

INVITATION LETTER for JpGU-AGU Joint Meeting 2018

March 20th, 2018

Dr. Inna Safonova
Novosibirsk State University
Pirogova St. 1, Novosibirsk
630090, Russia

Dear Dr. Inna Safonova,

On behalf of the Japan Geoscience Union, it gives me great pleasure to invite you to make a presentation at JpGU Meeting 2018, which will be held from May 20th to May 25th, 2018 at Makuhari Messe, Chiba, Japan. The meeting's program and other details is available online at http://www.jpqu.org/meeting_e2018/.

We confirm that you are an convener of Session U-02 "Pacific-type orogeny: from ocean to mantle" and that your invited talks "Tectonic erosion at Pacific-type convergent margins: evidence from the western Central Asian Orogenic Belt" (Abstract #C003561), "Systematization and importance of accretionary complex geology" (Abstract #C003450) and "Tectonic erosion and subduction of continental materials to mantle transition zone: The role of volatiles and heat-producing components for plume generation" (Abstract #C003594) were accepted for this session.

We would be very glad to welcome you at our meeting.

We look forward to seeing you soon.

Please contact us at office@jpqu.org, if you have any questions.

Sincerely yours,



Hisayoshi Yurimoto
Japan Geoscience Union
Earth, Planets and Space Sciences

Hisayoshi Yurimoto
2017 JpGU-AGU Joint Meeting Chair

Japan Geoscience Union
2-4-16 Yayoi, Bunkyo-ku, Tokyo
113-0032, Japan
Tel: +81-3-6914-2080
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Professor Tatsuki Tsujimori

Center for Northeast Asian Studies/ Dept. Earth Science, Tohoku University
41 Kawuchi, Aoba-ku, Sendai, Miyagi, 980-8576 Japan
Phone: +81-22-795-3614, -4236
Email: tatsuki@tohoku.ac.jp



To: Dr. Inna Safonova
Novosibirsk State University
Pirogova St. 2,
Novosibirsk-90,
Russia

May 1, 2018

Dear Dr. Safonova,

We invite you to come to Japan in a period from May 18 to June 3, 2018 for participating in the GP-EES Workshop "Earth, Sea and Sky III: International Joint Graduate Program Workshop in Earth and Environmental Sciences" in Tohoku University (May 28–29, 2018) and the JpGU Meeting 2018 (May 20–24, 2018) to manage an international session "Pacific-type orogeny: From ocean to mantle" in Chiba. We will provide some financial support for airfare and accommodation in Sendai and we would also expect you to give an invited talk in both GP-EES and the JpGU.

The workshop is co-hosted by The International Joint Graduate Program in Earth and Environmental Sciences, Tohoku University and JSPS-DFG Japanese-German Graduate Externship for Research on Deep Earth Volatile Cycle. Moreover the session in JpGU 2018 will be organized in the frame of the Mega -grant Project #14.Y26.31.0018 "A multidisciplinary study of Pacific-type orogenic belts and development of a holistic model linking evolution of oceans, their active margins and mantle magmatism" supported by the Ministry of Education and Science of the Russian Federation.

If you have any questions of concerns, or if I may be of assistance in any way, please do not hesitate to contact me.

Sincerely,
Tatsuki Tsujimori



Professor, Tohoku University

INVITATION LETTER for JpGU Meeting 2018

May 9, 2018

Dr. Inna Safonova
Novosibirsk State University

Dear Dr. Inna Safonova,

On behalf of the Japan Geoscience Union (JpGU), it gives me great pleasure to invite you to make a presentation at the JpGU Meeting 2018, which will be held from May 20th to May 24th, 2018 at Makuhari Messe, Chiba, Japan. The program and other details of the meeting are available online at http://www.jpgu.org/meeting_e2018/.

Session ID : U-02
Session Title : Pacific-type orogeny: from ocean to mantle
Abstract Title : Tectonic erosion at Pacific-type convergent margins: evidence from the western Central Asian Orogenic Belt

We would be very pleased to welcome you at our meeting.

We look forward to seeing you soon.

Please contact us at office@jpgu.org, if you have any questions.

Sincerely yours,



Yoshiaki Saito
JpGU Meeting 2018 Chair

Japan Geoscience Union
2-4-16 Yayoi, Bunkyo-ku, Tokyo
113-0032, Japan
Tel: +81-3-6914-2080
Email: office@jpgu.org
URL: <http://www.jpgu.org/en/index.html/>

ACCEPTANCE LETTER for JpGU Meeting 2018

May 9, 2018

Dr. Inna Safonova
Novosibirsk State University

Dear Dr. Inna Safonova,

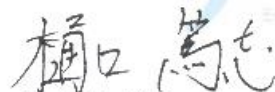
I am pleased to inform you that your abstract has been accepted by the Program Committee of the JpGU Meeting 2018, to be held from May 20th to May 24th, 2018 at Makuhari Messe, Chiba, Japan.

For more information please visit the following website:

http://www.jpgu.org/meeting_e2018/

Session ID and Title : U-02 Pacific-type orogeny: from ocean to mantle
Presentation Title : Tectonic erosion at Pacific-type convergent margins: evidence from the western Central Asian Orogenic Belt
Name of Author : Inna Safonova, Shigenori Maruyama, Pavel Kotler, Alina Perfilova
Name of Presenter : Inna Safonova
Presentation Schedule : May 24, 2018 14:45-15:00
Presentation Format : Oral Presentation

Sincerely yours,



Atsushi Higuchi
JpGU Meeting 2018 Program Committee Chair

2-4-16 Yayoi, Bunkyo-ku, Tokyo
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URL: <http://www.jpgu.org/en/index.html/>



THE MINISTRY OF EDUCATION AND SCIENCE
OF THE RUSSIAN FEDERATION

PROGRAM 220 RESEARCH PROJECT 14.Y26.31.0018



N* Novosibirsk
State
University
*THE REAL SCIENCE

Tectonic erosion at Pacific-type convergent margins: evidence from the western Central Asian Orogenic Belt

Inna Safonova^{1,2}, Shigenori Maruyama^{1,3}, Pavel Kotler^{1,2},

Alina Perfilova^{1,2}

1 - Novosibirsk State University, Novosibirsk, Russia

2 - Institute of Geology and Mineralogy SB RAS, Novosibirsk, Russia

3 - Earth-Life Science Institute, Tokyo, Japan



JpGU2018

日本地球惑星科学連合 2018 年大会

May 20 - 24, 2018

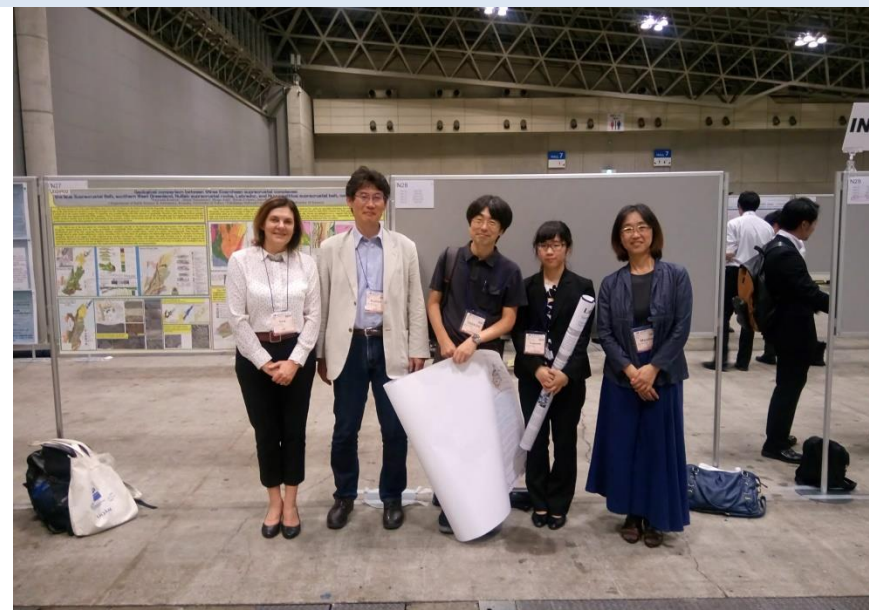
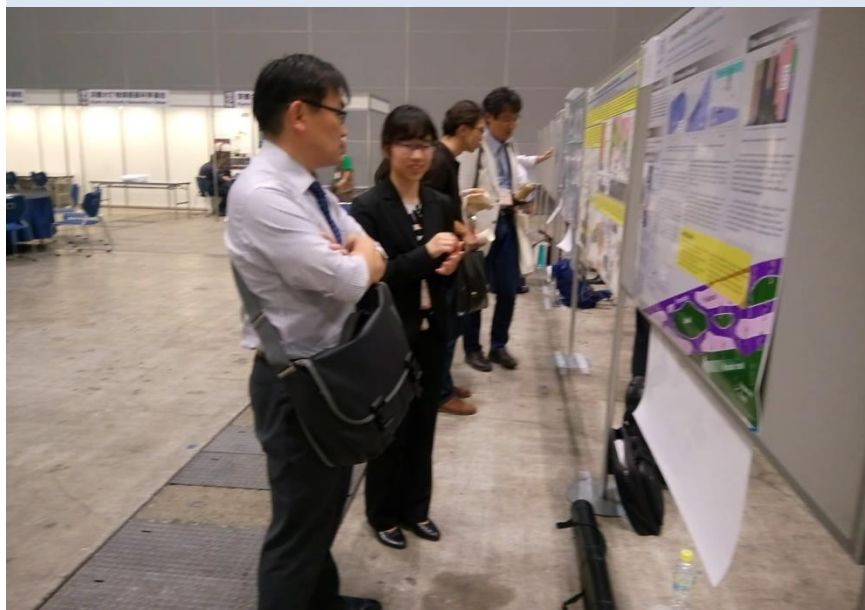
Makuhari Messe

Chiba, Japan

JpGU-2018. Session “Pacific-type orogeny: from ocean to mantle”



Conveners: Inna Safonova, Tatsuki Tsujimori, Yukio Isozaki, Tsuyoshi Komiya





Earth, Sea, and Sky III: International Joint Graduate Program Workshop in Earth and Environmental Sciences

co-hosted by Tohoku University GP-EES and JSPS-DFG Japanese-German Graduate Externship program

環境・地球科学国際共同大学院ワークショップ

東北大学 環境・地球科学国際共同大学院—独立行政法人日本学術振興会日独共同大学院プログラム共催

Location and Dates

Tohoku University Aobayama Campus Science Complex A
May 27–29, 2018

Program

May 28 (Mon)

Introduction 9:00-9:10 at Science Complex A A204
QE & Poster session 9:10-17:40 at Science Complex A (A204, A205 & 2F Hall)
Discussion 18:00-20:00 at AOSIS

May 29 (Tue)

9:00~ 9:10 Opening Remarks (T. Suga)
<Volcanology > (chair: T. Kozono)
9:10~ 9:40 Shanaka de Silva (Oregon State Univ.)
9:40~ 10:10 Georg Zellmer (Massey Univ.)
10:10~ 10:30 Coffee Break
10:30~ 11:00 Fidel Costa (Earth Observatory of Singapore, Nanyang Technological Univ.)
11:00~ 11:30 Satoshi Okumura (Tohoku Univ.)

11:30~ 13:00 Poster Session & Lunch Break (@ 2F Hall, Science Complex A)

<High-pressure mineral physics and Geochemistry> (chair: N. Hirano)

13:00~ 13:30 Tatsuki Tsujimori (Tohoku Univ.)
13:30~ 14:00 Inna Safonova (Novosibirsk State Univ.)
14:00~ 14:30 Daniel Frost (Bayerisches Geoinstitut, Univ. of Bayreuth)
14:30~ 14:50 Coffee Break
<Seismology and Tectonics> (chair: N. Uchida)
14:50~ 15:20 Stephen Kirby (U.S. Geological Survey)
15:20~ 15:50 Hisashi Nakahara (Tohoku Univ.)
15:50~ 16:20 Marcel Thielmann (Bayerisches Geoinstitut, Univ. of Bayreuth)
16:20~ 16:40 Coffee Break

<Oceanography> (chair: H. Iwabuchi)

16:40~ 17:10 Bo Qiu (Univ. of Hawaii at Mānoa)
17:10~ 17:40 Shusaku Sugimoto (Tohoku Univ.)

17:40~ 17:50 Closing Remarks (T. Obara)

Registration fee

Free (On-site registration)

Please Visit <http://igge-sci.tohoku.ac.jp/en/2018/05/07/post-1046/> for more detail.

Earth, Sea and Sky III:

International Joint Graduate Program Workshop in Earth and Environmental Sciences
co-hosted by The International Joint Graduate Program in Earth and Environmental Sciences, Tohoku University and JSPS-DFG Japanese-German Graduate Externship for Research on Deep Earth Volatile Cycle
May 27-29, 2018, Tohoku University Aobayama Campus

Tectonic erosion at Pacific-type convergent margins: evidence from the western Central Asian Orogenic Belt

INNA SAFONOVA^{1,2}, SHIGENORI MARUYAMA^{1,3},
PAVEL KOTLER¹, ALINA PERFILOVA¹

¹Novosibirsk State University

²Sobolev Institute of Geology and Mineralogy SB RAS

³Earth-Life Science Institute, Tokyo Institute of Technology

Pacific-type convergent margins (PCM) and their related orogenic belts exist/form over subduction zones. PCM are places of major continental growth by island-arc juvenile magmatism and accretion, but they are also places of strong plate interactions and crust destruction. Accordingly there are two contrast types of PCM: accreting ones accompanied by the formation of accretionary complexes, and eroding ones accompanied by the tectonic erosion of accretionary wedge, fore-arc prism and volcanic arc and even by direct subduction of intra-oceanic arcs (Safonova et al., 2015). PCM are the only ways on the Earth surface to deliver surface materials to the deep mantle. The longer are the periods of tectonic erosion and subduction, the larger will be the volume of the material arriving to the mantle. Therefore, it is very important to highlight the periods of tectonic erosion in fossil PCMs to evaluate the amount of the surface material eroded in the past.

The objectives of our study were Pacific-type orogenic belts of the Central Asian Orogenic Belt (CAOB). There are dozens of accretionary complexes formed during the late Neoproterozoic-early Paleozoic (Transbaikalia, Alta-Sayan, central Kazakhstan, N. Tianshan), the Middle Paleozoic-early Carboniferous (S. Tianshan, East Kazakhstan, Mongolia); the late Carboniferous-Permian (Sikhote-Alin), and the Triassic-Neogene (Russian Far East). The most promising areas of tectonic and subduction erosion in the CAOB are eastern and central Kazakhstan, northern Tianshan and Transbaikalia (Safonova et al., 2017).

We have sampled and studied greywacke and/or turbiditic sandstones in three orogenic belts of the CAOB: the Char ophiolite belt and the Zharma arc terrane in eastern Kazakhstan, and Imnarundy ophiolite/accretionary belt in central Kazakhstan. In total, we analyzed 11 samples for bulk rock geochemistry and U-Pb detrital zircon ages and four samples for Hf-in-zircon isotopes. The rocks have andesitic to dacitic major element composition. The samples from Char, Zharma and

Imnarundy (early stage) have andesitic major element compositions; they yielded unimodal distributions of U-Pb ages peaked at 340-320 and 390-340 (Char), 350-330 (Zharma) and 470-450 (Imnarundy-1) Ma suggesting their intra-oceanic arc origin. More evidence for this comes from their positive Hf values -5.5-16.7, 7.2-15.2, 9.2-17.6, respectively—and the occurrence of sparse outcrops of volcanic rocks possessing supra-subduction geochemical affinities. In addition, the Char samples show positive epsilon Nd values: 6.0-7.6. Two younger samples from Imnarundy-2 have dacitic compositions and yielded multi-model U-Pb age probability curves peaked at 500-480, 1000-900, and 2500-2400 Ma suggesting a continental arc origin. Thus, on the one hand, the unimodal U-Pb age probability curves and the positive epsilon Nd and Hf values suggest an Ordovician intra-oceanic arc in the Imnarundy-1 area, and a late Devonian and possibly two early Carboniferous arcs in east Kazakhstan. On the other hand, the scarcity of outcrops of supra-subduction rocks suggests that those arcs were tectonically eroded during oceanic subduction.

The work was supported by the Ministry of Science and Education of Russia, project # 14.Y2631.0018.

References

- [1] Safonova, I., Maruyama, S., Litavov, K. (2015). Generation of hydrous-carbonate phases in the mantle transition zone linked to tectonic erosion and subduction. *Tectonophysics* 662, 454-471.
- [2] Safonova I., Maruyama, S., Krak N., Obut O., Kotler P., Gavryushkina O., Khrounykh S., Kubikla M., Krivonogov S., in press. Pacific-type orogenic belts: linking evolution of oceans, active margins and intra-plate magmatism. *Episodes*.

Field trip excursion to the Narugo-Onikobe area of modern volcanism:
ingimbrites, caldera-fill deposits, geyser, geothermal power plant, "Green Tuff"



Earth, Sea and Sky III: International Workshop, Tohoku University

