

*Fourth International Workshop*

# **HEAT FLOW AND THE STRUCTURE OF THE LITHOSPHERE**

**PROGRAMME  
LIST OF PARTICIPANTS  
ABSTRACTS**

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*June 9-15, 1996  
Trest Castle, Czech Republic*

*Dear Participant of the Workshop*

*The Geophysical Institute of the Academy of Sciences is pleased to welcome you on the Fourth International Workshop on Heat Flow and the Structure of the Lithosphere, which is held under the auspices of the International Heat Flow Commission of the International Association of Seismology and Physics of the Earth Interior and the Academy of Sciences of the Czech Republic.*

*This Workshop is the fourth meeting of its kind organized by the Geophysical Institute following the successful workshops held in Liblice in 1982 and in Bechyne in 1987 and 1991 and it will focus on the major problems of the contemporary geothermics as one of the disciplines of the basic geophysical researches. In the name of the Organizing Committee of the Workshop I wish you a pleasant stay in the Trest castle and a lot of fruitful discussions.*

*Sincerely Yours*

*Vladimir Cermak*

*Praha/Trest, June 1996*

*4th International Workshop on Heat Flow and the Structure of the  
Lithosphere  
Trest castle, Czech Republic  
June 9-15, 1996*

**GENERAL TIMETABLE :**

07:30-08:15	Breakfast
08:30-10:00	Morning session 1(90 minutes)
10:00-10:30	Coffee break
10:30-12:30	Morning session 2 (120 minutes)
12:30-13:30	Lunch
14:00-16:00	Afternoon session (120 minutes)
16:00-18:30	Poster session
18:30-19:30	Dinner

**STRUCTURE OF THE WORKSHOP**

Topic 1	Heat Flow Studies - General Problems
	Chairman : D.D.Blickwell
Topic 2	Heat Flow and the Lithosphere Structure
	Chairman : D.C.Chapman
Topic 3	Regional Heat Flow Data
	Chairmen : V.Cermak and I.T.Kukkonen
Topic 4	Geothermal Modelling
	Chairmen : T.Lewis, K.Wang and U.Seipold
Topic 5	Deep drilling and Temperature Logging
	Chairmen : I.Popov, D.Probnow
Topic 6	Heat Transfer : Conduction, Convection, Rheology
	Chairmen : C.Clauser, G.Ranalli
Topic 7	Climate Change Inferred from Borehole Data
	Chairmen : H.N.Pollack, W.Gosnold and S.Putnam

## SCIENTIFIC PROGRAMME

Monday, June 10, 1996

Chairmen : D.D.Blackwell and D.S.Chapman

8:30 Welcome address

8:45-10:00 **Heat Flow Studies - General Problems**

D.D.Blackwell : Major scientific contributions of thermal studies of the 20th Century  
and rationale for the 21th Century  
followed by discussions

10:30-12:30 **Heat Flow and Lithosphere Structure**

D.S.Chapman : Introduction and Review

C.Demetrescu : Geological "correction" to surface heat flow data

short contributions : C.Clauser, W.Jacoby, M.Fernandez, S.Veliciu, T.Lewis, K.Wang,  
C.Williams, S.Hurter

14:00-16:00 General discussion to topical groups 1 and 2

16:00-17:00 preparation of posters (all participants)

17:00-18:30 poster presentations (Nos.1-7) V.Vacquier, M.Pffister, A.Joehlet,  
R.Kutas, P.Chiozzi, M.Springer, P.Whiteford

simultaneously : Shaopeng.Huang : Video demonstration of the IHFC Home pages

Tuesday June 11, 1996

Chairmen I.Kukkonen, T.Lewis, K.Wang

8:30-10:00 **Regional Heat Flow Data**

V.Cermak : Heat flow map of Europe and its interpretation

D.D.Blackwell : Heat flow pattern of North America

M.Munoz : Regional mapping of the heat flow field in South America

I.T.Kukkonen : Geothermics of the Precambrian shields

short contributions : N.Balling, I.Golovanova,

10:30-12:30 **Geothermal modelling**

K.Wang : Geothermal modelling - general problems

U.Seipold : Influence of pressure and temperature on thermal conductivity

short contributions : I.Kukkonen, T.Kohl

14:00-16:00 General discussion to topical groups 3 and 4

16:00-18:30 Poster presentations (Nos.8-29) : J.Francu, M.Fernandez, A.Fraseri,  
B.Bruszewska, E.Ramalho, R.Kutas, S.Milanovski, E.Decker, H.N.Pollack,  
M.Pffister, A.M.Jessop, S.Hurter, D.Pribnow, A.Joehlet, O.Parphenuk,  
T.Yamaguchi, C.Demetrescu, U.Seipold, H.Poelchau, J.Poort, B.Bodri.



Wednesday, June 12, 1996

Chairmen : Yu.Popov, C.Clauser, G.Ranalli

8:30 - 10:00 **Deep drilling and temperature logging**

I.Popov : Introduction and review

D.Pribnow : How does the 9km deep KTB borehole help to estimate the temperature at 30 km

10:30 - 12:30 **Heat transfer : conduction, convection, rheology**

C.Clauser : Advective vs. conductive heat transport

G.Ranalli : Heat flow and rheology in the lithosphere

short contributions : S.Franck, W.D.Gosnold, E.Salusti, M.Verdoya

12:30 - 13:15 Demonstration of the field optical scanning apparatus (by I.Popov and V.Korostelyov)

Thursday, June 13, 1996

Chairmen : D.Pribnow, C.Clauser, H.N.Pollack

8:30 - 10:00 General discussion to topical groups 5 and 6

10:30 - 12:30 : **Climate change inferred from borehole logs**

H.N.Pollack and Shaopeng Huang : In search of climate footprint : penetrating the camouflage

short contributions : J.Majorowicz, S.Huang, C.Clauser, V.Cermak

14:00 - 16:00 General discussion to topical group 7

16:00 - 18:30 Poster presentations (Nos.30-42) : T.Kohl, I.Popov, Y.Kuznetsov, J.Strehlau, P.Stulc, B.Bodri, C.Clauser, H.Lehmann, A.M.Jessop, M.Munoz

Friday, June 14, 1996

(Chairmen W.Gosnold, S.Putnam, T.Lewis)

8:30 - 10:00 **Climate change inferred from borehole logs (continued)**

T.Lewis : A review of evidence for land development causing climate warming in Eastern North America over the last two centuries

short contributions : J.Safanda, S.Putnam, R.N.Harris

10:30 - 12:30 : General discussions to topical group 7 (continued)

14:00 - 16:00 : Future cooperation in heat flow studies, joint projects and their funding: general and final discussions

16:00 - 18:30 Poster presentations (Nos.43-60) : J.Wright, J.Majorowicz, I.Golovanova, I.Kukkonen, R.N.Harris, S.Veliciu, H.N.Pollack, K.Wang, D.Rajver, I.Popov, T.Lewis, S.Putnam, C.Clauser, J.Majorowicz, W.D.Gosnold, L.Kucerova, M.Kresl, V.I.Zui.

## Social Programme :

Monday, June 10, 1996

Evening : B-B-Q dinner at 19:30 (garden of the castle)

Tuesday, June 11, 1996

20:30 (after dinner) : "ad hoc" IHFC meeting

Wednesday, June 12, 1996

13:30-14:15 : Late lunch

14:30 Sighseeing trip to historical town of Telc.

Evening : Special "surprise" event

Thursday, June 13, 1996

20:30 Evening concert (Music lounge of the castle)

Friday, June 14, 1996

Evening (20:00) : Farewell party

## CONFERENCE FEE

The conference fee includes all local costs, i.e. local transport, shuttle bus to and from Trest, accommodation and full board in the castle, conference material, free beer, coffee/tea, welcome and farewell parties, B-B-Q, concert and ladies programme.

The conference fee is to be paid on your arrival to Trest castle. The fee amounts to Kc 14,500 (Kc = Czech crown) for a delegate, and Kc 11,000 for an accompanying person (or an equivalent in US\$, DM or Sfr) paid in cash or in cheque preferably of minimum value of US \$100.-. The exchange rates are: 1 USD = Kc 27.20, 1 DEM = 18.50 Kc, 1 CHF = 22.70 Kc.

### The Address of the Castle

Zámecký hotel Třešť  
Academy of Sciences of the Czech Republic  
589 01 Třešť  
Phone : (42-66) 91 52 47, 91 52 48  
Fax : (42-66) 91 59 80

## PROGRAMME OF POSTER PRESENTATIONS :

Poster Stands, Principal Authors and Poster Titles

Monday, June 10, 1996, 17:00 - 18:30

- 1 **Victor Vacquier**  
Origin of the Earth's heat
- 2 **Martin Pffister**  
Active transtensional tectonics of NW-Anatolia : the Marmara poly-project as an interdisciplinary approach
- 3 **Peter Whiteford**  
Heat flow over the Fjordland subduction zone
- 4 **Argo Joeleht**  
Thermal properties of granulite facies rocks in the Precambrian basement of Estonia and Finland
- 5 **Roman Kutas**  
Heat flow and geothermal model of the Black Sea depression
- 6 **Paolo Chiozzi**  
Radiogenic heat production in the Variscan crust, new determinations and distributions modelks in Corsica
- 7 **Michael Springer**  
Heat flow density pattern and implications for the thermal structure of the Central Andean crust

Tuesday, June 11, 1996, 16:00 - 18:30

- 8 **Alfred Frasheri**  
Heat flow in Albania
- 9 **Ed Decker**  
Thermal studies in the environs of Creede Mining District, Southern Rocky Mountains
- 10 **Jiri Francu**  
Modelling of the thermal history in the contact area of the Bohemian Massif and West Carpathians
- 11 **Beata Brzezewska**  
Heat flow in Poland, GEOFLOG data base
- 12 **Daniel Pribnow**  
Juan de Fuca Ridge heat flow data
- 13 **Manel Fernandez**  
Heat flow and heat production in Spain
- 14 **Argo Joehlet**  
Temperature and heat flow data in Estonia
- 15 **Alan M. Jessop**  
Geothermal data compilation in Canada
- 16 **Martin Pfister**  
Geothermal reconnaissance of the Marmara Sea region (NW Anatolia)

- 17     **Roman Kutas**  
A geothermal model of the East Carpathians
- 18     **Henry N. Pollack**  
Heat flow density measurements in Africa: present status
- 19     **Svet Milanovski**  
Geological and geophysical peculiarities of the Anabar shield crust
- 20/21 **Suzanne Hurter**  
Atlas of geothermal resources in Europe
- 22     **Henry N. Pollack**  
Heat flow from the Earth's interior: Analysis of the IHFC Heat flow density database
- 23     **Jeffrey Poort**  
An integrated modelling study of the central and northern Baikal rift to assess the deep thermal structure and evaluate the surface heat flow
- 24     **Harald S. Poelchau**  
Thermal conductivity contrast due to gas saturated pore space - application in basin simulation
- 25     **Ulfert Seipold**  
A general law for thermal dependence of the thermal transport parameters of rocks
- 26     **Tohru Yamaguchi**  
Measurement of the spatial distribution of the heat production in island arc crust and oceanic crust
- 27     **Bertolan Bodri**  
A 3-D geothermal model for the Pannonian Basin, Hungary
- 28     **Crisan Demetrescu**  
Some aspects of the thermal evolution of the Carpatho-Pannonian system
- 29     **Olga Parphenuk**  
2-D modelling of thermomechanical evolution of collision belts

Thursday, June 13, 1996, 16:00 - 18:30

- 30     **Thomas Kohl**  
Thermal and hydraulic aspects of the KTB drill site
- 31     **Iouri Popov**  
Geothermic parameters of sections of the Ural and Tyumen superdeep boreholes
- 32     **Iouri Popov**  
Geothermic investigations of the Vorotilovo deep borehole section (Pucheze-Katunk impact structure)
- 33     **Yuri Kuznetsov**  
Continental lithosphere deep structure researches on the base of scientific deep drilling in Russia
- 34     **Jurgen Strehlau**  
Thermal, geologic and petrologic factors governing the depth extent of continental seismicity
- 35     **Thomas Kohl**  
Modelling of non-Darcian flow transients in fracture rocks

- 36 **Petr Stulc**  
Combined effect of topography and hydrogeology on subsurface temperatures:  
an example from the Bohemian Cretaceous Basin
- 37 **Bertolan Bodri**  
Influence of topographically driven convection on heat flow in the Swiss Alps,  
A model study
- 38 **Iouri Popov**  
Geothermic investigation of anisotropic rock massives
- 39 **Christoph Clauser**  
Simulation of fluid and heat transport in Variscan rocks paleotemperature  
mapping and hydrothermal models
- 40 **Holger Lehmann**  
Heat transfer parameter identification with forward and inverse 2-D models
- 41 **Alan M. Jessop**  
Geothermal energy from abandoned mines at Springhill, Nova Scotia
- 42 **Miguel Munoz**  
Geophysical imaging and geotemperatures in the Andean region

Friday, June 14, 1996, 16:00 - 18:30

- 43 **Ilmo T. Kukkonen**  
Anomalously low HFD in Eastern Karelia, an indication of exceptional  
paleoclimate, fluid circulation or very low crustal heat production?
- 44 **William D. Gosnold**  
The borehole temperature record of climate warming in the midcontinent of  
North America
- 45 **James Wright**  
Climate change inferred from boreholes in Botswana
- 46 **Ilmo T. Kukkonen**  
Extracting GST history from geothermal logs in a complicated structure in  
Outokumpu, Eastern Finland
- 47 **Iouri Popov**  
Impact of paleoclimate and some other factors of variations of heat flow by  
data of Russian scientific boreholes
- 48 **Serban Veliciu**  
Ground temperature history in Romania inferred from borehole temperature  
data
- 49 **Dusan Rajver**  
Climate change in Slovenia inferred from borehole temperatures
- 50 **Trevor Lewis**  
Direct effects of deforestation and high water table on ground surface  
temperatures
- 51 **Jacek Majorowicz**  
Anomalous ground warming versus surface air warming in the Canadian Prairie  
provinces
- 52 **Robert Harris**  
Borehole temperature depth measurements may provide a test of SAT time  
series and their adjustments

- 53 **Vladimir Zui**  
Climatic and hydrogeologic signatures derived from temperature logs within Belarus
- 54 **Henry N. Pollack**  
Recent climate history in Australia inferred from borehole temperatures with comparisons to the meteorologic record
- 55 **Scott Putnam**  
Cross-calibrating three climatic records
- 56 **Milan Kresl**  
Temperatures, precipitation and solar radiation monitoring in the borehole GFU in years 1994-96
- 57 **Lenka Kucerova**  
Climate areas in Europe derived from long-term meteorological records
- 58 **Kelin Wang**  
Recent ground surface warming in western and eastern Canada constrained by many boreholes
- 59 **Jacek Majorowicz**  
Cold period before the recent ground surface warming in Western Canada - Evidence from inversions of temperature logs
- 60 **Inessa V. Golovanova**  
Ground surface temperature history from the South Urals





# *"Accompanying Persons' Programme"*

Castle of Třešť, 9-15 June, 1996

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## **Monday, June 10**

- 8:30 a.m. Departure
- 10:00 a.m. Excursion to a Glass Factory at Chlum u Třeboně
- 12:00 Lunch in the town of Třeboň
- 2:00 p.m. Visit to a "Regent" brewery in Třeboň
- 5:00 p.m. Arrival to Třešť

## **Tuesday, June 11**

- 9:00 a.m. Departure
- 11:10 a.m. Excursion to a Castle of Jindřichův Hradec
- 12:30 Lunch in the Castle's restaurant
- 3:00 p.m. Visit to a Chateau of Červená Lhota
- 5:30 p.m. Arrival to Třešť

## **Wednesday, June 12**

- 9:00 a.m. Departure
- 10:00 a.m. Visit to a renaissance chateau at Dačice
- 12:00 a.m. Arrival to Třešť
- 2:30 p.m. Departure for the joint excursion to historical town of Telč, including the visit of the Telč castle

## **Thursday, June 13**

- 8:30 a.m. Departure
- 10:40 a.m. Visit to the Bítov castle, located on a spur of rock above the Dyje (Thaya) river.
- 12:30 Lunch at Bítov
- 2:40 p.m. Visit to the Vranov nad Dyjí Castle (Vranov upon Thaya)
- 5:30 p.m. Arrival to Třešť

## **Friday, June 14**

- 9:00 a.m. Departure
- 10:30 a.m. Exploring the Chýňov cave, the only one in the world formed in a marble layer (suitable sport shoes recommended)
- 12:30 Arrival to Třešť