

## 15<sup>th</sup> International Workshop on WATER DYNAMICS Deeper and Hotter in Frontier Earth

Venue: GSES, Aobayama Campus, Tohoku University

All talks are invited

13th AM

### Lab Tour (for visitors)

10:00 Arc Hotel Pick Up

10:30-11:45 Lab Tour at Research Building

### ZAO Session (蔵王セッション)

13th AM

(Closed Session and all of talks and discussion are in Japanese)

Contact WD organizing Committee (wd\_org@geoserv.kankyo.tohoku.ac.jp)

### New GSES building Lecture Hall

Time	No.	Speaker	Title	Chairman
9:30-9:35		Akio Goto Tohoku University	Session Overview	N. Tsuchiya
9:35-9:50	1	Akio Goto Tohoku University	Field survey report on Zao Volcano (2012-2017)	
9:50-10:05	2	Nobuo Hirano Tohoku University	Depth profile of "Okama" crater lake of Mt. Zao	
10:05-10:20	3	Atsushi Watanabe SEQSENSE	Autonomous Depth Mapping of Mt.Zao Okama Crater Lake by a Portable Semi-submersible Unmanned Surface Vehicle	
10:20-10:35	4	Kengo Sawayama Tohoku University	Geochemistry of Mt. Zao, Maruyamazawa and Okama (crater lake)	
10:35-10:50	5	Tetsuya Matsunaka Kanazawa University	Iodine isotopic composition in water from the crater lake and fumarolic area at Zao volcano.	
10:50-11:05	6	Miwa Kuri Tohoku University	Response of residents to volcanic hazard information: a case study of the 2015 Zao Volcano warning	
11:05-11:20	7	Masao Ban Yamagata University	Eruption history of Goshikidake, Zao	
11:20-11:35	8	Mare Yamamoto Tohoku University	Geophysical observations at Zao volcano, Japan	
11:35-11:50	9	Jun Okada JMA	Recent geothermal and seismovolcanic activity of Zao volcano	

12:00-12:50		Lunch	Aoba Memorial Building (Four Seasons)	
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**Tuesday, March 13th, 2018**

**New GSES building Lecture Hall**

<b>Time</b>	<b>No.</b>	<b>Speaker</b>	<b>Title</b>	<b>Chairman</b>
<b>Opening</b>				
13:15-13:20		Noriyoshi Tsuchiya Tohoku University	WS Framework	<b>N. Tsuchiya</b>
13:20-13:25		Noriaki Watanabe Tohoku University	Safety Information	
<b>High Temperature Geothermal Project 1</b>				
13:25-13:45	1	Hiroshi Asanuma FREA-AIST	Outline of Japanese Supercritical Geothermal Development, one of the most promising development options of JBBP	<b>N. Watanabe (TU)</b>
13:45-14:05	2	Noriyoshi Tsuchiya Tohoku University	Supercritical Geothermal Reservoir -Scientific and Engineered Perspective-	
14:05-14:50	3	Thomas Kretzschmar CICESE	THE MEXICAN CENTER ON INNOVATION IN GEOTHERMAL ENERGY- POSSIBILITIES FOR INTERNATIONAL	
			Discussion on Mexican Project: International Collaboration	
14:50-15:05		Break		
<b>High Temperature Geothermal Project 2</b>				
15:05-15:50	4	Ruggero Bertani Enel Green Power	The First Results of the DESCRAMBLE Project	<b>H. Asanuma FREA-AIST</b>
			Discussion on Italian Project: What is the K- horizon?	
15:50-16:05		Break		
<b>Poster Introduction</b>				
16:05-16:55		Poster	Introduction of Poster Presentation	<b>M. Uno</b>
<b>Geoapplication</b>				
16:55-17:15	5	Leonid Aranovich Russian Academy of Science	The role of silica mobility in the origin of incipient eclogites	<b>A. Okamoto</b>
17:15-17:45	6	W F McDonough University of Maryland	Geoneutrinos and heat production in the Earth	
Poster Session untill 18:20				
18:30		<b>Workshop Banquet</b>		

## Wednesday, March 14th, 2018

### New GSES building Lecture Hall

Time	No.	Speaker	Title	Chairman
<b>Silica Solubility around Critical Point (日本語セッション)</b>				
9:00-9:30	7	Atsushi Okamoto Tohoku University	Some unsolved problems on supercritical water-rock interaction	<b>M. Uno</b>
9:30-10:00	8	Kenichi Hoshino Hiroshima University	Physicochemical properties of brine	
10:00-10:30	9	Hiroshi Sakuma NIMS	Dielectric constant of NaCl-H <sub>2</sub> O fluid at elevated temperatures and pressures studied by molecular dynamics simulations	
10:30-10:45		Break		
10:45-11:15	10	Takeshi Tsuji Kyushu University	Continuous monitoring of geothermal reservoirs and crustal-scale faults and volcanoes	<b>N. Tsuchiya</b>
11:15-11:45	11	Jun-Ichi Kimura JAMSTEC	Subduction zone input-output: Modeling of geochemical mass balance	
11:45-12:15	12	Dapeng Zhao Tohoku University	Hot mantle upwelling, slab dehydration and slab melting beneath Japan	
12:15-13:30		Poster Session & Lunch		
		Co-op Restraunt		
<b>Crystal Permeability</b>				
13:30-14:00	13	Takuya Ishibashi AIST-FREA	Permeability change and shear slip on rough-walled fracture caused by pressurized water injection	<b>N. Watanabe (TU)</b>
14:00-14:30	14	Hideaki Yasuhara Ehime University	Experiments and modelling of fracture permeability evolution through fluid-rock reaction under temperature, stress, and pH-controlled conditions	
14:30-15:00	15	Norihiro Watanabe AIST-FREA	Numerical simulation of supercritical geothermal reservoir formations	
15:00-15:30	16	Noriaki Watanabe Tohoku University	Hydraulic Fracturing and Permeability Enhancement under Supercritical Geothermal Conditions	
15:30-15:45		Coffee Break		
<b>Metamorphism and Volcanism</b>				
15:45-16:15	17	Tetsuo Kawakami Kyoto University	Spatiotemporal evolution of magmatic pulses and regional metamorphism during a Cretaceous flare-up event: constraints from the Ryoke belt (Mikawa area, central Japan)	<b>M. Uno</b>
16:15-16:35	18	Masaoki Uno Tohoku University	Budget of slab-derived water in arc crust: Constraints from melt-crust reaction zones and fossil caldera differentiation processes	
16:35-16:55	19	Fumiko Higashino Tohoku University	Infiltration of high Cl fluids in the middle to lower crust	
16:55-17:15	20	Dmitry Zedgenizov Russian Academy of Science	SiO <sub>2</sub> -bearing protoliths – subducted crustal source of water in sublithospheric mantle?	
17:15-17:35	21	Leonid Aranovich Russian Academy of Science	Fluid-present granulite facies metamorphism: evidence from oxygen isotopes, Porya Guba shear zone, Lapland Granulite Belt	

## Thursday, March 15th, 2018

### New GSES building Lecture Hall

Time	No.	Speaker	Title	Chairman
<b>Early Energy and Early Life</b>				
9:00-9:30	22	Takeshi Kakegawa Tohoku University	Formations of prebiotic nucleotide and peptide around Hadean juvenile crusts	<b>T. Kakegawa</b>
9:30-10:00	23	Ken-ichiro Sugitani Nagoya University	Speciation of Paleoarchean life demonstrated by analysis of the morphological variation of lenticular microfossils, from the Pilbara Craton of Western Australia	
10:00-10:20	24	Yuya Tsukamoto Tohoku University	Discovery of extraterrestrial Ni-Fe phosphides in early Archean rocks: Implication to phosphorous cycle on the early Earth	
10:20-10:50	25	Shawn McGlynn Tokyo Inst Tech	Microbial inhabitants and activity in ferrous carbonate hot springs	

11:15

**Departure for Nagatoro**

**15th-16th Excursion**

**Sambagawa Metamorphic Rocks in Nagatoro**