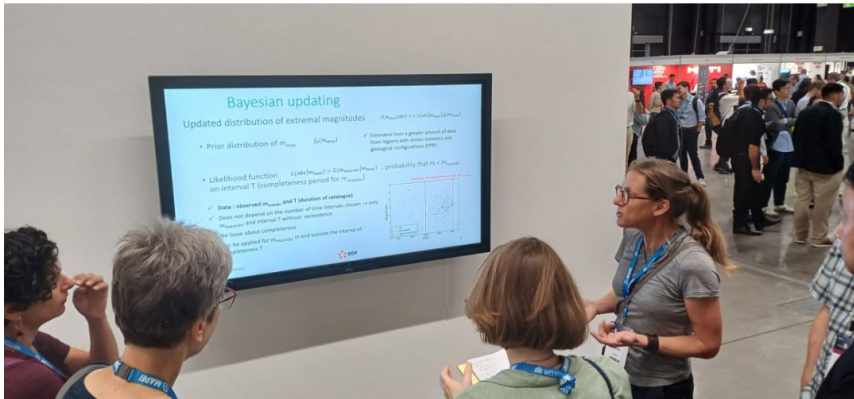


METIS CASE STUDY – INTEGRATED APPROACH TO COMPUTE FLOOR RESPONSE AND FRAGILITY INCLUDING SITE RESPONSE



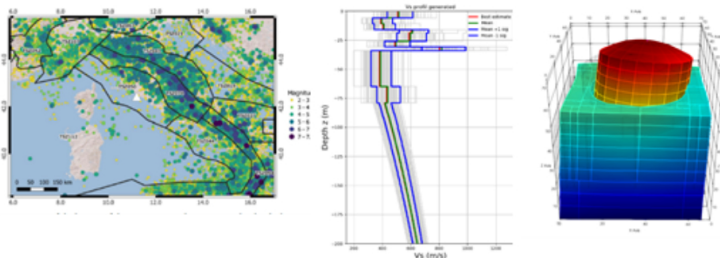
Project News | 5 November 2024



Author: Dr. Irmela Zentner, Expert Research Engineer, METIS Project Coordinator, EDF R&D

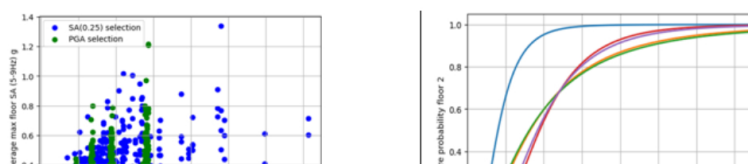
In the framework of METIS project, an integrated approach was developed where the hazard is evaluated on reference or bedrock level and where the site response can be introduced in a graded framework by means of 1D or multidimensional analysis as described in METIS D5.3. The spectral shape of seismic ground motion is accounted for using the conditional spectra approach implemented in METIS D5.4. where hazard consistent time histories are developed for a set of return periods.

We continue the practical implementation of the integrated approach through METIS case study by developing simulation-based fragility curves using multiple stripes analysis and the regression/cloud approach. The METIS case study considers a site in Italy to develop hazard on rock and site response and the Zaporizhzhia nuclear power plant (ZNPP) in Ukraine.





Parametric and sensitivity analysis are carried out to assess the benefits and efficiency of hazard consistent record selection on rock and the full integration of site response. We identified needs for further research to better constrain hazard on rock to allow for detailed site response and avoid double counting of soil uncertainties. We assessed the impact of the conditioning IM on the risk estimates and confirmed the performance of PGA for seismic risk assessment of NPP.


These findings are reported in METIS D5.4 and WCEE conference papers and will be scrutinized by the peer review group.





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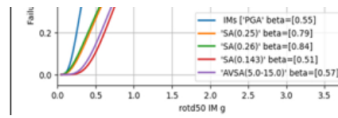
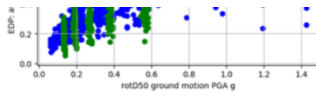
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This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement n°945121. The content of this document reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.