

# International Heat Flow Commission of IASPEI

Minutes of the IHFC Business Meeting, Prague, Czech Republic, June 30, 2015.

The IHFC Business Meeting was held on Wednesday, July 23, 2013, following the oral sessions of the symposia “S13a Terrestrial Heat Flow: Subsurface Thermal Evaluation - Resources and Signals” and “S13b Terrestrial Heat Flow: Lithosphere Heat Flow and Its Relationships with Tectonics, Seismicity and Crustal Fluid Circulation” organized by the IHFC.

## 1. Chairman Dr. Popov Greeted participants to the meeting

## 2. Chairman’s Report

### 1) A review of the IHFC history and membership

### 2) The status of the working groups

- Data banks
  - Heat Flow, Continental data, Marine data
  - Borehole temperature
- Paleoclimate
- Thermal Properties
- Outreach
- Applied Geothermics (Geothermal energy, Petroleum systems)

### 3) Evolution of IHFC Objectives

- Development of experimental and theoretical basis
- Collecting and unification of HFD data
- HFD data processing
- HFD mapping
- Data interpretation
- Crustal temperature estimations
- Paleoclimate study
- Deep drilling programs, vertical HFD variations
- Advanced equipment development
- Geothermal energy production
- Petroleum systems

### 4) Accomplishment over the past two years

- IAHS - IAPSO - IASPEI Joint Assembly “KNOWLEDGE FOR THE FUTURE” , Symposium SP2S1 “From surface heat flow mapping to geodynamic analysis and geothermal energy”, Sweden, Gothenburg 22-26 July 2013.

**Conveners:** Christoph Clauser (Germany), Yuri Popov (Russia), Valiya Hamza (Brasil), Olafur Flovenz (Iceland)

12 oral presentations, 9 poster presentations

- 26th IUGG General Assembly 2015, Tow Symposia under S13 “**Terrestrial Heat Flow**”, Prague, Czech Republic, June 22 – July 2, 2015

**Conveners:** Massimo Verdoya (Italy), Makoto Taniguchi (Japan), Valiya Hamza (Brazil)

24 oral presentations, 27 poster presentations

- Collaboration with the International Society of Rock Mechanics (ISRM)

Working group on ISRM Suggested Methods for the Thermal Property Measurements resulted in the paper “**ISRM-Suggested Methods for Determining Thermal Properties of Rock Samples**” to be published in Rock Mechanics and Rock Engineering.

Working Group Co-Chairmen: Yuri Popov and Christoph Clauser

Members: C. Williams, G. Beardsmore, S. Roy, J. Safanda

### 3. Discussions

#### 1) Proposals for IHFC symposia and workshops for IASPEI-2017 to be held in Kobe, Japan from July 30 through August 4, 2017

- Experimental geothermics (Yuri Popov)
- Development and Application of Geothermal Databases (Shaopeng Huang)
- Heat flow, thermotectonics, and geothermal energy (Valiya Hamza)

#### 2) IHFC Website

The IHFC website is currently hosted by Professor Christoph Clauser’s Applied Geophysics and Geothermal Energy group at RWTH Aachen University. Professor Clauser (IHFC Chair, 2007-2011) has asked to be released from the custodianship of the IHFC website. Dr. Derrick Hasterok of The University of Adelaide in Australia indicated earlier that he has the ownership of the domain name heatflow.org which could be the permanent home of the IHFC. Dr. Hasterok was not presented at the Business Meeting. No decision was made regarding a prospective website migration. The bureau would like to ask Professor Clauser to continue his custodianship until a successor is named.

#### 3) IHFC Heat Flow Database

Currently there were several version of the global heat flow database circulating on the internet and among research groups. One of the major tasks of the International Heat Flow Commission (IHFC) of the International Association of Seismology and Physics of the Earth’s Interior is to gather, publish, and assess quality of heat flow measurements as well as other geothermal data of interest. It has been almost a quarter century since the last published compilation and analysis of global heat flow data of Pollack et al. (1993, Rev. Geophys.) under the auspices of the IHFC. The participants agree that it is high time for a new IHFC authenticated global heat flow database, as proposed by Professors Shaopeng Huang and William Gosnold. Professor Huang will lead the effort on this subject.

#### 4) Proceedings of the Prague symposia

Dr. Vladimír Čermák (LOC Chairman of the IUGG 2015; IHFC Chairman, 1999-2003) proposed to prepare a special issue (proceedings volume) to cover papers and posters presented under the S13 symposia and to be published in some geophysical journal. The proposal was enthusiastically echoed by participants. Prospective contributors are asked to confirm their interests with preliminary titles and approximate size of contributions (number of printed pages, number of figures/tables). The plan is to submit our special issue proposal to a journal/publisher in August; if accepted, to submit all manuscripts by the end of 2015 ready for review process. Corrections and final arrangements should be finished before April/May 2016.

## 4. IHFC New Term Election (Term 2015-2019)

### Bureau

**Chairman:** Huang, Shaopeng (USA/China), [shaopeng@umich.edu](mailto:shaopeng@umich.edu);  
[shaopeng@mail.xjtu.edu.cn](mailto:shaopeng@mail.xjtu.edu.cn)

**Vice Chairman:** Verdoya, Massimo (Italy) , [verdoya@dipteris.unige.it](mailto:verdoya@dipteris.unige.it)

**Past Chairman:** Popov, Yuri (Russia) , [yupopov@dol.ru](mailto:yupopov@dol.ru)

**Secretary:** Roy, Sukanta (India), [sukanta.roy@nic.in](mailto:sukanta.roy@nic.in)

**Vice Secretary:** Beardsmore Graeme (Australia), [graeme.beardsmore@hotdryrocks.com](mailto:graeme.beardsmore@hotdryrocks.com)

### Members:

Demetrescu, Crisan (Romania)

Demezhko, Dmitry (Russia)

Foerster, Andrea (Germany)

Gosnold, William (USA)

Hamza, Valiya (Brazil)

Harris, Robert (USA)

He, Lijuan (China)

Joeleth, Argo (Estonia)

Jones, Michael (South Africa)

Kohl, Thomas (Germany)

Majorovicz, Jacek (Canada)

Manzella, Adele (Italy)

Regenauer-Lieb, Klaus (Australia)

Saar, Martin (Switzerland)

Schill, Eva (Switzerland)

Williams, Colin (USA)

## 5. New Chairman's Closing Remarks

Dr. Shaopeng Huang (University of Michigan in the USA and Xi'an Jiaotong University in China) thanked the trust of the IHFC community and expressed gratitude to the past Chair, all retired and incumbent bureau officers, and IHFC members for their extraordinary efforts in promoting geothermal research. He urged support and inputs as how to enhance the heat flow community's research strength and impact on the broad Earth science community.

## 6. Adjourn

P.S. The official IHFC Business Meeting was followed by an unofficial meeting in a bar in downtown Prague, thanks to Dr. Čermák's thoughtful arrangement. More than thirty people attend the official meeting and about 20 attended the unofficial one.

## 7. Appendix: Program of the “Terrestrial Heat Flow” Symposia

### S13 Terrestrial Heat Flow

*Convener: [Massimo Verdoya](#) (Genoa, Italy)*

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#### S13a Terrestrial Heat Flow: Subsurface Thermal Evaluation - Resources and Signals

*Convener: [Massimo Verdoya](#) (Genoa, Italy)*

*Co-convener: [Makoto Taniguchi](#) (Kyoto, Japan)*

#### Description

Evaluation of subsurface thermal regimes is important in terms of geothermal energy applications, which in their different technical aspects (electrical and direct uses, ground-source heat pumps, etc.) are becoming more prominent in the frame of the renewable and sustainable. Subsurface thermal evaluation is also important to discover the signals of climate change related to global warming. Subsurface warming occurs all over the world due to global warming and heat island effects. Signals and changes of the subsurface thermal environment can be used not only for the reconstruction of climate change, but also for the study of the effect of urbanization and/or groundwater flow. In this symposium, subsurface thermal evaluations will be discussed in terms of resources and signals.

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#### S13b Terrestrial Heat Flow: Lithosphere Heat Flow and Its Relationships with Tectonics, Seismicity and Crustal Fluid Circulation

*Convener: [Massimo Verdoya](#) (Genoa, Italy)*

*Co-convener: [Valiya Hamza](#) (Rio de Janeiro, Brasil)*

#### Description

The terrestrial heat flow constitutes the principal surface boundary constraint for inferring the thermal structure of the lithosphere and can be regarded as a piece of evidence of dynamic processes, such as extension, subduction, and thrust folding, that take place on a regional scale. Moreover, it is widely accepted that the temperatures below which deformation is accompanied by seismic activity are related to the thermally controlled brittle-ductile boundary. Circulation of fluids in crust is known to bias the lithosphere heat-flow data, which are usually interpreted under the assumption of a purely conductive thermal regime. Thus, detailed understanding of advective versus conductive heat transfer in continental and oceanic regions is crucial for a better modelling of the lithosphere thermal structure. The focus of the symposium is on advances in geothermics in relation to tectonic, rheological, seismological and crustal fluid flow processes that can contribute to improved understanding of the thermal regime of the lithosphere. We welcome contributions that describe results in experimental and theoretical works on the importance of heat transfer by conduction and by fluid flow and that explore their relationships with the main tectonic processes.

### S13 Terrestrial Heat Flow

Session

1

- 08:30 - Over two decades of ground-air temperature tracking: the effect of different land cover materials** IUGG-1090  
*Speaker: Vladimír Čermák (Czech Republic)*
- 08:45 - Geothermics of climate change – the Utah experience** IUGG-2368  
*Speaker: David Chapman (USA)*
- 09:00 - Evaluation of shallow temperature logs for urban heat island effects in Switzerland** IUGG-1035  
*Speaker: Ladislaus Rybach (Switzerland)*
- 09:15 - Anthropogenic heat fluxes into subsurface urban heat islands** IUGG-3896  
*Speaker: Susanne Benz (Germany)*
- 09:30 - Effects of subsurface warming on thermal storage in Asia** IUGG-3486  
*Speaker: Makoto Taniguchi (Japan)*
- 09:45 - South Caspian Basin: Temperature Distribution Models** IUGG-1630  
*Speaker: Abdulvahab Mukhtarov (Azerbaijan)*

### **S13 Terrestrial Heat Flow**

*Session 2*

**Room:** South Hall 3  
**Date & time:** June 30, 10:30 - 12:00  
**Room:** South Hall 3  
**Date & time:** June 30, 08:30 - 10:00

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**Convener:** Massimo Verdoya (Italy)

**Co-convener(s):** Makoto Taniguchi (Japan), Valiya Hamza (Brazil)

**Chair(s):** Yury Popov (Russia)

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**Chair(s):** Makoto Taniguchi (Japan)

**10:30 - Heat flow determinations from BHT data**

IUGG-4796

*Speaker: William Gosnold (USA)*

**10:45 - Continuous Thermal Core Logging for Reservoir Characterization**

IUGG-1856

*Speaker: Yury Popov (Russia)*

**11:00 - Interplay of porous media and fracture stimulation in Sedimentary Enhanced Geothermal Systems, Red River Formation, Williston Basin, North Dakota**

IUGG-0265

*Speaker: Caitlin Hartig (USA)*

**11:15 - CANCELLED - Geothermal energy provision in low enthalpy settings: the IRETherm project**

IUGG-5106

*Speaker: Alan Jones (Ireland)*

**11:30 - EGRT-Mobile: a new tool for evaluating in-situ thermal properties of the ground**

IUGG-2473

*Speaker: Philipp Heidinger (Germany)*

**11:45 - Scaling relations between geothermal resources and subsurface fluid accumulations: A South American Perspective**

IUGG-0372

### **S13 Terrestrial Heat Flow**

Session 3

**Room:** South Hall 3

**Date & time:** June 30, 13:30 - 15:00

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**Convener:** Massimo Verdoya (Italy)

**Co-convener(s):** Makoto Taniguchi (Japan), Valiya Hamza (Brazil)

**Chair(s):** Vladimír Čermák (Czech Republic)

**13:30 - It is high time for a new IHFC authenticated Global Heat Flow Database** IUGG-0991

*Speaker: Shaopeng Huang (China)*

**13:45 - Heat flow, thermal thickness of the lithosphere in the North China craton and geodynamical significances** IUGG-0989

*Speaker: Lijuan He (China)*

**14:00 - Terrestrial heat flow in peninsular India: unique characteristics and geodynamic implications** IUGG-0429

*Speaker: Mohanlal Gupta (India)*

**14:15 - Anomalous geothermal belts along passive continental margins of Eastern Brazil and West Africa**

*Speaker: Valiya Hamza (Brazil)*

**14:30 - Meso-Cenozoic thermal structure of lithosphere in the Bohai Bay Basin, Eastern North China Craton** IUGG-1124

*Speaker: Nansheng Qiu (China)*

**14:45 - Geotherms and thermal parameters from the Curie depth constrained solutions of the one-dimensional Steady-State Heat-Flow equation: A new method** IUGG-5358

*Speaker: Dhananjay Ravat (USA)*

### **S13 Terrestrial Heat Flow**

Session 4

**Room:** South Hall 3

**Date & time:** June 30, 16:30 - 18:00

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**Convener:** Massimo Verdoya (Italy)

**Co-convener(s):** Makoto Taniguchi (Japan), Valiya Hamza (Brazil)

**Chair(s):** Valiya Hamza (Brazil)

**16:30 - Heat flow, heat production and thermal structure in the Bundelkhand craton: implications for thermal regime beneath the northern Indian shield** IUGG-0908

*Speaker: Sukanta Roy (India)*

**16:45 - Effective mechanisms of heat transport in sedimentary basins at different scales** IUGG-2255

*Speaker: Magdalena Scheck-Wenderoth (Germany)*

**17:00 - New geothermal data and their correlation with the potential fields and deep structure by DSS profiles in Western Uzbekistan** IUGG-0486

*Speaker: Irina Sidorova (Uzbekistan, Republic of)*

**17:15 - New heat-flow observations in a hotspot swell: the Reunion-Mascarene Plateau** IUGG-1876

*Speaker: Massimo Verdoya (Italy)*

**17:30 - Temperatures and fault slips on the upper surface of the subducting Philippine Sea plate beneath the Kanto district, central Japan** IUGG-1469

*Speaker: Shoichi Yoshioka (Japan)*



**17:45 - Multiple-scale heat flow anomalies seaward of the Japan Trench associated with deformation of the incoming Pacific plate**

IUGG-2315

*Speaker: Makoto Yamano (Japan)*

### **S13 Terrestrial Heat Flow**

*Poster session (also today 18.00-19.30 & tomorrow 15.00-16.30 & 18.00-19.30)*

**Room:** Poster Area (Foyer)

**Date & time:** June 30, 15:00 - 16:30

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**Convener:** Massimo Verdoya (Italy)

**Co-convener(s):** Makoto Taniguchi (Japan), Valiya Hamza (Brazil)

**15:00 - Estimation of earth's interior heat flow from spectral analysis of aeromagnetic data of Upper Sokoto Basin, Nigeria**

S13p-393

*Poster Presenter: Levi Nwankwo (Nigeria)*

**15:00 - Meso-Cenozoic thermal-rheological structure in the Jiyang sub-basin, Bohai Bay Basin**

S13p-394

*Poster Presenter: Wei Xu (China)*

**15:00 - Thermal history reconstruction based on vitrinite reflectance and thermochronological data of the Sichuan basin, SW China**

S13p-395

*Poster Presenter: Wei Xu (China)*

**15:00 - Global analysis of heat-flow data in 2015**

S13p-396

*Poster Presenter: Francis Lucazeau (France)*

**15:00 - Measured versus calculated thermal conductivity of high-grade metamorphic rocks - inferences on the lower crust at ambient and in-situ conditions**

S13p-397

*Poster Presenter: Andrea Foerster (Germany)*

**15:00 - Heat and groundwater flow in the NE sector of the Morocco hot line**

S13p-398

*Poster Presenter: Massimo Verdoya (Italy)*

**15:00 - Quantitative analyses of groundwater flow from thermal tests and temperature logs**

S13p-399

*Poster Presenter: Massimo Verdoya (Italy)*

**15:00 - Energy Resources of the Some Geothermal Boreholes in Azerbaijan**

S13p-400

*Poster Presenter: Abdulvahab Mukhtarov (Azerbaijan)*

**15:00 - Geochemical assessment of a MgCl<sub>2</sub> heat transport fluid to evaluate the feasibility of using geothermal energy from saline systems** S13p-401

*Poster Presenter: Kayla Moore (Canada)*

**15:00 - Synthesis of subsurface temperature information and evaluation of the potential for setting up borehole heat exchanger in Obama Plain, Japan** S13p-402

*Poster Presenter: Hideki Hamamoto (Japan)*

**15:00 - Temperature and Heat Flow Data from Azerbaijan** S13p-403

*Poster Presenter: Abdulvahab Mukhtarov (Azerbaijan)*

**15:00 - "Heat flow in South Portugal- A review"** S13p-404

*Poster Presenter: Maria Rosa Duque (Portugal)*

**15:00 - " Some comments about new heat flow data obtained in West Antarctica and Greenland"** S13p-405

*Poster Presenter: Maria Rosa Duque (Portugal)*

**15:00 - Thermal logs as a tool for Darcy velocity determination** S13p-407

*Poster Presenter: Diego Barbero (Italy)*

**15:00 - Geothermal Climate Change Observatory, South India: Results from first five years of operation** S13p-408

*Poster Presenter: Sukanta Roy (India)*

**15:00 - High geothermal potential in the eastern Basin and Range, USA** S13p-409

*Poster Presenter: David Chapman (USA)*

**15:00 - Heat flow in the European Arctic region – preliminary results from a Norwegian - Russian cooperation** S13p-410

*Poster Presenter: Carmen Gaina (Norway)*

**15:00 - Present-day heat flow of the Jizhong Depression in Bohai Bay Basin, East China** S13p-411

*Poster Presenter: Jian Chang (China )*

**15:00 - "The role of hydrogeological conditions and thermophysical properties on the evaluation of geothermal exchange potential"** S13p-412

*Poster Presenter: Jessica Chicco (Italy)*

**15:00 - Shallow (0-200 m) Geothermal Atlas in Catalonia (NE-Spain)** S13p-413

*Poster Presenter: Ignacio Marzan (Spain)*

- 15:00 - Anthropogenic signals in transient components of the subsurface temperature field** S13p-414  
*Poster Presenter: Petr Dedecek (Czech Republic)*
- 15:00 - Heat flow and interstitial water chemistry in the flanks of the Oceanographer-Hayes segment of the Mid-Atlantic Ridge** S13p-415  
*Poster Presenter: Virginie Le Gal (France)*
- 15:00 - Recent earthquakes and geologically recent volcanoes in South-west Victoria, Australia** S13p-416  
*Poster Presenter: Gary Gibson (Australia)*
- 15:00 - Radiogenic heat production in paleozoic, mesozoic, and cenozoic sedimentary rocks from the central United States** S13p-417  
*Poster Presenter: Dylan Young (USA)*
- 15:00 - "Environmental pre-exploitation monitoring of Torre Alfina geothermal system (Central Italy)"** S13p-418  
*Poster Presenter: Alessandro Gattuso (Italy)*
- 15:00 - Thermal regime measured at volcanic areas in Japan** S13p-419  
*Poster Presenter: Akiko Tanaka (Japan)*
- 15:00 - New heat flow determination in northern Tarim Craton, northwest China** S13p-420  
*Poster Presenter: Shaowen Liu (China)*