



# CONFERENCE BROCHURE

OF THE

# GEOMATES 2019

**International Congress on Geomathematics in Earth- &  
Environmental Sciences**

**which is the 21<sup>th</sup> Congress of Hungarian Geomathematicians**

**2019**

## Organizers



Hungarian  
Geological Society  
(HGS)



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& Informatics  
Section of the HGC



MTA CSFK  
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University of  
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The South Transdanubian Regional  
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Hungarian Academy of Sciences,  
Geomathematical Subcommittee of  
Committee on Geology and the Regional  
Committee in Pécs

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## SCIENTIFIC PROGRAM

**Wednesday (15.05)** – **Short course on trend analysis** – pre-conference short course by **Dr. Manfred Mudelsee** (Venue: MTA PAB, Pécs Regional Committee of the Hungarian Academy of Sciences H-7624, Pécs, Jurusics Miklós str. 44)

09:30-10:00 **Registration**  
10:00-11:30 **Course lecture**  
11:30-11:45 **Coffee break**  
11:45-13.15 **Course lecture**  
13:15-14:00 **Lunch**  
14:00-15:30 **Course lecture/exercises**  
15:30-16:00 **Coffee break**  
16:00-18:00 **Course lecture/exercises**

### **Thursday (16.05)** –

09:00-10:25 **Registration**

10:00-10:25 **Coffee break**

10:25-10:30 **Opening ceremony** with speeches by:

**Ferenc Fedor** - President of the Geomathematical and Informatics Section of the Hungarian Geological Society

10:30-11:45 **Climate modelling past and future** – chair: István G. Hatvani

- Keynote speaker: **Manfred Mudelsee - Geological Climate Archives and Time Series Analysis**
  
- **Sándor Gulyás**      Testing chronological precision and accuracy of age-depth models built with limited available dates using geomathematical tools
- **Izsák Beatrix**      Spatial interpolation of the temporal trend of climatic elements
- **István G. Hatvani**      Limitations of spectral analysis of time series with timescale error and variable temporal resolution

11:45-13:00 **Lunch**

13:00-14:00                      **Quantitative methods in palaeontology**– chair: Attila Virág

- Keynote speaker: **József Palfy - From percentage to Procrustes: A historical review of the growing use of quantitative methods in Hungarian paleontology**
  
- **Gáspár Albert**              Datamining the Santonian dinosaur bonebed of Iharkút, Hungary
- **Attila Virág**                  Automated landmark analysis: a new methodology

**14:00-14:30 Coffee break**

**14:30-15:45 Agrarian- and environmental informatics & Geoinformatics- chair: Gábor Szatmári**

- Keynote speaker: **Tomislav Hengl - Predictive Soil Mapping using ensemble Machine Learning: automation opportunities and remaining challenges**
  
- **Diego Magalhães Borges Santanna**  
Mobility analysis of Arsenic and Lead in fluvial sediments. A study case in the Baiut Mining Area, Romania.
- **Péter Szabó**  
Investigation of geochemical-microbiological processes in the Drava River floodplain based on environmental geochemical data
- **István Elek**  
Redundancy-free topological data structures

**15:45-17:00 Mathematical aspects of reservoir geology- chair: Marko Cvetković**

- Keynote speaker: **István Nemes - Mathematical aspects of reservoir geology - a case study**
  
- **Szabolcs Borka**  
Insight into multiple-point simulation of a deep-water system, Algyó HC field, Hungary
- **János Geiger**  
Pore regimes and REV: a CT-based model for the BCF
- **Marko Cvetković**  
Lithology prediction in the subsurface using artificial neural networks on well and seismic data - a stochastic approach

**18:00-22:00 Ice breaker dinner at the Nana Bistro (Pécs, Király str. 2)**

**Friday (17.05) -**

**09:15-10:00 Conquering space - remote sensing - chair: Ferenc Fedor**

- Keynote speaker: **Mark McCaughrean - ESA's planetary missions - once explorers, always explorers**
  
- **Andor Németh**  
Geostatistical analysis of Raman spectrographic data of the Chelyabinsk meteorite

**10:00-10:30 Coffee break**

**10:30-12:00 Analysis of monitoring time series- chair: Péter Tanos**

- Keynote speaker: **Márk Molnár - Big Data in Geosciences - Challenges and Novelties**
  
- **Norbert Magyar**  
Assessment of the groundwater bodies in the vicinity of Lake Fertő/ Neusiedler See using multivariate data analysis methods.
- **Hervai András**  
The influence of Danube on the groundwater system in Mohács Island
- **Márton Barcza**  
Hydraulic characterization using water level monitoring time series on an example from Eastern-Hungary

- **Péter Tanos** Stochastic analysis of different homogeneous river sections at seasonal resolution on the River Tisza

**12:00-13:00 Lunch**

**13:00-15:30 Data analysis in engineering geology** – chair: Ákos Török

- Keynote speaker: **László Kovács - Data analysis in engineering geology**
- **Seyed Morteza Davarpanah**  
Investigation of relationship between dynamic and static deformation constants of rocks
- **Jalal Zenah**  
Comparison of properties of porous limestone from different locations

**14:00-14:30 Coffee break**

- **Zsuzsanna Szabó** Predictors of concrete strength, porosity and permeability as suggested by data analysis and machine learning
- **Benedek Lógó** Parametric study of the Poisson's ratio
- **Alina Vattai** Effect of multi-stage shearing on shear strength of rock joint surfaces
- **Ákos Török** Geomathematical evaluation of surface strength tests of stone monuments

**15:30-16:00 Assessment of geophysical datasets - interpretation & uncertainty** – chair: Norbert Péter Szabó

- **Byambasuren Turtogtoh**  
Application of the fuzzy c-mean cluster analysis over the Yamaat gold deposit in Mongolia
- **Armand Abordán** Reducing the uncertainty of parameter estimation for the interval inversion method using factor analysis

**16:00-16:15 Break**

**16:15-17:15 Diverse faces of Geomathematics (posters)** – chair: János Geiger

- **Sahar Saeidi** Analysing land use change and geomorphometric parameters in small watersheds
- **Lilla Hoffmann** Comparison of interpolation methods for Hungary
- **Artúr Kóhler** Probability distribution of concentration time series data
- **Kamilla Modrovits** Analysis of karst water recovery time series in a former mining area, Hungary
- **Dániel Erdélyi** Tritium isoscape of precipitation across the Adriatic-Pannonian realm
- **Péter Cseh** Preliminary data of the geoarchaeological analyses on the Vesszős-halom (mound) at Pusztaszer

- **Csaba Vágó** Late Pleistocene deglaciation and paleoclimate in the Rau Barbat Valley, Retezat Mountains, Southern Carpathians
- **Ana Kamenski** Estimating subsurface lithology distribution of a theoretical model by geomathematical methods
- **Réka Orsolya Tapody** Environment development of a Transylvanian peat bog derives from geochemical analysis
- **Attila Virág** Landmark analysis of *S. citelloides* (Sciuridae, Rodentia)
- **Attila Virág** Deer hunt in the Random Forest
- **István G. Hatvani** Interannual fluctuation of xylem cellulose content of three tree species (2012-2017; Romania)

**17:05-17:30 Closing ceremony –**

**István G. Hatvani** - Secretary of the Geomathematical and Informatics Section of the Hungarian Geological Society and the Geomathematical Sub-committee of the Hungarian Academy of Sciences

**Ferenc Fedor** - President of the Geomathematical and Informatics Section of the Hungarian Geological Society

**18:30 Departure from the conference venue to the *Conference Dinner Programme***

**18:40-19:25** Guided tour in the Cathedral of Pécs (meeting at the western entrance of Cathedral (from parking places))

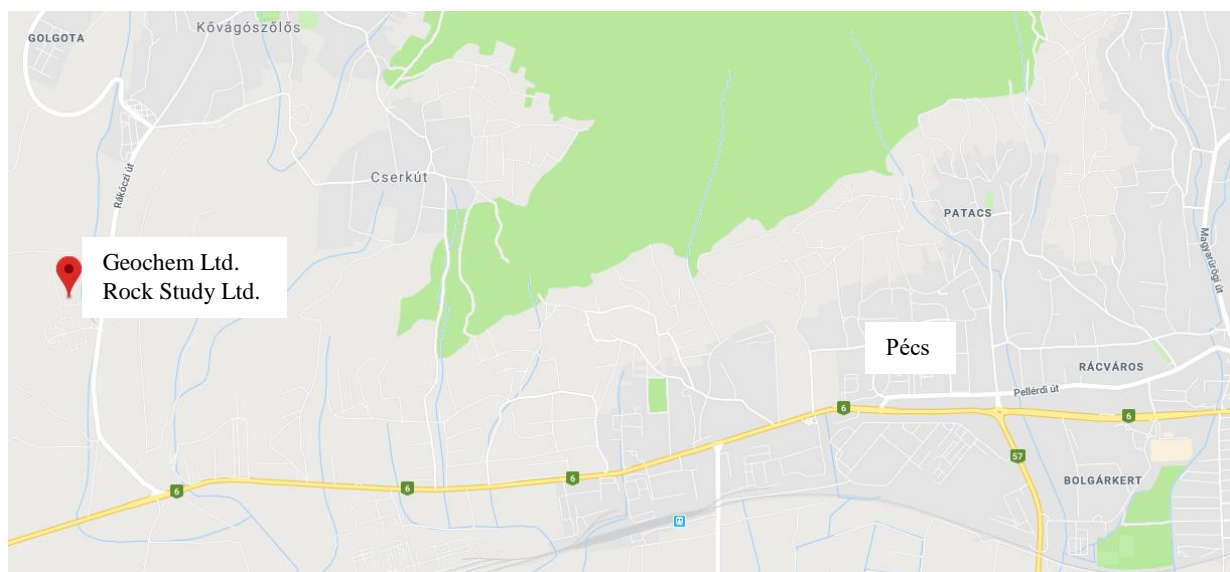
**19:30-20:00** Organ concert in the Cathedral

**20:05-22:30** Conference dinner in the Magtár Restaurant (Pécs Dóm sqr. 2)

**Saturday (18.05) –**

**10:00-12:00 Excursion – A step to Smartlab – automation in geology** lead by Ferenc Fedor (meeting at 9.30 conference venue parking lot or at the laboratory site)

- **Geochem Ltd.**
- **Rock Study Ltd.**



*Conference and social venue*



MTA PAB, Pécs Regional Committee of the Hungarian Academy of Sciences  
H-7624, Pécs, Jurisics Miklós str. 44

