



International Workshop on Seismic Hazard Assessment of Nuclear Installation Sites in Low Seismicity Regions

**Hosted by the
Government of Belgium**

**through
Tractebel Engineering**

Brussels, Belgium

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Information Sheet

Introduction

In order to ensure the seismic safety of nuclear installations, their structures, systems, and components are designed to withstand vibratory ground motions expected to occur at their sites during the life cycle of these facilities. IAEA Safety Standards Series No. SSG-9 (Rev. 1), “Seismic Hazards in Site Evaluation for Nuclear Installations” provides the recommendations in relation to the evaluation of vibratory ground motion hazards, based on the seismic hazard assessment of the nuclear installation site. Successful completion of seismic hazard assessment projects with proper implementation of the recommendations given in SSG-9 (Rev. 1) may be challenging in low seismicity regions, due to lack of seismotectonic data. These challenges include:

- Developing seismic source zonation models in the lack of well-studied seismogenic structures with recent tectonic activity;
- Achieving statistically stable estimates of magnitude recurrence model parameters due to limited number earthquakes in the project catalogue;
- Representing the center, body and range of technically defensible interpretations in the logic tree for important source parameters such as maximum magnitude associated with the diffused seismicity sources;
- Selecting ground motion models and assigning weights to alternative models in the logic tree, due to the limited availability of ground motion models for low seismicity regions;
- Difficulties in adjusting ground motion models for the host region as only a few empirical recordings may be available within the site region;
- Treating the epistemic uncertainties due to large variabilities in models, interpretations and parameters.

These challenges will be more pronounced as small modular reactors (SMRs) and microreactors are being considered in an increasing pace by Member States, particularly in low seismicity regions. Complications in estimating the seismic hazards at low frequencies of exceedances that are needed for probabilistic safety analysis without the support of well-established seismotectonic datasets may lead to large conservatism often applied to design. Recent seismic hazard assessment projects for site evaluations or periodic safety reviews of nuclear installations located in such regions provide valuable experience for all Member States. Sharing and discussing good practices, challenges and lessons-learned from seismic hazard assessment projects in low seismicity regions will offer the opportunity for a better understanding of seismic hazards for new and existing nuclear installations.

In order to support the Member States in seismic hazard assessment of nuclear installations, a series of informational documents have been prepared by the IAEA. A recent TECDOC entitled “*Non-Ergodicity of Ground Motion Models for Site Specific Seismic Hazard Assessment at Nuclear Installation Sites*” provides guidance in developing ground motion characterization logic trees where no or limited strong ground motion data is available. A new Safety Report on “*Evaluation of Epistemic Uncertainty in Seismic Hazard Assessment for Nuclear Installations*” describes a well-structured and objective framework for dealing with the epistemic uncertainties in the seismic hazard assessment projects in low and high seismicity regions. With this event, the Member States will also be able to recognize and discuss the support provided by the new informational documents, particularly on the challenging issues in low seismicity areas.

Objectives

The objectives of the international workshop are: (i) to share and discuss the recent experience and challenges from seismic hazard assessment projects in low seismicity regions, (ii) to present the overall outline of a viable process to carry out the seismic hazard assessment for nuclear installation sites by appropriately considering all data and models and their epistemic uncertainties, (iii) to introduce the novel approaches in the ground motion characterization for areas with limited number of recorded strong ground motions, (iv) provide the participants necessary tools and hands-on-experience to implement these new methodologies in site evaluation of nuclear installations, and (iv) provide guidance on seismic monitoring systems, their deployment and their use in low seismicity regions.

Target Audience

The event is targeted at experts from regulatory bodies, utilities, technical support organizations, vendors and research and development organizations, who are working in the areas covered by the workshop.

The event is open to all experts from Member States that that are involved or interested in the assessment of the seismic hazards for nuclear installation safety in low seismicity regions. The keynote lectures will be supported by hands-on examples, especially for young professionals from embarking countries who may need some practical guidance to implement the state-of-the-practice.

Professionals specialized in earthquake engineering, seismology, geology, geophysics, seismic hazard, and safety assessment in nuclear regulatory bodies, utilities, technical support organizations, vendors, research and development organizations and other relevant stakeholders are encouraged to apply.

Topics

The workshop will be focused on the state-of-the-practice on probabilistic seismic hazard assessment, ground motion models, seismic source characterization, and evaluation of epistemic uncertainties. The main topical areas to be covered during the workshop are:

- Collection and use of observational data (empirical ground motions, macro-seismic intensity, etc.) and compilation of the site-specific geological, geophysical, and seismological datasets in low seismicity regions for seismic hazard assessment.
- Development of seismic source characterization models with limited seismotectonic data.
- Ground motion characterization using ergodic and non-ergodic ground motion models in low seismicity regions, for national seismic hazard maps, nuclear installation projects or other critical infrastructure.
- Performing physics-based ground motion simulations in low seismicity regions. Incorporation of simulation results in seismic hazard assessment.
- Seismic hazard assessment project development for new and existing sites for site evaluations and periodic safety review.
- Evaluation of epistemic uncertainties in seismic hazard assessment projects and expert elicitation.
- Deployment of the seismic monitoring systems at nuclear installation sites located in low seismicity regions. Differences in system requirements compared to high seismicity regions.
- Use of the data from seismic monitoring systems in non-ergodic ground motion models and site response analysis.

Working Language(s)

English

Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State or invited organization, participants are requested to submit their application via the InTouch+ platform (<https://intouchplus.iaea.org>) to the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or organization for onward transmission to the IAEA by **31 July 2025**, following the registration procedure in InTouch+:

1. Access the InTouch+ platform (<https://intouchplus.iaea.org>):
 - Persons with an existing NUCLEUS account can sign in to the platform with their username and password;
 - Persons without an existing NUCLEUS account can register [here](#).
2. Once signed in, prospective participants can use the InTouch+ platform to:
 - Complete or update their personal details under ‘Complete Profile’ and upload the relevant supporting documents;
 - Search for the relevant event under the ‘My Eligible Events’ tab;
 - Select the Member State or invited organization they want to represent from the drop-down menu entitled ‘Designating Authority’ (if an invited organization is not listed, please contact InTouchPlus.Contact-Point@iaea.org);
 - If applicable, indicate whether financial support is requested and complete the relevant information (this is not applicable to participants from invited organizations);
 - Based on the data input, the InTouch+ platform will automatically generate the Participation Form (Form A) and/or the Grant Application Form (Form C);
 - Submit their application.

Once submitted through the InTouch+ platform, the application, together with the auto-generated form(s), will be transmitted automatically to the required authority for approval. If approved, the application, together with the applicable form(s), will automatically be sent to the IAEA through the online platform.

NOTE: The application for financial support should be made, together with the submission of the application, by **31 July 2025**.

For additional information on how to apply for an event, please refer to the [InTouch+ Help](#) page. Any other issues or queries related to InTouch+ can be sent to InTouchPlus.Contact-Point@iaea.org.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial matters.

Participants are hereby informed that the personal data they submit will be processed in line with the [Agency’s Personal Data and Privacy Policy](#) and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. The IAEA may also use the contact details of Applicants to inform them of the IAEA’s scientific and technical publications, or the latest employment opportunities and current open vacancies at the IAEA.

These secondary purposes are consistent with the IAEA's mandate. Further information can be found in the [Data Processing Notice](#) concerning the IAEA InTouch+ platform.

Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the topics listed in above Topics Section.

Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made, together with the submission of the application, by **31 July 2025**.

Venue

The event will be held in Brussels, Belgium. Participants must make their own travel and accommodation arrangements. Participants are advised to arrive at the venue one hour before the start of the event on the first day in order to allow for timely registration.

Visas

Participants who require a visa to enter the Kingdom of Belgium should submit the necessary application as soon as possible to the nearest diplomatic or consular representative of the Kingdom of Belgium.

Organization

Scientific Secretary

Ms Zeynep Gulerce

Division of Nuclear Installation Safety
Department of Nuclear Safety and Security
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 22008

Fax: +43 1 26007

Email: Z.Gulerce@iaea.org

Administrative Secretary

Ms Minitha Poikudiyil

Division of Nuclear Installation Safety
Department of Nuclear Safety and Security
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 21207

Fax: +43 1 26007

Email: M.Poikudiyil@iaea.org

Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/Secretaries and correspondence on other matters related to the event to the Administrative Secretary.