GSSP Lochkovian-Pragian boundary at Velká Chuchle) – 2 500 samples were acquired for magnetic susceptibility measurements, spectral reflectance, elemental geochemistry, EDXRF analyses. 1 Ph.D. student was involved – Hedvika Poukarová from the Masaryk University in Brno (Czech Republic). Field campaign has been started also in Germany (Devonian-Carboniferous boundary, Frasnian-Famennian boundary) at Rheinisches Schiefergebirge where Steinbruch Schmidt, Hasselbachtal and Wocklum sections were studied, 1000 samples for magnetic susceptibility measurement was acquired, 1 Ph.D. student was involved – Tomáš Kumpan from the Palacký University in Olomouc (Czech Republic).

**The list of publications with dedication to the project:**

da Silva, A.-C., Whalen, M.T., Hladil, J., Koptikova, L., Chen, D., Spassov, S., Boulvain, F. & Devleeschouwer, X. (2015). Application of magnetic susceptibility as a paleoclimatic proxy on Paleozoic sedimentary rocks and characterization of the magnetic signal – IGCP-580 projects and events. *Episodes*, 37, 2, 87-95.

**The list of abstracts with dedication to the project:**

Chadimová, L., Vacek, F., Sobień, K., Slavík, L. & Hladil, J. (2014). Frequency-dependent magnetic susceptibility of limestones: a case study from the Late Silurian shallow-water limestones (Teplá-Barrandian Unit, Prague Synform, Czech Republic). *Book of Abstracts*, 35.



Slavík, L., Valenzuela-Ríos, J.I., Chadimová, L., Liao, J.-C., Hušková, A. & Calvo, H. (2014). Hi-res correlation of the Lochkovian-Pragian (Lower Devonian) sections in the key regions of peri-Gondwana. IGCP 596 & IGCP 580 Joint Meeting and Field-Workshop, International Symposium in Mongolia. Ulaanbaatar 5.-18.8., 2014. Berichte des Institutes für Erdwissenschaften, Karl-Franzens-Universität Graz, Band 19, p. 46-47.

➤ **IGCP/SIDA Project 594 – IMPACT OF MINING ON THE ENVIRONMENT IN AFRICA**

**Duration:** 2011-2014

**Project Leaders:** B. Kříbek (Czech Republic), E. Cukrowska (South Africa), B. Mapani (Namibia), I. Nyambe (Zambia)

**Czech representative:** B. Kříbek ([bohdan.kribek@geology.cz](mailto:bohdan.kribek@geology.cz))

**Website address related to the project:** <http://www.geology.cz/igcp594>

**The main activities and results of the project in 2014:**

Project has finished in 2014. Final meeting of the project was held in May (26-28) in Prague, Czech Republic): “Kříbek, B. & Davies, T. (2014): **Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa**”. Also field excursion to was organized 65 participants from Cameroon, Democratic Republic of Congo, Kenya, Morocco, Namibia, Nigeria, Senegal, Zambia, South Africa, Belgium, Czech Republic, Croatia, Germany, Italy, Great Britain, Poland, Sweden and United States of America took part at this final workshop. 54 oral presentations or posters were presented. Results on both projects (IGCP/SIDA Project 594 and 606) acquired during 4 years as well as formulated priorities for further development of environmental agenda in African countries were summarized. All these priorities were broadly discussed and published at the Episodes journal. The results of the project were also summarized in the Special issue of the Journal of Geochemical Exploration:

**Kříbek B. (managing guest editor), Theo C. Davies (Guest Editor), Benedetto De Vivo (Guest Editor) 2014. Special Issue: Mining vs. Environment in Africa. Journal of Geochemical Exploration, Volume 144, Part C, ISSN 0375-6742.**

- The work of Czech group was focused in 2014 mostly on mining districts in Namibia. Special attention was paid to the Tsumeb smelter where very strong contamination due to processing of arsenic rich ores has occurred. The concentrations of arsenic in the upper parts of soil profiles reach 500 – 1000 mg.kg<sup>-1</sup> in the proximity of the smelter. Very strong contamination was observed also in the adjacent pasture land. Other areas were also studied during the project, e.g., Namib Lead, Kombat and Rosh Pinah.

**The list of abstracts with dedication to the project:**

Albanese, S., De Vivo, B., Lima, A., Frattasio, G., Kříbek, B., Nyambe & I., Majer, V. (2014). Prioritising environmental risk at the regional scale by a GIS aided technique: The Zambian Copperbelt Province case study. *Journal of Geochemical Exploration* 144, 433-442.

Davies, T.C., Kříbek B., Ngure, V., Poswa, T.T., Arthur, G.D. & Ettler V. (2014). Joint closing workshop of the IGCP/UNESCO/SIDA Projects 594 and 606. *Episodes*, 37, 222-223.

Ettler, V., Vítková, M., Mihaljevič, M., Šebek, O., Klementová, M., Veselovský, F., Vybíral, P. & Kříbek, B. (2014a). Dust from Zambian smelters: mineralogy and contaminant bioaccessibility. *Environmental Geochemistry and Health*, 36, 5, 919-933.

Ettler, V., Konečný, L., Kovářová, L., Šebek, O., Kříbek, B., Majer, V., Veselovský, F., Penížek, V., Vaněk, A. & Nyambe, I. (2014h): Surprisingly contrasting metal distribution and fractionation patterns in copper smelter-affected tropical soils in forested and grassland areas (Mufulira, Zambian Copperbelt). *Science of the Total Environment*, 473-474.

Konečný, L., Ettler, V., Kříbek, B., Mihaljevič, M., Šebek, O., Nyambe, I. & Scott-Fordsmand, J. (2014g). Response of *Enchytraeus crypticus* worms to high metal levels in tropical soils polluted by copper smelting. *Journal of Geochemical Exploration*, 144, Part C, 427-432.

Kříbek, B., Davies, T. & De Vivo, B. (2014f). Special Issue: Impacts of mining and mineral processing on the environment and human health in Africa. *Journal of Geochemical Exploration*, 144, part C, 387-390.

Kříbek, B., Mapani, B. & Nyambe, I. (in press). Mining and the environment in Africa - Inaugural workshop of IGCP/SIDA 594. *Episodes*.

Kříbek, B., Majer, V., Knésl, I., Nyambe, I., Mihaljevič, M., Ettler, V. & Šrámek, O. (2014b). Concentrations of arsenic, copper, cobalt, lead and zinc in cassava (*Manihot esculenta* Crantz) growing on uncontaminated and contaminated soils of the Zambian Copperbelt. - *Journal of African Earth Sciences*, 99, Part 2, 713-723.

Kříbek, B., Majer, V., Pašava, J., Kamona, F., Mapani, B., Keder, J. & Ettler, V. (2014c). Contamination of soils with dust fallout from the tailings dam at the Rosh Pinah area, Namibia: Regional assessment, dust dispersion modeling and environmental consequences. *Journal of*

Geochemical Exploration, 144, Part C, 391-408.

Šrámek, O., Mihaljevič, M., Kříbek, B., Majer, V., Filip, J., Vaněk, A., Penížek, V., Ettler, V. & Mapani, B. (2014i). Geochemistry and mineralogy of vanadium in mine tailings at Berg Aukas, northeastern Namibia. *Journal of African Earth Sciences*, 96, 180-189.

Šrámek, O., Mihaljevič, M., Kříbek, B., Majer, V., Vaněk, A., Penížek, V., Ettler, V. & Mapani, B. (2014j). Geochemistry of mine tailings and behavior of arsenic at Kombat, northeastern Namibia. *Environmental Monitoring and Assessment* 186, 4891-4903.

Vaněk, A., Ettler, V., Skopalová, K., Novotný, J., Penížek, V., Mihaljevič, M., Šrámek, O., Drábek, O., Tejnický, V. & Mapani, B. (2014). Environmental stability of the processing waste from sulfide mining districts in Namibia - A model rhizosphere solution approach. *Journal of Geochemical Exploration*, 144, 421-426.

**List of contributions of the Czech participants from Closing workshop of the project in May 2014 in Prague (in peer-reviewed Proceedings of the Closing Workshop of the IGCP/SIDA Projects 594 and 606):**

Albanese, S., De Vivo, B., Kříbek, B., Majer, V. & Nyambe, I. (2014k). Assessment and prioritisation of environmental risks at regional scale: the Zambian Copperbelt case study. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 9-11. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Ettler, V., Mihaljevič, M., Šebek, O., Kříbek, B., Veselovský, F., Majer, V., Vaněk, A., Šrámek, O., Nyambe, I., Kamona, F. & Mapani, B. (2014f). Fate of smelter particulates in tropical soils. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 41-45. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Ettler, V., Mihaljevič, M., Šebek, O., Vítková, M., Kříbek, B., Veselovský, F., Majer, V., Vaněk, A., Penížek, V., Šrámek, O., Nyambe, I., Kamona, F. & Mapani, B. (2014l). Dust from selected African metal smelters: mineralogy, contaminant bioaccessibility and exposure estimations. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 37-41. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Jarošíková, A., Ettler, V., Mihaljevič, M., Šebek, O. & Kříbek, B. (2014g). The pH-static leaching

behaviour of metallurgical wastes from the Tsumeb Copper Smelter (Namibia). *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 57-61. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Kříbek, B., Majer, V., Pašava, J., Kamona, F., Mapani, B., Keder, J. & Ettler, V. (2014h). Contamination of soils with dust fallout from the tailings dam at the Rosh pinah area, Namibia: Regional assessment, dust dispersion modeling and environmental consequences. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 71-75. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Mihaljevič, M., Ettler, V., Vaněk, A., Penížek, V., Kříbek, B., Chrastný, V., Knésl, I., Mapani, B. & Kamona, F. (2014). Tracing of copper and lead in soils near Kombat mine using stable Cu and Pb isotopes. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 89-91. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Podolský, F., Ettler, V., Mihaljevič, M., Šebek, O., Ježek, J., Kříbek, B., Majer, V., Šráček, O., Vaněk, A., Penížek, V., Nyambe, I., Kamona, F. & Mapani, B. (2014j). Mercury in soil profiles from metal mining and smelting areas in Zambia and Namibia: distribution and potential sources. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 165-169. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Šráček, O., Kříbek, B., Knésl, I., Majer, V., Mihaljevič, M., Ettler, V., Vaněk, A., Penížek, V. & Mapani, B. (2014k). Mobility of vanadium and arsenic in mine tailings in semiarid northeastern Namibia. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 189-191. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

Vaněk, A., Penížek, V., Skipalová, K., Drábek, O., Tejnecký, V., Ettler, V., Mihaljevič, M., Kříbek, B., Šráček, O. & Mapani, B. (2014l). Environmental stability of the processing waste from Berg Aukas, a sulfide mining district of Namibia. *In* Kříbek, B. & Davies, T: Addressing environmental and health impacts of active and abandoned mines in Sub-Saharan Africa. Proceedings of the Closing Workshop of the IGCP/SIDA projects 594 and 606, Prague, Czech Republic, May 25-28, 2014, pp. 193-195. Czech Geological Survey. Prague. ISBN 978-80-7075-858-8.

## ***B/ Projects with active working groups in the Czech Republic***

### ➤ **IGCP 587 – IDENTITY, FACIES AND TIME – THE EDIACARAN (VENDIAN) PUZZLE**

**Duration:** 2010-2014

**Project Leader:** P. Vickers-Rich (Australia)

**Czech Representatives:** R. Mikuláš ([mikulas@gli.cas.cz](mailto:mikulas@gli.cas.cz))

The Czech group of IGCP 587 workers (Dr. R. Mikuláš, Dr. M. Vavrdová and Dr. O. Fatka) has revealed new field data in 2014 and actively been involved in the project theme in 2014. They acquired data from the Cambrian and Ordovician of Bohemian Massif that can add new information on the taphonomy of Ediacara-type biota which passed the Proterozoic-Palaeozoic boundary. In the Neoproterozoic of the Bohemian Massif, new field data suggest the presence of shallow marine, potentially inhabited settings.

### ➤ **IGCP 591 – THE EARLY TO MIDDLE PALAEOZOIC REVOLUTION**

**Duration:** 2011-2015

**Project Leaders:** B.D. Cramer (USA), Ž. Žigaitė (Lithuania), T. R.A. Vanderbrouke (France), K. Histon (Italy), R. Zhan (China), G.L. Albanesi (Argentina), M.J. Melchin (Canada), M. Calner (Sweden)

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### ***The main activities and results of the project in 2014:***

Biodiversity development and faunal communities of the middle Palaeozoic was completed by many papers describing Silurian eurypteryds (Budil et al. 2014), Cambrian cystoids (Fatka, Szabad 2014), Middle Ordovician Ostracods (Lajblová et al 2014), and Devonian vertebrates (Vaškaninová and Kraft 2014a, b).

On the global changes in marine ecosystem and stratigraphy of the Silurian was focused a set of papers: Frýda and Frýdová (2014) described first record of late Homeric carbon isotope excursion, Loydell et al. (2014) chemostratigraphy of early Wenlock in Wales, Manda and Frýda (2014) studied link between global carbon cycle and marine communities in late Silurian, Slavík et al. (2014) integrated late Ludlow graptolite, conodont and chemostratigraphical zones, Štorch et al. (2014) described Gorstian-Ludfordian boundary in Bohemia, and Tonarová et al. (2014) studied reaction of polyacheate faunas on early Wenlock Irviken extinction event.

In addition Tasáryová et al. (2014) evaluated and integrated geochemical, palaeomagnetic, rockmagnetic and stratigraphic methods applied on Silurian volcanic rocks of the Prague Basin.

**The list of publications with dedication to the project:**

Budil, P., Manda, Š., Tetlie & E. O. (2014). Silurian carcosomatid eurypterids from the Prague Basin (Czech Republic). *Bulletin of Geosciences*, 89, 2, 257-267.

Fatka, O. & Szabad, M. (2014). Family Dibrachycystidae from the "middle" Cambrian of the Barrandian area (Rhombifera, Echinodermata, Czech Republic). *Paläontologische Zeitschrift*, 88, 159-166.

Frýda, J. & Frýdová, B. (2014). First evidence for the Homerian (late Wenlock, Silurian) positive carbon isotope excursion from peri-Gondwana: new data from the Barrandian (Perunica). *Bulletin of Geosciences*, 89, 617-634.

Lajblová, K., Kraft, P. & Meidla, T. (2014). Ontogeny of the ostracod *Conchoprimitia osekensis* (Příbyl, 1979) from the Darriwilian of the Prague Basin (Czech Republic). *Estonian Journal of Earth Sciences*, 63, 144–155.

Loydell, D. K., Frýda, J., Butcher, A. & Loveridge, R.F. (2014). A new high-resolution  $\delta^{13}\text{C}_{\text{carb}}$  isotope curve through the lower Wenlock Series of Buttington Quarry, Wales. *GFF*, 136, 172-174.

Manda, Š. & Frýda, J. (2014). Evolution of the late Ludlow to early Lochkovian brachiopod, trilobite and bivalve communities of the Prague Basin and their link with the global carbon cycle. *GFF*, 136, 179-184.

Slavík, L., Štorch, P., Manda, Š. & Frýda, J. (2014). Integrated stratigraphy of the Ludfordian in the Prague Synform. *GFF*, 136, 1, 238-242.

Štorch, P., Manda, Š. & Loydell, D. K. (2014). The early Ludfordian *leintwardinensis* graptolite Event and the Gorstian–Ludfordian boundary in Bohemia (Silurian, Czech Republic). *Palaeontology*, 57, 1003-1043.

Tasáryová, Z., Schnabl, P., Čížková, K., Pruner, P., Janoušek, V., Rapprich, V., Štorch, P., Manda, Š., Frýda, J. & Trubač, J. (2014). Gorstian palaeoposition and geotectonic setting of Suchomasty Volcanic Centre (Silurian, Prague Basin, Teplá-Barrandian Unit, Bohemian Massif). *GFF*, 136, 262-265.

Tonarová, P., Hints, O. & Eriksson, M. E. (2014). Impact of the Silurian Ireviken Event on polychaete faunas: new insights from the Viki drill core, western Estonia. *GFF*, 136, 270-274.

Vaškaninová, V. & Kraft, P. (2014a). Dynamics of placoderm distribution in the Prague Basin (Czech Republic). *GFF*, 136, 281-285.

Vaškaninová, V. & Kraft, P. (2014b). The largest Lower Devonian placoderm – Antineosteus rufus sp. nov. from the Barrandian area (Czech Republic). Bulletin of Geosciences, 89, 635-644.

➤ **IGCP 596 – CLIMATE CHANGE AND BIODIVERSITY PATTERNS IN THE MID-PALEOZOIC**

**Duration:** 2011-2015

**Project Leaders:** P. Königshof (Germany), T.J. Suttner (Austria), I.A. Boncheva (Bulgaria), N.G. Izokh (Russian Federation), P. Ta Hoa (Vietnam), T. Charoentitirat (Thailand), J.A. Waters (USA), W. Kiessling (Germany)

**Czech Representative:** S. Vodrážková ([stanislava.berkyova@geology.cz](mailto:stanislava.berkyova@geology.cz))

**The main activities and results of the project in 2014:**

During 2014 3 papers in WOS indexed journals and 1 paper in peer-reviewed journal were published by the Czech IGCP 596 working group, dedicated to IGCP 596 project. The main attention was paid to Mid-Paleozoic environmental and faunistic changes. The „Devonian working group“ focused on Lower and Middle Devonian events, the Daleje and Kačák events.

1 Czech participant (L. Slavík, Institute of Geology AS CR, v.v.i.) took part and presented data at one international conference, joint meeting of IGCP 580 and 596 projects: “IGCP 596 & IGCP 580 Joint Meeting and Field-Workshop, International Symposium in Ulaanbaatar, Mongolia” which took place in Mongolia in August (August 5-18, 2014).

1 lecture was given here:

Slavík, L., Valenzuela-Ríos, J.I., Chadimová, L., Liao, J.-C., Hušková, A. & Calvo, H. (2014): Hi-res correlation of the Lochkovian-Pragian (Lower Devonian) sections in the key regions of peri-Gondwana.

**The list of publications in peer-reviewed journals with dedication to the project:**

Baranov, V.V., Slavík, L. & Blodgett, R.B. (2014): Early Devonian polygnathids of Northeast Asia and correlation of Pragian/Emsian strata of the marginal seas of Anqarida. Bulletin of Geosciences 89, 3, 645-678.

Budil, P., Fatka, O., Rak, Š. & Hórbinger, F. (2014). Unusual occurrence of dalmanitid trilobites in the Lochkovian of the Prague Basin (Czech Republic). Bulletin of Geosciences 89, 2, 325-334.

Budil, P., Fatka, O., Holloway, D. & Hughes, N. C. (2014, eds.). From J. Barrande to H.B. Whittington. Bulletin of Geosciences 89, 2, 201-450, see:  
<http://www.geology.cz/bulletin/contents/2014/vol89no2>

da Silva, A.C., Whalen, M.T., Hladil, J., Koptikova, L., Chen, D., Spassov, S., Boulvain, F. & Devleeschouwer, X. (2014). Application of magnetic susceptibility as a paleoclimatic proxy on Paleozoic sedimentary rocks and characterization of the magnetic signal – IGCP-580 projects and events. Episodes, 37, 2, 87-95.

Frýda, J. & Frýdová, B. (2014). First evidence for the Homeric (late Wenlock, Silurian) positive carbon isotope excursion from peri-Gondwana: new data from the Barrandian (Perunica). Bulletin of Geosciences 89(3), 617-634.

➤ **IGCP 609 – CLIMATE-ENVIRONMENTAL DETERIORATION DURING GREENHOUSE PHASES: CONSEQUENCES OF SHORT-TERM CRETACEOUS SEA-LEVEL CHANGES**

**Duration:** 2013-2017

**Project Leaders:** M. Wagreich (Austria), X. Hu (China), M. Julleh Jalalur Rahman (Bangladesh), S. Voigt (Germany), I.Ö. Yılmaz (Turkey), S. Zorina (Russia)

**Czech Representative:** P. Skupien ([petr.skupien@vsb.cz](mailto:petr.skupien@vsb.cz)).

**The main activities and results of the project in 2014:**

In 2014 Czech participants became involved in this project. Their activities were focused on studies on the Bohemian Cretaceous Basin in the Bohemian Massif and also Cretaceous of the Western Carpathians.

**The list of publications in peer-reviewed journals with dedication to the project:**

Laurin, J., Čech, S., Uličný, D., Štaffen, Z. & Svobodová, M. (2014). Astrochronology of the Late Turonian: implications for the behavior of the carbon cycle at the demise of peak greenhouse. Earth and Planetary Science Letters, 394, 254-269.

Pavluš, J. & Skupien, P. (2014). Lower Cretaceous black shales of the Western Carpathians, Czech Republic: Palynofacies indication of depositional environment and source potential for hydrocarbons. Marine and Petroleum Geology, 57, 14-24.



#### **4. Sponsors of IGCP projects in the Czech Republic in 2014:**



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