

Dr. Matteo Spada

Curriculum vitae

Education - personal data



Education	Ph.D. in Geophysics at ETH Zurich (Switzerland) Master Degree in Physics at University of Bologna (Italy)
Address (H)	Eichbühlstrasse 61, CH-8004 Zurich
Address (W)	Paul Scherrer Institut, OHSA/D19, CH-5232 Villigen PSI
Phone (W)	+41 56 310 56 90
Mobile	+41 78 856 69 64
e-mail	spdmatteo@gmail.com
Linkedin	https://www.linkedin.com/in/mspada
Nationality	Italian
Work Permit	C

About Me

I'm currently a Senior Researcher/Risk Analyst at the Paul Scherrer Institut (PSI) highly motivated in using my competences in different fields. During my career, I adapted in working in different fields and topics and acquired different statistical, e.g. Bayesian and frequentist inference, and programming expertise, e.g. R. I'm a curious and problem-solving oriented person able to fast adapt to changes both in terms of working fields and groups. My open and friendly personality helps in connecting with peoples and fast integrate in new team where I am seen as a resource. Staying calm and reflecting even under pressure, is my secret ingredient to reach the goal and respect the deadlines. At ease in international and multicultural environments, I can properly communicate and work in two different languages and I have experience in communicating complex topics to lay audience.

Competences

Expertise	Risk assessment, resilience assessment, probabilistic seismic and tsunami hazard assessment, sustainability assessment, multivariate statistics, regression models (OLS, GLM, panel), probability theory, Bayesian analysis, spatio-temporal models, Extreme Value Theory (EVT), uncertainty quantification, Local and Global Sensitivity Analysis, Multi-Criteria Decision Analysis (MCDA), time series analysis, signal and data processing, Fourier analysis, Parallel Computing, Principal Component Analysis (PCA), Stochastic Models, Predictive Models.
Methodological skills	Strong mathematical and statistical background; Problem-solving oriented; Experience with programming (R, R-Shiny, Python, MATLAB, Bash, Perl).
Computer Competences	Software MS Office, ADOBE (Photoshop, Illustrator) Programming R, R-Shiny, MATLAB, QGIS (Quantum Geographic Information System), GMT (Generic Mapping Tools), LaTeX , Bash Programming, Fortran, Perl, SQL , Python, Sed, Awk, C++, Java, HTML 5, php, PostgreSQL, Docker, Openshift Operative systems Mac OS X, UNIX/Linux, MS Windows
Social skills	An ease in international and multicultural environments, can easily communicate and work in two different languages, conflict resolution skills, very curious, proactive and group player.
Languages	Italian (native) English (fluent oral and written) German (A2)

Professional experiences

January 2013 – present

Senior Researcher/Risk Analyst at Paul Scherrer Institut (PSI), Villigen PSI (CH)



The Paul Scherrer Institut (PSI) is the largest federal research institute for natural and engineering sciences within Switzerland. As risk analyst at the Technology Assessment (TA) group of the Laboratory for Energy Systems Analysis (LEA), I'm principally working on the comparative evaluation of severe accident risk in the energy sector, and its relevance in the broader context of sustainability, energy security, critical infrastructure protection; the resilience of critical infrastructures in the energy sector; the risk of rare but severe accidents related to production and consumption of energy; the uncertainty estimation in the context of accident risk assessment; the external costs of accidents in the energy sector. Furthermore, I'm involved in different projects dealing also with other type of risks, e.g. spatial risk assessment with focus on credit risk related to mortgages, risk assessment related to different type of transportation modes, etc.. Additionally, I'm working on the development and support of algorithms for complex decision-making processes, including Multi-Criteria Decision Analysis (MCDA) and spatial MCDA (sMCDA), for sustainability assessment purposes. Finally, I'm one of the responsible for the update and extensions of PSI's database ENSAD (Energy-Related Severe Accident Database), which is the world's largest database on severe accidents in the energy sector, providing a well-founded basis for technical comparisons of severe accident risks among different energy chains, and individual countries or country groups; and the Energy Infrastructure Attacks Database (EIAD), which is a comprehensive database that captures and organizes reported EI attacks, carried out by non-state actors, worldwide since 1980. As part of my duties, I'm also engaged in the supervision of students at different levels (PhD, MSc, BSc, interns), Postdoc and Staff.

August 2011 – October 2012

PostDoc at ETH/SED, Zürich (CH)

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich



Schweizerischer Erdbebendienst
Service Sismologique Suisse
Servizio Sismico Svizzero
Swiss Seismological Service

As PostDoc at ETH/Swiss Seismological Service (SED), I have had the opportunity to cover a wide range of contemporary topics in Earth science. In particular, I study the relationship between the frequency-size distribution of earthquake, also known as Gutenberg–Richter relationship, and the strength profile of the crust; I have developed an hybrid (statistic/physics) earthquake model for the next generation of the probabilistic earthquake hazard assessment in Switzerland; I have helped in developing 3D reference crustal models for the alpine region, to be used for earthquake localization purposes, using a combination of different seismic information, namely controlled-source seismology (CSS), receiver functions (RF) and local earthquake tomography (LES) studies. This work was funded by the Swiss Federal Nuclear Safety Inspectorate (ENSI).

November 2006 – August 2011

PhD at ETH/SED, Zürich (CH)

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich



Schweizerischer Erdbebendienst
Service Sismologique Suisse
Servizio Sismico Svizzero
Swiss Seismological Service

As PhD at ETH/SED, I have had the opportunity to cover a wide range of contemporary topics in Earth science. Primarily, I worked on the development of models for probabilistic seismic and tsunami hazards. In my projects, starting from the (seismic) data analysis, I built, implemented and validated a hybrid (statistical/physical) and a non-linear (fractal) model as base for hazard assessment. Furthermore, I have helped in developing a 3D reference crustal models for the alpine region, to be used for earthquake localization purposes, using a combination of different seismic information, namely controlled-source seismology (CSS) and receiver functions (RF).

September 2005- October 2006

Researcher at INGV, Rome (IT)



The Istituto Nazionale di Geofisica e Vulcanologia (INGV) was born in September 1999 and it is the largest research institute for earth science research in Italy. As researcher at INGV, I was working on the developing of the new velocity models for shallow structures in the Italian region, to be used for earthquake localization

purposes, using genetic algorithm inversion and cross-correlation of seismic noise. This work was funded by the Italian Department of Civil Protection (DPC) under the project DPC-INGV-S4 (Shakemap).

November 2004- January 2005
Researcher at INGV, Rome (IT)



As researcher at INGV, I was working on the development of automatic procedures for noise level analysis of the Italian Seismic Network.

June - August 1998
Air traffic controller at the Aerodromo of Boscomantico, Verona (IT)

Education

2006-2011

PhD in Geophysics at the ETHZ and Swiss Seismological Service (SED), Zurich (CH). Title of the thesis: "From crustal imaging to long-term seismic hazard assessment: New methodologies for generating 3D crustal models and synthetic earthquake catalogs". Supervisor Prof. Stefan Wiemer.



1999-2005

Master degree in Physics (106/110) at the University of Bologna, Bologna (IT). Title of the thesis: "Analysis of Seismic Stations signals: Application for the determination of the detection threshold of the Italian Seismic Network". Supervisor Prof. Enzo Boschi.



1994-1999

High-School Istituto Tecnico Aeronautico "F. Baracca", Forlì (IT)



Other experiences

May 2016 & May 2019

Invited teaching class on Risk Analysis within the Sustainable Energy System course at the Lucerne University of Applied Sciences and Arts (HSLU) (Master students)

September 2014

Invited teaching class on Risk Analysis and Multi-Criteria Decision Analysis (MCDA) applied to Deep Geothermal Energy Systems for the Transdisciplinary Case Study 2015 entitled "Deep Geothermal Energy: the St. Gallen Project" of the Department of Environmental Systems Science at ETH Zurich.

2007-2011

Teaching Assistant for the Geophysical field course of ETH Zurich, topics: Geothermic and Seismic noise (bachelor students).

Memberships

2016 – present

Member of the Institute for Operations Research and the Management Sciences (INFORMS).

2013 – present

Member of the European Safety and Reliability Association (ESRA).

Other Interests

Cooking, Cinema, Art, Music (playing Bass guitar), Football, Cross-Country skiing

Additional information

I will gladly provide my references under request.

Complete Publication List of Matteo Spada (January 2020)

Peer-reviewed Journal Articles

- Spada, M.** and Burgherr, P. (2020). Comparative Risk Assessment for Fossil Energy Chains using Bayesian Model Averaging, *Energies*, Vol. 13(2), 295, doi: [10.3390/en13020295](https://doi.org/10.3390/en13020295)
- Gasser, P., Suter, J., Cinelli, M., **Spada, M.**, Burgherr, P., Hirschberg, S., Kadzinski, M. and Stojadinovic, B. (2020). Comprehensive resilience assessment of electricity supply security for 140 countries, *Ecological Indicators*, Vol. 110, 105731, doi: [10.1016/j.ecolind.2019.105731](https://doi.org/10.1016/j.ecolind.2019.105731)
- Lustenberger, P., Schumacher, F., **Spada, M.**, Burgherr, P. and Stojadinović, B. (2019). Assessing the Performance of the European Natural Gas Network for Selected Supply Disruption Scenarios Using Open-Source Information. *Energies*, Vol. 12 (24), 4685, doi: [10.3390/en12244685](https://doi.org/10.3390/en12244685)
- Cinelli, M., **Spada, M.**, Kadzinski, M., Miebs, G. and Burgherr, P. (2019). Advancing hazard assessment of energy accidents in the Natural Gas sector with rough set theory and decision rules, *Energies*, Vol. 12, doi: [10.3390/en12214178](https://doi.org/10.3390/en12214178)
- Lordan-Perret, R., Wright, A.L., Burgherr, P., **Spada, M.** and Rosner, R. (2019). Attacks on energy infrastructure targeting democratic institutions, *Energy Policy*, doi: [10.1016/j.enpol.2019.06.025](https://doi.org/10.1016/j.enpol.2019.06.025)
- Gasser, P., Lustenberger, P., Cinelli, M., Kim, W., **Spada, M.**, Burgherr, P., Hirschberg, S., Stojadinovic, B. and Sun, T. Y. (2019). A review on resilience assessment of energy systems, *Sustainable and Resilient Infrastructure*, doi: [10.1080/23789689.2019.1610600](https://doi.org/10.1080/23789689.2019.1610600)
- Kim, W., Burgherr, P., **Spada, M.**, Lustenberger, P., Kalinina, A. and Hirschberg, S. (2019). Energy-related Severe Accident Database (ENSAD): cloud-based geospatial platform, *Big Earth Data*, doi: [10.1080/20964471.2019.1586276](https://doi.org/10.1080/20964471.2019.1586276)
- Kalinina, A., **Spada, M.** and Burgherr, P. (2018). Application of a Bayesian hierarchical modeling for risk assessment of accidents at hydropower dams, *Safety Science*, Vol. 110, pp. 164-177, doi: [10.1016/j.ssci.2018.08.006](https://doi.org/10.1016/j.ssci.2018.08.006)
- Spada, M.**, Burgherr, P. and Boutinard Rouelle, P. (2018). Comparative risk assessment with focus on hydrogen and selected fuel cells: Application to Europe, *International Journal of Hydrogen Energy*, Vol. 43(19), pp. 9470-9481, doi: [10.1016/j.ijhydene.2018.04.004](https://doi.org/10.1016/j.ijhydene.2018.04.004)
- Spada, M.**, Burgherr, P. and Hohl, M. (2018). Toward the validation of a National Risk Assessment against historical observations using a Bayesian approach: application to the Swiss case, *Journal of Risk Research*, doi: [10.1080/13669877.2018.1459794](https://doi.org/10.1080/13669877.2018.1459794)
- Spada, M.**, Paraschiv, F. and Burgherr, P. (2018). A Comparison of Risk Measures for Accidents in the Energy Sector and Their Implications on Decision-Making Strategies, *Energy*, Vol. 154, pp. 277-288, doi: [10.1016/j.energy.2018.04.110](https://doi.org/10.1016/j.energy.2018.04.110)
- Sutra, E., **Spada, M.** and Burgherr, P. (2017). Chemicals usage in stimulation processes for shale gas and deep geothermal systems: A comprehensive review and comparison, *Renewable and Sustainable Energy Reviews*, Vol. 77, pp. 1-11, doi: [10.1016/j.rser.2017.03.108](https://doi.org/10.1016/j.rser.2017.03.108)
- Hirschberg, S., Bauer, C., Burgherr, P., Cazzoli, E., Heck, T., **Spada, M.** and Treyer, K. (2016). Health effects of technologies for power generation: Contributions from normal operation, severe

accidents and terrorist threat. *Reliability Engineering & System Safety*, 145, 373-387. doi: [10.1016/j.ress.2015.09.013](https://doi.org/10.1016/j.ress.2015.09.013)

Spada, M. and Burgherr, P. (2016). An aftermath analysis of the 2014 coal mine accident in Soma, Turkey: Use of risk performance indicators based on historical experience. *Accident Analysis & Prevention*, 87, 134–140. doi: [10.1016/j.aap.2015.11.020](https://doi.org/10.1016/j.aap.2015.11.020)

Volkart, K., Bauer, C., Burgherr, P., Hirschberg, S., Schenler, W. and **Spada, M.** (2016). Interdisciplinary assessment of renewable, nuclear and fossil power generation with and without carbon capture and storage in view of the new Swiss energy policy. *International Journal of Greenhouse Gas Control*, 54, Part 1, 1-14. doi: [10.1016/j.ijggc.2016.08.023](https://doi.org/10.1016/j.ijggc.2016.08.023)

Burgherr, P., Giroux, J. and **Spada, M.** (2015). Accidents in the Energy Sector and Energy Infrastructure Attacks in the Context of Energy Security. *European Journal of Risk Regulation*, 6(2), 271-283. <http://ejrr.lexxion.eu/article/EJRR/2015/2/14>

Lordan, R., **Spada, M.** and Burgherr, P. (2015). Import-adjusted fatality rates for individual Organization for Economic Cooperation and Development (OECD) countries caused by accidents in the oil energy chain. *Journal of Cleaner Production*, 108, Part A, 1203-1212. doi: [10.1016/j.jclepro.2015.08.097](https://doi.org/10.1016/j.jclepro.2015.08.097)

Spada, M., Bianchi, I., Kissling, E., Piana Agostinetti, N. and Wiemer, S. (2013). Combining controlled-source seismology and receiver function information to derive 3-D Moho topography for Italy. *Geophysical Journal International*, 194(2), 1050–1068. doi: [10.1093/gji/ggt148](https://doi.org/10.1093/gji/ggt148)

Spada, M., Tormann, T., Wiemer, S. and Enescu, B. (2013). Generic dependence of the frequency-size distribution of earthquakes on depth and its relation to the strength profile of the crust. *Geophysical Research Letters*, 40(4), 709-714. doi: [10.1029/2012GL054198](https://doi.org/10.1029/2012GL054198)

Sørensen, M. B., **Spada, M.**, Babeyko, A. J., Wiemer, S. and Grünthal, G. (2012). Probabilistic tsunami hazard in the Mediterranean Sea. *Journal of Geophysical Research – Solid Earth*, 117(B1). doi: [10.1029/2010JB008169](https://doi.org/10.1029/2010JB008169)

Spada, M., Wiemer, S. and Kissling, E. (2011). Quantifying a Potential Bias in Probabilistic Seismic Hazard Assessment: Seismotectonic Zonation with Fractal Properties. *Bulletin of the Seismological Society of America*, 101(6), 2694-2711. doi: [10.1785/0120110006](https://doi.org/10.1785/0120110006)

Li, H., Michelini, A., Zhu, L., Bernardi, F. and **Spada, M.** (2007). Crustal velocity structure in Italy from analysis of regional seismic waveforms. *Bulletin of the Seismological Society of America*, 97(6), 2024-2039. doi: [10.1785/0120070071](https://doi.org/10.1785/0120070071)

Books and Book Chapters

Gasser, P., Cinelli, M., **Spada, M.**, Burgherr, P. and Stojadinovic, B. (2019). Indices under the spotlight: An Approach to Unveil and Manage the Implicit Tradeoffs between Indicators. In Beer, M. and Zio, E. (Eds.): *Proceedings of the 29th European Safety and Reliability Conference (ESREL)*. Research Publishing, Singapore.

Burgherr, P., **Spada, M.**, Kalinina, A., Vandepaer, L., Lustenberger, P. and Kim, W. (2019). Comparative Risk Assessment of Accidents in the Energy Sector within Different Long-Term Scenarios and Marginal Electricity Supply Mixes. In Beer, M. and Zio, E. (Eds.): *Proceedings of the 29th European Safety and Reliability Conference (ESREL)*. Research Publishing, Singapore.

- Spada, M.** and Burgherr, P. (2019). A Hierarchical Approximate Bayesian Computation (HABC) for Accident Risk in the Energy Sector triggered by Natural Events. In Beer, M. and Zio, E. (Eds.): *Proceedings of the 29th European Safety and Reliability Conference (ESREL)*. Research Publishing, Singapore.
- Burgherr, P., Cinelli, M., **Spada, M.**, Blaszczyński, J., Słowiński, R. and Pannatier, Y. (2018). Risk assessment of worldwide refinery accidents using advanced classification methods: effects of refinery configuration and geographic location on outcome risk levels. In Haugen, S., Barros, A., van Gulijk, C., Kongsvik, T. and Vinnem, J. E. (Eds.): *Safety and Reliability – Safe Societies in a Changing World*. CRC Press, Taylor and Francis Group, London, UK.
- Kalinina, A., **Spada, M.** and Burgherr, P. (2018). Alternative life-loss rates for failures of large concrete and masonry dams in mountain regions of OECD countries. In Haugen, S., Barros, A., van Gulijk, C., Kongsvik, T. and Vinnem, J. E. (Eds.): *Safety and Reliability – Safe Societies in a Changing World*. CRC Press, Taylor and Francis Group, London, UK.
- Kalinina, A., **Spada, M.**, Burgherr, P. and Sacco, T. (2018). Analysis of historical dam accidents worldwide: risk indicators and risk maps. In CIGB ICOLD (Eds.): *26th International Congress on Large Dams*. CRC Press, Taylor and Francis Group, London, UK.
- Lustenberger, P., Kim, W., Schumacher, F., **Spada, M.**, Burgherr, P., Hirschberg, S. and Stojadinovic, B. (2018). Network analysis of the European natural gas infrastructure to quantify its performance in long-duration pipeline shutdown scenarios. In Haugen, S., Barros, A., van Gulijk, C., Kongsvik, T. and Vinnem, J. E. (Eds.): *Safety and Reliability – Safe Societies in a Changing World*. CRC Press, Taylor and Francis Group, London, UK.
- Spada, M.** and Ferretti, V. (2018). Toward the integration of uncertainty and probabilities in spatial multi-criteria risk analysis: an application to tanker oil spills. In Haugen, S., Barros, A., van Gulijk, C., Kongsvik, T. and Vinnem, J. E. (Eds.): *Safety and Reliability – Safe Societies in a Changing World*. CRC Press, Taylor and Francis Group, London, UK.
- Burgherr, P., **Spada, M.**, Kalinina, A., Hirschberg, S., Kim, W., Gasser, P. and Lustenberger, P. (2017). The Energy-related Severe Accident Database (ENSAD) for comparative risk assessment of accidents in the energy sector. In Cepin, M. and Bris, R. (Eds.): *Safety and Reliability. Theory and Applications*. CRC Press, Taylor and Francis Group, London, UK.
- Cinelli, M., **Spada, M.**, Miebs, G., Kadziński, M. and Burgherr, P. (2017). Classification models for the risk assessment of energy accidents in the natural gas sector. In *The 2nd International workshop on Modelling of Physical, Economic and Social Systems for Resilience Assessment, 14-16 December 2017, Ispra, Italy*. Publications Office of the European Union. <http://doi.org/10.2760/556714>
- Gasser, P., Lustenberger, P., Sun, T., Kim, W., **Spada, M.**, Burgherr, P., Hirschberg, S. and Stojadinovic, B. (2017). Security of electricity supply indicators in a resilience context. In Cepin, M. and Bris, R. (Eds.): *Safety and Reliability. Theory and Applications*. CRC Press, Taylor and Francis Group, London, UK.
- Kalinina, A., **Spada, M.** and Burgherr, P. (2017). Uncertainty of the outflow hydrograph resulting from the break of a concrete dam. In Cepin, M. and Bris, R. (Eds.): *Safety and Reliability. Theory and Applications*. CRC Press, Taylor and Francis Group, London, UK.
- Lustenberger, P., Sun, T., Gasser, P., Kim, W., Burgherr, P., **Spada, M.**, Hirschberg, S. and Stojadinovic, B. (2017). Potential impacts of selected natural hazards and technical failures on

the natural gas transmission network in Europe. In Cepin, M. and Bris, R. (Eds.): *Safety and Reliability. Theory and Applications*. CRC Press, Taylor and Francis Group, London, UK.

Spada, M., Boutinard, P., Burgherr, P. and Giardini, D. (2017). Comparative risk assessment of hydrogen accidents in Europe. In Cepin, M. and Bris, R. (Eds.): *Safety and Reliability. Theory and Applications*. CRC Press, Taylor and Francis Group, London, UK.

Burgherr, P., **Spada, M.**, Kalinina, A., Eckle, P. and Pannatier, Y. (2016). Accident risk assessment of refineries depending on configuration and geographic location. In Walls, L., Revie, M., Bedford, T. (Eds.): *Risk, Reliability and Safety: Innovating Theory and Practice*. CRC Press, Taylor and Francis Group, London, UK.

Kalinina, A., **Spada, M.**, Burgherr, P., Marelli, S. and Sudret, B. (2016). A Bayesian hierarchical modelling for hydropower risk assessment. In Walls, L., Revie, M., Bedford, T. (Eds.): *Risk, Reliability and Safety: Innovating Theory and Practice*. CRC Press, Taylor and Francis Group, London, UK.

Burgherr, P., **Spada, M.**, Kalinina, A. and Page, P. (2015). Regionalized risk assessment of accidental oil spills using worldwide data. In Podofillini, L., Sudret, B., Stojadinovic, B., Zio, E. and Kröger, W. (Eds.): *Safety and Reliability Complex Engineered Systems*. CRC Press, Taylor and Francis Group, London, UK. doi: [10.1201/b19094-12](https://doi.org/10.1201/b19094-12)

Hirschberg, S., Benighaus, C., Burgherr, P., Evans, K., Kant, M., Kissling, E., Renn, O., Rudolf Von Rohr, P., Scheichinger, B., Schenler, W., **Spada, M.**, Stauffacher, M., Treyer, K., Wiederkehr, R. and Wiemer, S. (2015). Chapter 10: Conclusions. In Hirschberg S., Wiemer S. and Burgherr P. (Eds.): *Energy from the Earth. Deep Geothermal as a Resource for the Future?* TA-SWISS Study TA/CD 62/2015, vdf Hochschulverlag AG, Zurich, Switzerland. doi: [10.3218/3655-8](https://doi.org/10.3218/3655-8)

Hirschberg, S., Burgherr, P., Schenler, W., **Spada, M.**, Treyer, K. and Bauer, C. (2015). Chapter 9: WP8: Integration. In Hirschberg S., Wiemer S. and Burgherr P. (Eds.): *Energy from the Earth. Deep Geothermal as a Resource for the Future?* TA-SWISS Study TA/CD 62/2015, vdf Hochschulverlag AG, Zurich, Switzerland. doi: [10.3218/3655-8](https://doi.org/10.3218/3655-8)

Lordan, R., **Spada, M.** and Burgherr, P. (2015). Import-adjusted fatality rates for OECD countries caused by fossil fuel accidents. In Podofillini, L., Sudret, B., Stojadinovic, B., Zio, E. and Kröger, W. (Eds.): *Safety and Reliability Complex Engineered Systems*. CRC Press, Taylor and Francis Group, London, UK. doi: [10.1201/b19094-14](https://doi.org/10.1201/b19094-14)

Spada, M. and Burgherr, P. (2015). Chapter 6.1: Accident Risk. In Hirschberg S., Wiemer S. and Burgherr P. (Eds.): *Energy from the Earth. Deep Geothermal as a Resource for the Future?* TA-SWISS Study TA/CD 62/2015, vdf Hochschulverlag AG, Zurich, Switzerland. doi: [10.3218/3655-8](https://doi.org/10.3218/3655-8)

Spada, M., Burgherr, P. and Tsianou, E. (2015). Comparative Risk Assessment for Fossil Energy Chains: Severe Accidents triggered by Natural Hazards. In Podofillini, L., Sudret, B., Stojadinovic, B., Zio, E. and Kröger, W. (Eds.): *Safety and Reliability Complex Engineered Systems*. CRC Press, Taylor and Francis Group, London, UK. doi: [10.1201/b19094-16](https://doi.org/10.1201/b19094-16)

Burgherr, P., Giroux, J. and **Spada, M.** (2014). Vulnerability of energy infrastructure to intentional attacks – The interplay of resource, conflict and security. In Nowakowski, T., Młyńczak, M., Jodejko-Pieruczuk, A. and Werbińska-Wojciechowska, S. (Eds.): *Safety and Reliability: Methodology and Applications*. CRC Press, Taylor and Francis Group, London, UK. doi: [10.1201/b17399-206](https://doi.org/10.1201/b17399-206)

Spada, M., Sutra, E., Wolf, S. and Burgherr, P. (2014). Accident Risk Assessment for Deep Geothermal Energy Systems. In Nowakowski, T., Młyńczak, M., Jodejko-Pieruczuk, A. and Werbińska-Wojciechowska, S. (Eds.): *Safety and Reliability: Methodology and Applications*. CRC Press, Taylor and Francis Group, London, UK. [doi: 10.1201/b17399-208](https://doi.org/10.1201/b17399-208)

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Reports

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Cinelli, M., **Spada, M.**, Zhang, Y., Kim, W., Burgherr, P. (2018). [MCDA Index Tool: an interactive software to develop indices and rankings](#).

Linden, D., Cinelli, M., **Spada, M.**, Becker, W. and Burgherr, P. (2018). [Composite Indicator Analysis and Optimization \(CIAO\) Tool](#).

Spada, M., Burgherr, P., Cox, B., Schenler, W., Treyer, K. (2017). Socio-economic analysis of the alkaline fuel cell system: Effects for utilities and society. Deliverable no D8.03, *POWER-UP: Demonstration of 500 kWe alkaline fuel cell system with heat capture*. Brussels, Belgium

Kalinina, A., **Spada, M.**, Marelli, S., Burgherr, P. and Sudret, B. (2016). Uncertainties in the risk assessment of hydropower dams. State-of-the-art and Outlook. *Report RSUQ-2016-8*, Paul Scherrer Institut (PSI), Villigen PSI and ETH Zurich, Chair of Risk, Safety and Uncertainty Quantification, Zurich, Switzerland. <https://www.ethz.ch/content/dam/ethz/special-interest/baug/ibk/risk-safety-and-uncertainty-dam/publications/reports/RSUQ-2016-008.pdf>

Spada, M. and Burgherr, P. (2015). Modeling frequencies and expected maximum consequences of catastrophic events in Switzerland based on historical observations. *Final Report commissioned by the Federal Office for Civil Protection (FOCP)*. Paul Scherrer Institut (PSI), Villigen PSI, Switzerland.

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