

Second circular

16th

GARRM

RADON v.o.s. and Czech Geological Survey organize the

16th INTERNATIONAL WORKSHOP

GARRM

(on the GEOLOGICAL ASPECTS OF RADON RISK MAPPING)

September 19th – 21st, 2023, Prague, Czech Republic

**+ RIM – Radon and Permeability Intercomparison
Measurements at Radon Reference Sites**

September 18th, 2023

+ this time connected with ERA workshop

Morning session, September 21st, 2023

**(it is certainly possible to participate in all events or only in
selected ones)**

+ again

**Possibility of calibration of radon in soil gas devices in Certified
laboratory SUJCHBO, v.v.i. Kamenna**

WEBPAGE: www.radon.eu/workshop2023

IMPORTANT DATES AND DEADLINES

Deadline for paper submission: June 30, 2023

Deadline for lower registration fee: June 30, 2023

PROGRAMME

September 18th (Monday): Registration for RIM (in the field in the morning, will be arranged via e-mail with all participating groups) + Field measurements

Registration for GARRM (18,00-21,00) - venue

September 19th (Tuesday): Registration for GARRM (8,00-9,30), GARRM sessions

September 20th (Wednesday): GARRM sessions, GARRM dinner

September 21st (Thursday): morning - ERA workshop, afternoon – GARRM discussions + world cafe (together with ERA)

+ .. throughout: Possibility of calibration of radon in soil gas devices

ORGANIZING COMMITTEE:

GARRM: Matej NEZNAL (RADON), Ivan BARNET & Petra PACHEROVA (CGS)

RIM: Milan MATOLIN & Ondrej Salek (Charles University in Prague), Matej NEZNAL (RADON)

Calibration: Petr OTAHAL (SUJCHBO), Matej NEZNAL (RADON)

WORKSHOP GARRM - GENERAL TOPICS

RADON RISK MAPPING AND RADON ACTION PLANS

- **NEW RESEARCH ACTIVITIES AND RESULTS
NATIONAL STRATEGIES, RADON ACTION PLANS, APPROACHES TO RADON RISK; RADON RISK MAPPING ON VARIOUS SCALES INCLUDING GEOGENIC MAPPING & DETAILED MEASUREMENTS; DELINEATION OF RADON PRONE/PRIORITY AREAS**

RADON IN GEOLOGICAL ENVIRONMENT

- **NEW RESEARCH ACTIVITIES AND RESULTS
METHODS OF MEASUREMENTS AND CLASSIFICATION OF RADON RISK;
PASSIVE AND ACTIVE SOIL GAS SAMPLING; PERMEABILITY AS THE SECOND DECISIVE PARAMETER FOR RADON POTENTIAL ASSESSMENT;
UNDERSTANDING RADON TRANSPORT MECHANISMS IN THE SOIL AND FROM THE SOIL INTO THE BUILDINGS**

Due to our common experiences from last workshops, we would like to ask you for oral presentations (15 min) or posters.

In addition to lectures/presentations, we would like to open meaningful exchange of experiences/knowledge, during the Thursday afternoon – together with ERA - through “world cafe” and face to face moderated discussions. The main topics will appear (as usually) during the first two days of GARRM + participants are kindly invited to propose any interesting topic for such discussions.

Selection of papers presented at the GARRM + ERA workshops will be published in JERA.

ERA WORKSHOP GENERAL TOPIC

EFFICIENCY INDICATORS FOR THE EVALUATION OF RADON ACTION PLANS

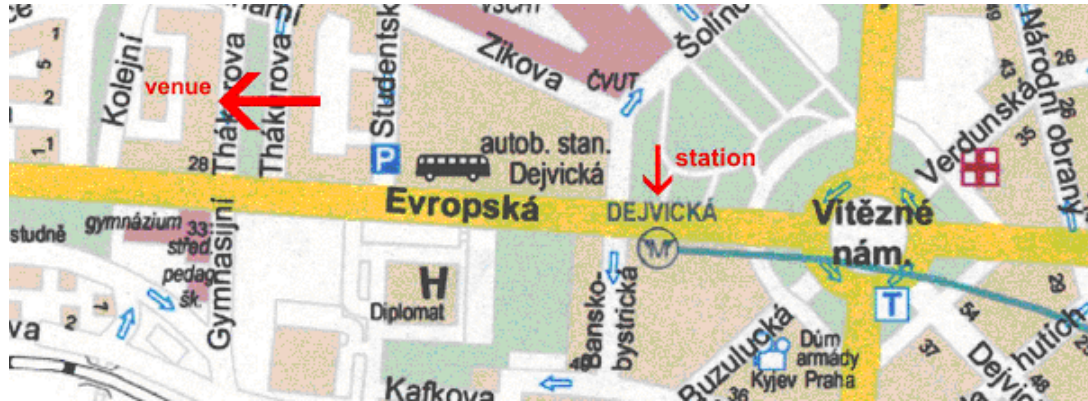
VENUE

The conference will be held in the beautiful city of Prague, capital of the Czech Republic, at the conference hall of the Masarykova College, the Czech Technical University (the same as in 2018 and 2021). The Masarykova College is located in the western part of central Prague, near the Prague Castle, the dominant symbol of Prague, in the direction to the Ruzyne airport, close by to the Dejvicka underground station (line A). It is also well served by tram and buses. The best way to reach the venue from the airport is to use the bus No. 119, which goes from the airport (it has a stop at terminal 1 and 2 as well) to the Veleslavin underground station and then use the underground line A (two stations) to the mentioned Dejvicka underground station.



Masarykova college

Thakurova street No.1, 160 41
Prague 6



ACCOMMODATION

On site accommodation (i.e. directly at the Masarykova College, medium/low price) is possible but limited in number.

You can try to book via e-mail: rezervace-mk@cvut.cz or via [booking.com](https://www.booking.com)

The direct neighbourhood has also a large number of excellent hotels, pensions, hostels, which you can find via internet (we recommend to concentrate on accommodation in the central parts of Prague – Prague 1 and/or Prague 6).

RIM - GENERAL INFORMATION

Compare your radon measurement with the international community in friendly field environment - comparison measurement of radon in soil gas at radon reference sites in the Czech Republic

Radon comparison measurement at reference sites in the Czech Republic, RIM 2023, will be organized as an independent part of the GARRM Workshop on September 18th, 2023. Comparison measurements at reference sites serve for verification of field radon measurements performed by single organizations.

Radon intercomparison measurement will be organized at two reference sites Cetyne and Buk established in 2000, located 60 km SW of Prague near the city Milín in the Czech Republic. Both reference sites are accessible for cars. Radon reference sites are situated on meadows, their soil cover enables soil gas sampling at the depth of 0.8 m, and their mutual total distance is 12 km. Each reference site implies 10 stabilized stations, which are marked by numbers. Single reference sites differ in radon activity concentration in soil gas, the radon distribution within the reference site is relatively homogeneous.

Radon comparison measurements at reference sites are organized for single participants or groups of participants. **Results of tests will be anonymous, each participant (group) will be denoted by a code.**

Note: the fee for the intercomparison measurement depends on the number of resultant sets of radon data from single equipment for testing and on the number of participants in one measuring group (more detailed info in REGISTRATION FEE and INSTRUCTIONS for PAYMENT).

During this RIM we would like to focus not only on comparison of resulting soil-gas radon concentrations, but on the sampling methods themselves.

Benefits of participation in radon comparison measurement are:

- Radon comparison with international expert community.
- Radon comparison with radon site databases derived using measurements of 351 successful Czech organizations.
- The use of two well documented radon reference sites fulfilling geological requirements.
- Based on more than 30-year experience in periodical radon comparison measurement 1992-1999, and 2000-2022.
- Three tests by computer programme TestMOAR based on statistics, compiled by the Institute of Applied Mathematics and Computer Technique, Faculty of Science, Charles University in Prague.

Working plan for the comparison measurement: Instruction (via e-mail), transport from Prague (provided on request, we recommend to arrange the transport to the reference sites on an individual basis), meeting at the reference area, measurement of radon in soil gas at 10 stations of each reference site, reporting of resultant data (kBq/m³) from measured stations by 2 weeks after RIM measurement by e-mail. Data processing and evaluation by TestMOAR will follow after all participants provide the data. For those who will collect a lower number of measurements at reference sites, programme TestMOAR accepts their number of data.

There is no electrical power supply at radon reference sites, however a power supply generator can be provided on the request. We expect we will meet with all participants in the field in the morning, but transport from Prague can be provided as well.

Accommodation: Please, take into consideration, that this year "only" one-day intercomparison is hold. Suitable accommodation, just in the area of radon reference sites, is available in "Hotel u Milina" (www.hotelumilina.cz).

Permeability intercomparison measurement - with respect to the discussions during the previous GARRM workshop, we would like to organize this year also the first **soil-gas permeability intercomparison measurement**, at the same time, i.e. on Monday, 18th September) and at the same areas as well. The challenge is simple – to begin with intercomparison measurements of the second parameter used during radon risk mapping. Our basic ideas are as follows:

- There will be two permanently installed probes (standard Neznal probe, 12/2 mm) at stations with different permeability in the neighborhood of reference area Cetyne. Those participants, who can use the installed probes for their permeability measurements, will take the measurements first. Then, if necessary, it will be possible to use other measuring probes/rods in the immediate vicinity and perform permeability measurements.

- During the radon intercomparison measurements at the reference area Buk, there will be a flow rate measurement model available for connection with your measuring device for performing permeability measurements.

Working plan – corresponding to working plan for radon comparison measurement.

Organizers of the RIM 2023 offer the consultation for your participation in radon comparison measurement and/or in permeability comparison measurements through e-mail address matolin@natur.cuni.cz or radon@comp.cz

More detailed information will be available at the workshop webpage, details will be discussed with all participants of RIM via e-mail.

CALIBRATION OF RADON IN SOIL GAS DEVICES

Possibility of calibration of radon in soil gas devices in Calibration laboratory SUJCHBO, v.v.i. – the accredited Calibration protocol

Calibration Laboratory SUJCHBO, v.v.i.: National Institute for Nuclear, Chemical and Biological Protection (SUJCHBO, v.v.i.) is certificated by Lloyd's Register Quality Assurance according to standards ČSN EN ISO 9001 - quality management system, ČSN EN ISO 14001 - environmental management system, ČSN ISO 45001:2018 - safety management system.

The Authorized Metrological Centre (AMC) working under SUJCHBO v.v.i. ensures the metrological traceability for devices measuring the radon air concentration and the energy equivalent radon concentration connected with the radon decay products (RnDP). The AMS laboratory is authorized by the UNMZ (Czech office for standards, metrology and testing). Calibration Laboratory is accredited by the Czech Institute for Accreditation according to the standard ČSN EN/IEC 17025:2018 and certificated by Lloyd's. Following the metrological traceability, the AMC is on the same metrological level as BfS Berlin. These two institutions compare results periodically and cooperate in some international research projects.

Working plan for calibration: Expected time schedule differs for continual radon monitors and for grab sampling devices.

In case of continual monitors, a responsible person from SUJCHBO will pick up the participant's continual monitors at reference site Buk on Monday, September 18th, 2023, after the RIM intercomparison comparison measurement. It is necessary to prepare some similar operation manual and pack it for transport together with owner's contact data. Devices will be exposed in the Radon-aerosol chamber of SUJCHBO under two different levels of radon activity concentration. On Thursday, calibration of continual radon monitors will be completed and the responsible person from SUJCHBO will transport participant's devices back to Prague (GARRM venue). Participant will download data from the device and send results from two expositions no later than one month after the calibration. Time of each exposition will be sent to participants briefly after the calibration process. Based on the participant's results, SUJCHBO will send the accredited Calibration protocol to each participant forthwith.

Grab sampling radon in soil gas devices – on Thursday, September, 21st, at about 8,00 in the morning; we will organize the transport of interested persons + equipment from Prague to the Calibration laboratory of SUJCHBO, Kamenna. Participants will take samples of the air from prepared sampling rubber tires with three different levels of radon activity concentration. Because of limited volume of air in the sampling

rubber tires, participants can take at most four 150 ml samples (600 ml together) from each level of radon activity concentration. Expected time of arrival back to Prague: Thursday, September 21st before or at about 13,00 (just in time for GARRM discussions). Participants will send the results of three levels of radon activity concentration no later than one month after the calibration. Based on the participant's results, SUJCHBO will send the accredited Calibration protocol to each participant forthwith.

Note: Limits of participants/devices number – due to the time schedule and due to the special price for calibration as well, there are limits of participants/devices for the calibration:

- continual monitors: min 4 – max 15 devices
- grab sampling devices: min 4 – max 15 devices

So, please take into account, that the number of participants is limited!

EXHIBITORS

Each exhibitor is asked to pay in minimum for 2 persons the fees for the GARRM workshop (independently whether one or two persons will participate). It covers, except as mentioned below at "fees", a standard booth (ca 4m², table ca 120x120) and 10 minutes for presentation during the GARRM programme.

All exhibitors are required to register via workshop web as well (with the note "exhibition")

REGISTRATION FEE and INSTRUCTION for PAYMENT

for ERA members - one of the following fees (you can select by yourselves which one) is reduced by 50 EUR (valid only for ERA members)

for ERA members – your participation at the ERA workshop is free

for non ERA members interested in participation at the ERA workshop (Thursday morning) - the fee for the ERA workshop (50 EUR) will be dealt with separately - with ERA

The registration fee for the GARRM workshop (**410 €** if paid after June 30, 2023, **370 €** if paid before) covers the GARRM workshop program, refreshments during the sessions and the GARRM workshop dinner. Accommodation is not included in the registration fee.

The fee for RIM – radon intercomparison measurement (**370 €** if paid after June 30, 2023, **330 €** if paid before) means a fee for an independent participant or for two participants in one measuring group using one measurement and sampling technique. The fee for each another one (third, fourth ..., participant in the same measuring group) is **60 €**. The fee for each another measurement/sampling technique used by the same participant/group (involved in final testing) is **280 €**. Accommodation is not included in the registration fee.

The fee for RIM - permeability intercomparison measurements – (**140 €** if paid after June 30, 2023, **120 €** if paid before) means a fee for an independent participant or for two participants in one measuring group using one measurement technique. The

fee for each another measurement technique used by the same participant/group is **80 €**. Accommodation is not included in the registration fee.

The fee for Calibration – (**320 €** if paid after July 26, 2021, **290 €** if paid before) means a fee for calibration of one piece of equipment (continual radon monitor or grab sampling device).

VAT is 21% and is included in the fees. VAT number of the beneficiary is CZ00473316

In order to confirm your registration, a proof of payment (photocopy of bank transfer) should be sent to RADON v.o.s. (via e-mail: radon@comp.cz), accepting the given conditions of payment and cancellations. Participants are kindly asked to indicate clearly the name of the person for whom the services are booked in the bank document sent. Payments can only be accepted in Euros.

Cancellation and requests for refunds should be made in writing and sent to RADON v.o.s.. Those made before 30 August 2023, will be refunded at 80 % of the original sum. After that date no refunds will be possible. All bank charges will be deducted from the refund. Refunds will be issued after the Workshop (15th October 2023).

Payment - by bank transfer (the payee name ... RADON v.o.s.)

The bank name: KOMERCNI BANKA

The bank address: ZENKLOVA 12/351
180 00 PRAHA 8
CZECH REPUBLIC

Account number: 35-6485850237/0100

Swift (BIC): KOMBCZPPXXX

IBAN code: CZ9501000000356485850237

Var.symbol/details of payment: 340123

There will be also a possibility to pay cash at the registration (hopefully ? also by card), but those participants should also send us the registration form in advance (the number of participants, especially in case of RIM and calibration, is limited).

CALL FOR PAPERS AND INSTRUCTIONS FOR AUTHORS

The language of the conference will be English.

Authors are kindly asked to send their contributions (extended abstracts) as camera ready file, e-mail attachment (best in Word 6. or higher, for high quality print, black+white, A4 format, 2.5 cm margins on all sides). Please do not number the pages. The papers should not extend 7 pages including figures, tables and references.

Contributions (extended abstracts) should be submitted by the 30th of June, 2023. The volume of the extended abstracts (flash disk) will be made available during the workshop.

For further contacts, please, send us the registration form (via e-mail, or – the easiest way - directly through the workshop webpage). Please fill in your e-mail with attention as it is the most effective way how to contact you.

REGISTRATION FORM

I shall take part in: the GARRM workshop RIM (radon)

RIM (permeability) Calibration

Name.....Mr/Mrs

Full address.....

.....

Phone.....

e-mail.....

Title of my contribution(s):

.....

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Names of participants in one measuring group (in case of RIM – radon intercomparison measurement participation):

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Names of participants in one measuring group (in case of RIM - soil-gas permeability intercomparison participation):

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Names of participants and specification of instruments (continual x grab sampling) in case of Calibration:

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Contact addresses of the organizing committee:

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