



Annual Report* of IGCP Project No. 592

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A LIST OF PUBLICATIONS HAS TO BE ADDED AS AN ANNEX.

***REMINDER: IF THIS IS THE FINAL YEAR OF YOUR PROJECT, PLEASE SUBMIT A REVIEW ARTICLE ABOUT YOUR PROJECT TO THE IUGS JOURNAL 'EPISODES'.**

The scientific information in this report will further be used for publication on the IGCP website hosted at UNESCO (please feel free to attach any additional information you may consider relevant to the assessment of your project).

IGCP project short title: "Continental construction in Central Asia"

Duration: 2012-2015

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Abbreviations used in the report: CAOB – Central Asian Orogenic Belt; IAGR – International Association for Gondwana Research; IAGOD - International Association on the Genesis of Ore Deposits; CERCAMS - Centre for Russian and Central Eurasian Mineral Studies; CUGS – China University of GeoSciences; IGG CAS – Institute of Geology and Geophysics, Chinese Academy of Sciences; IGM SB RAS – Institute of Geology and Mineralogy, Siberian Branch, Russian Academy of Sciences; MDSG – Mineral Deposits Study Group; NHM – Nature History Museum, OPS – Ocean Plate Stratigraphy; PAO – Paleo-Asian Ocean; WP – western Pacific.

1. Website address(es) related to the project

<http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/international-geoscience-programme/igcp-projects/deep-earth/project-592/> - UNESCO-IGCP site
<https://sites.google.com/site/igcp592/home> or <http://igcp592.igm.nsc.ru> - official IGCP#592 site
<http://www.conferencenet.org/conference/iccd.htm> - website of Meeting #1, Xi'an, China
<http://www.convergentmargins.com/> - website of Meeting #2, Trabzon, Turkey
<http://conf.uran.ru/default.aspx?cid=12ips> – website of Meeting #3, Yekaterinburg, Russia
<http://www.igm.nsc.ru/granites2014/index.php> – website of Meeting #4, Novosibirsk, Russia
<http://www.14iaqod.org/en/> – website of Meeting #5, Kunming, China
http://www.iagrhomepage.com/zb_users/upload/2014/9/IAGR_2014Program_0916final.pdf - link to the materials of Meeting#6, Beijing, China
<http://www.igm.nsc.ru/labs/lab212/~safonova/english/safonova-index-engl.htm> – website of Inna Safonova
<http://www.nhm.ac.uk/cercams> - official website of the CERCAMS led by co-leader Reimar Seltnann
<http://www.earthsciences.hku.hk/people/academic-staff/prof-sun-min> - university website of co-leader Min Sun
<http://english.igg.cas.cn/rh/rd/dotp/> - institutional website of co-leader Wenjiao Xiao
<http://inqua2015.jp> - website of 2015 meeting in Nagoya, Japan
www.ICCP2015.kpfu.ru - website of 2015 meeting in Kazan, Russia
http://www.iagrhomepage.com/zb_users/upload/2014/11/IAGR_2015_convention.pdf -11th IAGR Meeting
<http://www.episodes.co.in/contents/2014/june/Vp77.pdf> - paper on 2013 results in Episodes.

2. Summary of major past achievements of the project

During the previous years (2012-2013), the IGCP-592 results addressed 1) evaluation of juvenile to recycled crust in the CAOB based on isotope geochronology and geochemistry; 2) geology, tectonics and magmatism in different segments of the CAOB; 3) assessment of accretion as part of continental construction; 4) metallogeny and formation of mineral deposits; 5) correlations between the CAOB and western Pacific (WP) based on new project results; 6) contribution of deep-mantle processes to continental growth; 7) climate change and environmental impact. During 2012-2013 we made geologic and lithostratigraphic comparisons of CAOB and WP showed both P- and C-type orogenic belts in the CAOB and highlighted the presence of OPS units in both Phanerozoic (CAOB, WP) and Precambrian accretionary orogens. Combination of U-Pb zircon ages with Nd and Hf isotopes elucidated source characteristics to show the Early-Middle Paleozoic crustal growth and a mixed character of CAOB crust despite dominating P-type orogens due to tectonic erosion. Combination of geology and petrologic modelling in studying PGE-Ni mineral deposits allowed us to highlight the formation of porphyry deposits by a subduction-related input of juvenile material and to recognize major epochs of metallogeny in CAOB related to certain geodynamic settings, e.g., the 290 Ma peak of Ni-Co sulphide mineralization related to plume-related decompression melting, ascent of melts via translithospheric faults, melt-crust interaction and, finally Cu-Ni-Co-sulphide accumulation. Multi-proxy studies of sedimentary cores showed links between tectonic activity, humidity and sedimentation and their effects on environmental and climate changes.

3. Achievements of the project this year only

3.1. General scientific achievements

In 2014, the research activities in the frame of IGCP#592 were performed in **five main fields/topics**.

- 1) *Geology, lithostratigraphy, structural/tectonic patterns and magmatism in different segments of the CAOB:*
 - i) *Russian-Kazakh Altai and East Kazakhstan (Cai et al., 2014; Chen et al., 2015; Kruk et al., 2014; Kurganskaya et al., 2014; Safonova, 2014; Wang Y. et al., 2014; Yang G. et al., 2014b);*
 - ii) *Junggar Region in NW China and SE Kazakhstan (Shen et al., 2014; Simonov et al., 2014; Yang G. et al., 2014a,b; Yin et al., 2014; Zhao et al., 2014);*
 - iii) *Kyrgyz and Chinese Tianshan (Ju et al., 2014; Klemd et al., 2014; Konopelko et al., 2014; Mao et al., 2014; Wang B. et al., 2014a,b);*
 - iv) *southern CAOB (Cai et al., 2014; Guo et al., 2014; Song et al., 2013; Tian et al., 2014; Zhang S. et al., 2014; Zhang H. et al., 2014);*
 - v) *eastern CAOB (Fedotova et al., 2014; Li et al., 2014; Lin et al., 2014; Ruppen et al., 2014).*
- 2) *Isotope Geochronology and Geochemistry:*
 - i) *formation of continental crust and timing of granitoid magmatism (Cai et al., 2014; Guo et al., 2014;*

- Konopelko et al., 2014; Kruk et al., 2014, Ed.; Mao et al., 2014; Seltmann et al., 2014; Song et al., 2014; Wang B. et al., 2014a,b; Yang G. et al., 2014a; Yang H. et al., 2014; Zhang S. et al., 2014);
- ii) evolution of convergent margins and the timing of mafic and andesitic magmatism (Lin et al., 2014; Mao et al., 2014; Tian et al., 2014; Yang G. et al., 2014b; Yin et al., 2014; Zhao et al., 2014);
- iii) juvenile vs recycled granitoid magmatism (Cai et al., 2014; Kroener et al., 2014; Wang B. et al., 2014b; Zhang H. et al., 2014, Ed.),
- iv) provenance analysis of metasediments (Glorie et al., 2014; Ruppen et al., 2014; Zhang S. et al., 2014; Zhang H. et al., 2014, Ed.);
- v) timing of deformation and metamorphism (Klemd et al., 2014; Song et al., 2014; Wang Z., 2014a,b).
- 3) Deep-mantle processes contributing to continental growth
- i) Deep-mantle dynamics (Safonova and Maruyama, 2014; Safonova et al., in press; Zhang H. et al., 2014, Ed.; Santosh et al., 2014, Ed.);
- ii) Plume magmatism (Safonova and Maruyama, 2014; Safonova et al., in press; Zhang H. et al., 2014; Santosh et al., 2014, Ed.).
- 4) Metallogeny and mineral resources
- i) PGE deposits (Anikina et al., 2014, Ed.; Santosh et al., 2014, Ed.);
- ii) porphyry and sulphide deposits (Kruk et al., 2014, Ed.; Plotinskaya et al., 2014; Seltmann et al., 2014a; Shatov et al., 2014; Han et al., 2014c);
- iii) gold deposits (Kruk et al., 2014, Ed.; Seltmann et al., 2014b; Santosh et al., 2014, Ed.);
- iv) iron deposits (Han et al., 2014a,b; Kruk et al., 2014, Ed.)
- v) metallogenesis in the CAOB (Han et al., 2014d; Seltmann et al., 2014a; Santosh et al., 2014, Ed.).
- 5) Correlations between the CAOB and western Pacific (WP) and project results:
- i) magmatism and tectonics of CAOB vs. WP convergent margins (Cai et al., 2014; Guo et al., 2014; Kurganskaya et al., 2014; Li et al., 2014; Ruppen et al., 2014; Safonova, 2014; Shen et al., 2014; Tian et al., 2014; Xiao et al., 2014)
- ii) collisional and post-collisional processes (Cleven et al., 2014; Fedotova et al., 2014; Ju and Hou, 2014; Safonova, 2014; Safonova et al., in press)
- iii) global correlations (Kroener et al., 2014; Safonova and Maruyama, 2014; Santosh et al., 2014; Sharkov et al., 2014; Xiao and Santosh, 2014)
- iv) project results and social impacts (Lee and Kim, 2014; Safonova et al., 2014; Xiao et al., 2013).

Major results of the 2014 research activities are:

1. Identification of juvenile versus recycled crust domains in the western (Altai, Junggar, Tianshan), southern (Beishan, Dunghuang) and eastern (Inner Mongolia) CAOB, which showed both juvenile and recycled domains in the Kyrgyz Tianshan and dominantly juvenile domains in Altai and Beishan.
2. Timing of granitoid and mafic magmatism showing peaks in the late Neoproterozoic (mafic), Cambrian-Ordovician, Devonian and Triassic (granitoid) and indicating the late Permian closure of the PAO.
3. Deep mantle dynamics greatly contributed to the continental construction in the CAOB 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.
4. 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 CAOB.
5. Comparison with the modern WP showed that the CAOB is dominated by P-type orogenic belts as 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.

3.2. List of IGCP project meetings/symposia and IGCP related meetings/symposia

1. "International Conference on Continental Dynamics (ICCD)", Xi'an, China; April 26-28, 2014; about 300 participants from 19 countries.
2. "International Workshop on Convergent Margins", Trabzon, Turkey, May 21-23, 2014; about 450 participants from 14 countries.
3. 12th International Platinum Symposium, Yekaterinburg, Russia, August 1-14, 2014; about 400 participants from 25 countries.
4. II International Conference and Field Trip "Granites and Earth's Evolution", Novosibirsk, Russia, August 17-

20, 2014; about 100 participants from 16 countries.

5. IGCP#592 Session “Mineral deposit systems of active continental margins: subduction, accretion to collision” at the 14th Quadrennial IAGOD Symposium “Mineral Resources: Discovery and Utilization”, Kunming, China, August 19-22, 30 participants from 4 countries;

6. The 2014 IAGR Annual Convention and 11th International Symposium on “Gondwana to Asia”, Beijing, China, about 250 participants from 21 countries.

3.3. Educational, training or capacity building activities. (in chronological order)

1. A training module on mineral deposits at the MDSG annual meeting in Oxford and methodology training for 3 Kazakh PhD students at NHM in London, UK, January 2014; supervisor: R. Seltmann.

2. A training course at East Kazakhstan Science-Technical University (EKSTU) Oskemen, Kazakhstan, March 2014; supervisor: R. Seltmann.

3. A seminar on Asia tectonics, IGM SB RAS, Novosibirsk, Russia, March 2014; supervisor: I. Safonova.

4. Best student poster challenge at Meeting#1 in Xi'an, China, April 28, 2014; 74 PG and PhD students from China, India, Japan, and Republic of Korea; supervisors: Prof. S. Tsunogae, Dr. I. Safonova.

5. Lectures of leading scientists for early-career researchers and students at Meeting#2 in Trabzon, Turkey, May, 2014 (see §3.2); supervisor: Dr. Yener Eyuboglu.

6. A field training course on mineral deposits for PhD students at EKSTU, Oskemen, Kazakhstan, June 2014; supervisor: R. Seltmann.

7. The pre-symposium workshop for students “Processes in magma chambers and genesis of ore deposits” at Meeting#3 (§3.2), Yekaterinburg, Russia, Aug. 9-10, 2014; supervisors: R. Barnes, R. Latypov.

8. Best student poster challenge at Meeting#6 (§3.2) at the CUGS, Beijing, China, Sept. 20, 2014, for 42 PG and PhD students from China, Japan, Korea, Russia; supervisors: N. Rogers, S. Glorie, E. Andreeva.

9. Short lecture courses on climate changes and environmental problems; IGM SB RAS, Novosibirsk, Russia, Sept. 27, 2014; Gifu University, Gifu, Japan, Dec. 10, 2014; supervisor: S. Krivonogov.

3.4. List of countries involved in the project (* - active this year):

Algeria*, Australia*, Austria*, Bangladesh, Belgium*, Botswana*, Brazil*, Canada*, Chile*, China*, Cote d'Ivoire*, Czech Republic*, Denmark*, Egypt*, Ethiopia*, Finland*, France*, Germany*, India*, Indonesia, Iran*, Ireland*, Israel, Italy*, Japan*, Kazakhstan*, Kyrgyzstan*, Madagascar*, Malaysia, Mongolia*, Morocco*, Myanmar, Nepal*, Netherlands*, New Zealand*, Norway, Poland*, Republic of Korea*, Romania*, Russia*, South Africa*, Spain*, Sri Lanka*, Switzerland*, Taiwan*, Tajikistan*, Thailand*, Turkey*, UK*, Ukraine*, USA*, Uzbekistan*, Vietnam* (totally 53 countries).

3.5. Participation of scientists from developing countries, and in particular young and women scientists

	<i>Total number of scientists</i>	<i>Number of male scientists</i>	<i>Number of female scientists</i>
<i>Number of participating scientists</i>	289	249	42
<i>Number of young scientists/students (<35 years old)</i>	87	73	14
<i>Number of scientists from developing countries</i>	182	159	25

The geographic position of the major areas of interest (Central and East Asia) determines the high portion of project participants from developing countries, namely, China, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, Uzbekistan, plus participants from developing countries outside the CAOB but involved into its study: India, Egypt, Iran, Thailand, Vietnam and other countries (see §3.4); about 65% of IGCP#592 participants. IGCP#592 also triggered by having a female Project Leader continued to attract participation of female scientists (42 from 8 countries) by publishing key papers under IGCP592 flag or attended our IGCP meetings (Belousova E., Dolgoplova A., Fedotova A., Guy A., Kurganskaya E., Malybaeva I., Miroshnikova A., Obut O., Plotinskaya O., Rojas-Agramonte Y., Ruppen D., Safonova I. and many others.).

Catalysed by the training modules and field courses offered by IGCP#592 (see §3.3) that took place in UK (Oxford, London), China (Xi'an, Kunming, Beijing), Russia (Novosibirsk), Kazakhstan (Oskemen) a large number of young scientists (postdocs, PhD students, specifically from LDC) became involved into our research. Prof. Reimar Seltmann and Dr. Alla Dolgoplova were successful to generate \$80,000 USD matching funds from British Council for a Researcher Links workshop on sustainable use of nature's wealth (co-sponsored by IGCP-592) that took place in Oskemen (Kazakhstan) in March 2014 and gathered young Kazakh and British scientists

(limited to early career researchers) aiming to develop bilateral and multinational cooperation projects. At a special session IGCP#592 was presented and promoted as a suitable program to seek seed-corn funding for joint research projects in the future. It was agreed to enter into preparations for an IGCP YSP (young scientist project) involving researchers from developing countries of central Asia, Russia and China, with guidance from experienced researchers from Russia, China and UK. The project is planned to be submitted in 2014/15.

Among those financially supported by IGCP#592 are about 70% female scientists and 50% young scientists. 90% of participants supported by IGCP#592 are of these 3 categories, i.e. female / young scientists and from developing countries (see below Paragraph 7 and Form III).

3.6. List of the 5 most important publications (including maps) of this year

a) could not have been published were it not for this project

1. Safonova I., 2014. The Russian-Kazakh orogen: an overview and main debatable issues. *Geoscience Frontiers* 5, 537-552.
2. Safonova, I., Seltmann, R., Sun, M., Xiao, W., et al., 2014a. Continental construction in Central Asia (IGCP#592): 2013 Meetings and Training Activities. *Episodes* 37, 15-21.
3. Safonova I., Kojima, S., Nakae, S., et al. 2014b. Oceanic island basalts in accretionary complexes of SW Japan: Tectonic and petrogenetic implications. *Journal of Asian Earth Sciences*, <http://dx.doi.org/10.1016/j.jseaes.2014.09.015>.
4. Seltmann, R., Porter, T.M., Pirajno, F., 2014. Geodynamics and metallogeny of the central Eurasian porphyry and related epithermal mineral systems: A review. *Journal of Asian Earth Sciences* 79, 810-841.
5. Xiao, W., Zhang, Z., Safonova I., 2013. International Field Trip and Workshop "Beishan Orogen in NW China: accretionary tectonics, magmatism, eclogite and granulite complexes". *Episodes* 36, 295-297.

b) related to this project

1. Kröner, A., Kovach, V., Belousova, E., et al., 2014. Reassessment of continental growth during the accretionary history of the Central Asian Orogenic Belt. *Gondwana Research* 25, 103-125.
2. Ruppen D., Knaf A., Bussien D. et al., 2014. Restoring the Silurian to Carboniferous northern active continental margin of the Mongol–Okhotsk Ocean in Mongolia: Hangay–Hentey accretionary wedge and seamount collision. *Gondwana Research* 25, 1517-1534.
3. Wang, B., Cluzel, D., Jahn, B.-M., et al., 2014. Late Paleozoic pre- and syn-kinematic plutons of the Kangguer-Huangshan shear zone: inference on the tectonic evolution of the eastern Chinese North Tianshan. *American Journal of Science* 314, 43–79.
4. Yakubchuk, A., Stein, H., Wilde, A., 2014. Results of pilot Re–Os dating of sulfides from the Sukhoi Log and Olympiada orogenic gold deposits, Russia. *Ore Geology Reviews* 59, 21–28.
5. Zhao, L., He, G., 2014. Geochronology and geochemistry of the Cambrian (~518 Ma) Chagantaolegai ophiolite in northern West Junggar (NW China): constraints on spatiotemporal characteristics of the Chingiz–Tarbagatai megazone. *International Geology Review* 56, 1181-1196.

Totally in 2014, **four** volumes of conferences materials and **58** papers in SCI peer-reviewed journals were published or accepted for publication. See the full list of publications in a supplementary attached file.

3.7. Activities involving other IGCP projects, UNESCO, IUGS or others

1. The IGCP#592 activities involved the programs of IAGR (Meeting #6 in Beijing), CERCAMS (Meeting #5 in Kunming), and Russian Mineralogical Society (Meeting #4 in Yekarinburg).
2. IGCP #592, IGCP #628 (The Gondwana Map) and IGCP#596 (Paleozoic biodiversity) co-participated in the 11th Int'l Symp. "Gondwana to Asia" (September 2014, Beijing). Two joint meetings with these IGCP projects are planned for 2015 in Tsukuba and Guangzhou.
3. Several IGCP-592 project members participate also in activities of IGCP#599 "The Early Earth" and IGCP#596 (Paleozoic biodiversity).
4. IGCP#592 co-operated with IUGS for advertising meetings (<http://iugs.org/index.php?page=2015-july>; <http://iugs.org/index.php?page=2015-august>).

3.8. Scientific Legacy: Is there a need for storage of publications, field data, and other results of the project? Do you have a clear vision concerning where the data would be stored and who will be the custodian?

We aim to publish key research in peer-reviewed journals where the papers and Data Repositories are stored by the publisher, remaining accessible online in the future. Field data and monographs/proceedings are kept according to the institutional policies for at least 15 years (IGM RAS and IGG CAS libraries; NHM London data

portal and archives and library). *The field data, including maps and samples, are kept by project participants in their labs. The custodians will be those who obtain them, first of all projects leaders.*

3.9. What tangible improvements has your project obtained? (Besides publications, we are interested to hear about improvements to research, scientific contacts, policy implications, etc)

The project has improved through widened cooperative research network (§3.4, 3.5), joint seminars and lecture courses (§ 3.2, 3.3), career promotion, joint field works. For more details see <http://igcp592.igm.nsc.ru>.

3.10. What kinds of activities in respect to the benefit of society and science outreach has your project undertaken?

The *social benefits* result from i) focused resource studies to understand better formation of mineral deposits and societal needs; ii) climate change related studies, and iii) training of young scientists (§ 3.3). Scientists from developing countries, young and females scientists, project participants, benefited from direct meeting attendance support (§ 7), university seminars on CAOB and WP (§ 3.3), field courses and lecture courses on mineral deposits (§ 3.2, 3.3). Along with research results on mineral resources and environmental studies (§ 3.3), this is a major social impact.

3.11. What kind of public information (media reports, etc) has your project generated? And how do you evaluate their impact?

1. Public seminar “Continental construction in Central Asia and Deep Mantle processes” at the Earth-Life Science Institute, Tokyo Institute of Technology, November 14, 2014.

2. Cross-links at the websites of IGCP#592, IGM SB RAS, CERCAMS and IAGOD.

3. Article in Geological Society of Japan News magazine on the planned joint IAGR-IGCP meeting in Tsukuba, October, 2015 (see the link of Social Impacts at <http://igcp592.igm.nsc.ru>).

4. Media news about the “International Workshop on Convergent Margins”:
<http://www.61saat.com/bolgesel/ktude-konferans-verdiler-trabzonspor-sordular-h112636.html>;
<http://www.haber61.net/calistay-icin-trabzona-geldiler-formalari-gorunce...-182597h.htm>;
<http://www.ktu.edu.tr/ktu-basinkosesi499>

5. An article about Meeting#6 mentioning UNESCO-IGCP in the CUGS website newspaper:
<http://www.cugb.edu.cn/uploadCms/outCampusHtml/2014/40100/20140924095056161259.shtml>

4. Activities planned

4.1. General goals

1. The increase the number of field trip training programs for young scientists.
 2. To finalize evaluation of juvenile to recycled crust proportions in major CAOB terranes.
 3. To organize field trips in WP regions (Japan, SE China) and launch more related publications on the Australoasian regions.

4. To trace accretionary tectonics, OPS records and mantle temperatures back to the Precambrian;

5. To provide trustworthy evaluations of the timing of ocean closures to fix the beginning of the CAOB amalgamation and of the timing of intra-plate magmatism and metallogeny to fix the end of CAOB accretionary orogeny and the beginning of whole Asia intra-continental orogeny, continental crust erosion and cratonization.

4.2. Tentative list of specific meetings and field trips (please list the participating countries)

1. XIX INQUA Congress, IGCP#592 linked Session #21 “Arid” Central Asia”, Nagoya University, Nagoya, Japan, July 27 – August 2, 2015; Australia, Canada, China, Czech, Germany, Japan, India, Iran, Russia, UK, USA; <http://ingua2015.jp/>

2. XVIII International Congress on the Carboniferous and Permian (ICCP 2015), Kazan Federal University, Kazan, Russia, August 11-15, 2015; Australia, Canada, China, Czech, Germany, Japan, India, Iran, Russia, UK, USA; www.ICCP2015.kpfu.ru

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; Australia, China, France, Germany, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan; September 24-25, 2015.

4. 2nd International Workshop on Tethyan Orogenesis and Metallogeny in Asia (IWTOMA) and Silk Road Higher Education Cooperation Forum Wuhan, China, October 2015
<http://www.iwtoma.org/user/www.iwtoma.org/en-us/>.

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; Australia, Canada, China, Czech, Germany, Japan,

India, Russia, UK, USA; October 21-25, 2015.

6. The IGCP#592 International Conference “From Central Asia to the Circum-Pacific” and Fields Trips to South China and Chinese Altai; University of Guangzhou, Guangzhou, China; Australia, China, France, Germany, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Uzbekistan; October 27-29.

Attach any information you may consider relevant

Project materials, conference proceedings, photos and related publications all are available either at <http://igcp592.igm.nsc.ru> or at <https://sites.google.com/site/igcp592/>, or upon request to igcp592@gmail.com or to inna@igm.nsc.ru. The supplementary attached is the full list of IGCP#592 2014 publications.