

NorthQuake 2022

The 4th International
Workshop on Earthquakes
in North Iceland, Húsavík



Fosshótel Húsavík



hac@hac.is



18-20 October 2022

Register at :

<https://hac.is/radstefnur/northquake-2022/>

Workshop program

SESSION 1

Earthquake Geology and Tectonics



18th October - 10:20 AM

SESSION 2

Earthquake Seismology



18th October - 13:30 PM

SESSION 3

Engineering Seismology – Physics- based Approaches to Seismic Hazard



19th October - 9:00 AM

SESSION 4

Engineering Seismology – Engineering Approaches to Seismic Hazard



19th October - 11:40 AM

SESSION 5

Earthquake Engineering and Seismic Risk



20th October - 9:00 AM

Monday, 17 October, 2022	
20:00 – 21:30	Registration and Icebreaker

Tuesday, 18 October, 2022

9:00 – 10:00	Registration and Coffee
10:00 – 10:20	NorthQuake 2022 Opening and Introduction

Earthquake Geology and Tectonics

Session chairs: Benedikt Halldórsson and Kristín Jónsdóttir

10:20 – 10:40	Investigating Holocene deformation on the Húsavík Flatey Fault <u>Rémi Matrau</u> , Yann Klinger, Jonathan Harrington, Thorvaldur Thordarson, Ármann Höskuldsson, Esther R. Gudmundsdóttir, Ulas Avsar and Sigurjón Jónsson
10:40 – 11:00	Postglacial faulting within the Skjálfandi Bay <u>Bryndís Brandsdóttir</u> , Robert S. Detrick, Neal W. Driscoll, Jeffrey A. Karson, Gunnar B. Guðmundsson and Kristín Jónsdóttir
11:00 – 11:20	Húsavík-Flatey fault behavior and outstanding data gaps based on insight from major strike slip faults <u>Gregory P. De Pascale</u>
11:20 – 11:40	Insights into two decades of continuous and campaign GPS data in North Iceland <u>Alejandra Barreto</u> , Renier Viltres, Rémi Matrau, Benedikt G Ófeigsson and Sigurjón Jónsson.
11:40 – 12:00	Country-wide InSAR mapping and deformation signals observed in North Iceland <u>Sigurjón Jónsson</u> and Yunmeng Cao
12:00 – 13:30	Lunch

Earthquake Seismology

Session chairs: Páll Einarsson og Sigurjón Jónsson

13:30 – 13:50	Recent earthquake activity in the Tjörnes Fracture Zone <u>Kristín Jónsdóttir</u>
13:50 – 14:10	Earthquake source estimation of the main events of the 2020 North Iceland earthquake sequence <u>Renier Viltres</u> , Hannes Vasyura-Bathke and Sigurjón Jónsson
14:10 – 14:30	Seismic monitoring of Krafla, Þeistareykir and Námafjall high-temperature geothermal fields, NE-Iceland <u>Þorbjörg Ágústsdóttir</u> , Egill Á. Gudnason, Rögnvaldur L. Magnússon, Karl Gunnarsson and Anette K. Mortensen
14:30 – 14:50	Stress modeling of the Theistareykir geothermal area: Mapping of in-situ and deformation event stress changes at an active geothermal production area in NE-Iceland <u>Kyle Robert Dawson</u>
14:50 – 15:20	Coffee break
15:20 – 15:40	On Bayesian applications in statistical seismology: Spatial model for earthquake magnitudes Atefe Darzi, <u>Birgir Hrafnkelsson</u> and Benedikt Halldorsson
15:40 – 16:00	A new Bayesian epidemiological spatiotemporal aftershock sequence model the 2000 and 2008 aftershock sequences in Southwest Iceland <u>Atefe Darzi</u> , Birgir Hrafnkelsson, Benedikt Halldorsson and Kristín S. Vogfjörð
16:00 – 16:30	Discussion
17:00-18:00	Field trip to Skjálbrekka and Grjótháls for residents of Húsavík (in Icelandic)
Suggestions for activities and dinner	Activities: Geosea, Húsavík swimming pool, District Cultural Center, Whale Museum. Dinner: Fosshotel Húsavík, Gamli Baukur, Salka, Hlíðufell

Wednesday, 19 October, 2022

Engineering Seismology – Physics-based Approaches to Seismic Hazard

Session chairs: Kristín Jónsdóttir and Sigurjón Jónsson

9:00 – 9:20	Towards a physics-based fault system model for the Tjörnes Fracture Zone <u>Benedikt Halldorsson</u> , Farnaz Bayat, and Milad Kowsari
9:20 – 9:40	On the exploration of seismic ground motion amplitudes in North Iceland from dynamic rupture modeling of Húsavík-Flatey Fault Zone earthquake scenarios Bo Li, Alice-Agnes Gabriel, Thomas Ulrich, Claudia Abril, <u>Benedikt Halldorsson</u> , Lukas Krenz and Michael Bader
9:40 – 10:00	Modeling potential earthquake-tsunami scenarios from earthquake rupture simulations on the Húsavík-Flatey Fault Zone, North Iceland <u>Fabian Kutschera</u> , Sara Aniko Wirp, Bo Li, Thomas Ulrich, Alice-Agnes Gabriel, Claudia Abril and Benedikt Halldorsson
10:00-10:30	Coffee break
10:30 – 10:50	A new physics-based fault system model for the Southwest Iceland bookshelf zone <u>Farnaz Bayat</u> , Milad Kowsari and Benedikt Halldorsson
10:50 – 11:10	Simulation of finite-fault earthquake catalogues for Monte Carlo hazard assessment <u>Milad Kowsari</u> , Benedikt Halldorsson and Farnaz Bayat
11:10-11:30	Validation of CyberShake in the Southwest Iceland transform zone - towards application in the Tjörnes Fracture Zone <u>Otilio Rojas</u> , Marisol Monterrubio-Velasco, Juan E. Rodríguez, Scott Callaghan, Claudia Abril, Benedikt Halldorsson, Milad Kowsari, Farnaz Bayat, Kim Olsen, Josep de la Puente

Engineering Seismology – Engineering Approaches to Seismic Hazard

Session chairs: Bjarni Bessason and Páll Einarsson

11:40 – 12:00	The first seismic wave amplification functions for key geological units in Iceland <u>Benedikt Halldorsson</u> , Sahar Rahpeyma, Birgir Hrafnkelsson, Atefe Darzi
12:00 – 12:20	New ground motion models for the extreme near-fault region of strike-slip earthquakes <u>Farnaz Bayat</u> , Milad Kowsari and Benedikt Halldorsson
12:20 – 14:00	Lunch
13:15 – 14:00	Panel discussion for local students and career opportunities in engineering and natural sciences (in Icelandic)
14:00 – 14:20	On the influence of seismic ground motion duration on the seismic response of structures <u>Jónas Þór Snæbjörnsson</u>
14:20 – 15:00	The implications of the new European Seismic Hazard Model 2020 for Iceland Benedikt Halldorsson, <u>Milad Kowsari</u> , Farnaz Bayat, Claudia Abril, Atefe Darzi, Bjarni Bessason and Jónas Þór Snæbjörnsson
15:00 – 15:20	Discussion
15:20 – 17:30	Field trip to Út-Kinn – Landslides from October 2021 or Skjálbrekka and Grjótháls
Suggestions for activities and dinner	Activities: Geosea, Húsavík swimming pool, District Cultural Center, Whale Museum. Dinner: Fosshotel Húsavík, Gamli Baukur, Salka, Hlöðufell

Thursday, 20 October, 2022

Earthquake Engineering – Seismic Risk and Societal Effects

Session chairs: Benedikt Halldórsson og Jónas Þór Snæbjörnsson

9:00 – 9:20	Foundation types of buildings in Húsavík in the context of seismic hazard <u>Brynjar Örn Arnarson</u> and Benedikt Halldórsson
9:20 – 9:40	Statistical empirical vulnerability model for low-rise Icelandic buildings <u>Bjarni Bessason</u> , Rajesh Rupakhety and Jón Örvar Bjarnason
9:40 – 10:00	High spatial resolution loss estimation using new vulnerability models for Iceland <u>Atefe Darzi</u> , Bjarni Bessason, Benedikt Halldórsson, Sergio Molinad, Alireza Kharazian and Mojtaba Moosapoor
10:00 – 10:20	Numerical modeling of U-shaped Reinforced Concrete Walls <u>Ching-Yi Tsai</u> , Bjarni Bessason and Rajesh Rupakhety
10:20 – 10:50	Coffee break
10:50 – 11:10	Social resilience in the aftermath of a natural disaster <u>Tinna Halldórsdóttir</u>
11:10 – 11:30	Introducing MEDiate Horizon 2021 project in Iceland for Disaster-Resilient Society 2021 and the unique system dynamics approach to multihazard risk management. <u>Sólveig Þorvaldsdóttir</u>
NorthQuake 2022 – Panel Discussion and Closing Session chairs: Helena Eydís Ingólfssdóttir and Huld Hafliðadóttir	
11:30 – 12:30	NorthQuake 2022 Desk Exercise, Panel Discussion and Closing (in Icelandic) <u>Benedikt Halldórsson</u> , <u>Sólveig Þorvaldsdóttir</u> , <u>Kristín Jónsdóttir</u> , <u>Hulda Ragnheiður Árnadóttir</u> , <u>Katrín Sigurjónsdóttir</u> , <u>Bjarni Bessason</u>