

IASPEI



SEISMOLOGY AND PHYSICS OF THE EARTH'S INTERIOR

1895	G. Gerland & E. v. Rebeur-Paschwitz
1899	Commission séismologique permanente
1904	Permanent "Bureau" in Strasbourg
IUGG General Assembly (Rome, 1922)	One of the Sections of the Union
1930	International Association of Seismology
IX IUGG General Assembly (Bruxelles, 1951)	Present name



IASPEI
logo

STRUCTURE

Commissions, Committees, and Affiliated Activities of IASPEI

- Commission on Practice
- Commission on Earthquake Hazard and Prediction
- Commission for International Decade of Natural Disaster Reduction
- Commission on Wave Propagation
- Commission on Controlled Source Seismology
- Commission on Geodynamics and Tectonophysics
- International Heat Flow Commission (joint with IAVCEI and IAPSO)
- Commission on Physical and Chemical Properties of Materials of the Earth's Interior (joint with IAVCEI)
- Committee on Volcano Seismology (joint with IAVCEI)
- European Seismological Commission
- Asian Seismological Commission
- Committee on Education
- Committee for Developing Countries
- International Commission on Earth Sciences in Africa
- Federation of Digital Broadband Seismograph Networks
- International Ocean Network



STRUCTURE

Kenji Satake

President of IASPEI

Professor
Earthquake Research Institute - Japan



Johannes Schweitzer

Secretary General

Associate Professor
Centre for Earth Evolution and
Dynamics - NORSAR - Norway



OBJECTIVES

To facilitate: research on theoretical, observational and applied seismology ... the discussion, design and adoption of standards for observatory practice and data storage

To promote multidisciplinary research related to earthquake science, internal structure, properties and processes of the Earth

To initiate and coordinate the conduct and communication of related research which depends on co-operation between different countries.

To organise and support international conferences and meetings ... and to support, including financially if the budget allows, the participation in such meetings of young researchers and of scientists from developing countries.

BELGIUM'S PARTICIPATION



Kris Vanneste

BE representative to the IASPEI

Earthquake geologist
Royal Observatory of Belgium

IASPEI

ESC



Thomas Lecocq

**BE representative to the ESC
co-chair of the ESC WG on
Legacy Seismograms**

Seismologist
Royal Observatory of Belgium



Koen Van Noten

**co-chair of the ESC WG on
Harmonizing internet macroseismic
data exchange in Europe**

Seismologist
Royal Observatory of Belgium



Raphaël De Plaen

**Secretary of the ESC WG on
Legacy Seismograms**

Seismologist
Royal Observatory of Belgium

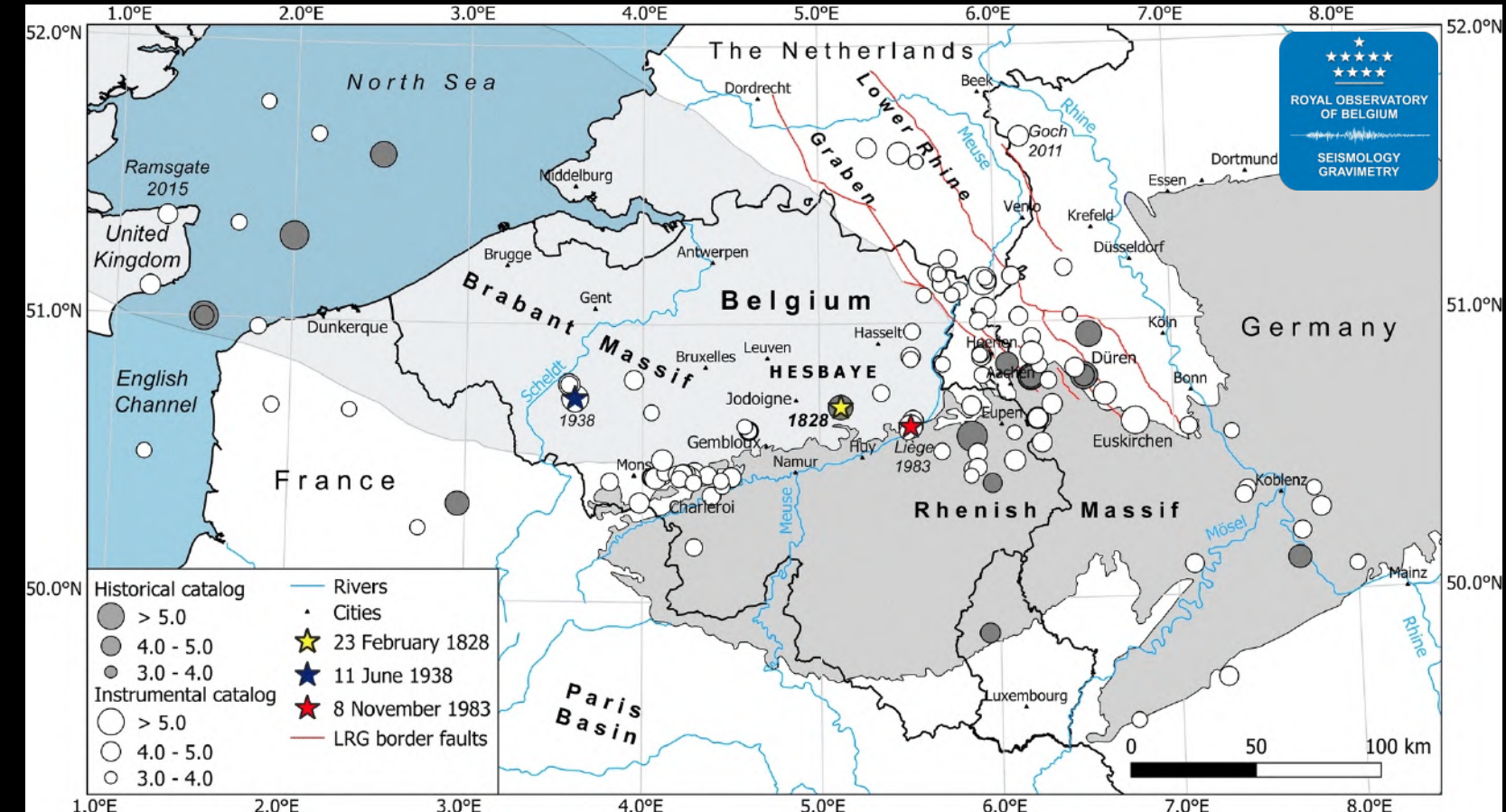
WHY SEISMOLOGY IN BELGIUM ?



WHY SEISMOLOGY IN BELGIUM?

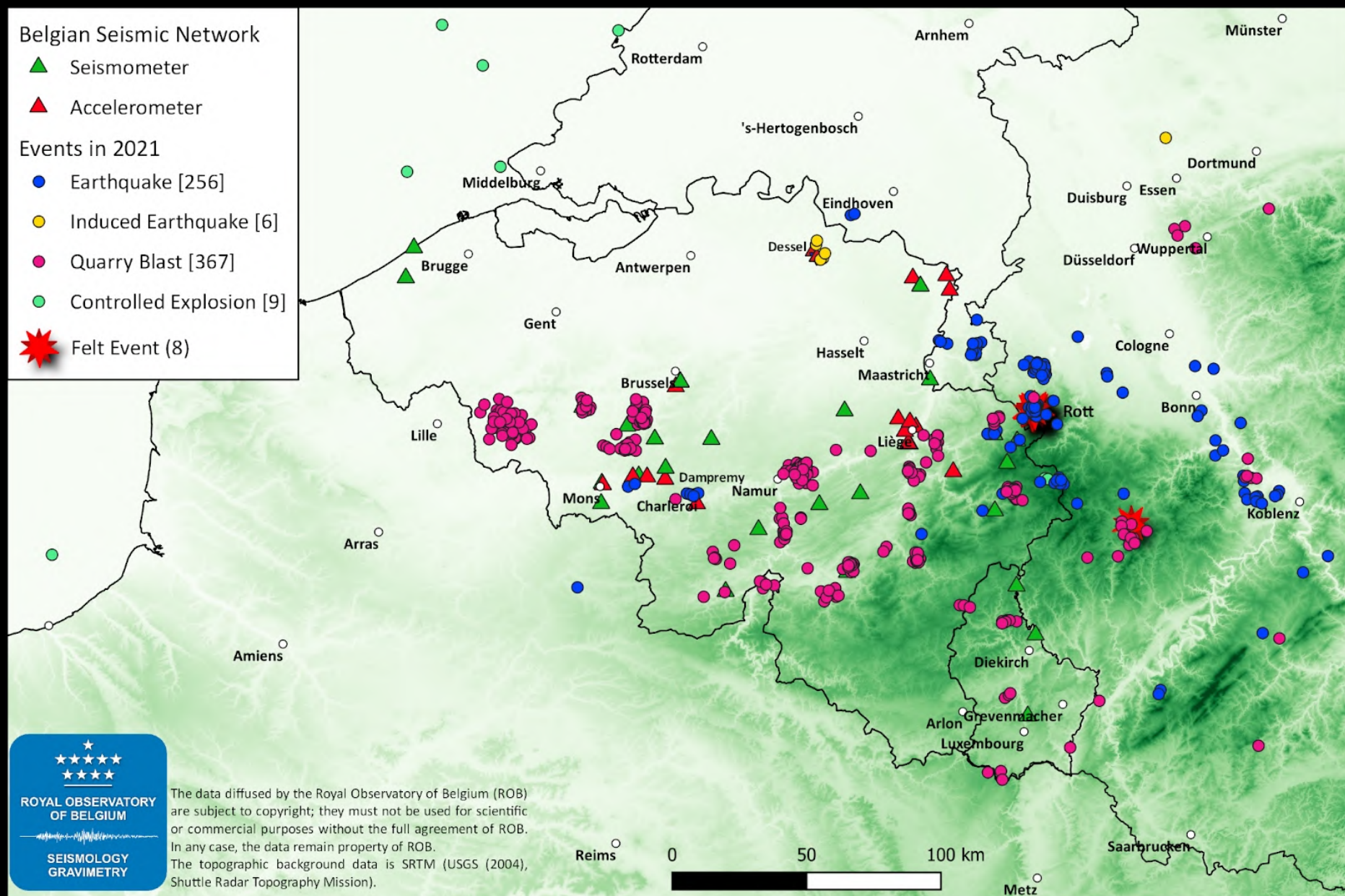


Egen 1828: First earthquake "impact" map

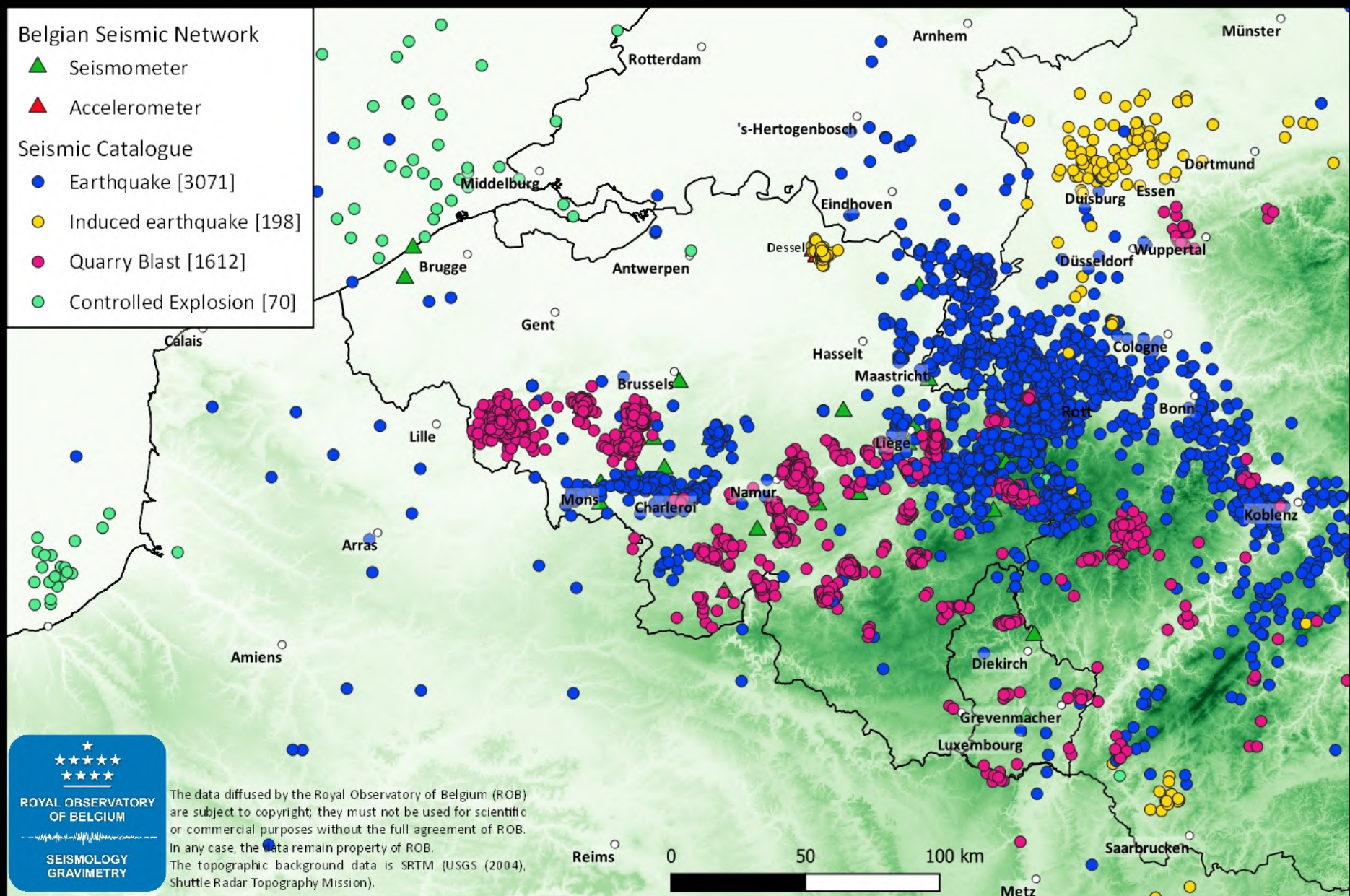


Magnitude	Event Statistics
≥ 6	1 every 315 years
≥ 5	1 every 40 years
≥ 4	1 every 5 years
≥ 3	1.5 per year
≥ 2	11 per year

LOCAL SEISMICITY

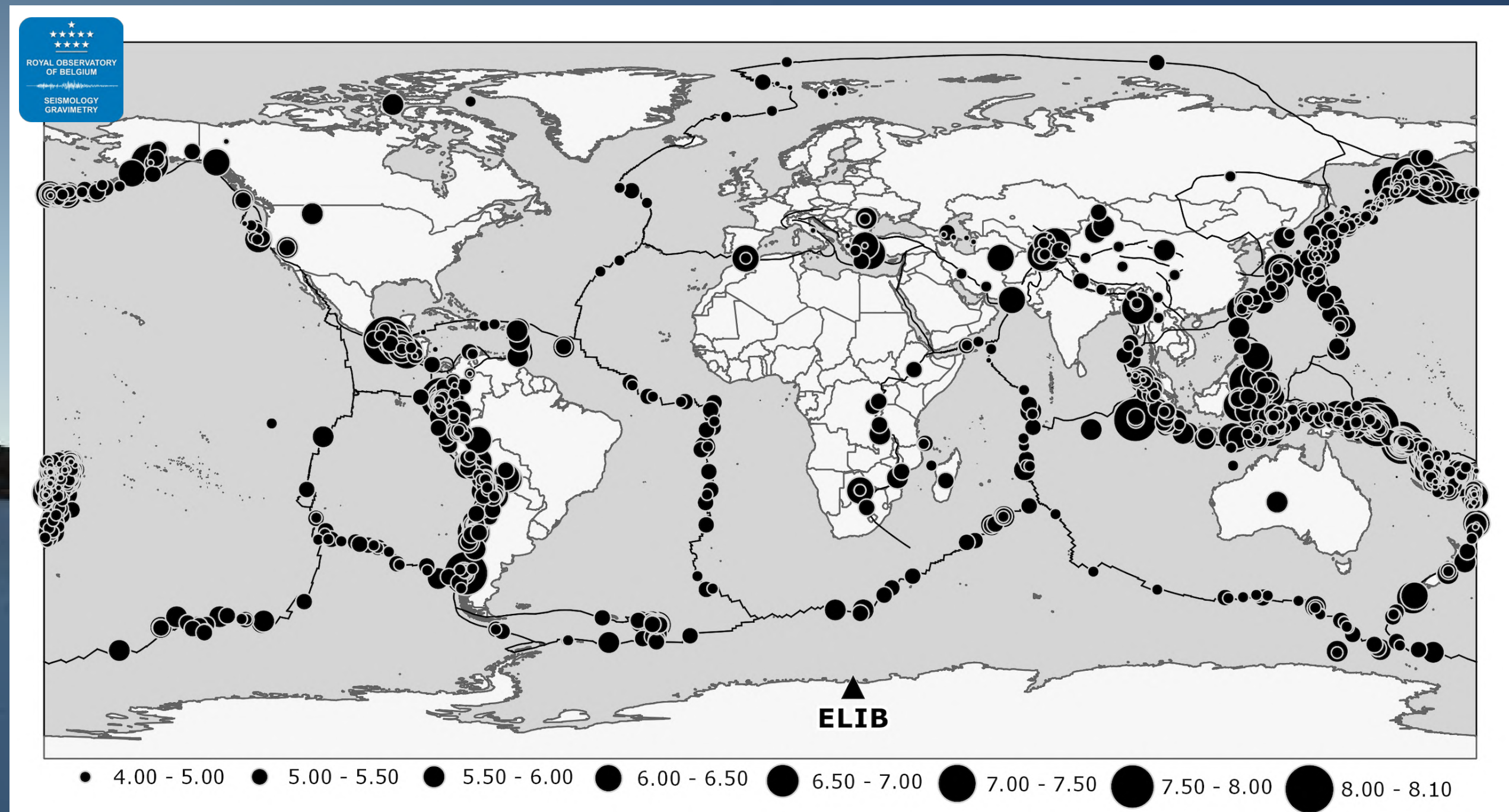


2021



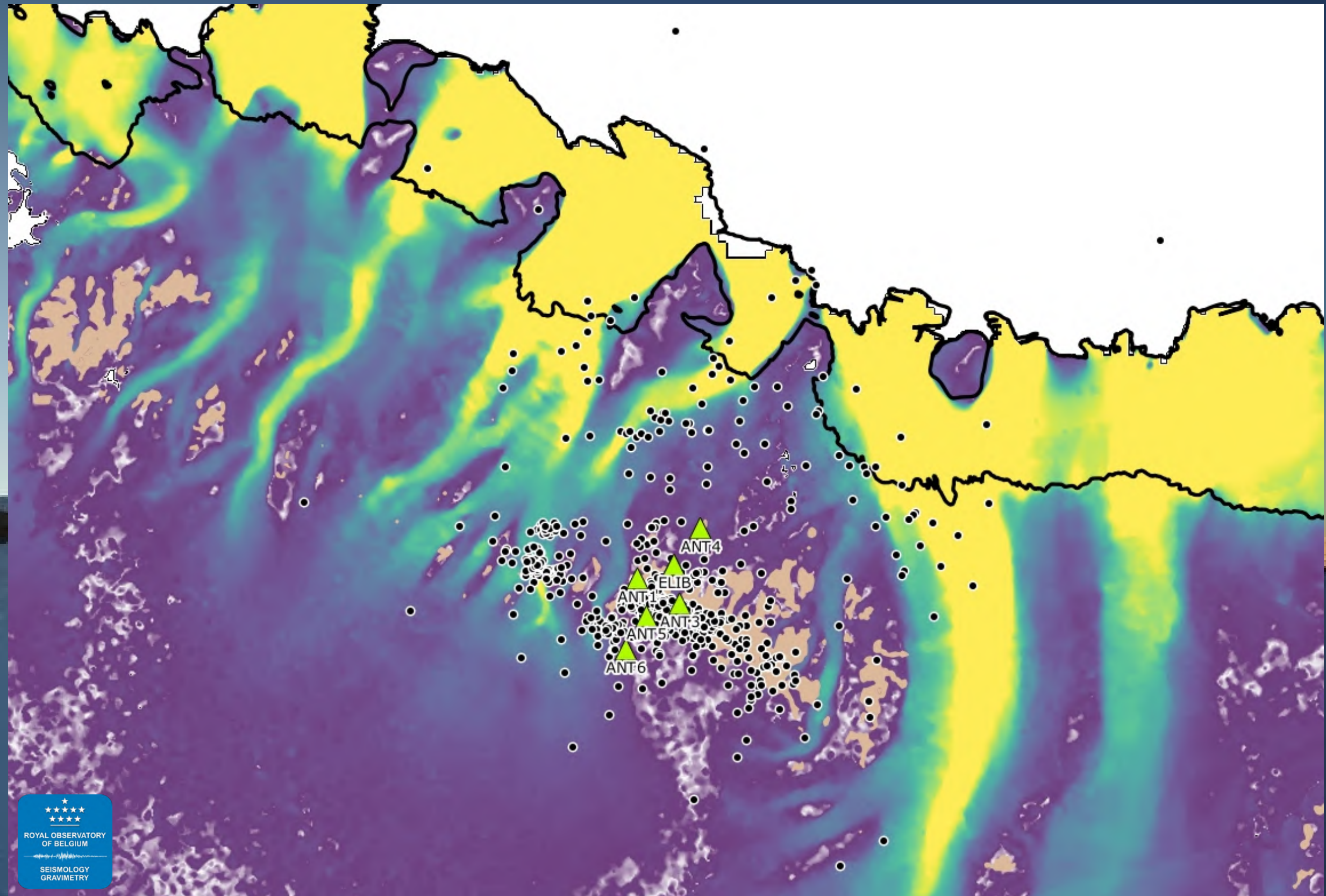
803 - 2022

FAR(FAR) AWAY SEISMICITY

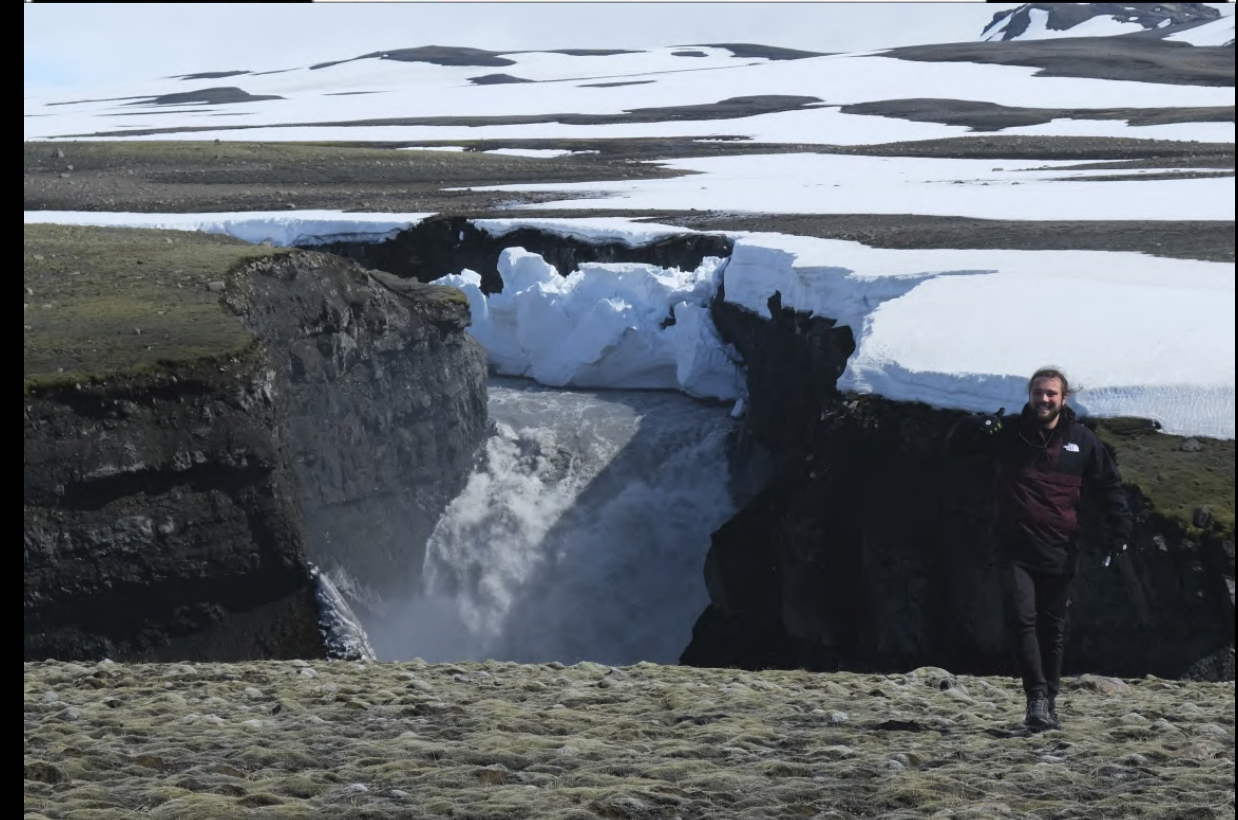
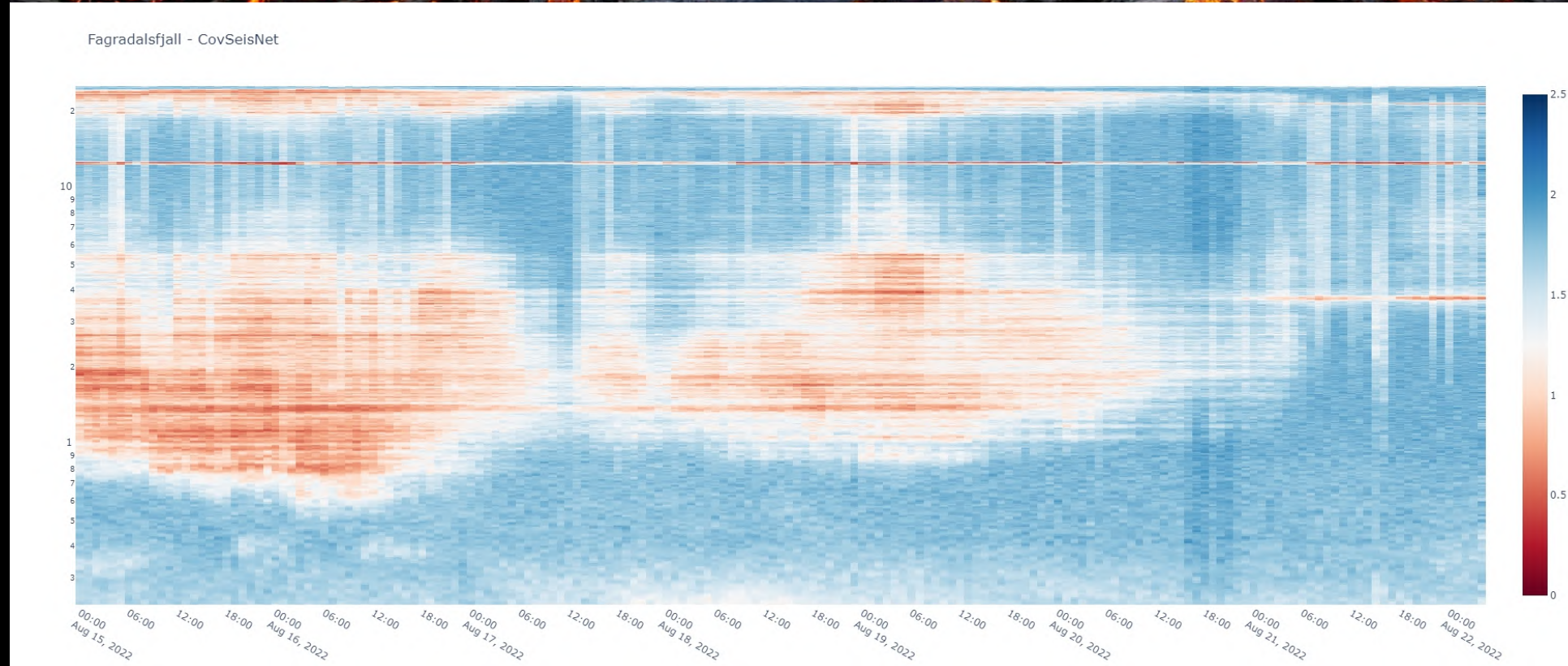
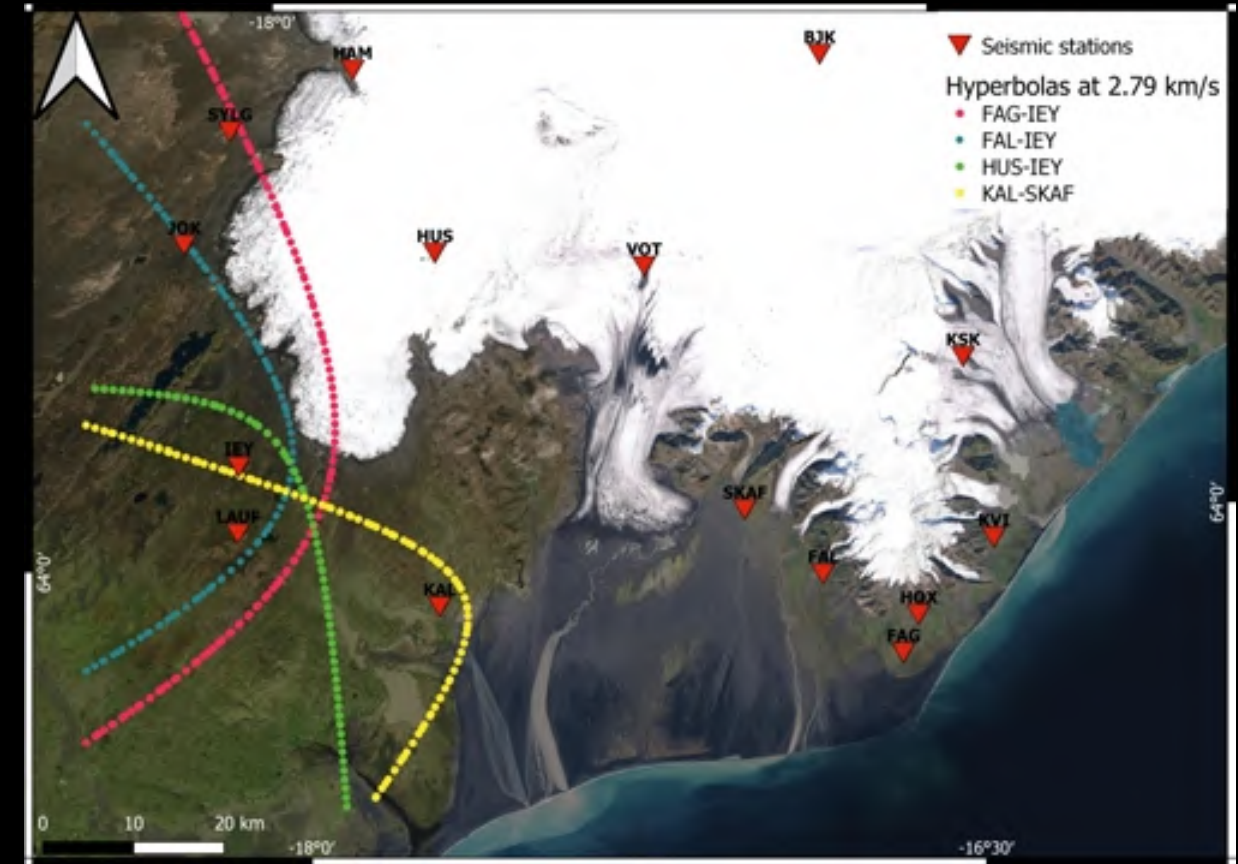


Events measured from the ELIB station since 2010

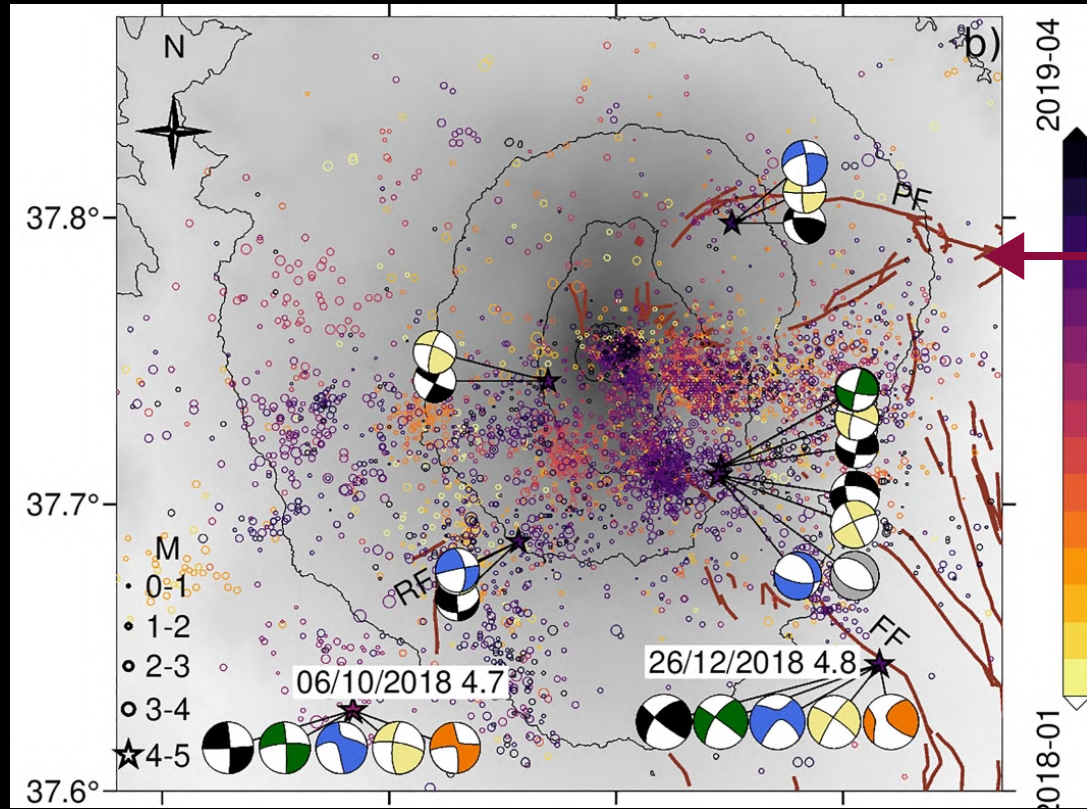
FAR(FAR) AWAY SEISMICITY



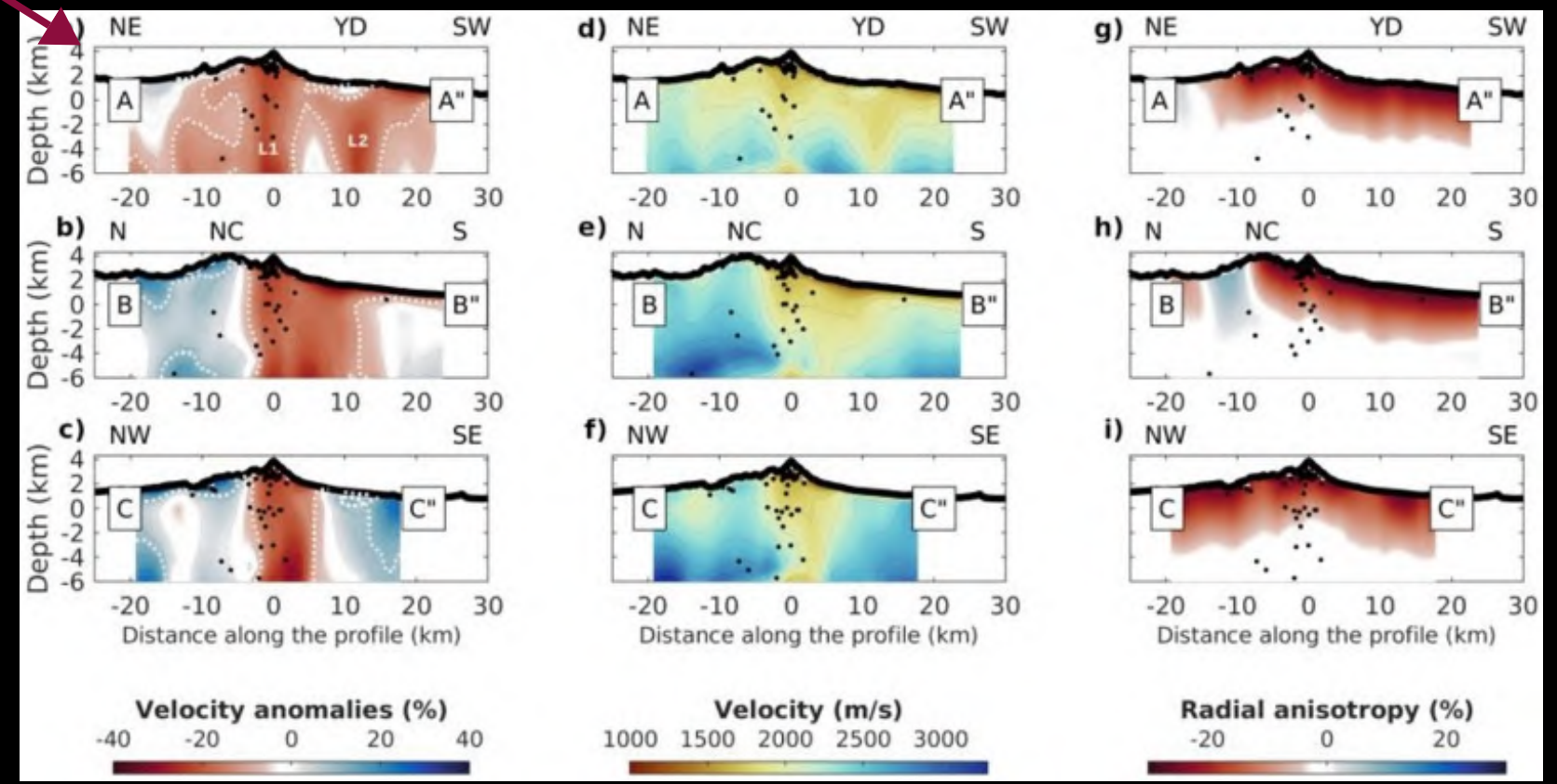
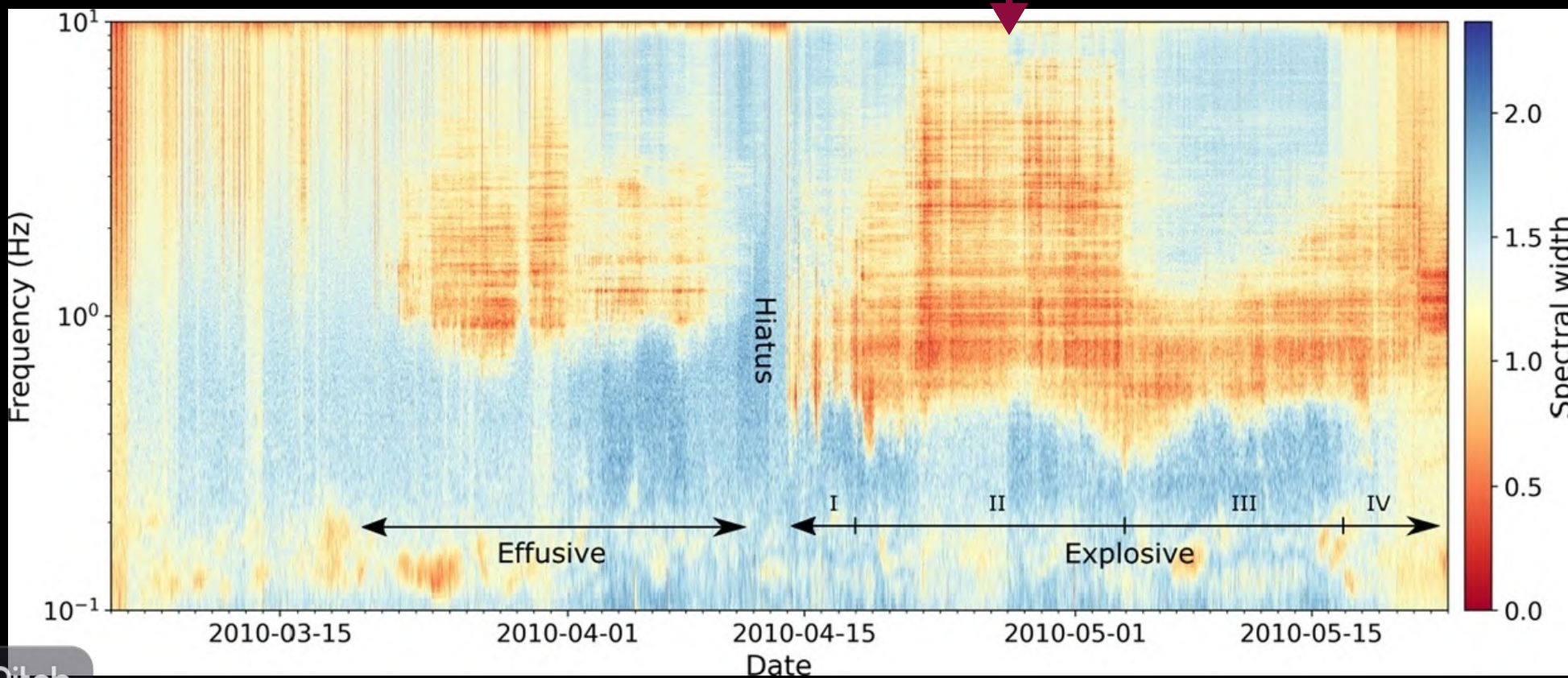
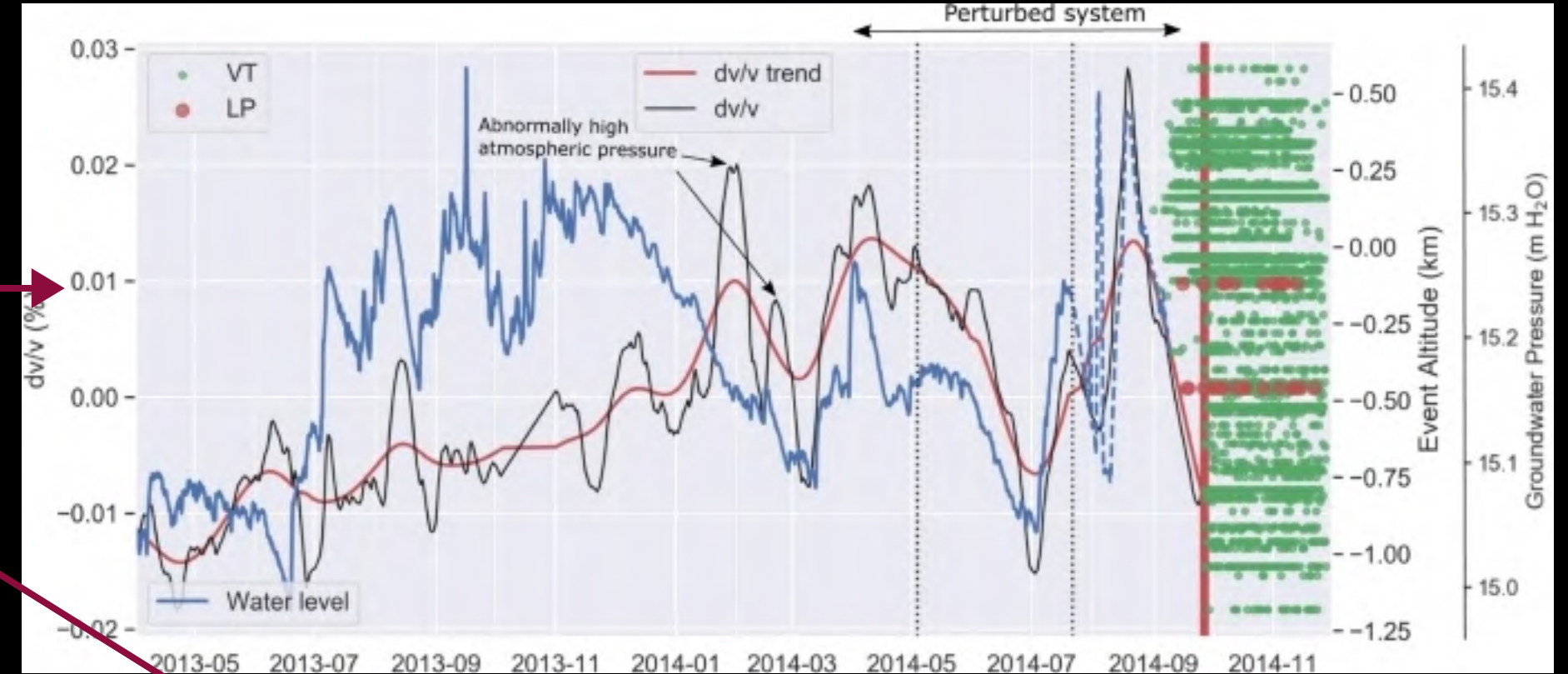
ICELANDIC TREMOR



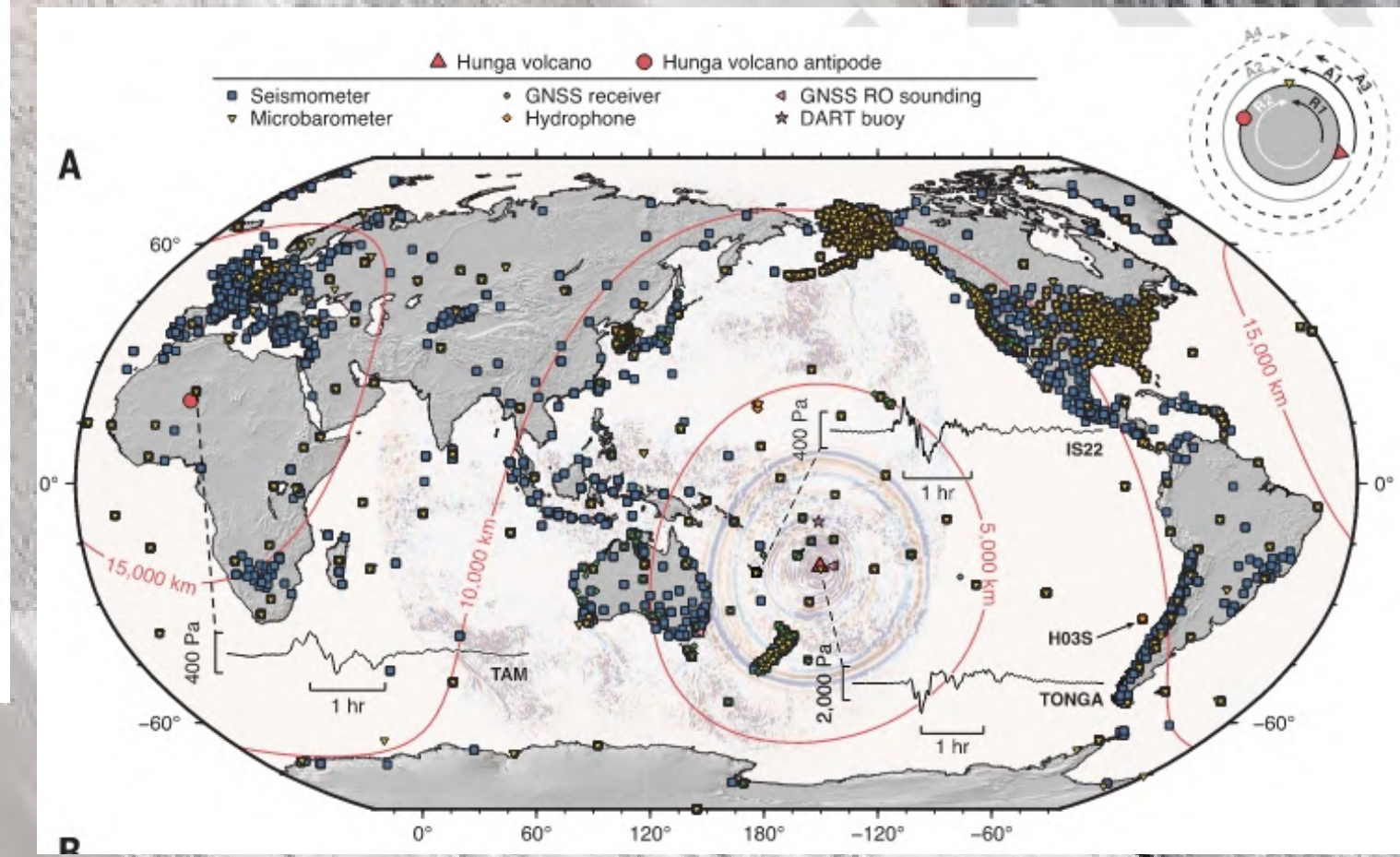
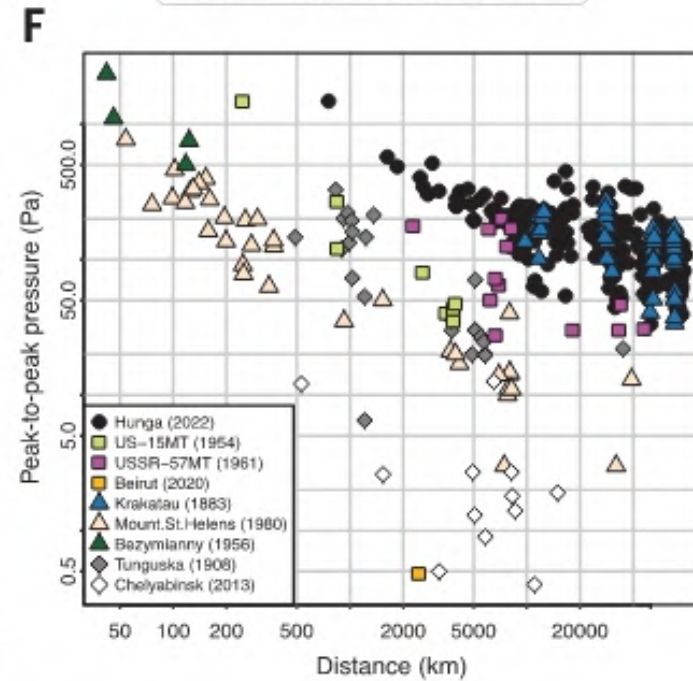
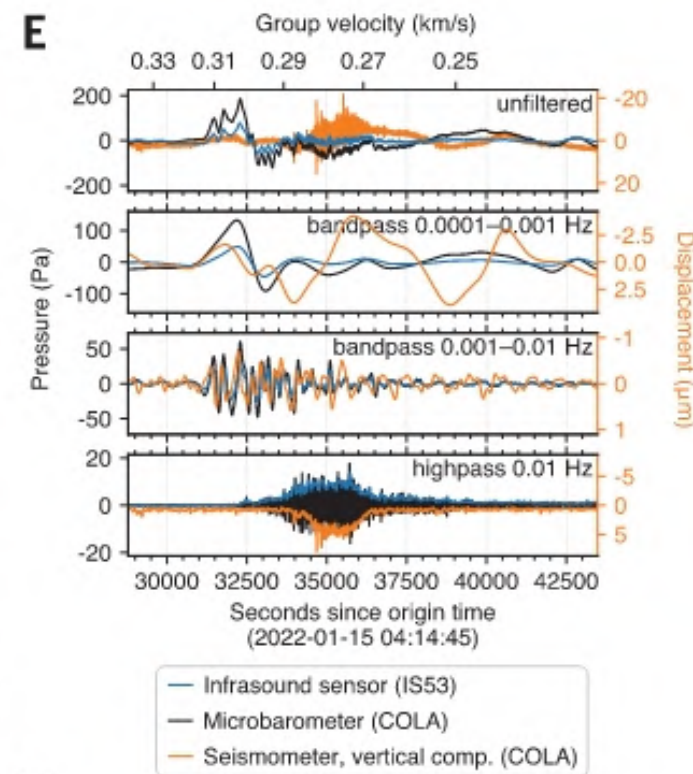
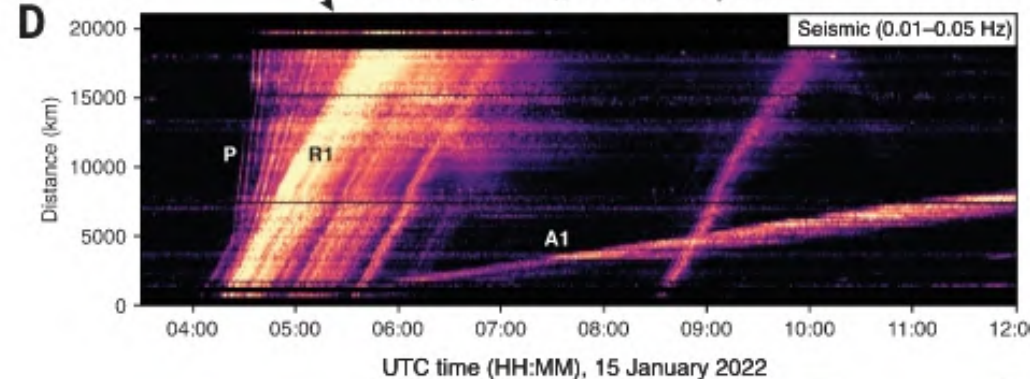
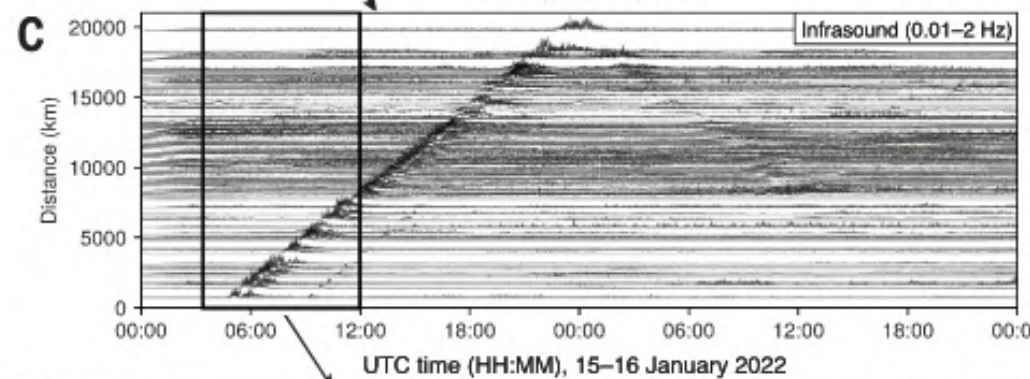
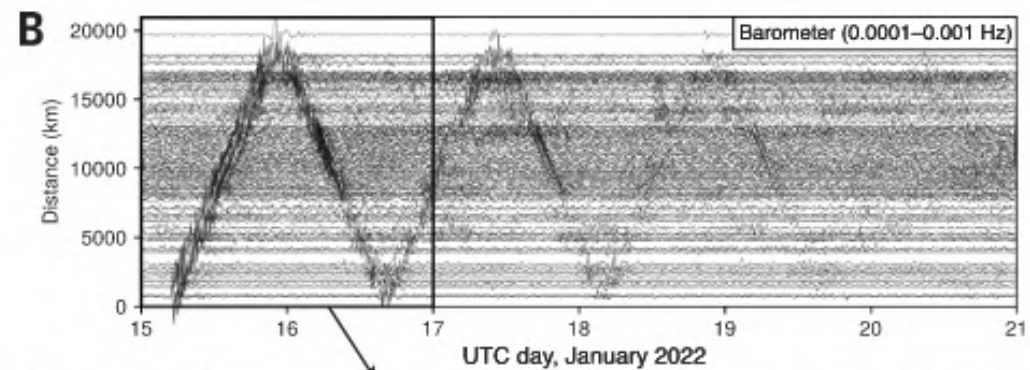
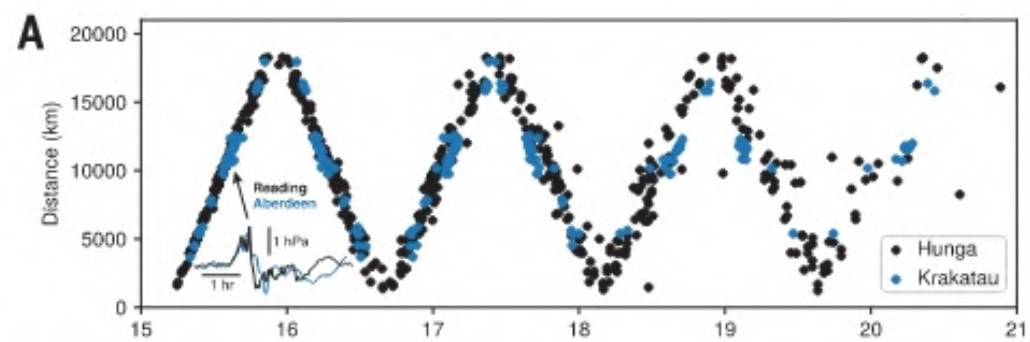
VOLCANO-SEISMOLOGY



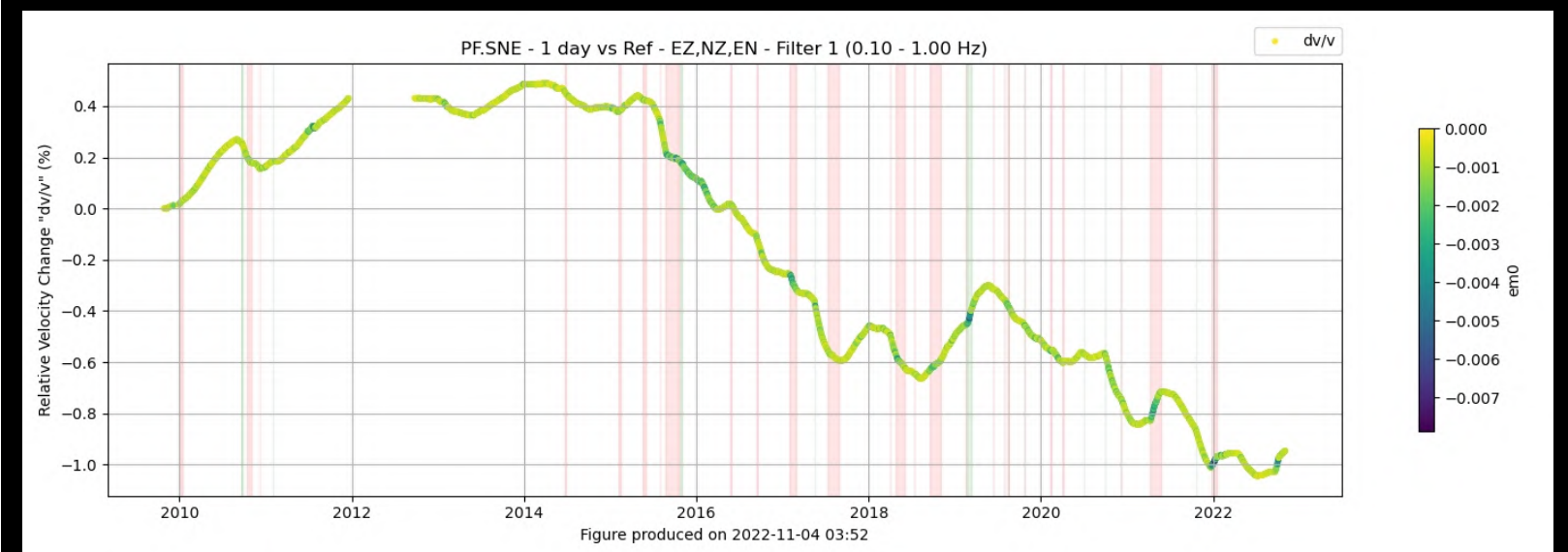
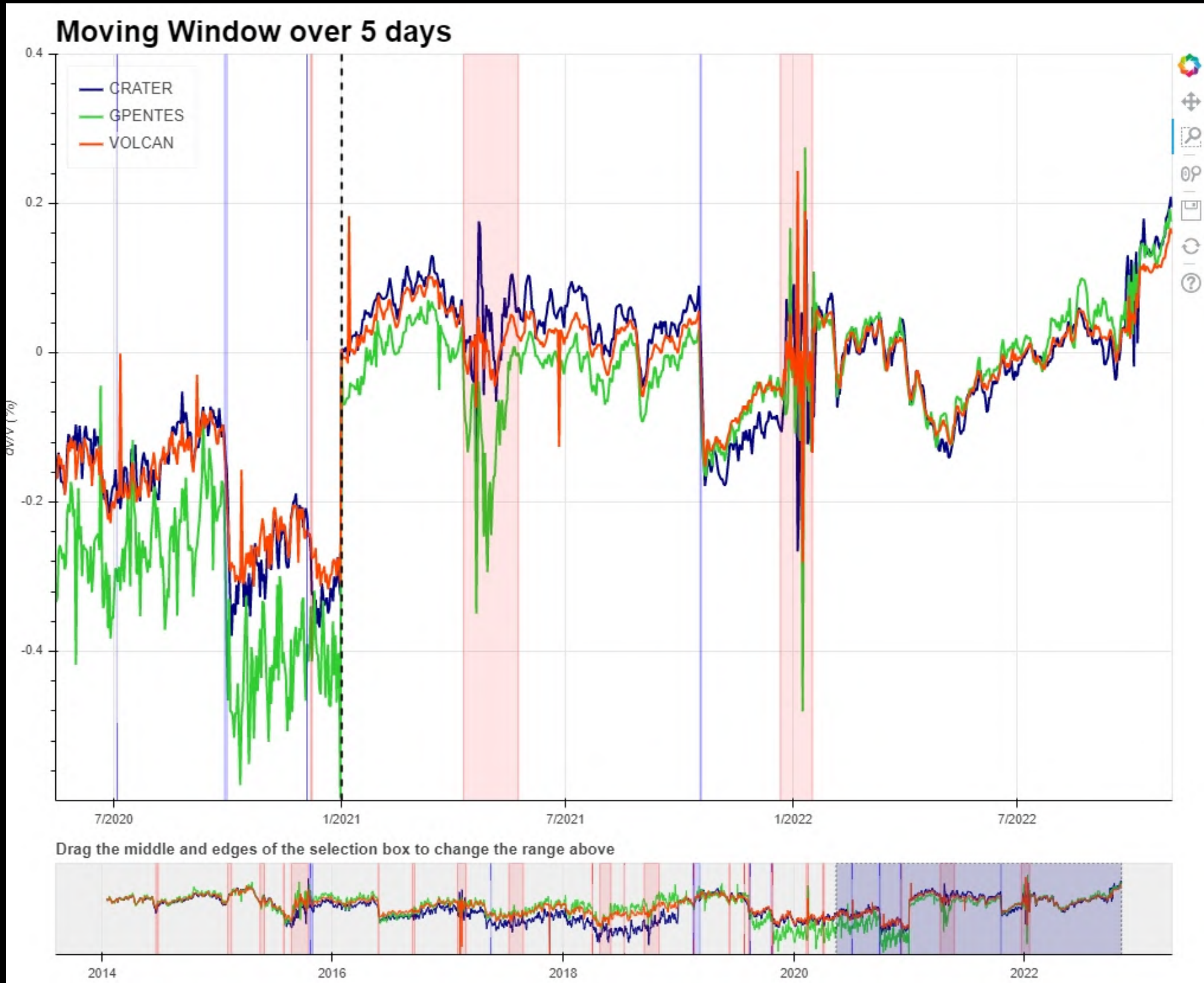
Etna
 Ontake
 Eyjafjallajökull
 Colima
 ...



VOLCANO-SEISMOLOGY

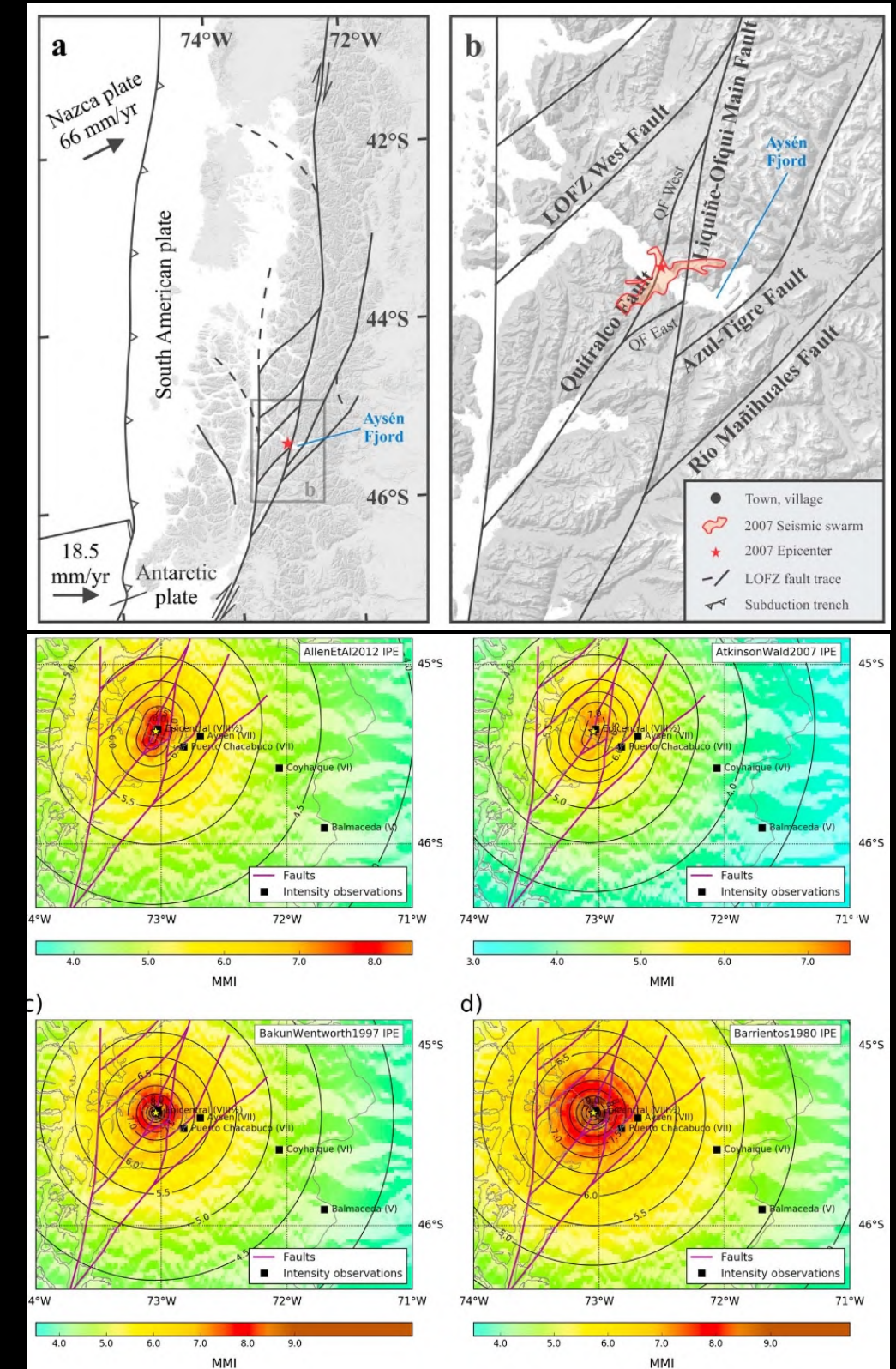
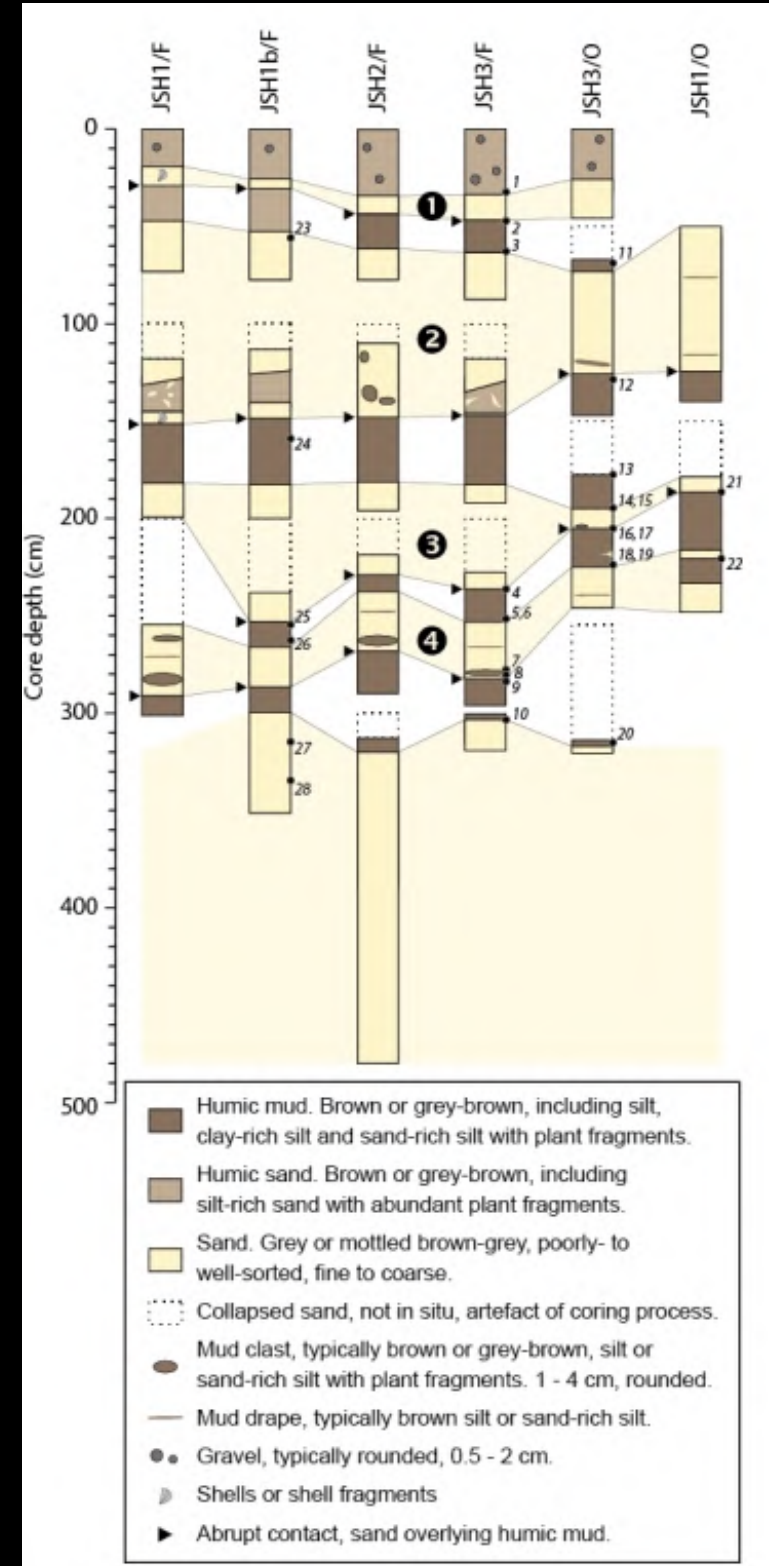
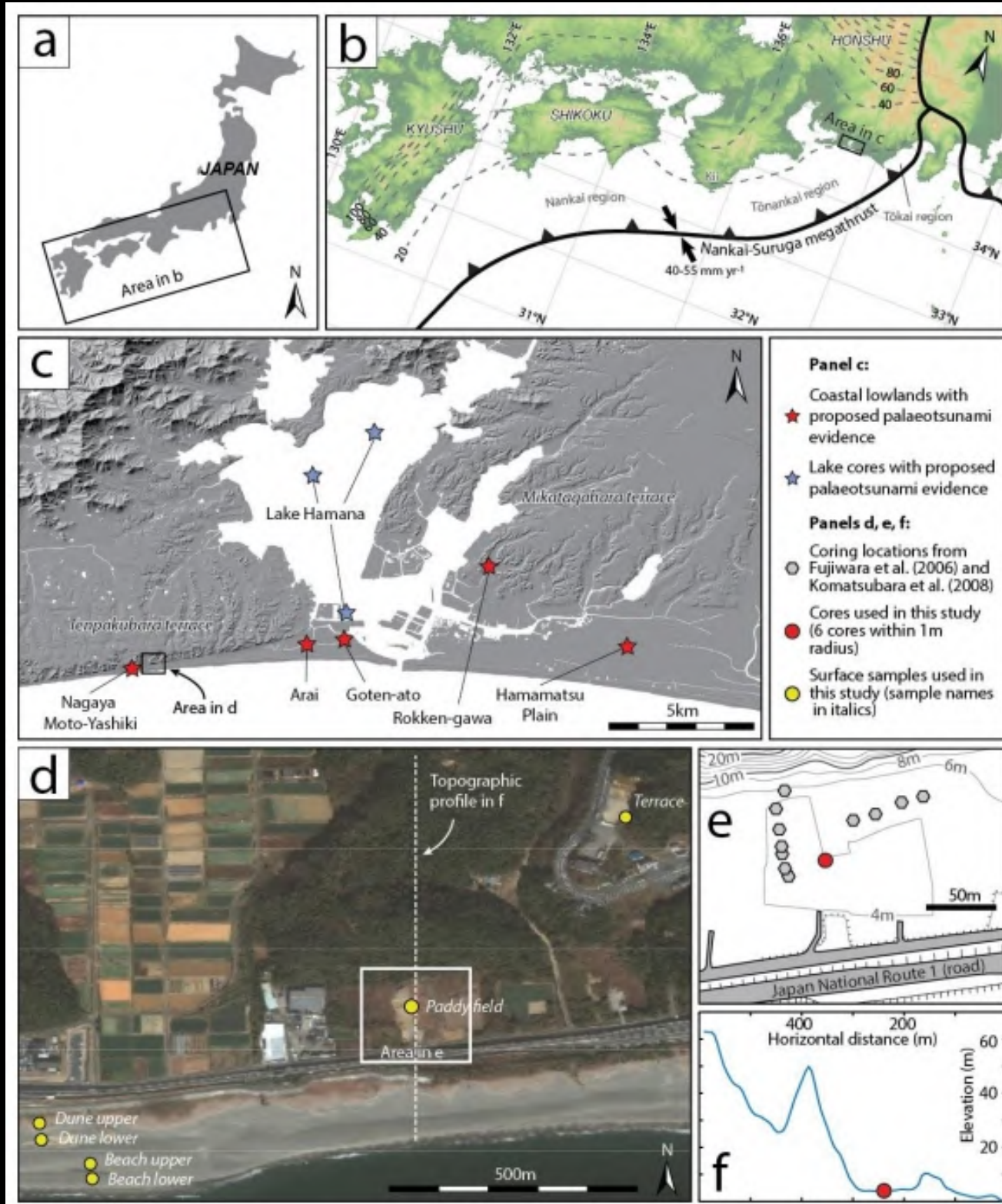


VOLCANO MONITORING



Real time monitoring system running at the Piton de la Fournaise observatory (La Réunion, France)

BIG EARTHQUAKES



Historical Nankai-Suruga megathrust earthquakes recorded by tsunami and terrestrial mass movement deposits on the Shirasuka coastal lowlands, Shizuoka Prefecture, Japan. Ed Garrett et al.

Probabilistic Evaluation of Fault Sources Based on Paleoseismic Evidence From Mass-Transport Deposits: The Example of Aysén Fjord, Chile. Kris Vanneste et al.

EVEN FURTHER

★★★★★ Royal Observatory
★★★★★ of Belgium

News / Mars Interior Structure Revealed by InSight Seismic Data

Mars Interior Structure Revealed by InSight Seismic Data

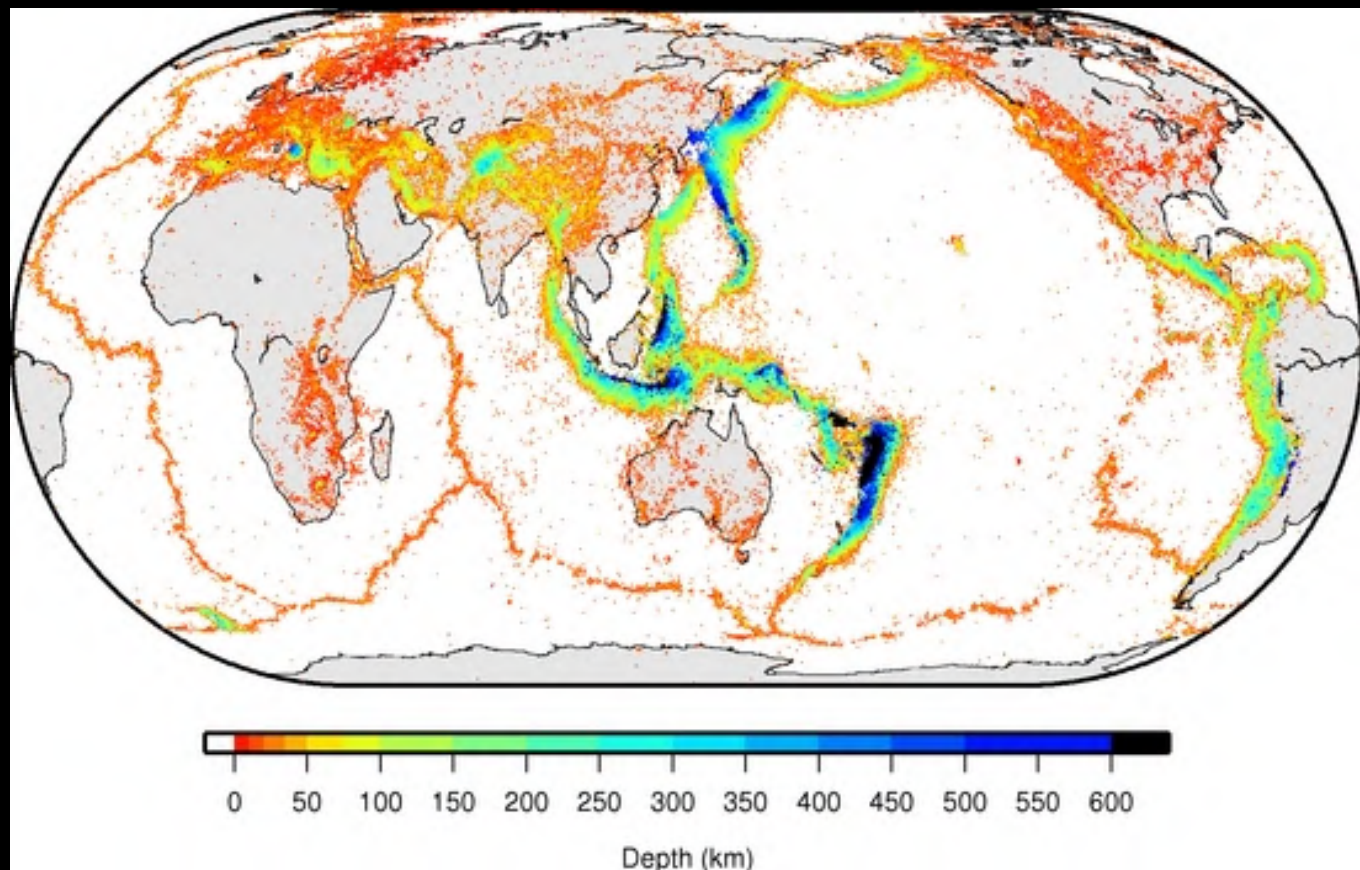


SEIS Instrument
(covered with Wind & Thermal Shield)



CHALLENGES

CHALLENGES FOR BELGIUM

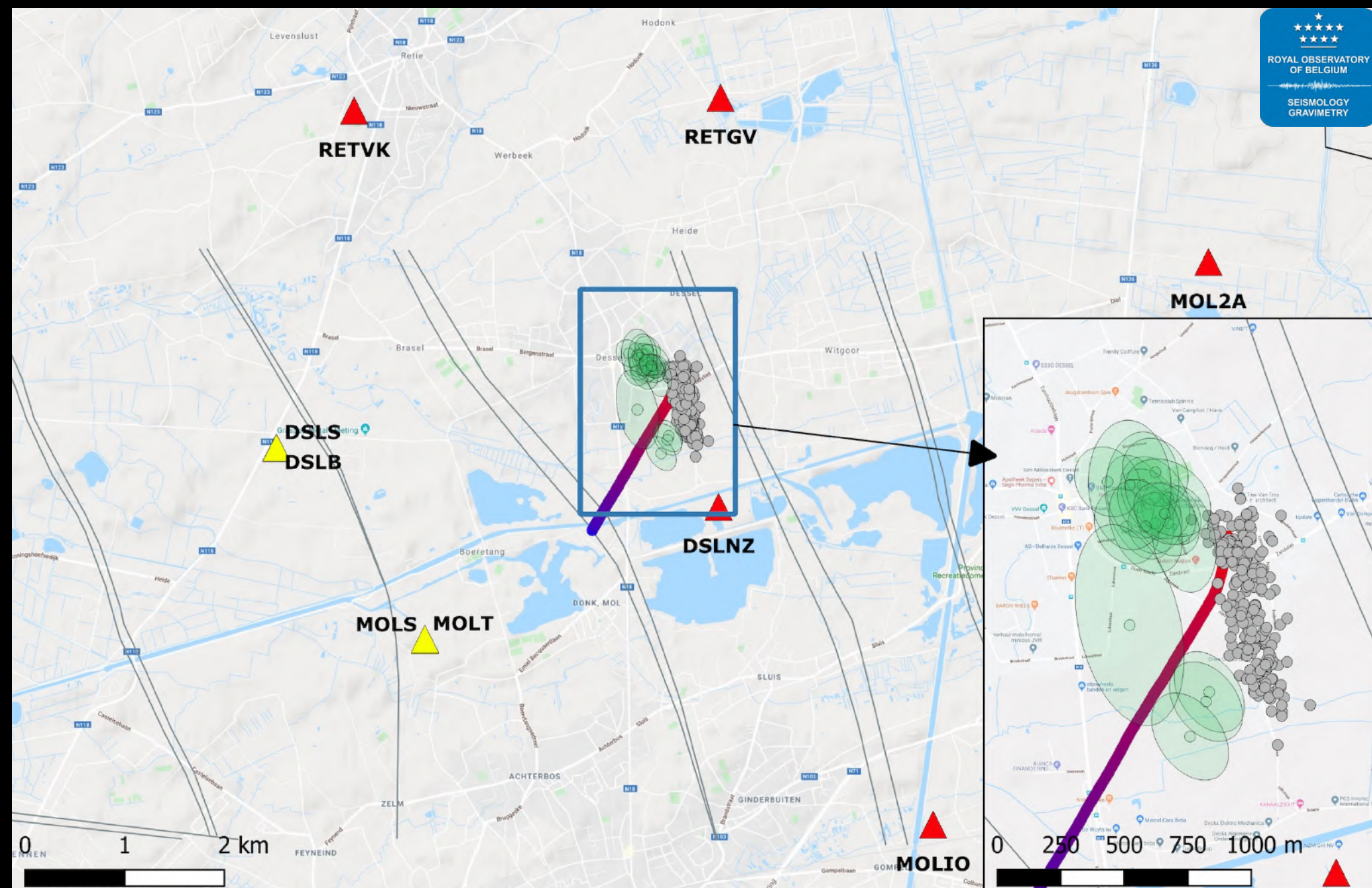


Society's risk aversion

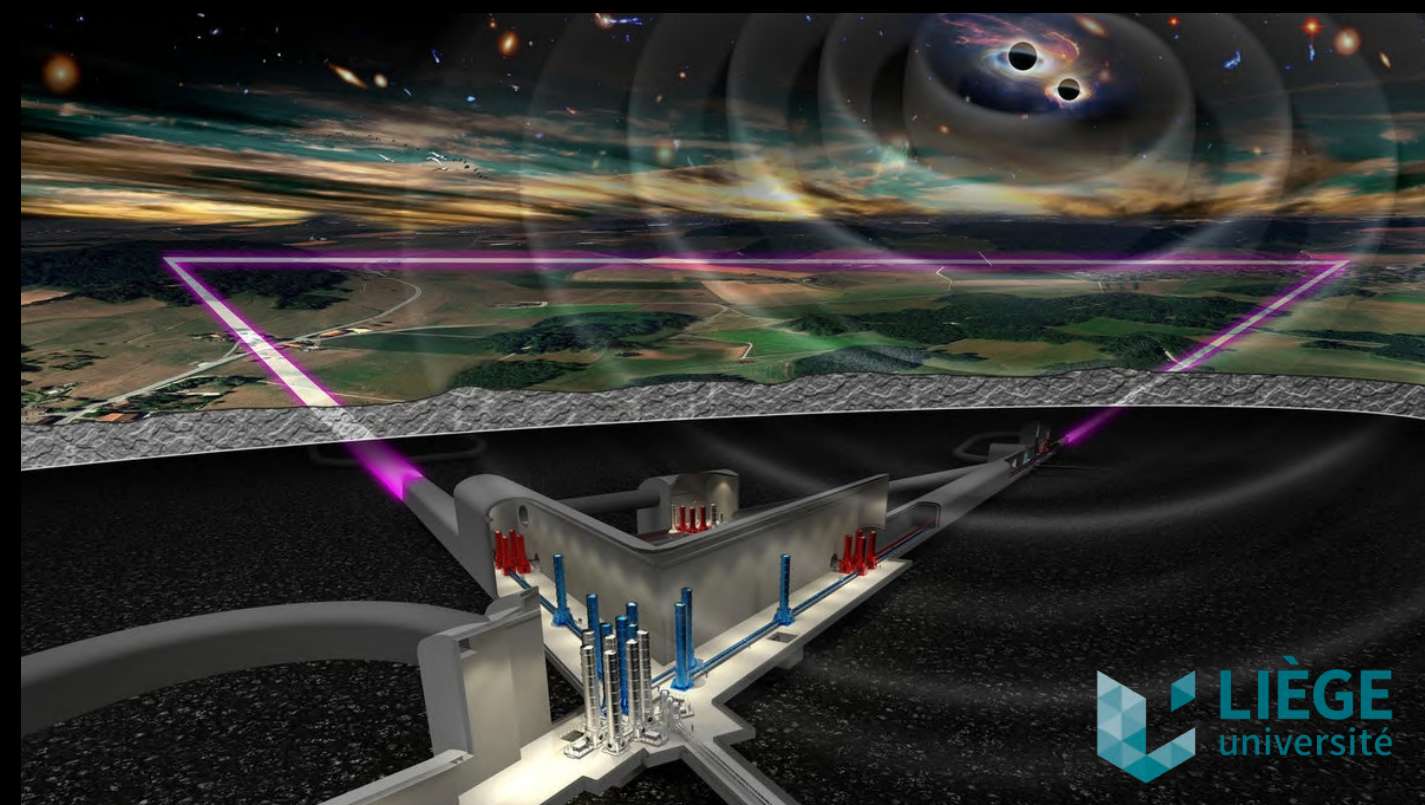
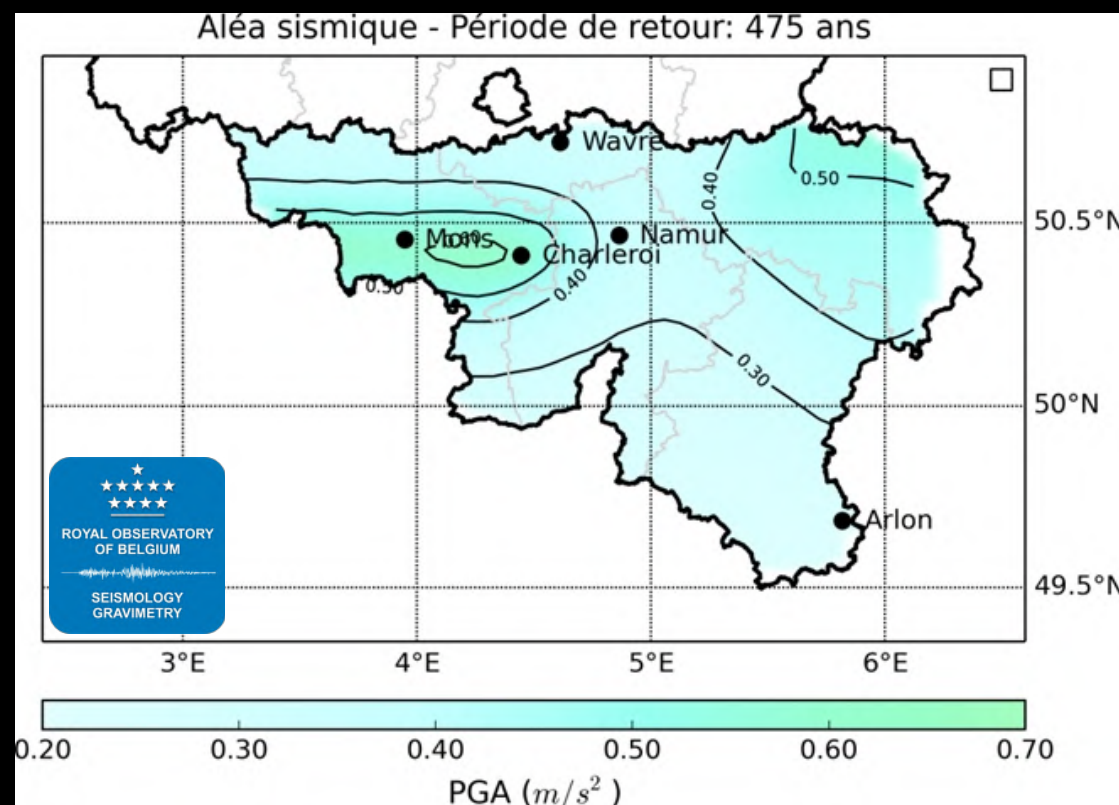
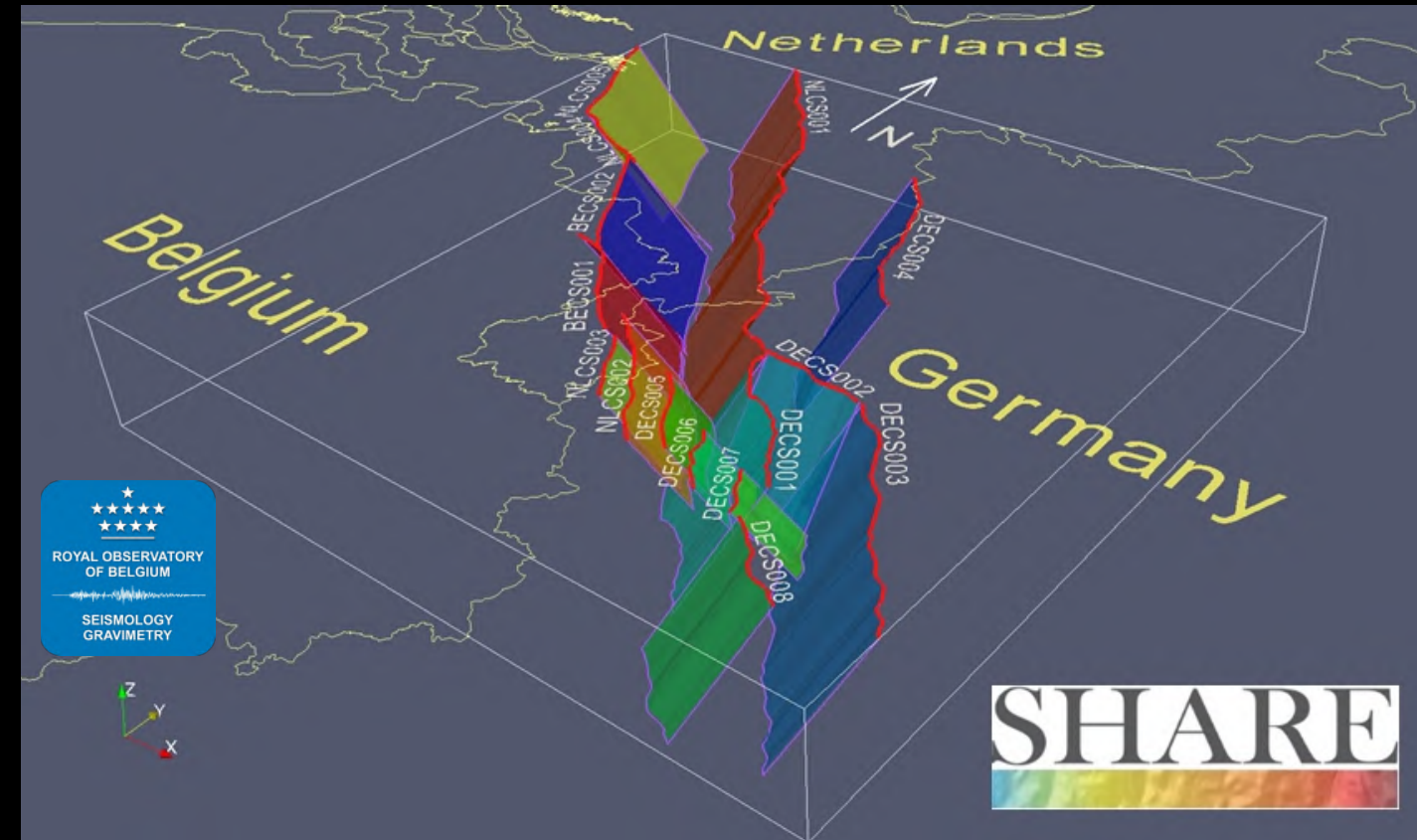
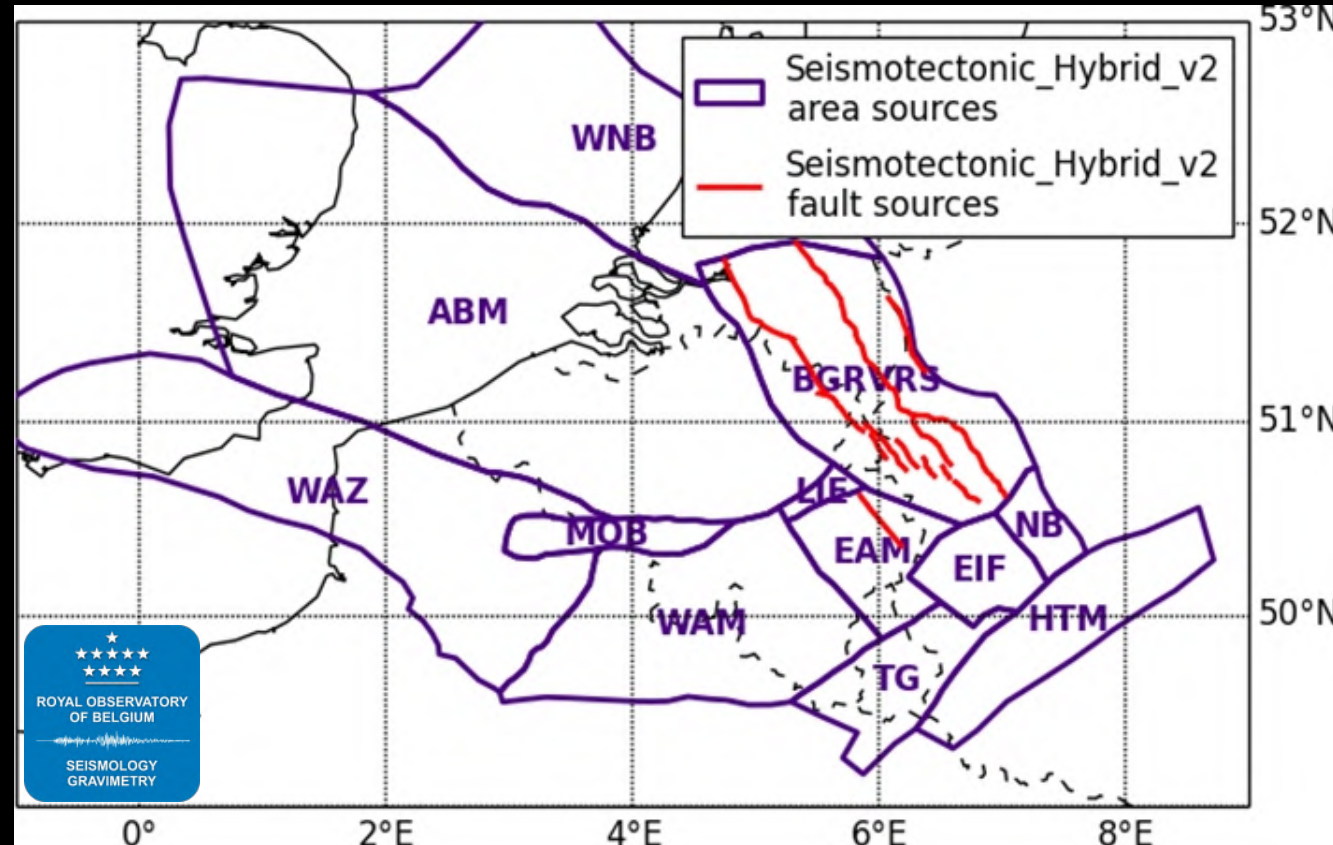
> 99% of events at plate boundaries

< 1% in intraplate: hazard lower, but what about risk?

Energy crisis & climate change
Need for local & renewable sources
Induced earthquakes!
Due to deep geothermal doublets
Due to CO2 injection
etc...

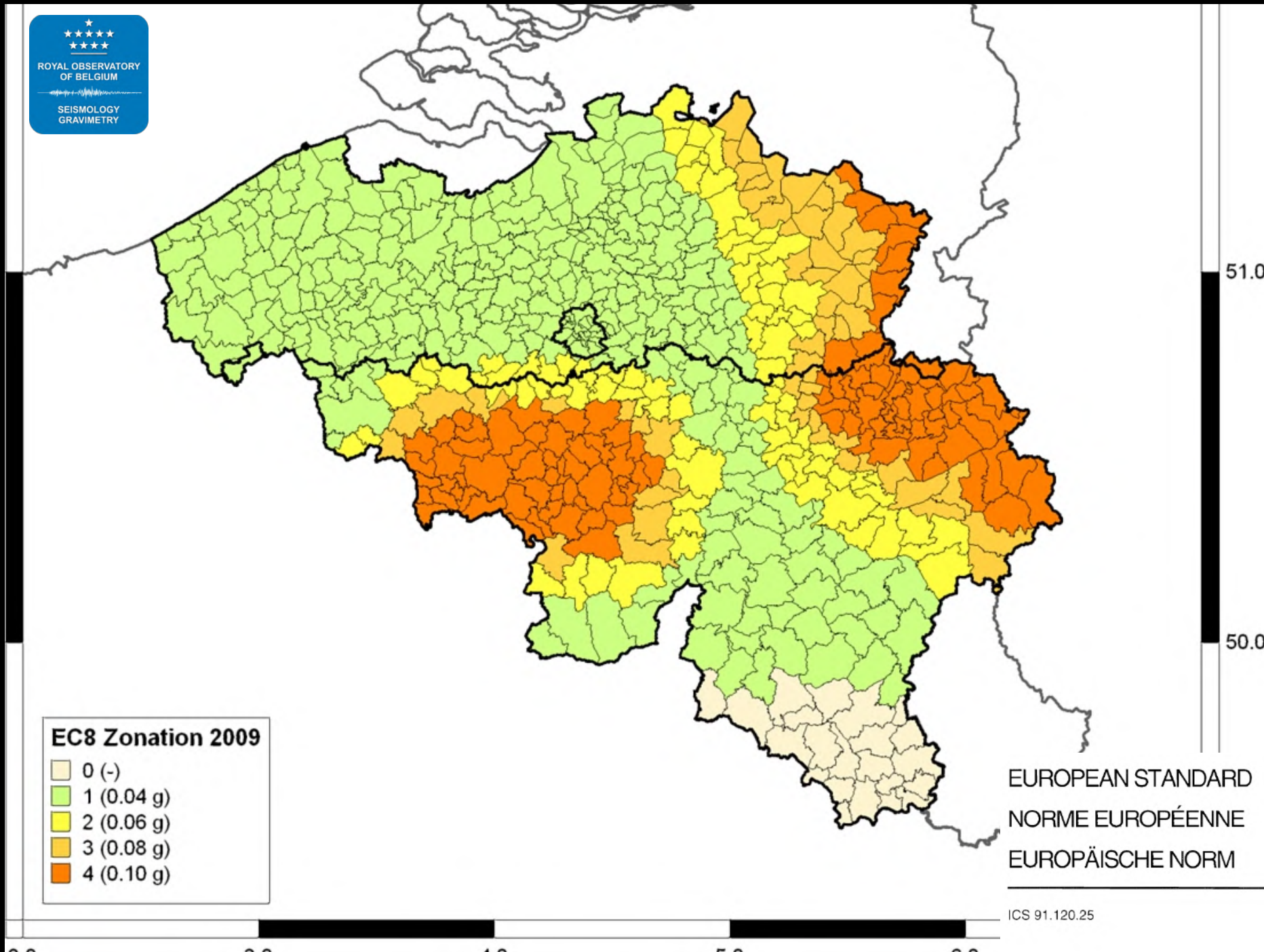


SEISMIC HAZARD ASSESSMENT

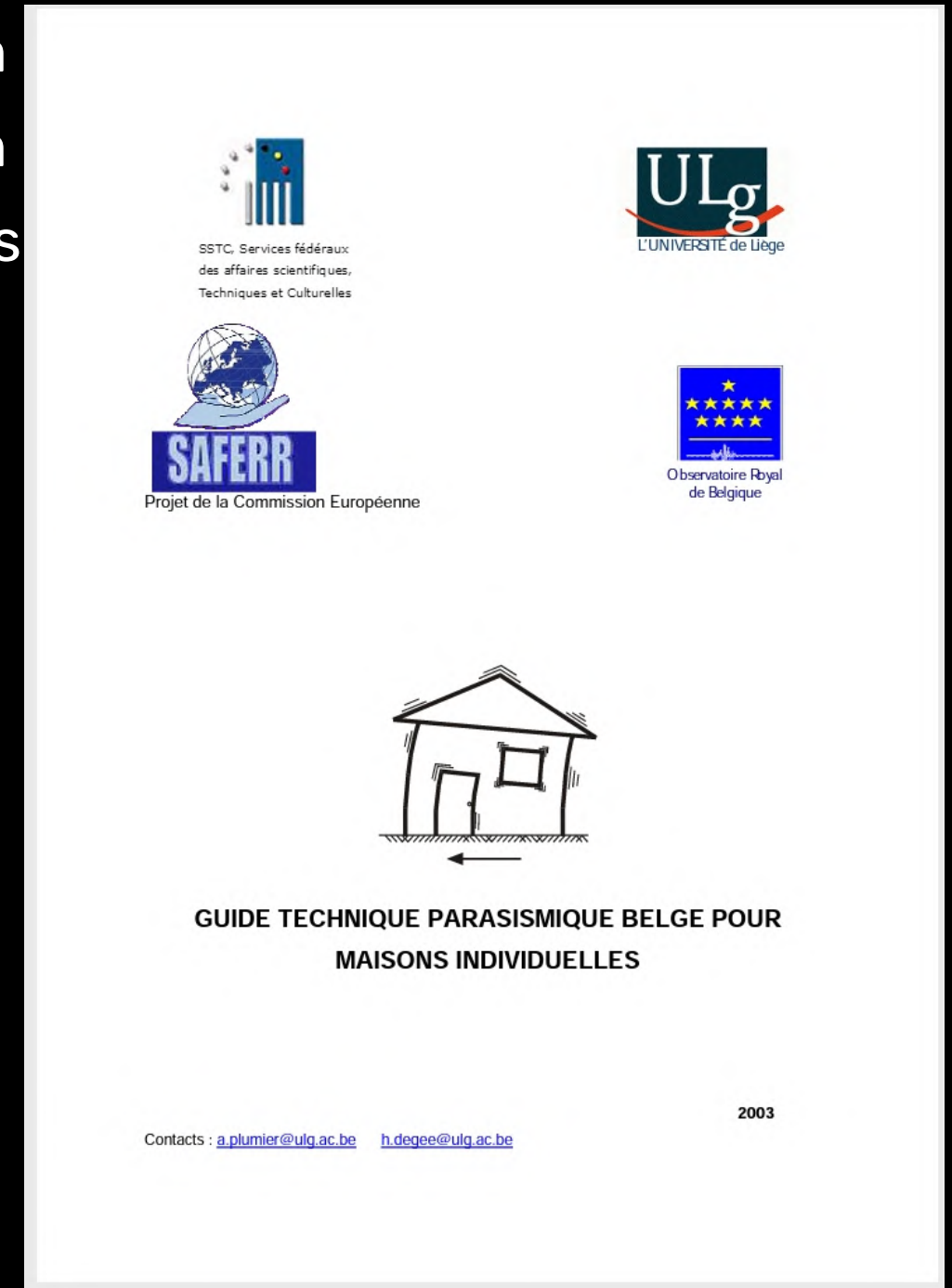


→ See Yawar Hussain's poster on the Einstein Telescope

LINKING WITH SOCIETY



Joint publication on
paraseismic construction
for individual houses



EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1998-1

December 2004

ICS 91.120.25

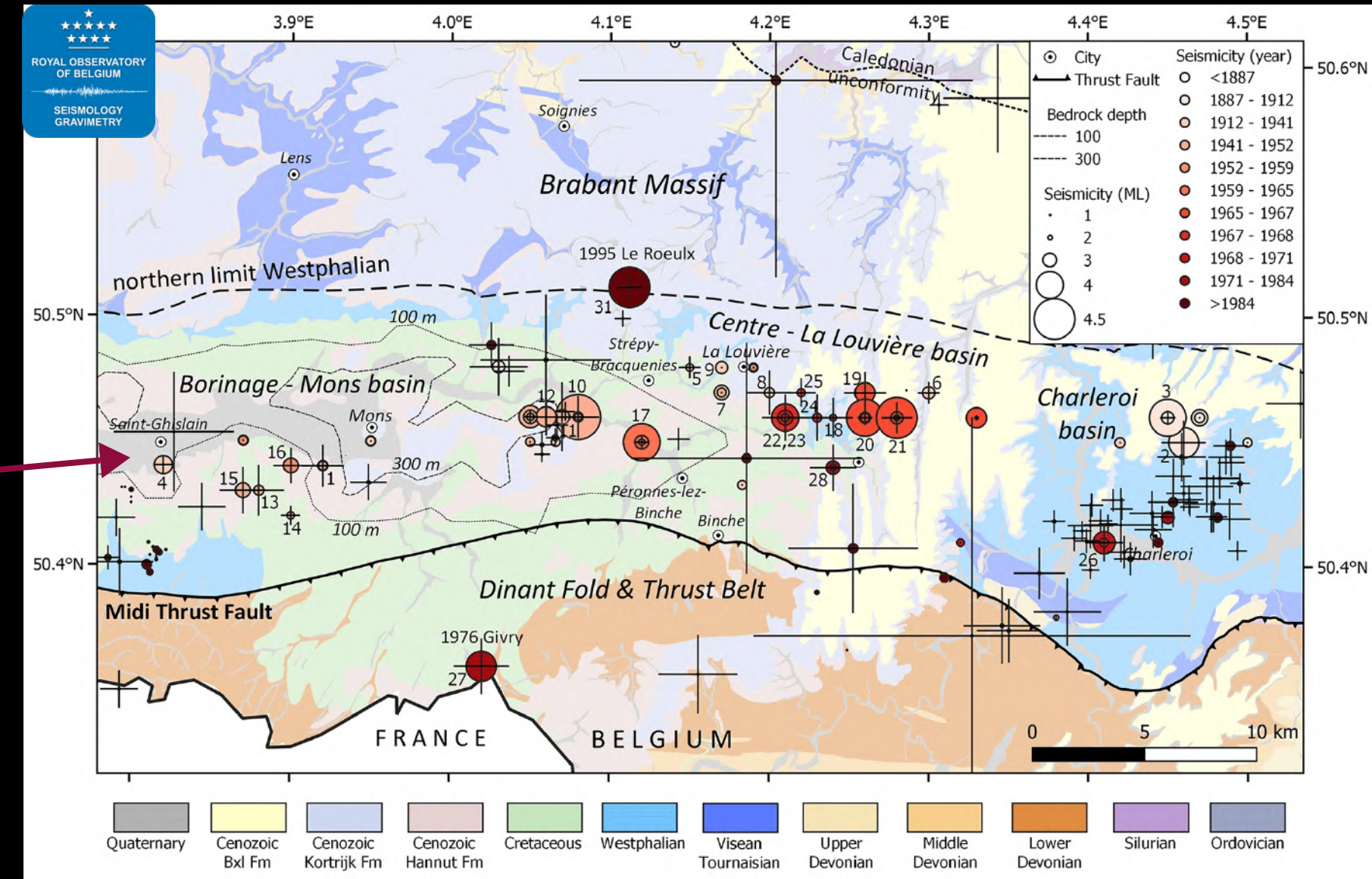
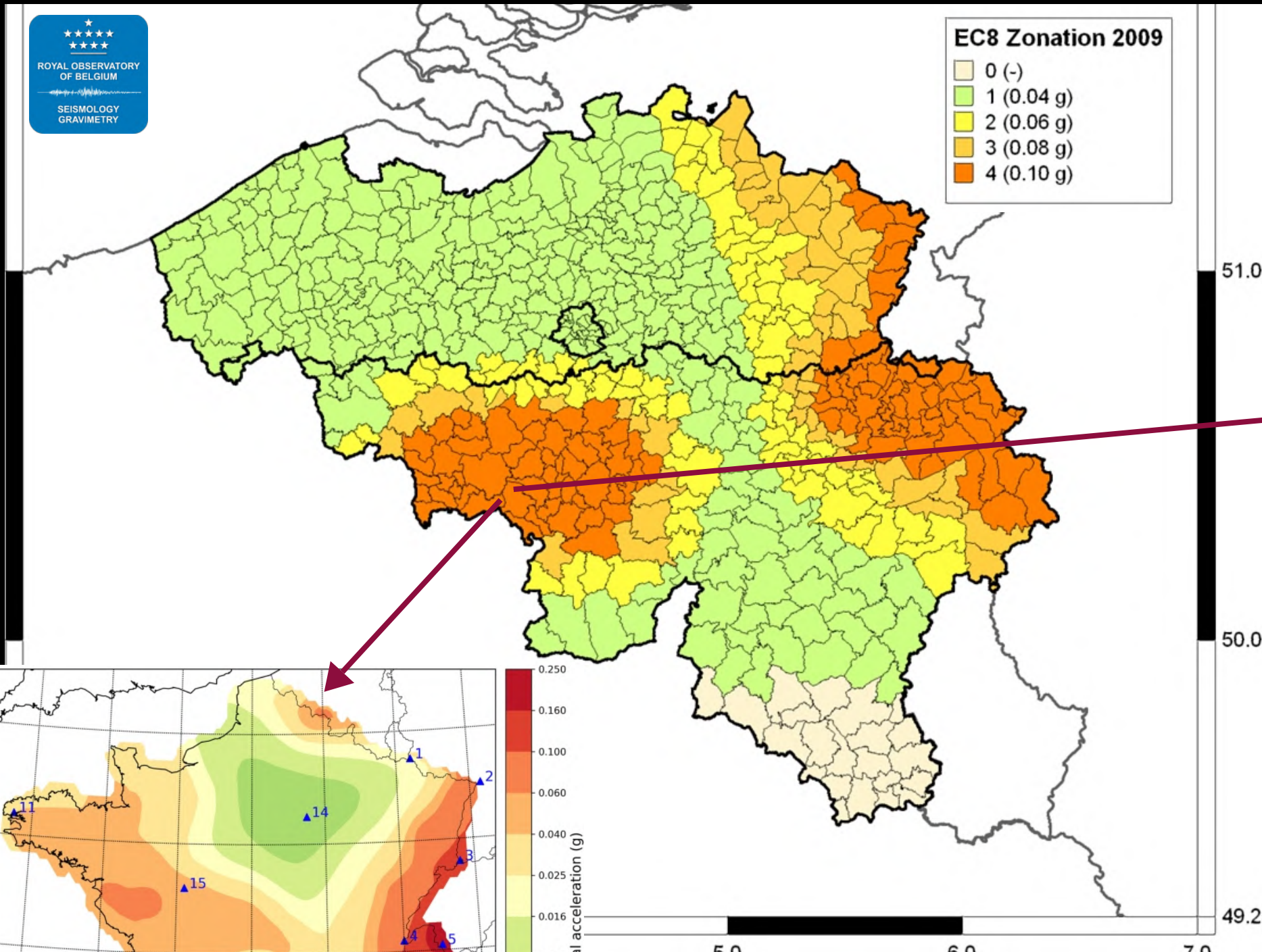
Supersedes ENV 1998-1-1:1994, ENV 1998-1-2:1994, ENV 1998-1-3:1995
Incorporating corrigendum July 2009

English version

Eurocode 8: Design of structures for earthquake resistance -
Part 1: General rules, seismic actions and rules for buildings

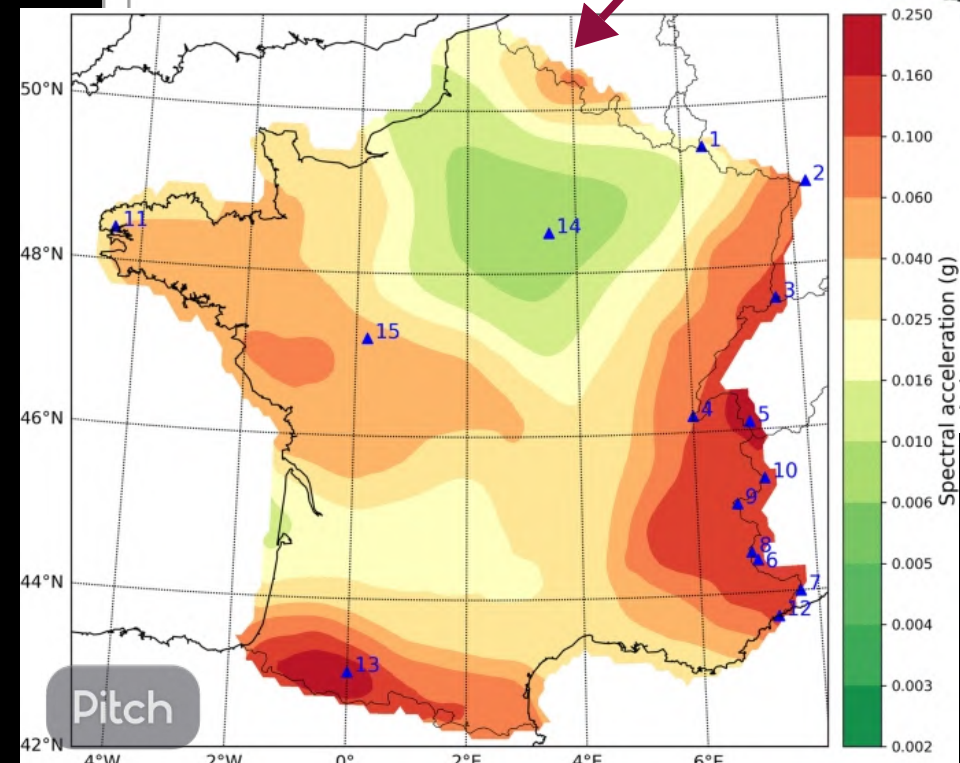
Belgian Annex to the EUROCODE 8 building code
Online tool at <http://seismology.be>

LOCAL RESEARCH - WIDER IMPACT

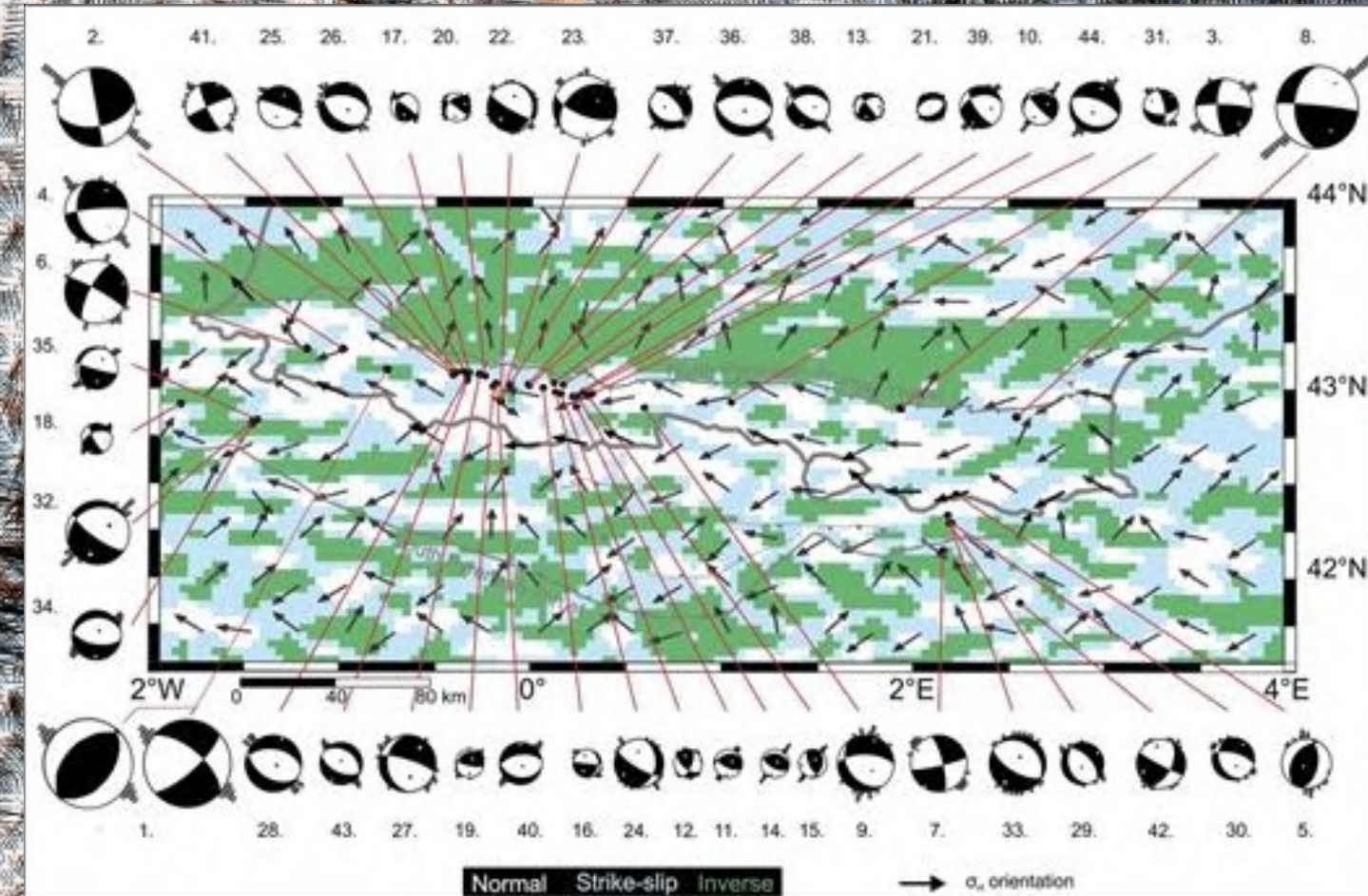


2022 re-evaluation of the Hainaut Seismicity in the XXth century

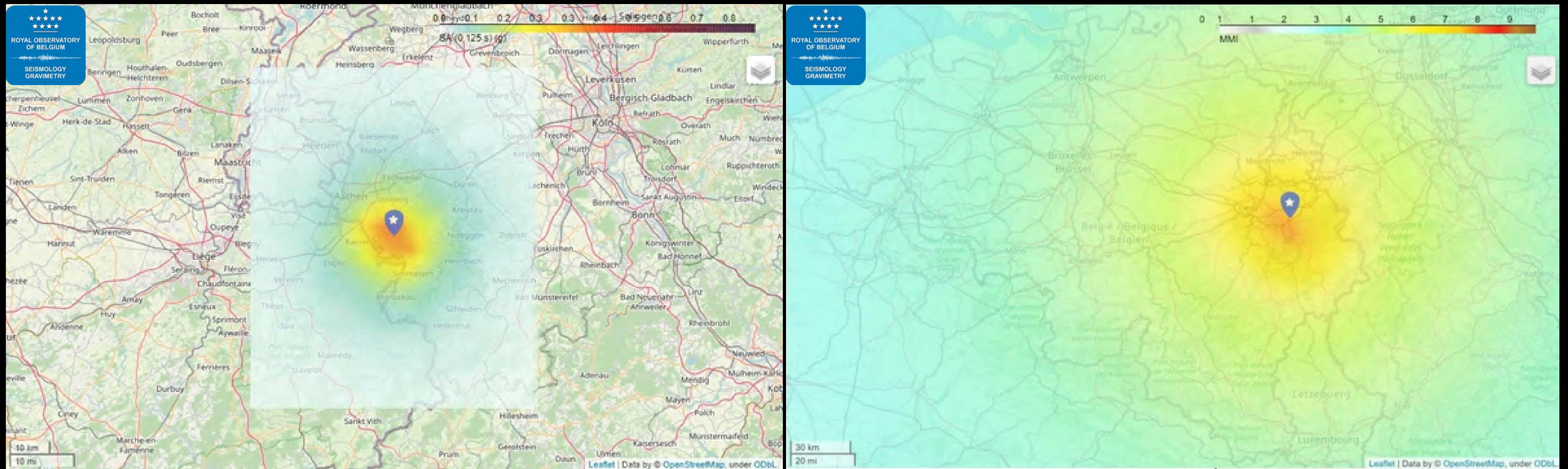
Belgian Annex to the EUROCODE 8 building code



CAUSES OF THE INTRAPLATE EQS?

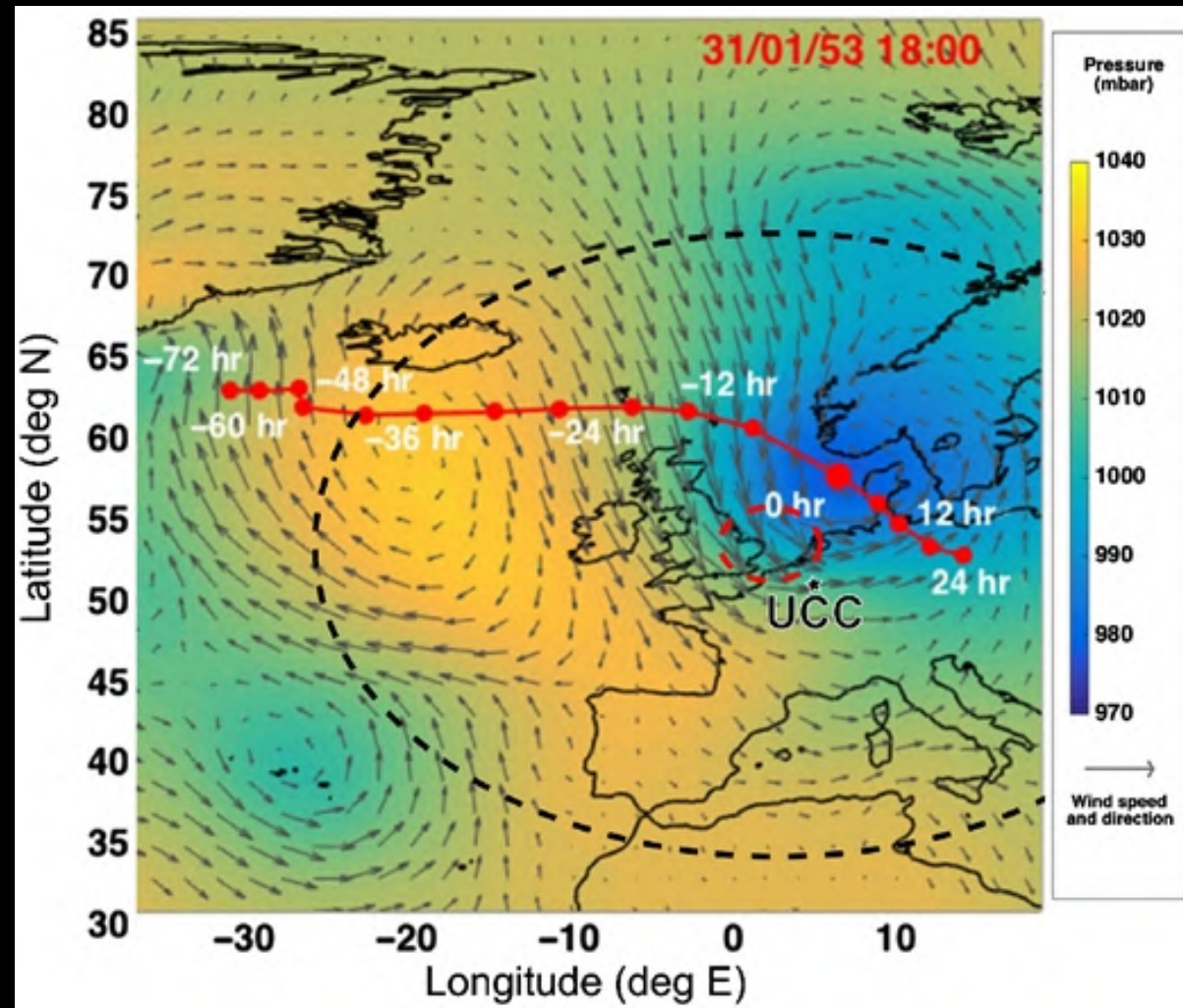


"WHAT IF?"

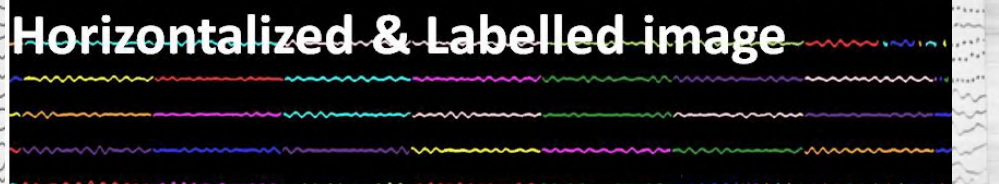
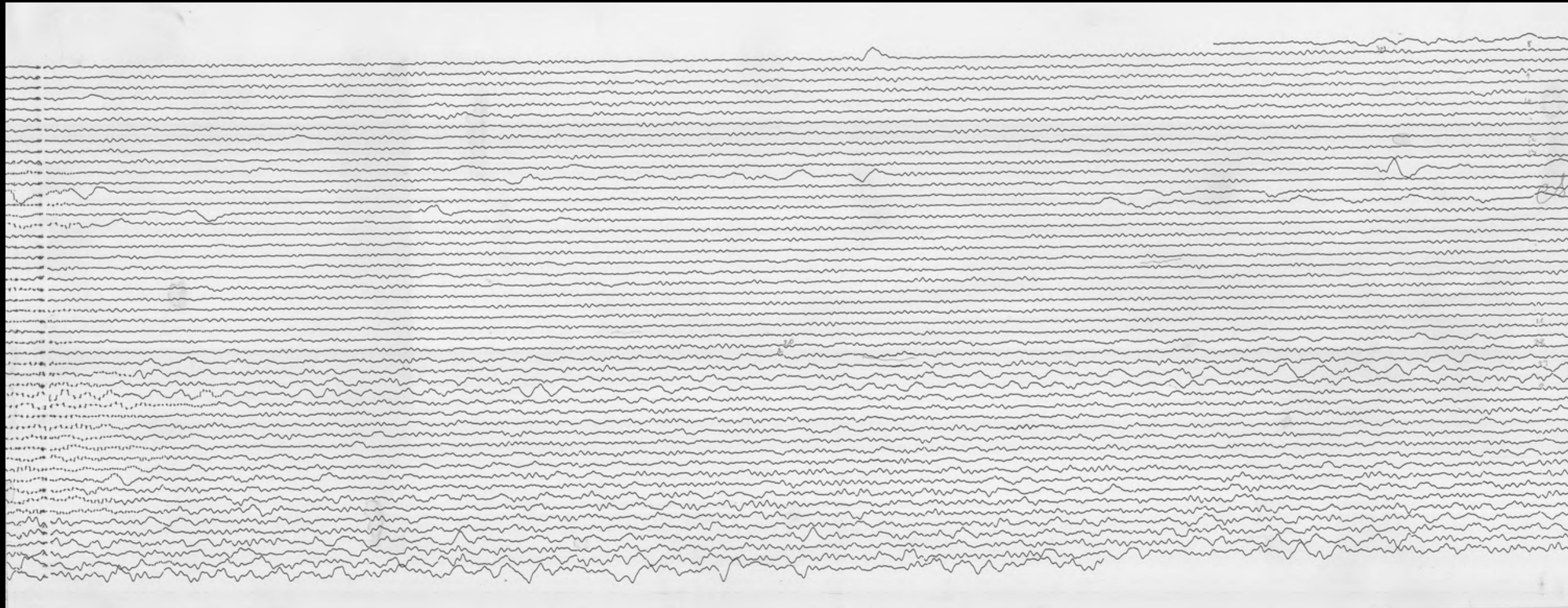


Ground-motion field modelled for a hypothetical M=5 earthquake in the area of the 2021 Rott sequence (left) or the Verviers 1692 M=6 1/4 modelled based on a ground-motion prediction equation - Belshake Project

SEISMO & OCEANS



SEISMO & OCEANS



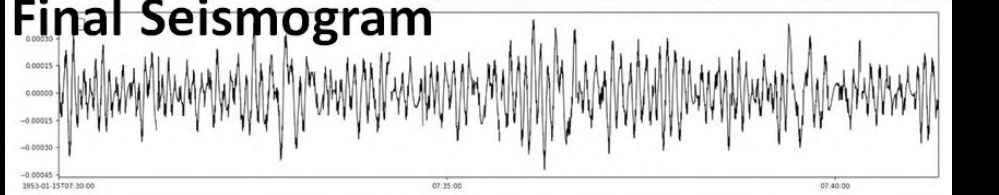
EWg
7.25
30-1-53

THE SEISMOSTORM PROJECT

Code

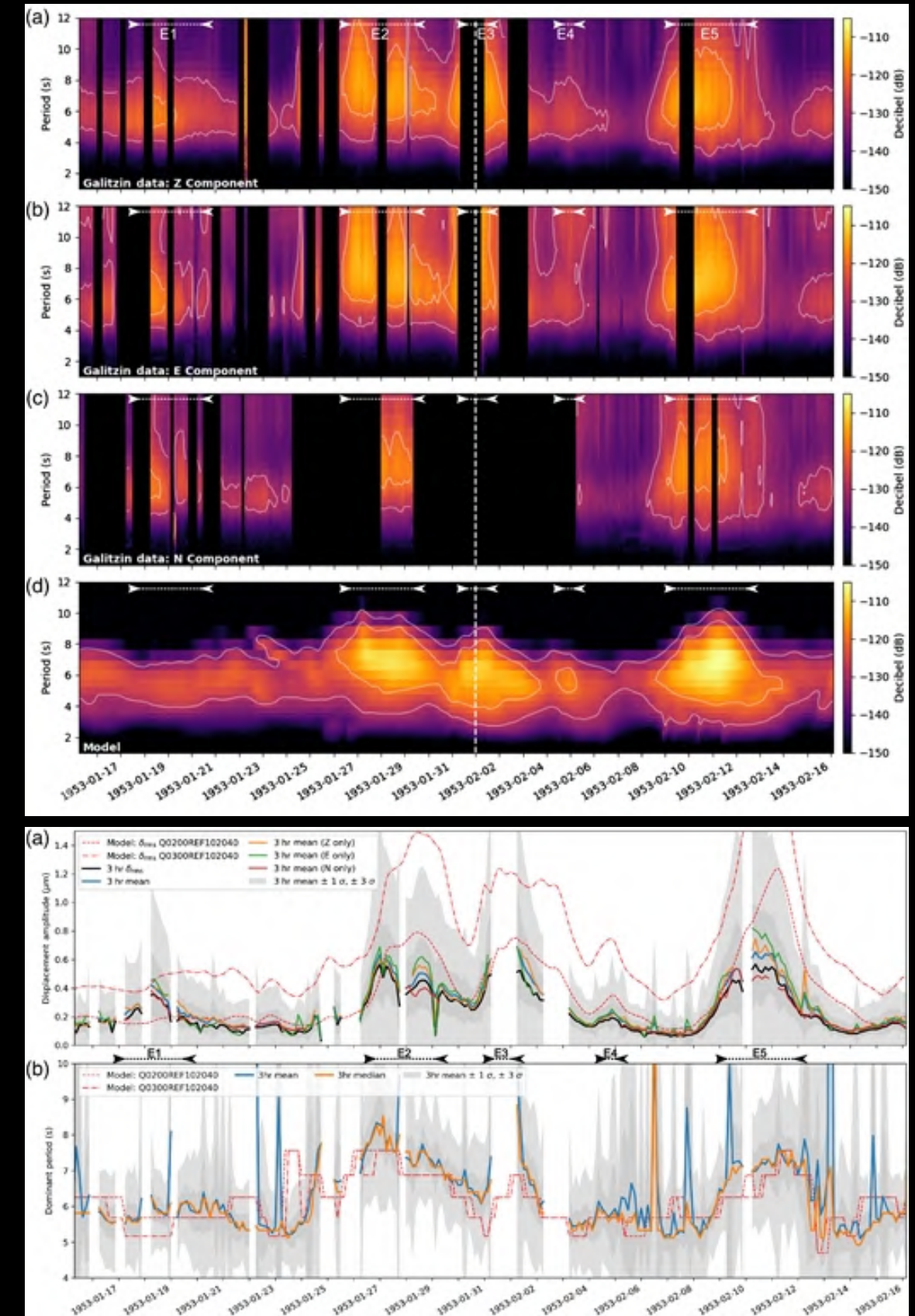
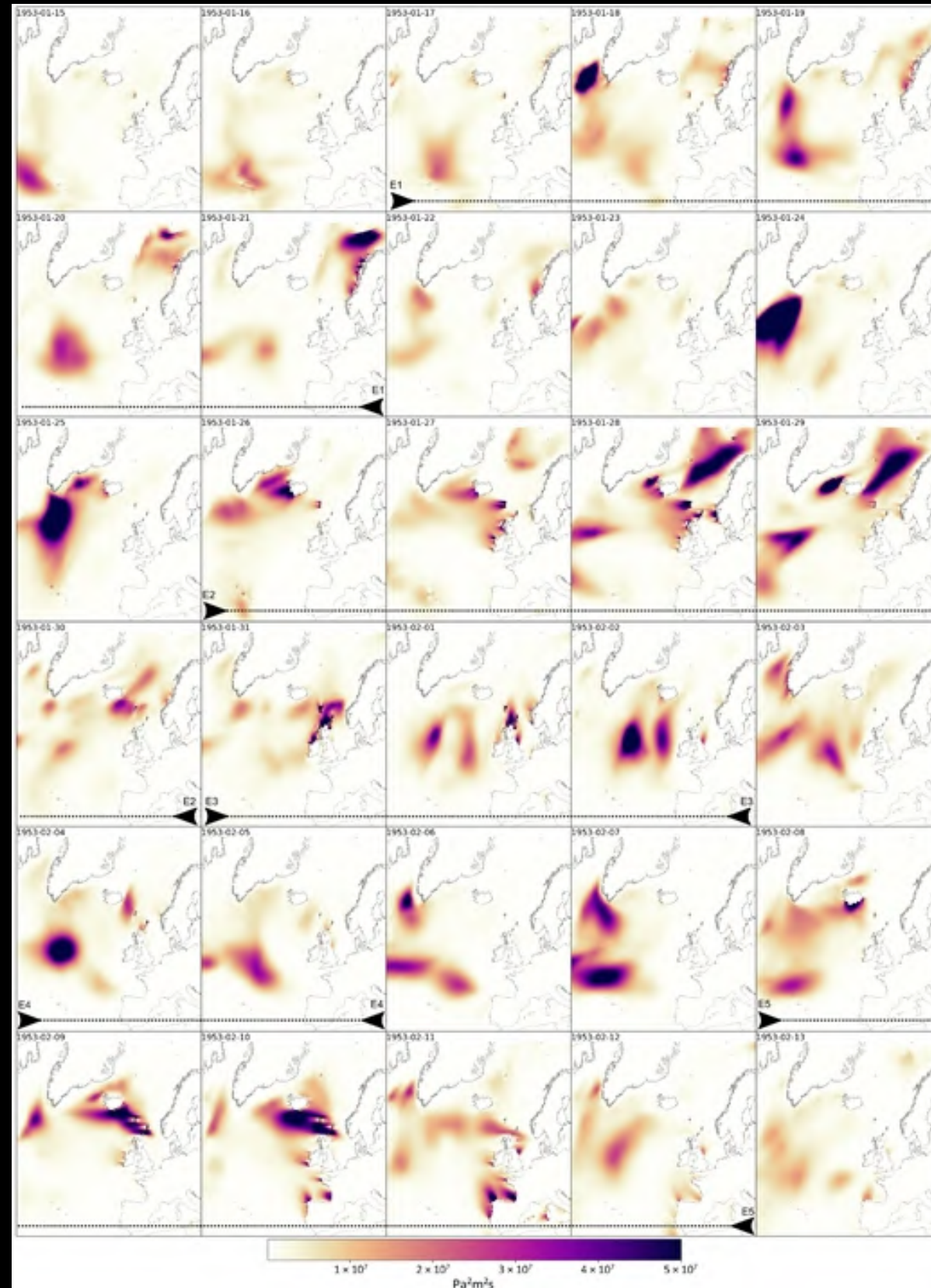
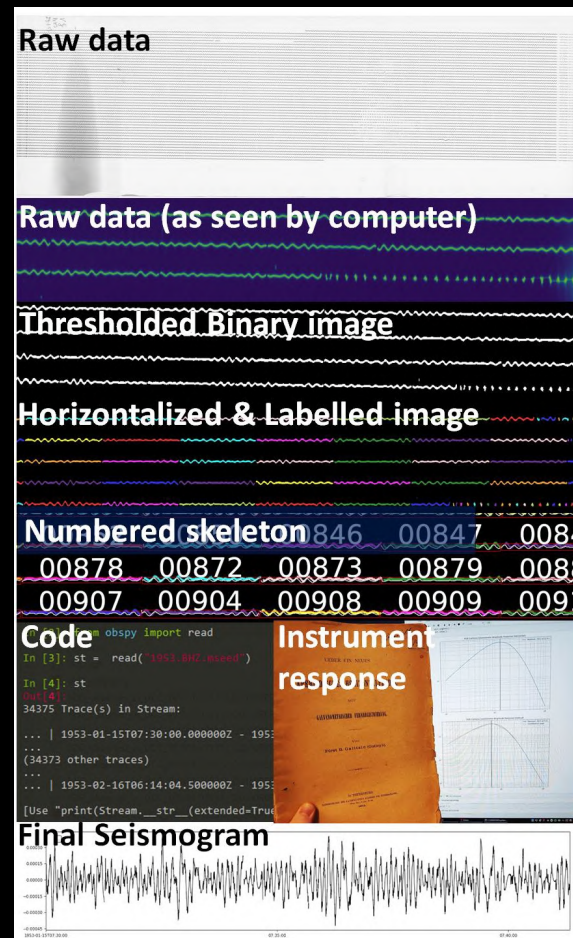
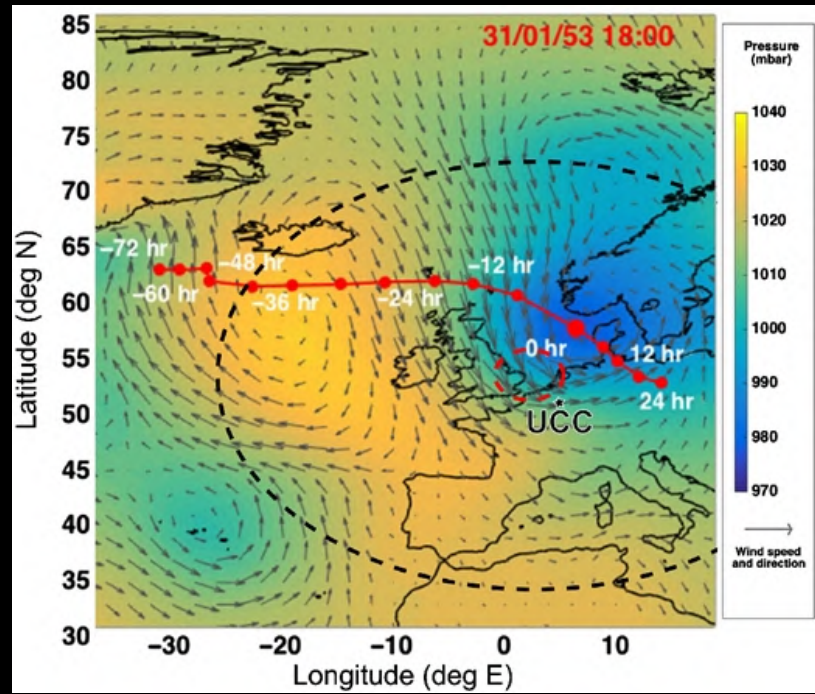
```
from obspy import read
In [3]: st = read("1953.BHZ.msseed")
In [4]: st
Out[4]:
34375 Trace(s) in Stream:
... | 1953-01-15T07:30:00.000000Z - 1953-01-15T07:30:00.000000Z
...
(34373 other traces)
... | 1953-02-16T06:14:04.500000Z - 1953-02-16T06:14:04.500000Z
```

Instrument response



Pitch

SEISMOSTORM





open
SCIENCE


OPEN SCIENCE

Software & Libraries



ObsPy

A Python Framework for Seismology

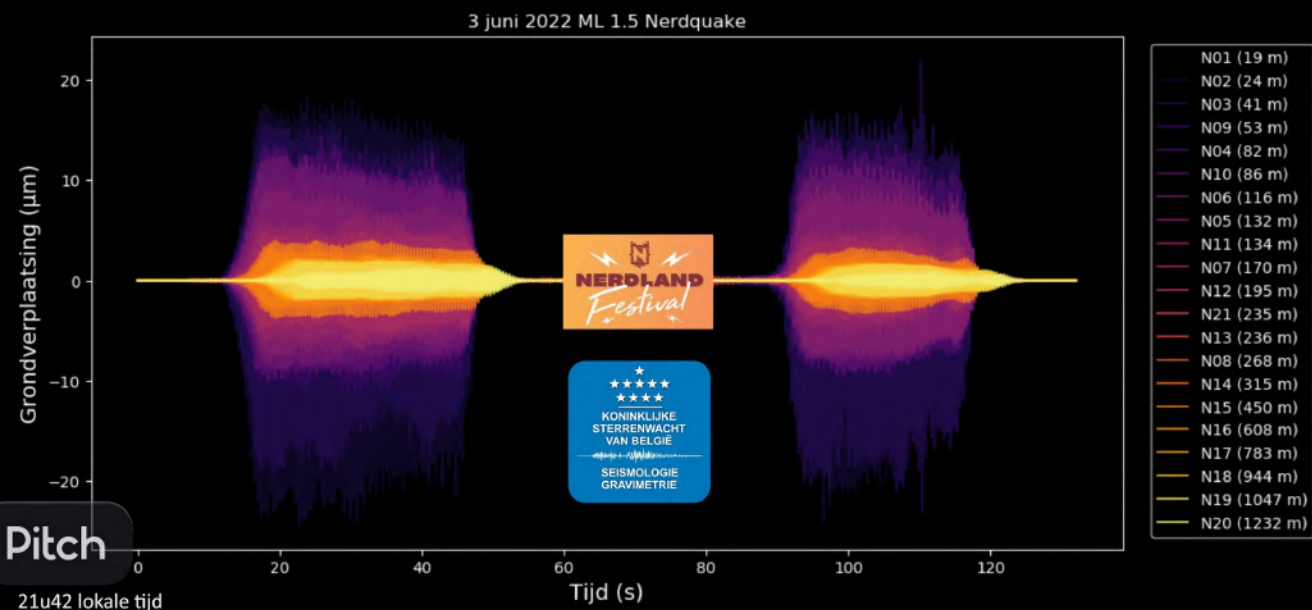


MSNoise

A Python Package for Monitoring (Seismic Velocity Changes) using Ambient Seismic Noise

HVSR to borehole
WaveWATCH III to seismo

...

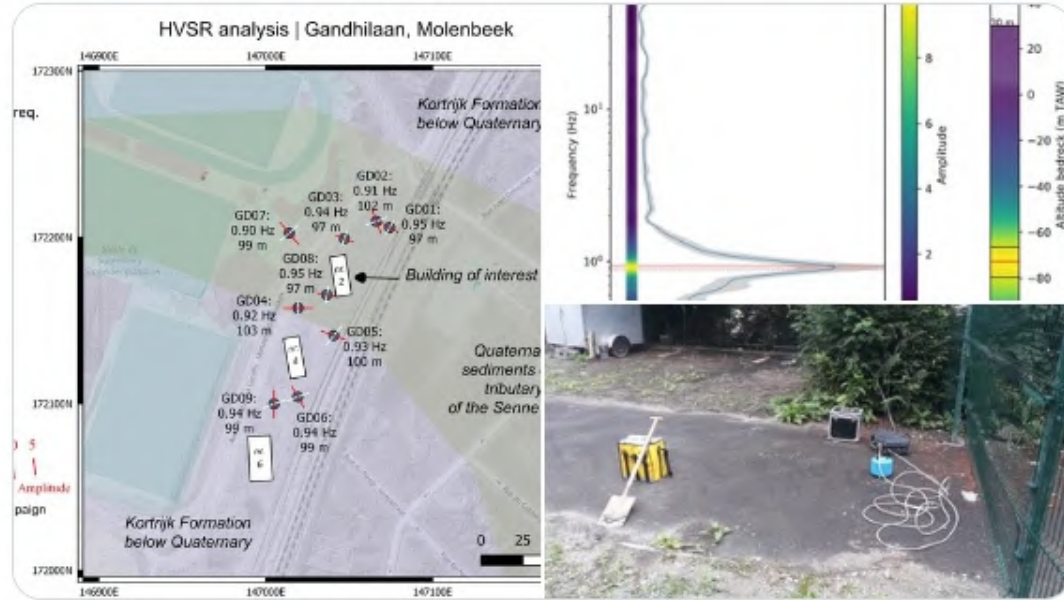


Sharing Science

Koen Van Noten @Koen_VanNoten

Today our colleagues of @GSBelgium reached the Cambrian bedrock during a new drilling campaign. With H/V spectral ratio analysis we predicted the depth between 97 and 103m. Spot on!! Our resonance frequency-to-depth powerlaw works! @seismo_tick @Seismologie_be

Traduire le Tweet



Koen Van Noten @Koen_VanNoten

Geniet nog eens mee van de dubbele aardbeving of "Nerdquake" die de jullie tijdens de @nerdlandbe openingsshow opwekten! Nerdlanders: jullie waren geweldig en lieten het tot meer dan 1,2 km ver schudden! @hHetty @lievenscheire @Raphael_DePlaen @Seismologie_be

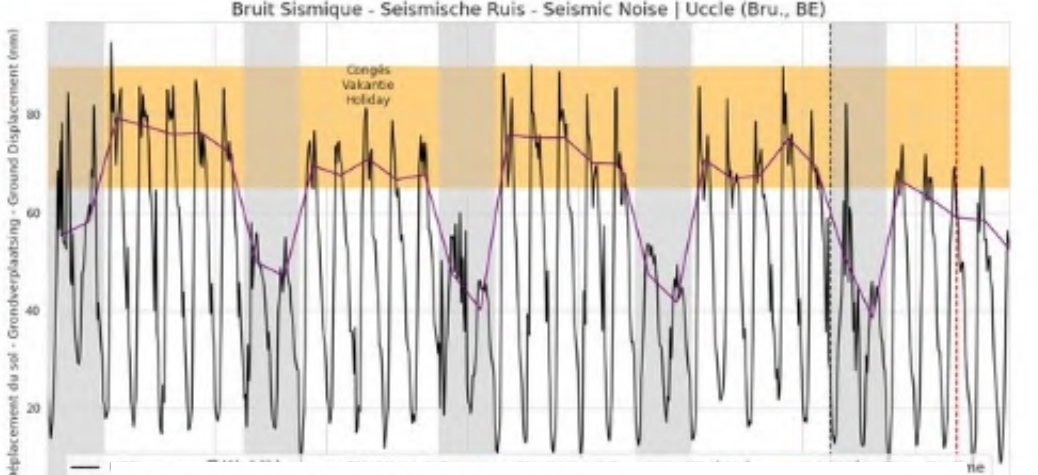
Thomas Lecocq @seismotom · 20 mars 2020

The virus won't stop the noise (but ok, lower the anthropogenic contribution...). @matplotlib @obsypy @ProjectLupyter powered!

Seismologie.be @Seismologie_be · 20 mars 2020

Our staff is teleworking. The earth continues shaking. Ground movements at frequencies 1-20 Hz, mainly due to human activity (cars, trains, industries,...) are much lower since the implementation of the containment measures by the government. #StayHome @ibzbe @CrisiscenterBE

Afficher cette discussion



Koen Van Noten @Koen_VanNoten · 29 sept.

Fieldwork day! Site characterisation of the Belgian TGA seismic station for the EPOS.BE @belspo project using active seismics, ambient noise and electrical resistivity tomography with @seismo_tick @seismotom @Seismologie_be



Seismica is **built for the community – by the community** of experts from around the world



The first **diamond open-access journal** for seismology, earthquakes, and related disciplines

JOURNAL SCOPE



ACCESSIBLE
TRANSPARENT
RESPECTFUL
CREDIBLE
PROGRESSIVE



Free to publish and free to read.
Authors retain full copyright.

PUBLICATION TYPES

Research articles that present advances in scientific knowledge or understanding

Reports that are peer-reviewed and can contribute useful information to the public sphere, but may not represent a substantive advance in understanding in themselves

- **Null Results or Failed Experiments**
- **Fast Reports** of recent earthquake, swarm, or other events
- **Software Reports**
- **Instrument Deployment and Field Campaign Reports**

Opinion articles and reviews are invited papers about a scientific idea, controversial topic and/or innovative concept



Submit a manuscript to Seismica following the Author Guidelines



Sign up to be a reviewer <http://seismica.eu.pythonanywhere.com>

Seismica is **built for the community** – **by the community** of experts from around the world



doi:10.1038/s41561-020-?



ACCESSIBLE
TRANSPARENT
RESPECTFUL
CREDIBLE
PROGRESSIVE

The launch of Seismica: *a seismic shift in publishing*

Christie D. Rowe ^{*1}, Matthew Agius ², Jaime Convers ³, Gareth Funning ⁴, Carmine Galasso ⁵, Stephen Hicks ⁶, Tran Huynh ⁷, Jessica Lange ⁸, Thomas Lecocq ⁹, Hannah Mark ¹⁰, Ryo Okuwaki ¹¹, Théa Ragon ¹², Catherine Rychert ¹⁰, Samantha Teplitzky ¹³, Martijn van den Ende ¹⁴

¹Department of Earth & Planetary Sciences, McGill University, Montréal, Canada, ²Dipartimento tal-Ġeoxjenza, L-Università ta' Malta, Msida, Malta, ³Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Universidade de Sao Paulo, Brazil, ⁴Department of Earth & Planetary Sciences, University of California Riverside, Riverside, USA, ⁵Department of Civil, Environmental and Geomatic Engineering, University College London, London, United Kingdom, ⁶Department of Earth Science & Engineering, Imperial College London, UK, ⁷Southern California Earthquake Center, University of Southern California, Los Angeles, California, USA, ⁸McGill University Library, Montréal, Canada, ⁹Seismology and Gravimetry, Royal Observatory of Belgium, Brussels, Belgium, ¹⁰Department of Geology & Geophysics, Woods Hole Oceanographic Institution, Massachusetts, USA, ¹¹University of Tsukuba, Tsukuba, Japan, ¹²Division of Geological and Planetary Sciences, Caltech, Pasadena, USA, ¹³University of California Berkeley Library, Berkeley, USA, ¹⁴Université Côte d'Azur, IRD, CNRS, Observatoire de la Côte d'Azur, Géoazur, Valbonne, France

Author contributions: *Conceptualization:* All Seismica Board. *Writing - original draft:* Rowe, Teplitzky, Funning, Convers, Agius, Rychert, van den Ende, Hicks, Ragon, Mark, Lange, Huynh. *Writing - review & editing:* Rowe, Teplitzky, Funning, Hicks, Ragon, Mark, Galasso, Lecocq, Sumy. *Visualizations:* Rowe, Convers. *Translations:* Ragon, Lecocq, Galasso, Convers, Okuwaki. *Alphabetical ordering of the authors:* does not reflect their contributions to the manuscript.

Abstract Seismica, a community-run Diamond Open Access (OA) journal for seismology and earthquake science, opened for submissions in July 2022. We created Seismica to support a shift to OA publishing while pushing back against the extreme rise in the cost of OA author processing charges, and the inequities this is compounding. Seismica is run by an all-volunteer Board of 47 researchers who fulfil traditional editorial roles as well as forming functional teams to address the needs for technical design and support, copy editing, media and branding that would otherwise be covered by paid staff at a for-profit journal. We are supported by the McGill University Library (Québec, Canada), who host our website and provide several other services, so that Seismica does not have any income or financial expenditures. We report the process of developing the journal and explain how and why we made some of the major policy choices. We describe the organizational structure of the journal, and discuss future plans and challenges for the continued success and longevity of Seismica.

Production Editor:
Gareth Funning
Handling Editor:
Danielle Sumy
Copy & Layout Editor:
Abhineet Gupta

Received:
?–March 5, 2021–?
Accepted:
?–March 5, 2021–?
Published:
?–April 15, 2022–?

TYPES

at advances in standing

ed and can contribute public sphere, but may advance in

Experiments

t earthquake, swarm,

ent and Field

s are invited papers versial topic and/or

Sign up to be a reviewer
<http://seismica.eu.pythonanywhere.com>

IASPEI

