

RUSSIAN NATIONAL COMMITTEE FOR IGCP
ANNUAL REPORT ON IGCP ACTIVITIES FOR 2014

This report informs on the Russia's activities in the IGCP projects in 2014.

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The current Committee's membership comprises twenty four members including the following Bureau members:

Mikhail A. Fedonkin (Chairman, Geological Institute, GIN RAS); Igor D. Ryabchikov (Vice Chairman, Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry, IGEM RAS); Oleg A. Bogatkov (Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry, IGEM RAS); Eric M. Galimov (Vernadsky Institute of Geochemistry and Analytical Chemistry, GEOKHI RAS); Alexander O. Gliko (Institute of Physics of the Earth, RAS); Yuri G. Leonov (Geological Institute, GIN RAS).

Projects with Russian co-leaders:

Project 587 Entity, Facies and Time – the Ediacaran (Vendian) Puzzle (2010-2014), Leaders: Mikhail Fedonkin (Russia), Patricia Vickers-Rich (Australia), Jim Gehling (Australia), Guy Narbonne (Canada)

Project 592 Continental construction in Central Asia (2012-2015), Leaders: Inna Safonova (Russia), Reimar Seltmann (UK), Min Sun (China)

Project 596 Climate Change and Biodiversity Patterns in the Mid-Paleozoic (2011-2015). Leaders: Peter Konigshof (Germany), Thomas G. Suttner (Austria), Iliana A. Boncheva (Bulgaria), Nadezhda G. Izokh (Russia), Phuong Ta Hoa (Vietnam), Thasinee Charoentitirat (Thailand), Johnny A. Waters (USA), Wolfgang Kiessling (Germany).

Project 609 Cretaceous Sea-Level Changes (2013-2017). Leaders: M. Wagnreich (Austria), X. Hu (China), S. Voigt (Germany), J.J. Rahman (Bangladesh), I.O. Yilmaz (Turkey), S. Zorina (Russia).

Project 610 From the Caspian to Mediterranean: Environmental Change and Human Response during the Quaternary (2013-2017). Leaders: V. Yanko-Hombach (Ukraine), N. Panin (Romania), M.C. Özdoğan (Turkey), O Smyntyna (Ukraine), T. Yanina (Russia)

Project 630 Permian-Triassic Climatic and Environmental Extremes and Biotic Response (2014-2018). Leaders: Zhong-Qiang Chen (China), Thomas J. Algeo (USA), Margaret L. Fraiser (USA), Steve Kershaw (UK), Jinnan Tong (China), Sylvie Crasquin (France), Michael J. Benton (UK), Guang R. Shi (Australia), Charles Henderson (Canada), Arne Winguth (USA), Paul B. Wignall (UK), Kunio Kaiho (Japan), Ghulam Bhat (India), Yuri D. Zakharov (Russia)

Russian geoscientists are members of 11 IGCP projects, including 2 started in 2014: Nos.: 587, 589, 591, 592, 596, 608, 609, 610, 628, **630**, and **632**.

This report has been prepared on the basis of the information submitted by Russian members IGCP projects in response to the Committee's request for information on 'significant' developments in 2014.

Report was not received from IGCP Project 632, as it started in 2014 and so far there have not been any significant achievements on it.

Project 587 Entity, Facies and Time the Ediacaran (Vendian) Puzzle (2010-2014).

The report was presented by acad. M.A. Fedonkin, co-leader of the project (Geological Institute RAS, Moscow)

Main results of the research activities in 2014:

- revision of 9 species of Precambrian macrofossils, previously considered as remains of Metazoa, green algae and cyanobacteria was performed. A conclusion that they represent variants of preservation of a single species *Beltanelliformis brunsae* Menner, 1974 was made. It was suggested, that *Beltanelliformis* represented microbial colonies, which were growing in extremely shallow waters of marine and desalinated basins of Late Precambrian;

- history of discovery of fossil remains of Proarticulata in the Eastern-European Platform and recent studies of this specific Vendian type of Metazoa were performed;

- the preliminary results were received from studying macrofossils collected by international paleontological expedition led by prof. P. Vickers-Rich in the north-west of the Arabian Shield in deposits of Late Precambrian Jibalah series.

- some problematic macroorganisms of the Ediacaran (Vendian) period have been studied;

- data on biostratigraphy, radioisotope dating, and chemostratigraphy of the Maikhanuul, Dzabkhan and Tsaganolom Formations in the Zavkhan basin of Western Mongolia were summarized

Publications

1. Fedonkin M.A. "Eucariotization of ancient biosphere: biogeochemical aspect" (monograph). M: GEOS (in press).

2. Fedonkin M.A. Role of hydrogen and metals in the formation and evolution of metabolic systems. Chapter 8 // Problems of Biosphere Origin and Evolution. Vol. 2 / Ed. E.M. Galimov. New York: Nona Science Publishers, Inc., 2014. P. 169–200. ISBN: 978-1-62808-346-0.

3. Ivantsov A. Yu., Grytsenko V. P., Konstantynenko L. I., Zakrevskaya M.A. Revision of the problematic Vendian macrofossils *Beltanelliformis* (= *Beltanelloides*, *Nemiana*) // Paleontol. Journ. V. 48. No 13. 2014. P. 1-26.
4. Serezhnikova E.A., Ragozina A.L., Dorjnamjaa D., Zaitseva L.V. Fossil microbial communities in Neoproterozoic interglacial rocks of Western Mongolia// Precambrian Research. 2014. V. 245. P. 66–79.
5. Serezhnikova E.A. Skeletogenesis in Problematic Late Proterozoic Lower Metazoa // Paleontological Journal. 2014. V. 48. № 14.
6. Grazhdankin D.V. Patterns of evolution of the Ediacaran soft-bodied biota // Journal of Paleontology. 2014. V. 88. No. 2. P. 269–283.
7. Zakrevskaya M.A. Paleoecological reconstruction of the Ediacaran benthic macroscopic communities of the White Sea (Russia) // Palaeogeography, Palaeoclimatology, Palaeoecology. V. 410.2014. P. 27–38.

Participation in conferences

The International Conference “The problem of the origin of life”, September 22-26, 2014, Moscow.

The following report was presented:

Fedonkin M.A. “Role of hydrogen and metals in the formation and evolution of metabolic systems”

Paleostrat-2014: Annual Assembly of the Paleontological Section of the Moscow Society of Nature Explorers. Moscow. PIN RAS. 27-29.01.2014.

The following reports were presented:

1. Ivantsov A.Yu., Vickers-Rich P., et al. “Macrofossils of Late Precambrian Ivantsov A.Yu. et al. “Macrofossils of Late Precambrian of Saudi Arabia”.
2. Serezhnikova E.A.”Skeletons of Precambrian Petalonamae and Phanerozoic sponges: does similar microstructure suggest homology?”

LX session of the Paleontological Society, dedicated to 100th anniversary of academician B.S. Sokolov. St. Petersburg, Karpinsky Russian Geological Research Institute (VSEGEI). 7-11.04.2014.

The following reports were presented:

1. Ivantsov A.Yu. and Zakrevskaya M.A. “ *Vendia sokolovi* and golden age of Proarticulata Proarticulata on microbial fields of Late Precambrian”.
2. Serezhnikova E.A. “Problematic Lower Vendian multicellular: skeleton genesis and establishment of taxa”

International Conference “Paleontology of the Central Asia and adjacent regions: to the 45th anniversary of the Joint Russian-Mongolian Paleontological Expedition (JRMPE)”. Moscow. PIN RAS, November 12-13, 2014.

The following report was presented:

Ragozina A.L. et al. “Algae (Rhodophyta, Chlorophyta, Prasinophyta), cyanobacteria, and problematics of Vendian-Cambrian deposits in western Mongolia”.

Field activities:

May 17-June 21, 2014. Namibia. Vendian macrofossils on the Huib-Hoch plateau (farm Aar and others). Extensive material of several species of Namibian fossil association, including iconic for Namibia *Ernietta platoensis*, was collected.

July, 3-26, 2014 Siberian Platform. Late Vendian macrofossils from Yudoma Group of Uchur-Maya region. Typical outcrops of Late Precambrian Yudoma Group on Maya and Yudoma River were studied.

July 6-22, 2014. Arkhangelsk district, Onega Peninsula, investigations of the paleontology and lithology of vendian deposits.

Project 589 Development of the Asyan-Tethyan Realm (2012-2016)

The report was presented by Pospelov I.I. (Geological Institute RAS, Moscow)

The main results of the research activities in 2014

- In 2014 the “Tectonic Map of Northern-Central-Eastern Asia and Adjacent Areas, scale 1:2,5M” was published in St.Petersburg, Russia. Authors: S.Shokalsky I.Pospelov et al. This map is the result of the 6-years international cooperation of the Russian, Chinese, Mongolian, Kazakhstan and South Korean geologists. This map was compiled by the aegis of the Commission for the geological map of the World (O.Petrov and S.Shokalsky – Subcommission for Northern Eurasia, I.Pospelov - Secretary General of Subcommission for Tectonic maps). This map reflects the new data on tectonics and geology (stratigraphy, magmatism) of the Asian Tethyan Domain and includes the digital data on age, chemical composition of the geological bodies, kinematic characteristics of the faults. This map is the basis for composition of the paleotectonic reconstructions for the Asian Tethyan Realm, and evolution of the South Eurasia and Eastern Gondwanaland in Paleozoic and Mesozoic.

Publications

Tectonic Map of Northern-Central-Eastern Asia and Adjacent Areas, scale 1:2,5M // Editors-in-Chief: O.Petrov, Yu.Leonov et al., Executive editors: S.Shokalsky, I.Pospelov et al., Authors: S.Shokalsky I.Pospelov et al. – Saint-Petersburg, VSEGEI Printing House, 2014. – 15 sheets.

Participation in conferences:

International Workshop Meeting “Regional Geology of Southeast Asia and East Tethys” (October 13-17, 2014, Beijing, China).

The following report was presented:

Pospelov I.I. “Tectonic map of Northern-Central-Eastern Asia and Adjacent Areas and Explanatory Note - Tectonics of the Northern, Central and Eastern Asia”.

Double-sided Chinese-Russian Meeting “Tectonics of Asia”(October 18-21, 2014, Beijing China)

The following report was presented:

Pospelov I.I. “Tectonics of Asian mobile belts – growth from Pacific and Tethyan Domains”. “

Project 591 Early to Middle Paleozoic Revolution (2011-2015)

The report was submitted by A.V. Dronov (Geological Institute RAS, Moscow).

Main results of the project activities in 2014:

- In the year 2014 in the framework of the IGCP 591 project, the activities were carried out on Ordovician stratigraphy of the Siberian platform. The absolute of zircon crystals from volcanic ash beds was dated in the Baksian regional stage (Upper Ordovician) of the Siberian platform. Zircon crystals provide $^{206}\text{Pb}/^{238}\text{U}$ age of 450.58 ± 0.27 Ma. This dating does not contradict to the position of the Baksian regional stage in the regional Stratigraphic scale but suggests the longer duration of the stage than it was previously supposed. There were also analyzed the geographical distribution of the volcanic ash beds on the Siberian paleocontinent. The conclusion was that the source of volcanic ash was near the western (in present day orientation) margin of the Siberian platform;
- new data were obtained on stratigraphical distribution of acritarchs in the Upper Ordovician succession of the Siberian platform were analyzed. There are some endemic species in the acritarch assemblages. But remarkable percentage of the acritarchs widespread outside Siberian palaeocontinent in the studied Siberian assemblages give the obtained palinological material strong potential for improvement of interregional correlations and correlations with the International Stratigraphic scale. Abundance of species typical for Gondwana and its margins demonstrates support for previously made conclusion on the cool-water nature of the Upper Ordovician of the Siberian platform;
- carbon isotope curves for the Middle and Upper Ordovician sections along the Kuluymbe and Parcamennaya Tunguska rivers were analyzed. The curves are also compared with the curve for the Baltoscandian succession of the same age. The data supports a conclusion that the boundary between the Middle and Upper Ordovician in Siberia should be placed not at the base of the Chertovskian regional stage but a little bit lower at the upper part of the Kirensk-Kudrino regional stage.

Publications

1. Huff, W.D., Dronov, A., Sell, B., Kanygin, A.V. & Gonta, T.V. 2014. Traces of explosive volcanic eruptions in the Upper Ordovician of the Siberian Platform. *Estonian Journal of Earth Sciences*. P. 1-8. (in press).
2. Elena Raevskaya & Andrei Dronov. 2014. New data on acritarchs from the Upper Ordovician of the Tungus basin, Siberian Platform. *Estonian Journal of Earth Sciences*. P. 1-6. (in press).
3. Leho Ainsaar, Peep Mannik, Andrei Dronov, Olga Izokh, Tonu Meidla, Oive Tinn. Carbon isotop stratigraphy and conodonts of the Middle-Upper Ordovician succession in Tungus Basin, Siberian Craton. 2014. *Palaeoworld*. P. 1-6. (in press).

Participation in conferences:**The 4th Annual IGCP 591 Meeting, Tartu, Estonia, June 9-19, 2014.**

The following reports were presented:

1. Dronov, A., Timokhin, A. and Kanygin, A. "Ordovician succession at Moyero River, Siberia: preliminary results of recent investigations"
2. Huff, W.D., Dronov, A., Sell, B., Kanygin, A.V. & Gonta, T.V. "Traces of explosive volcanic eruptions in the Upper Ordovician of the Siberian Platform"
3. Raevskaya, E. & Dronov, A. "New data on acritarchs from the Upper Ordovician of the Tungus basin, Siberian Platform".
4. Ivanovskaya, T. & Dronov, A." Glauconite in the Cambrian-Lower Ordovician succession of the East Baltic"
5. Lindskog, A., Schmitz, B., Cronholm, A. & Dronov, A." Enhanced concentrations of extraterrestrial chromite in Middle Ordovician strata at Lynna River, northwestern Russia".

LX session of the Paleontological Society, dedicated to 100th anniversary of academician B.S. Sokolov. St. Petersburg, Karpinsky Russian Geological Research Institute (VSEGEI). 7-11.04.2014.

The following report was presented:

A.V. Dronov, V.B.Kushlina." First findings of *Cruziana* and *Rusophycus* in the Ordovician of the Anabar region and its significance for palaeogeography".

Activities planned for 2015:

In 2015 it is planned to participate in the 12th International Symposium on the Ordovician System which will be held in June 3-17, 2015 in Harrisonburg (USA).

Project 592 Continental construction in Central Asia (2012-2015),

Main results of research activities in 2014, submitted by I.Yu. Safonova (IGM SB RAS, Novosibirsk)

- Identification of juvenile versus recycled crust domains in the western (Altai, Junggar, Tianshan), southern (Beishan, Dunghuang) and eastern (Inner Mongolia) CAO, which showed both juvenile and recycled domains in the Kyrgyz Tianshan and dominantly juvenile domains in Altai and Beishan;
- timing of the main stages of granitoid and mafic magmatism over the whole CAO showing peaks in the late Neoproterozoic (mafic), Cambrian-Ordovician, Devonian and Triassic (granitoid) and indicating the late Permian closure of the Paleo-Asian Ocean;

- deep mantle dynamics greatly contributed to the continental construction in the CAOBS through Meso-Cenozoic intra-plate continental volcanism (Junggar, Transbaikalia, Mongolia, East China) related to hydrous-carbonated plumes generated in the mantle transition zone and triggered by the oceanic subduction, tectonic erosion and arc subduction at Pacific-type convergent margins surrounding Laurasia and Eurasia;

- new data on the formation ages and genesis of gold, PGE, porphyry and iron deposits contributed to the understanding of metallogenesis and evolution of the whole CAOBS;

- comparison with the modern western Pacific showed that the CAOBS is dominated by P-type orogenic belts because it hosts numerous localities of granitoids with juvenile isotope characteristics, blueschists derived from MORB and OIB protoliths, accreted carbonate-capped OIBs and other OPS units, huge granitoid batholiths and boninites.

Publications

1. Cai, K.D., Sun, M., Xiao, W.J., Buslov, M.M., Yuan, C., Zhao, G.C., Long, X.P., 2014. Zircon U-Pb geochronology and Hf isotopic composition of Paleozoic granitoids in Russian Altai Mountain, Central Asian Orogenic Belt. *American Journal of Science*, 314, 580-612.. Fedotova, A.A., Razumovskiy, A.A., Khain, E.V., Anosova, M.O., Orlova A.V., 2014. Late Neoproterozoic Igneous Complexes of the Western Baikal–Muya Belt: Formation Stages. *Geotectonics* 48, 292–312.
2. Glorie, S., Buslov, M., Safonova I., Zhimulev F., 2014. Provenance of Early Paleozoic sediments at the southwestern margin of the Siberian Craton: insights from detrital zircon U-Pb geochronology. *Journal of Asian Earth Sciences* 82, 115-123.
3. Konopelko, D., Biske, G., Seltmann, R., Petrov, S.V., Lepekhina, E., 2014. Age and petrogenesis of the Neoproterozoic Chon-Ashu alkaline complex, and a new discovery of chalcopyrite mineralization in the eastern Kyrgyz Tien Shan. *Ore Geology Reviews* 61, 175–191.
4. Kröner, A., Kovach, V., Belousova, E., Hegner, E., Armstrong, R., Dolgoplova, A., Seltmann, R., Alexeiev, D.V., Hoffmann, J.E., Wong, J., M. Sun, Cai, K., Wang, T., Tong, Y., Wilde, S.A., Degtyarev, K.E., Rytsk, E., 2014. Reassessment of continental growth during the accretionary history of the Central Asian Orogenic Belt. *Gondwana Research* 25, 103-125.
5. Kurganskaya, E.V., Safonova, I.Yu., Simonov, V.A., 2014. Geochemistry and petrogenesis of suprasubduction volcanic complexes of the Char strike-slip zone, eastern Kazakhstan. *Russian Geology and Geophysics* 55, 69–84.
6. Plotinskaya O. Yu., Grabezhev A.I., Groznova E.O., Seltmann R., Lehmann B., 2014. The Late Paleozoic porphyry–epithermal spectrum of the Birgilda–Tomino ore cluster in the South Urals, Russia. *Journal of Asian Earth Sciences* 79, 910-931.
7. Safonova I., 2014. The Russian-Kazakh orogen: an overview and main debatable issues. *Geoscience Frontiers* 5, 537-552.
8. Safonova I., Maruyama, S., 2014. Asia: a frontier for a future S Amasia. *International Geology Review* 59, 1051-1071.
9. Safonova, I., Seltmann, R., Sun, M., Xiao, et al., 2014a. Continental construction in Central Asia (IGCP#592): 2013 Meetings and Training Activities. *Episodes* 37, 15-21.

10. Safonova I., Kojima, S., Nakae, S., Romer, R., Seltmann, R., Sano, H., Onoue, T., 2014b. Oceanic island basalts in accretionary complexes of SW Japan: Tectonic and petrogenetic implications. *Journal of Asian Earth Sciences*,
11. Safonova, I., Litasov, K., Maruyama, S. (in press). Triggers and sources of volatile-bearing plumes in the mantle transition zone. *Geoscience Frontiers*.
12. Sharkov, E., Lebedev, V., Chugaev, A., Zabarinskaya, L., Rodnikov, A., Sergeeva, N., Safonova, I. (in press). The Caucasian-Arabian segment of the Alpine-Himalayan collisional belt: Geology, volcanism and neotectonics. *Geoscience Frontiers*;
13. Shatov, V.V., Moon, C., Seltmann, R., 2014. Discrimination between volcanic associated massive sulphide and porphyry mineralisation using a combination of quantitative petrographic and rock geochemical data: A case study from the Yubileinoe Cu–Au deposit, western Kazakhstan. *J. Geochemical Exploration* 147, 26–36.
14. Simonov V.A., Mikolaichuk A.V., Safonova I.Yu., Kotlyarov A.V., Kovyazin S.V. (in press). Late Paleozoic–Cenozoic intra-plate continental basaltic magmatism of the Tianshan–Junggar region in the SW Central Asian Orogenic Belt. *Gondwana Research*;
15. Xiao, W., Zhang, Z., Safonova I., 2013 (not included into the 2013 report). International Field Trip and Workshop “Beishan Orogen in NW China: accretionary tectonics, magmatism, eclogite and granulite complexes”. *Episodes* 36, 295-297.
16. Yang, G., Li, Y., Safonova, I., Yi, S., Tong, L., Seltmann, R., 2014b. Early Carboniferous volcanic rocks of West Junggar in the western Central Asian Orogenic Belt: implications for a supra-subduction system. *International Geology Review* 56, 823-844.

Participation in conferences:

In 2014, IGCP#592 participated in organization of **6 scientific meetings**, including Russia, (Ekaterinburg, August, 1-14, and in Novosibirsk, August, 17-20), China (Xi’an, April 26-28; Kunming, August 19-22, and Beijing, September 19-23), and Turkey (Trabzon, May 21-23), totally about 260 participants (speakers) from **47** countries (including authors of abstracts) submitted their results.

IGCP#592 participants joined several **field work** missions in China, Japan, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, and Uzbekistan, totally 130 participants.

Field training courses, schools, and lectures for **young scientists** have been organized in Japan, China, Kazakhstan, Russia and Turkey. About 300 young scientists participated in them.

Activities planned for 2015

1. XIX INQUA Congress, IGCP#592 linked Session #21 “Arid” Central Asia”, Nagoya University, Nagoya, Japan, July 27 – August 2, 2015;
2. XVIII International Congress on the Carboniferous and Permian (ICCP 2015), Kazan Federal University, Kazan, Russia, August 11-15, 2015;

3. “The 1st Chinese-Russian Conference on the Central Asian Orogenic Belt and IGCP#592 Workshop” and Field Trip to Inner Mongolia; Institute of Geology and Geophysics CAS, Beijing, China; September 24-25, 2015.
4. 13th Conference “Geodynamic evolution of the lithosphere of the Central Asian Orogenic Belt (from ocean to continent)”, Institute of the Earth’s Crust SB RAS, Irkutsk, Russia, October 15-18, 2015.
5. The 2015 IAGR Annual Convention and 12th “Gondwana to Asia” International Conference and Field Trip to the Kanto area, the University of Tsukuba, Tsukuba, Japan; October 21-25, 2015.
6. The IGCP#592 International Conference “From Central Asia to the Circum-Pacific” and Field Trips to South China and Chinese Altai; University of Guangzhou, Guangzhou, China, October 27-29, 2015.

Project 596 Climate Change and Biodiversity Patterns in the Mid-Paleozoic (2011-2015).

The report was presented by Dr. Izokh N.G., project co-leader (Institute of Petroleum Geology and Geophysics, Siberian Branch RAS, Novosibirsk)

The main results of the research activities in 2014:

- Distribution of conodonts in Famennian (Upper Devonian) strata of Taimyr and North Siberia (Stolb Island, Lena River delta, north of Selenyakh Ridge) has been analyzed. Similarity in composition of studied associations represented by cosmopolitan Lower Famennian taxa was revealed. Among the predominant are *Palmatolepis* characterized relatively deep sedimentary environments;
- new regional stratigraphic chart for the Lower, Middle and Upper Devonian of the Salair-Kuznetsk paleobasin was worked out. Regional stages (= horizons) were defined based on the cyclicity in sedimentation;
- revision of the localities of nine Siberian species of *Protodouvillina*, reconstruction of their phylogeny and modern regional zonation by this brachiopod genus were done based on the new stratigraphic data. Analysis of the stratigraphic ranges of *Protodouvillina* species revealed development of morphological features through time as well as prospective phylogenetic relations;
- new conodont association from the Tournaisian, Lower Carboniferous of Salair was found. It is represented by cosmopolitan taxa *Pseudopolygnathus multistriatus* Mehl et Thomas, *Neopolygnathus communis* (Branson et Mehl), *Clydagnathus darensis* Rhodes, Austin et Druce et *Mestognathus groessensi* Belka, characterize shallow-water *typicus-isosticha* Zone. The Lower- Middle Tournaisian boundary interval correspond to Middle Tournaisian global Event (*typicus-isosticha* Zone base).

Publications

1. Izokh N.G. Upper Devonian conodonts from the Arctic Siberia // Interekspo Geo-Siberia-2014: X International conference “Subsurface management. Mining. New trends and techniques for prospecting, exploration and exploitation of mineral resources. Geoecology” (Novosibirsk, April 8-18, 2014). – Novosibirsk: SGGa, 2014. – Vol. 1. – P. 35-36.

2. Izokh N.G., Yazikov A.Yu. The Stratigraphic chart of the Lower Devonian of Salair // Correlation of Altaids and Uralids: magmatism, metamorphism, stratigraphy, geochronology, geodynamics and metallogeny: Proceedings of the Second Russian-Kazakh International scientific meeting. Novosibirsk, 1-4 April 2014). – Novosibirsk: SB RAS, 2014. – P. 67-68.
3. Yazikov A.Yu. Brachiopods and biostratigraphy of the Middle Devonian of the folded margins of the Kuznetsk Basin // Candidate Dissertation abstract – Novosibirsk: IPGG SB RAS, 2014. 19 p.
4. Yazikov A.Yu., Izokh N.G. Frequency of ecosystem rearrangements in the Early and Middle Devonian of the Salair // Proceedings of LX Session Paleontological Society of the Russian Academy of Sciences (April 7-11, 2014, St. Petersburg). St.-Pb. : Publishing House of VSEGEI, P. 147-148.
5. Yazikov A.Yu., Izokh N.G. Crises of ecosystems in the Lower and Middle Devonian of Salair// Interekspo Geo-Siberia-2014: X International conference “Subsurface management. Mining. New trends and techniques for prospecting, exploration and exploitation of mineral resources. Geoecology” (Novosibirsk, April 8-18, 2014). – Novosibirsk: SGGA, 2014. – Vol. 1. – P. 241-244.
6. Yazikov A.Yu., Izokh N.G. Devonian biostratigraphy of Salair // Geology, geophysics and mineral resources of Siberia: Proceedings of 1st scientific Conf. V. 1. - Novosibirsk: SNIIGGiMS, 2014. P. 254-258.
7. Yazikov A.Yu., Izokh N.G., Sobolev E.S. The Stratigraphic chart of the Middle Devonian of Salair // Correlation of Altaids and Uralids: magmatism, metamorphism, stratigraphy, geochronology, geodynamics and metallogeny: Proceedings of the Second Russian-Kazakh International scientific meeting. Novosibirsk, April 1-4, 2014). – Novosibirsk: SB RAS, 2014. – P. 185-186.
8. Yazikov A.Yu. Middle Devonian brachiopod associations of Salair // Interekspo Geo-Siberia-2013: X International conference “Subsurface management. Mining. New trends and techniques for prospecting, exploration and exploitation of mineral resources. Geoecology” (Novosibirsk, April 8-18, 2014). – Novosibirsk: SGGA, 2014. – Vol. 1. – P. 35-36.
9. Yazikov A.Yu. Phylogeny of the Siberian species of the genus *Protodouvillina* (brachiopods, Devonian// Interekspo Geo-Siberia-2013: X International conference “Subsurface management. Mining. New trends and techniques for prospecting, exploration and exploitation of mineral resources. Geoecology” (Novosibirsk, April 8-18, 2014). – Novosibirsk: SGGA, 2014. – Vol. 1. – P. 231-235.
10. Izokh N.G., Andreeva E.S. Upper Devonian and Lower Carboniferous conodont biostratigraphic markers in the south West Siberia // Interekspo Geo-Siberia-2013: X International conference “Subsurface management. Mining. New trends and techniques for prospecting, exploration and exploitation of mineral resources. Geoecology” (Novosibirsk, April 8-18, 2014). – Novosibirsk: SGGA, 2014. – Vol. 1. – P. 37-40.

Project 608 Asia-Pacific Cretaceous Ecosystems (2013-2017)

The report was presented by Kirillova G.L.(Institute of Tectonics and Geophysics DVO RAS)

Main results of research activities in 2014:

- Late Mesozoic provenances of the East Asian continental margin were reconstructed based on U-Pb geochronology of the clastic zircons and sedimentary tectonic settings in the Bureya sedimentary basin from lithochemical data;

-based on the analysis of the stratigraphic range of the *Buchia* assemblages in the Komsomolsk section, Amur River, their succession has been established which is consistent with the zonal *Buchia* scales of many regions of Arctica. The presence of Tethys ammonites in the section is testimony to the existence relations between the Tethys and Pacific;

- a wide development of riftogenic processes was supported by a comparative analysis of the Cretaceous continental margin fragments in SE Russia and NE China;

- the evolutionary change of Cretaceous ecosystems of south-eastern continental margin of Russia has been studied.

Publications

1. Kirillova G.L. Reconstruction of the provenances of the East Asian continental margin during the Late Mesozoic from U-Pb isotope geochronology of fragmental zircons // Reports of the Russian Academy of Sciences, 2014, V. 456, N 4, pp. 448-450 (in Russian).
2. Medvedeva S.A. Mesozoic sandstones and the reconstruction of tectonic depositional environments in the Bureya sedimentary basin, Far East // Russian Journal of Pacific Geology, 2014. V. 8, N 4, pp. 300-314 (in English).
3. Razvoziaeva E.P., Kirillova G.L., and Prokhorova P.N. Comparative analysis of the fragments of the Mesozoic continental margin of East Asia: the Kyndal depression, Bureya Basin, Russia, and the Suibin depression, Sangjiang Basin, China // Russian Journal of Pacific Geology, 2014. V. 8, N 6, pp. 404-422 (in English).
4. Urman O.S., Dzyuba O.S., Kirillova G.L., and Shurygin B.N. *Buchia* faunas and biostratigraphy of the Jurassic-Cretaceous boundary deposits in the Komsomolsk section (Russian Far East) // Russian Journal of Pacific Geology, 2014. V. 8, N 5, pp. 300-312 (in English).
5. Medvedeva S.A. Lower Cretaceous deposits of the Sikhote-Alin: matter composition and geochemistry // Cretaceous system of Russia and near abroad: Problems of stratigraphy and paleogeography/ Proceedings of the Seventh Russian scientific conference with international participation, 10-15 September 2014, Vladivostok: Dalnauka, 2014. P. 210-213.
6. Kirillova G.L. Cretaceous ecosystems of southeastern continental margin of Russia and their evolution // Cretaceous system of Russia and near abroad: Problems of stratigraphy and paleogeography/ Proceedings of the Seventh Russian scientific conference with international participation, 10-15 September 2014, Vladivostok: Dalnauka, 2014. P.145-148.
7. Krapiventseva V.V. Composition and cyclicity of the Cretaceous deposits of the Bureya Basin as to oil presence, Far East of Russia // Cretaceous system of Russia and near abroad: Problems of stratigraphy and paleogeography/ Proceedings of the Seventh Russian scientific conference with international participation, 10-15 September 2014, Vladivostok: Dalnauka, 2014. P.174-176.
8. Prokhorova P.N., Razvoziaeva e.P. Petroleum prospects of the Cretaceous deposits of the Bureya Bureya Basin from the thermal history modeling // Cretaceous system of Russia and near abroad: Problems of stratigraphy and paleogeography/ Proceedings of the Seventh Russian scientific conference with international participation, 10-15 September 2014, Vladivostok: Dalnauka, 2014. P. 264-267.

9. Medvedeva S.A. Geochemical specific features of Mesozoic terrigenous rocks of the Bureya sedimentary basin // Geological processes in the environments of subduction, collision, and sliding of the lithosphere plates: Proceedings of the Second Russian conference with international participation, Vladivostok, 17-20 September 2014. Vladivostok: Dalnauka, 2014. P. 76-79.
10. Kirillova G.L. Tectono-sedimentological model for formation of the Cretaceous East Asian margin of southeastern Russia // Geological processes in the environments of subduction, collision, and sliding of the lithosphere plates: Proceedings of the Second Russian conference with international participation, Vladivostok, 17-20 September 2014. Vladivostok: Dalnauka, 2014. P. 70-71.
11. Prokhorova P.N., Razvozhajeva E.P. 1D model of thermal evolution of the Kyndal graben, Bureya sedimentary basin // Geology and mineral resources of NE Russia: Proceedings of the Russian scientific-practical conference, 1-3 April 2014. Yakutsk, 2014. P. 389-392.
12. Medvedeva S.A. Sandstone composition and reconstruction of Mesozoic tectonic settings of sedimentation in the Bureya sedimentary basin, Russia // Tectonics of foldbelts of Eurasia: similarities, differences, peculiarities of the modern mountain formation, regional generalizations: Proceedings of XLVI Tectonic meeting. V. 1. M.: GEOS, 2014. P. 266-270.
13. Kirillova G.L., Obzhirov A.I., Gresov A.I. Gas hydrates of the Bureya Basin (Far East) // Gas hydrates in the Earth ecosystem: Proceedings of the Russian conference, 7-10 April 2014, Novosibirsk, 2014. P. 36.

Participation in conferences:

The Second International Symposium on IGCP Project 608 (September 4-6, 2014, Tokyo, Japan)

The following report was presented:

Kirillova G.L. "Cretaceous ecosystems of southeastern continental margin of Russia and their evolution".

Project 609 Cretaceous Sea-Level Changes (2013-2017).

The report was submitted by S.O Zorina (Research Institute of Geology and Industrial Minerals, Kazan) and Yu.D.Zakharov (Far East Geological Institute, DVO RAS, Vladivostok)

Main results of research activities in 2014:

-The models of mechanisms responsible for the formation of sedimentary successions in the platformal sedimentary basins were constructed on interpretation of the consequences of geological processes characterized by different vectors and amplitudes. Three of these processes are most important: eustasy, vertical movements ("tectonic noise"), and the depositional gradient;

-a methodical approach to identifying major abiotic events in the siliciclastic succession accumulated in the shallow epicontinental basin on the Eastern Russian Platform during the Early Cretaceous was presented by S.O.Zorina. On the basis of a reliable chronostratigraphic framework a comparison between global and regional sea level curves was undertaken. The intervals during which the global and regional sea level curve trends are similar correspond to a predominance of eustasy in the particular basin. Alternatively, tectonic activity dominates during intervals when there is no similarity between the trends of the global and regional sea level curves.

-new data on microstructure and isotopic composition of some cephalopod and bivalve molluscs from the Upper Cretaceous of North America (South Carolina, South Dakota, and Tennessee) and Europe (Poland and northern Germany) have been obtained.

Publications

1. Zorina S.O. The Sediment Accommodation Space and Sedimentary Successions in Platformal Basins: Mechanisms of Formation. *Doklady Earth Science*. 2014. V.455. Part. 2. P. 399-402. DOI: 10.1134/S1028334X14060099
2. Zorina S.O. Sedimentation regime and accommodation space in the Middle Jurassic–Lower Cretaceous on the eastern Russian Plate. *Russian Geology and Geophysics*. 2014. V. 55. P.1195–1204. DOI: 10.1016/j.rgg.2014.09.005
3. Zorina S.O. Eustatic, tectonic, and climatic signatures in the Lower Cretaceous siliciclastic succession on the Eastern Russian Platform. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 2014. Vol.412. Pp.: 91-98. DOI: 10.1016/j.palaeo.2014.07.029
4. Zorina, S.O., 2014. Mesozoic platform megasequences in the eastern part of the Russian Plate. In: Rocha, R., Pais, J., Kullberg, J.C. & Finney, S. (eds.), STRATI 2013 – First International Congress on Stratigraphy: At the Cutting Edge of Stratigraphy. Springer International Publishing, pp. 821–824.
5. D., Tanabe K., Safronov P.P., Smyshlyaeva O.P. 2014. New data on microstructure and isotopic composition of some cephalopods from the Upper Cretaceous of North America and Europe: significance for oxygen isotope palaeotemperature measurements. *Denesia*, N. Ser. 157, vol 32, p. 113-132.

Participation in conferences:

The Second Workshop of IGCP 609 and Earthtime-EU Sequence Stratigraphy Workshop (August 23-31, 2014, Bucharest, Romania).

The following report was presented:

Zorina S.O. “Modeling of accommodation and siliciclastic sedimentation mechanisms in platformal sedimentary basins”.

4th International Palaeontological Congress (September 28 – October 3, 2014, Mendoza, Argentina)

The following report was presented:

Zakharov Yu.D. ”The history of life: a view from the Southern Hemisphere”

Field trips were conducted after the conference to the Eastern and Southern Carpathians to observe sections with black shales, red beds, and turbidites, shallow sections with fauna, volcanic deposits; UNESCO Dinosaur Geopark was also visited.

The activities planned for 2015

The 3-rd workshop on Project 609 is planned to be held in Nanjing, China, in September 5–11, 2015.

Project 610 From the Caspian to Mediterranean Environmental Change and Human Response during the Quaternary (2013-2017)

The report was prepared by T.A. Yanina (Moscow State University)

Main results of research activities in 2014:

- The cores material from the Northern Caspian Sea is studied. On the basis of the received results the history of the Caspian Sea in the Late Pleistocene is specified and detailed: new data on the age of the Khvalynian deposits of the Northern Caspian Sea according AMS 14C dating are executed; the existence of the Gircanian transgression is proved;
- the biostratigraphic scheme of the Holocene of the Iranian coast of the Caspian Sea has been made;
- detailed paleogeographic reconstruction of the Holocene of the Volga delta on the basis of palynological data were carried out;
- the current status and paleostages of the Caspian Sea is considered as a potential evaluation tool for climate model simulations.

Publications

1. Svitoch A., T. Yanina, E. Badyukova, B. Sheikhi. Biostratigraphy of the marine Holocene on the Iranian coasts of the Caspian Sea // *Quaternary International*, 2014.
2. Yanina T. The Ponto-Caspian region: Environmental consequences of climate change during the late Pleistocene // *Quaternary International*, 2014. Vol. 345. P. 88–99.
3. Yanina T. Stratigraphy of the Caspian Sea Neopleistocene, based on *Didacna Eichwald* mollusks // STRATI 2013. First International Congress on Stratigraphy. At the Cutting Edge of Stratigraphy. Springer Geology. Springer International Publishing, Switzerland, 2014.
4. Yanina T.A., Svitoch A.A. Stratigraphy and paleogeography of the Caspian Neopleistocene // *Stratigraphy and sedimentology of oil-gas basins*. 2014. Vol. 1, no. 1. P. 157–161.
5. Yanina T.A., Sorokin V.M., Bezrodnykh Yu.P. Girkanian epoch in the Pleistocene history of the Caspian Sea // *Stratigraphy and sedimentology of oil-gas basins*. 2014. Vol. 1, no. 1. P. 153–156.
6. Sorokin V., Yanina T., Guilderson T., Bezrodnykh Yu., Kuprin P. Age of the Khvalynian deposits of the Northern Caspian Sea according AMS 14C dating // *Stratigraphy and sedimentology of oil-gas basins*. 2014. Vol. 1, no. 1. P. 135–137.
7. Makshaev R., Svitoch A., Yanina T., Badyukova E., Khomchenko D., Oshepkov G. New data on the Khvalynian history of the Ergeni Bench of Kalmykia // *Stratigraphy and sedimentology of oil-gas basins*. 2014. Vol. 1, no. 1. P. 122–124.
8. Büyükmeriç Y., Wesselingh F.P., Alçiçek M.C., Anistratenko V., Yanina T. At the doorstep of the Pontocaspian and Mediterranean: Mollusc faunas from the Marmara gateway in the Quaternary // *Stratigraphy and sedimentology of oil-gas basins*. 2014. Vol.1, no.1, P. 28-30.
9. K. Richards, N. Bolikhovskaya, R. Hoogendoorn et al. Reconstructions of deltaic environments from Holocene palynological records in the Volga delta, northern Caspian Sea // *Holocene*. 2014. Vol. 24, no. 10. P. 1226–1252.

10. Badyukova E. Baery knolls - a key to the Caspian Sea history in the late Neopleistocene // *Stratigraphy and sedimentology of oil-gas basins*. Special issue devoted to IGCP 610 plenary conference and field trip "from the Caspian Sea to Mediterranean: environmental change and human response during the Quaternary. 2014. no.1, P. 20–22.

11. Kislov A., Panin A., Toropov P. Current status and palaeostages of the Caspian Sea as a potential evaluation tool for climate model simulations // *Quaternary International*. 2014. Vol. 345. P. 48–55.

12. Kislov A., Panin A., Toropov P. Present-day variations and paleodynamics of the Caspian Sea level as a standard for climate modelling data verification // *Russian Meteorology and Hydrology*. 2014. Vol. 39, no. 5. P. 328–334.

Participation in conferences:

Second plenary meeting on Project 610 (October 12-20, 2014, Baku, Azerbaijan).

8 reports were presented

The International school-conference of young scientists "Climate change and environment of northern Eurasia: analysis, forecast, adaptation"(September, 2014, Kislovodsk, Russia)

The following report was presented:

Yanina T.A."System of the Caspian Sea in the conditions of global climate changes of a neopleistocene"

Field works were conducted:

1. In different natural and historical regions of Azerbaijan
2. In Kalmykiya and Lower Volga Area.

Project 628 The Gondwana Map Project (2013-2016)

The report was presented by I.I.Pospelov (Geological Institute RAS, Moscow)

The main results of project activities in 2014:

In 2014, the International Geoscience Programme (IGCP) Scientific Board (UNESCO-IUGS) by the IGCP-628 Project the leaders of Project (Co-leaders: Renata Schmitt, Alan Collins, Maarten De Wit, Colin Reeves, Edison Milani, Philippe Rossi and Umberto Cordani) prepared the first draft of the Geological Map of Gondwana (150 Ma).

Participation in conferences:

The 1st Workshop Meeting on the Project IGCP 628 Paris, in CGMW (Maison du Geologie) February 17, 2014, before General Assembly of the Commission for the Geological Map of the World (CGMW). 15 participants (Brazil, France, Russia, Netherlands).

GONDWANA-15 International Conference, Madrid, Spain, 13-18 July, 2014. As on previous occasions, the conference dealt with the Gondwana supercontinent from accretion in the Early Paleozoic until break-up in the Early Mesozoic. All members of the IGCP Project 628 have taken a part in the working group and composed of the working plan for 2015 – 2017.

Project 630 Permian-Triassic Climatic and Environmental Extremes and Biotic Response (2014-2018)

The report was presented by Yu.D.Zakharov (Far East Geological Institute FarEast Branch RAS, Vladivostok)

Main results of research activities in 2014:

- Data were obtained on different patterns of recovery between the benthic and nektonic faunas following mass extinction at the Permian-Triassic boundary (on the basis of data from the Lower Triassic of Far East (South Primorye) and Middle Asia (Kazakhstan, Mangyshlak); - the ammonoid genus *Churkites*, a typical representative of the early Olenekian assemblage (*Anasibirites nevolini* Zone) in South Primorye, is reported in the top part of the famous Tri Kamnya section located on the western coast of the Ussuri Gulf;
- new species of flemingitid ammonoids from the Lower Substage of the Olenekian Stage of South Primorye have been described;
- well-preserved foraminifera (*Ammodiscus* sp.) from the Lower Triassic *Anasibirites nevolini* Zone in South Primorye have been described.

Publications

1. Bondarenko, L.G., Zakharov Yu.D., and Barinov, N.N. 2014. The first find of well-preserved foraminifera in the lower Triassic of Russian Far East. *Albertiana*, no. 41, p. 34-38.
2. Zakharov Yu.D., Biakov A.S., Horachek M. 2014a. Global correlation of basal Triassic layers in the light of the first carbon isotope data on the Permian-Triassic boundary in Northeast Asia. *Russian Journal of Pacific Geology*, vol. 8, no. 1, p. 1-17.
3. Zakharov Yu.D., Bondarenko L.G., Popov A.M. 2014. Lower Triassic stratigraphic units of Southern Primorye. Paper 1: First records of ammonoids of the genus *Churkites* on the coast of the Ussuri Gulf. *Russian Journal of Pacific Geology*, vol. 8, no. 6, p. 3-15.
4. Zakharov Yu.D. and Popov A.M. 2014. Recovery of brachiopod and ammonoid faunas following the End-Permian crisis: additional evidence from the Lower Triassic of the Russian Far East and Kazakhstan. *Journal of Earth Science*, vol. 25, no. 1, p. 1-44.

Participation in conferences:

The 4th International Paleontological Congress (September 28- October 3, 2014, Mendoza, Argentina)

The following report was presented:

Zakharov Yu.D., Biakov A.S., Richoz S., Horachek M. "Global correlation of *Otoceras* beds in the light of the first carbon-isotope data on the Permian-Triassic boundary in Siberia".

The activities planned for 2015

Next IGCP 630 Meeting is planned to be held in Kazan, Russia, in Aug. 11-15, 2015 (jointly with XVIII International Congress on the Carboniferous and Permian).

IGCP Committee's Activities in 2014

During 2014 the Russian National Committee for Geosciences maintained contacts with the Commission of the Russian Federation for Unesco. There were also close interactions with Russian members of IGCP projects.

The Committee also sustained the IGCP Committee website.

A handwritten signature in black ink, appearing to read "M. Fedonkin" with a stylized flourish at the end.

Mikhail A. Fedonkin

Academician

Chairman of the Russian National Committee for Geosciences

IGCP Projects, in which Russian scientists participated in 2014

Project 587 Entity, Facies, and Time – the Ediacaran (Vendian) Puzzle
(2010-2014);

Project 589 Development of the Asian Tethyan Realm (2012-2016);

Project 591 Early to Middle Paleozoic Revolution (2011-2015);

Project 592 Continental construction in Central Asia (2012-2015);

Project 596 Climate Change and Biodiversity Patterns in the Mid-Paleozoic
(2011-2015);

Project 608 Asia-Pacific Cretaceous Ecosystems (2013-2017)

Project 609 Cretaceous Sea-Level Changes (2013-2017)

Project 610 From the Caspian to Mediterranean: Environmental Change and Human Response
during the Quaternary (2013-2017)

Project 628 The Gondwana Map Project (2013-2017)

Project 630 Permian-Triassic Climatic and Environmental Extremes and Biotic Response (2014-
2018)

Project 632 Continental Crises of the Jurassic (2014-2018)

