



The TURNkey TB4 Achaia Array: Bridging School and Citizen Seismology through Earthquake Alerting

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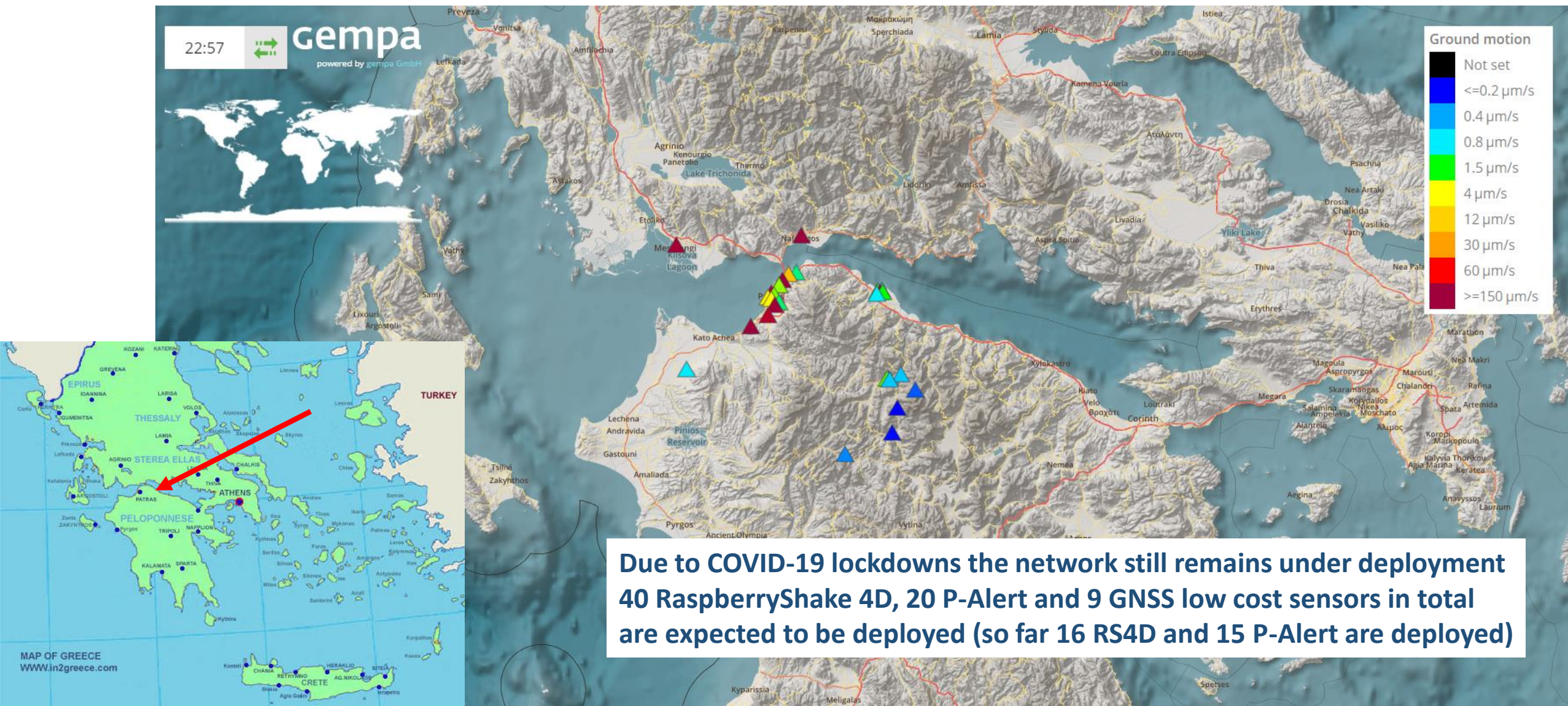
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we consider

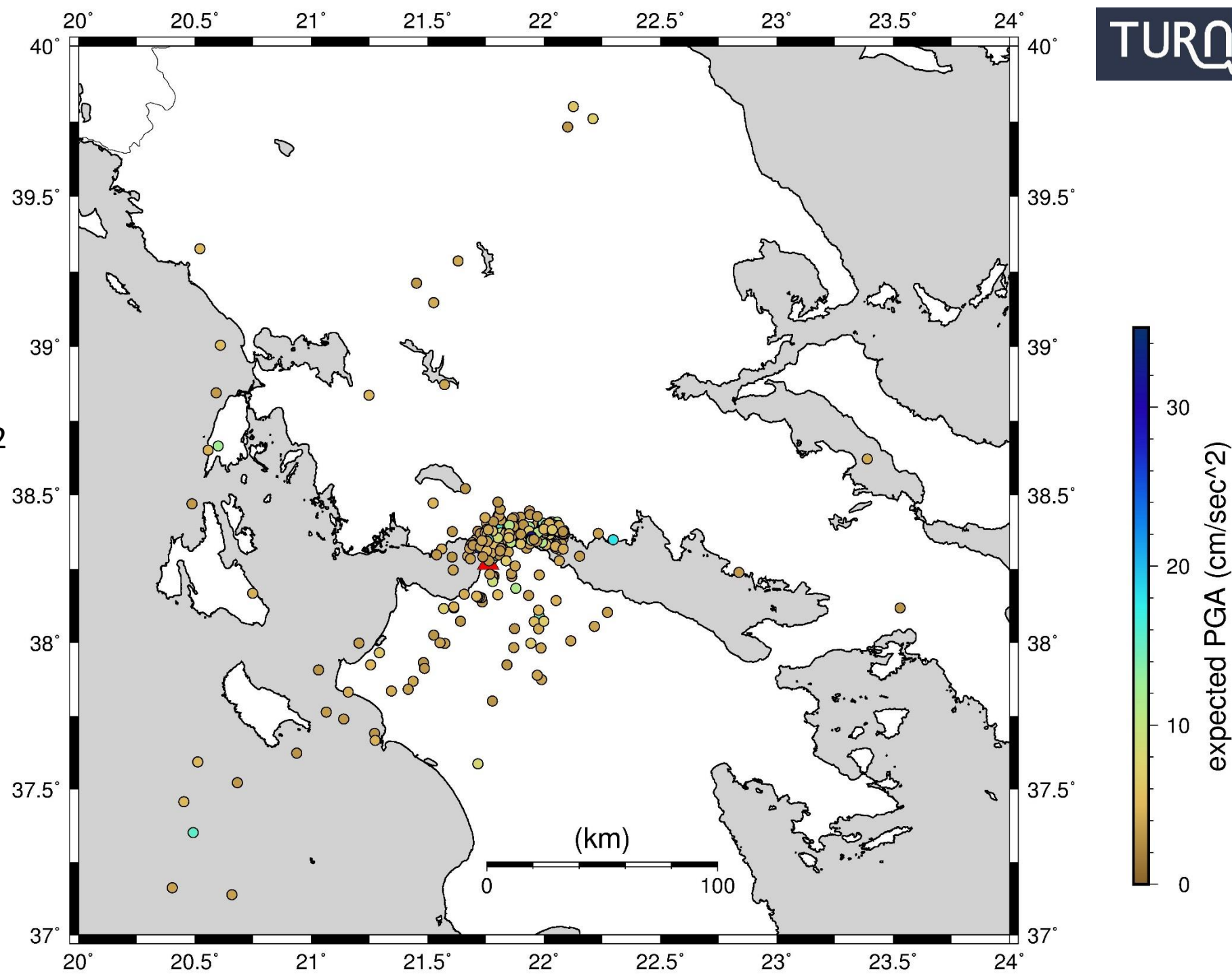
- Deploy a Pilot Array of low cost seismic sensors in the Achaia area, Central Western Greece - H2020-TURNkey project application as Test Bed Area 4
- Apply EEW alerting in schools and promote preparedness, awareness, resilience to earthquake risk in addition to School Seismology
- Explore Citizen involvement – Citizen Seismology

Achaia TURNkey TB4 Array in Central Greece



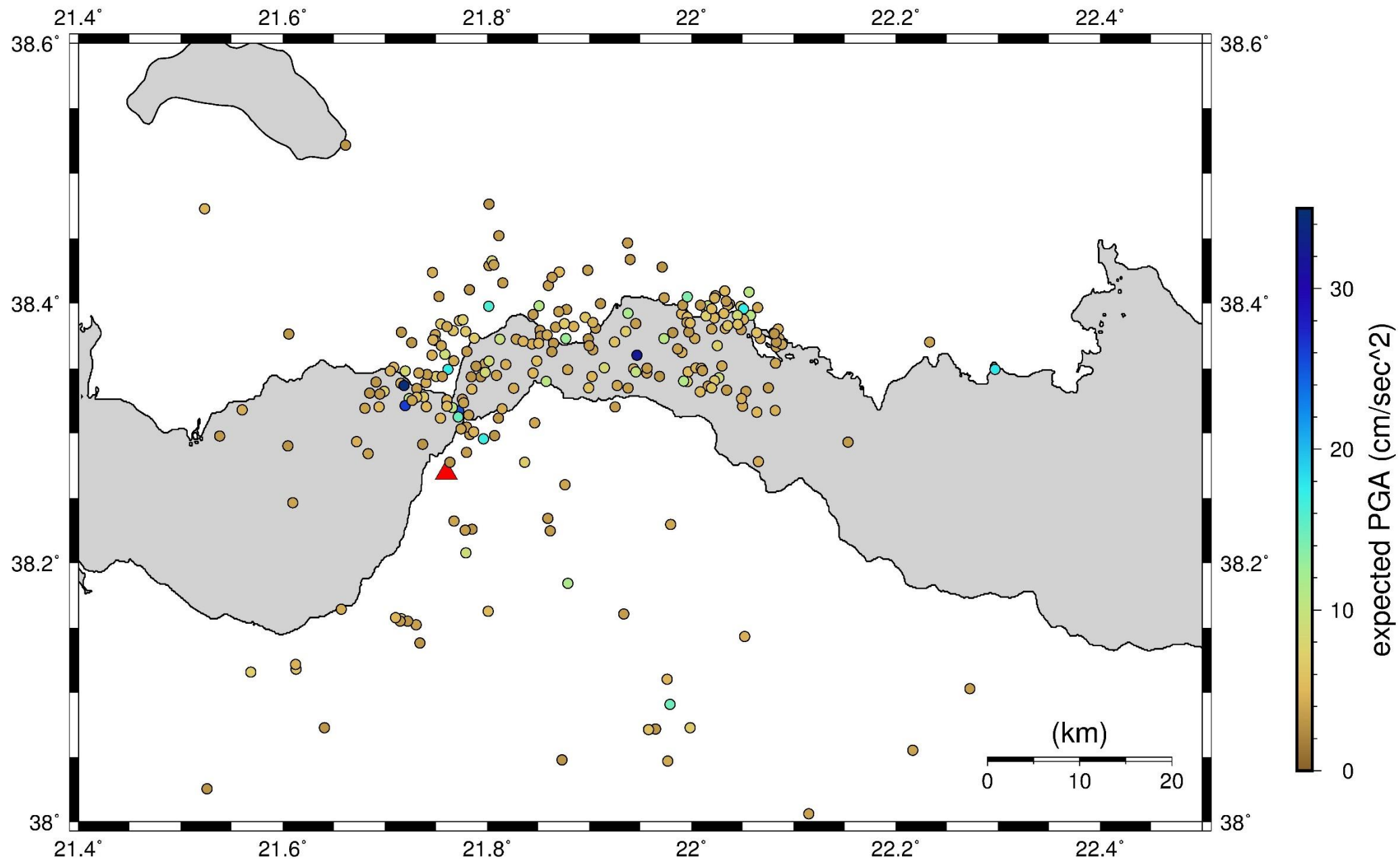
so far more than 300 events
have been recorded
with estimated expected
PGA greater than 3 cm/sec^2

a good pilot data set for
the TURNkey platform
under development



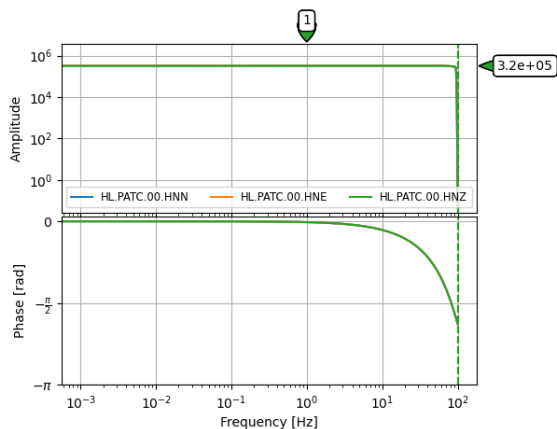
Events recorded
in the near field

Patras town center
is marked with
the red filled triangle

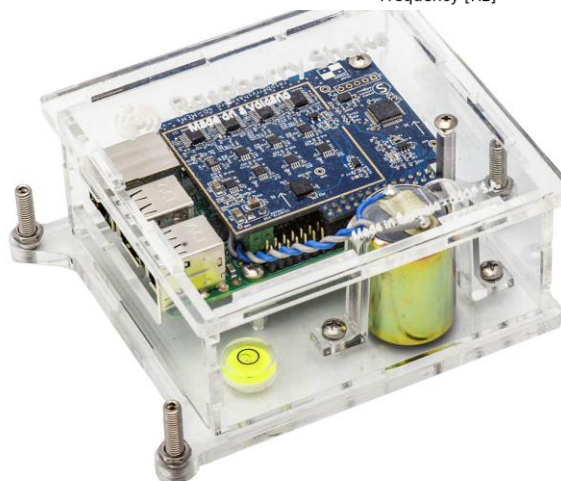
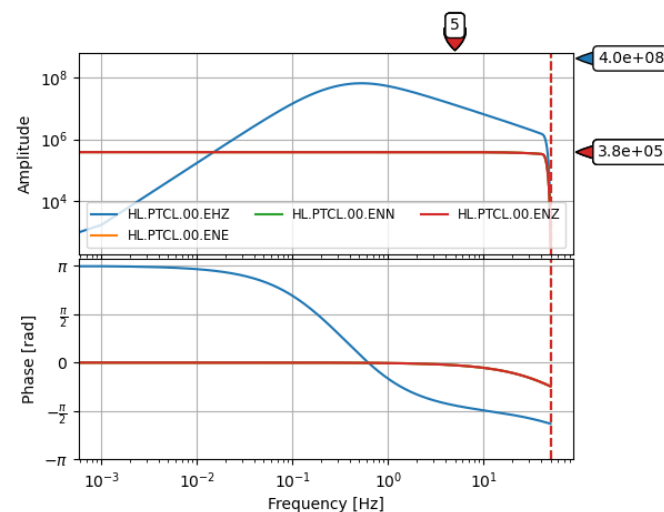


TB4 strong motion sensors used in monitoring

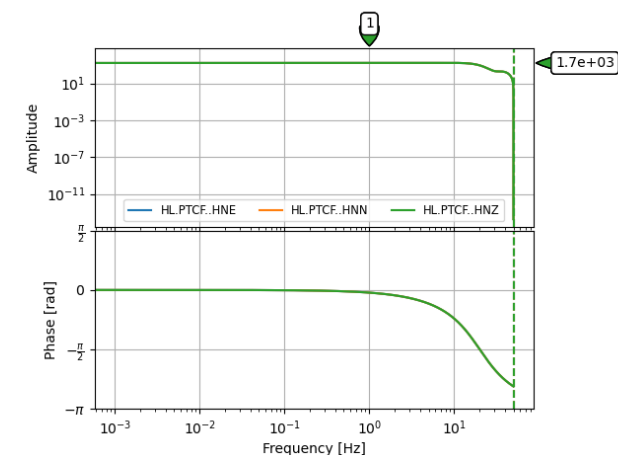
Guralp-CMG-5TDE



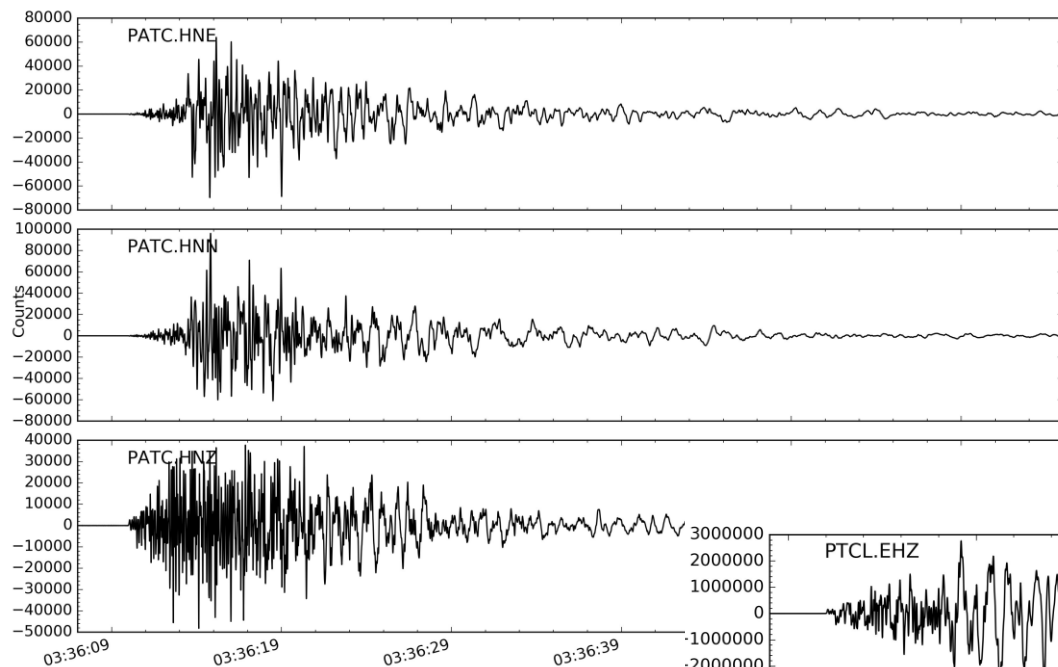
Raspberry Shake 4D



P-Alert



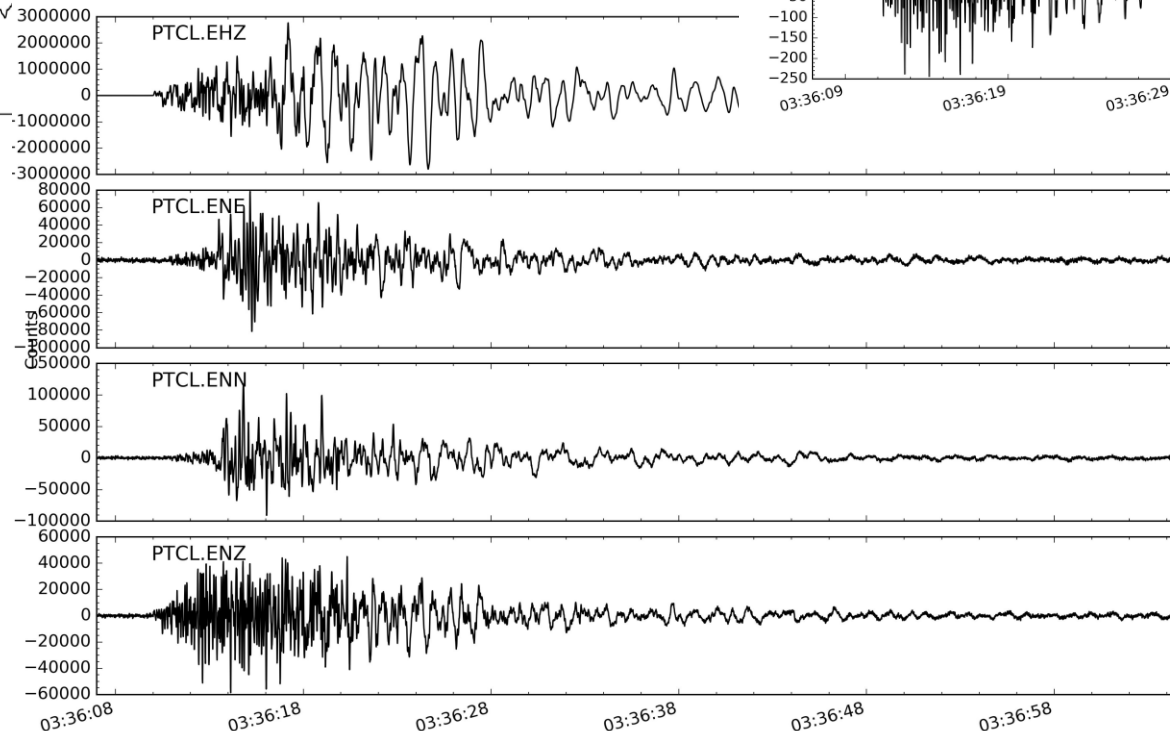
PATC - event: noa2021diego



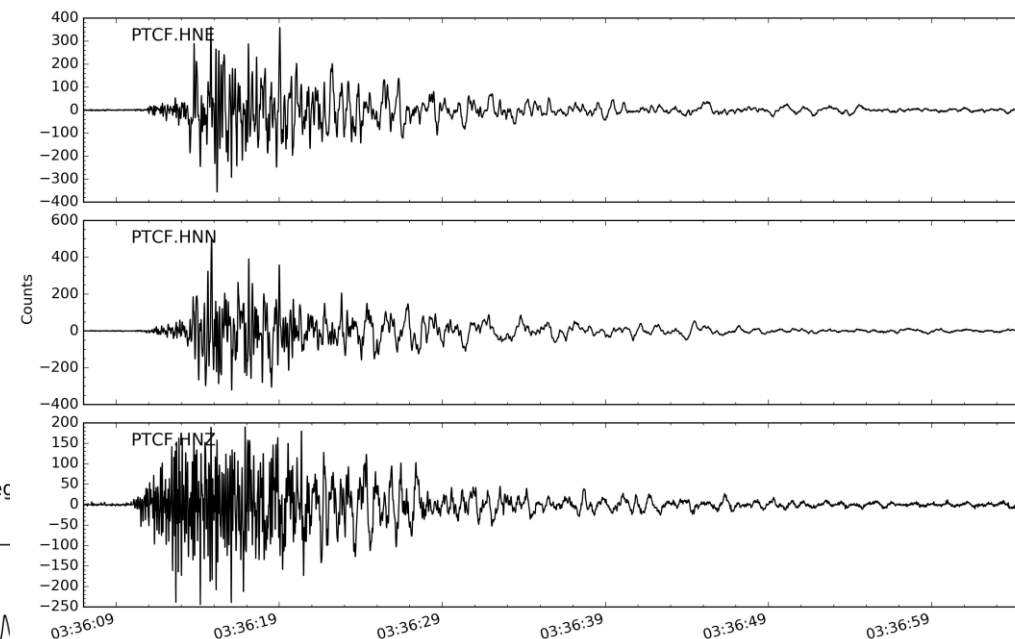
Guralp CMG-5TDE

RS4D

PTCL - event: noa2021diego



PTCF - event: noa2021diego



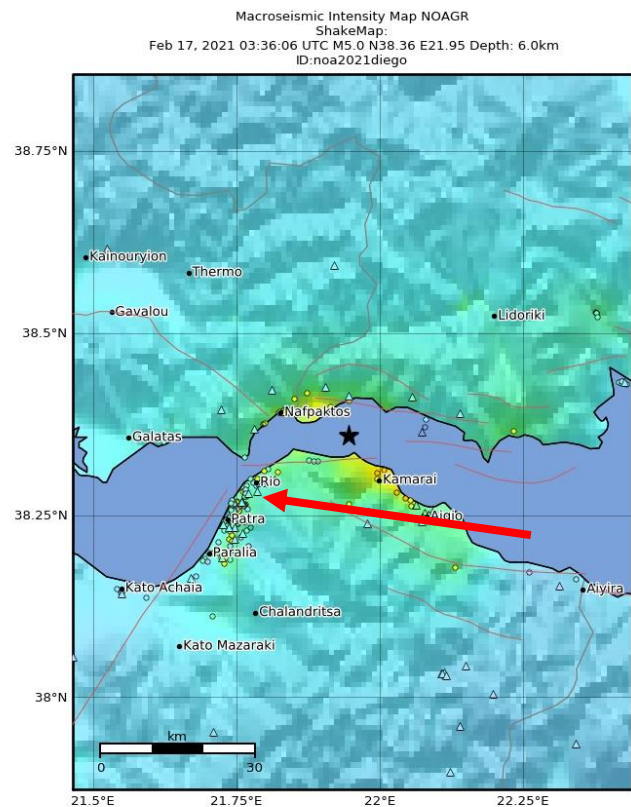
P-Alert

2021-02-17T03:36:06Z

5.1Mw

Ep. Dist = 18km

Before studying the recorded events there was an investigation to compare recordings of collocated sensors using a Guralp CMG-5TDE strong motion sensor as reference

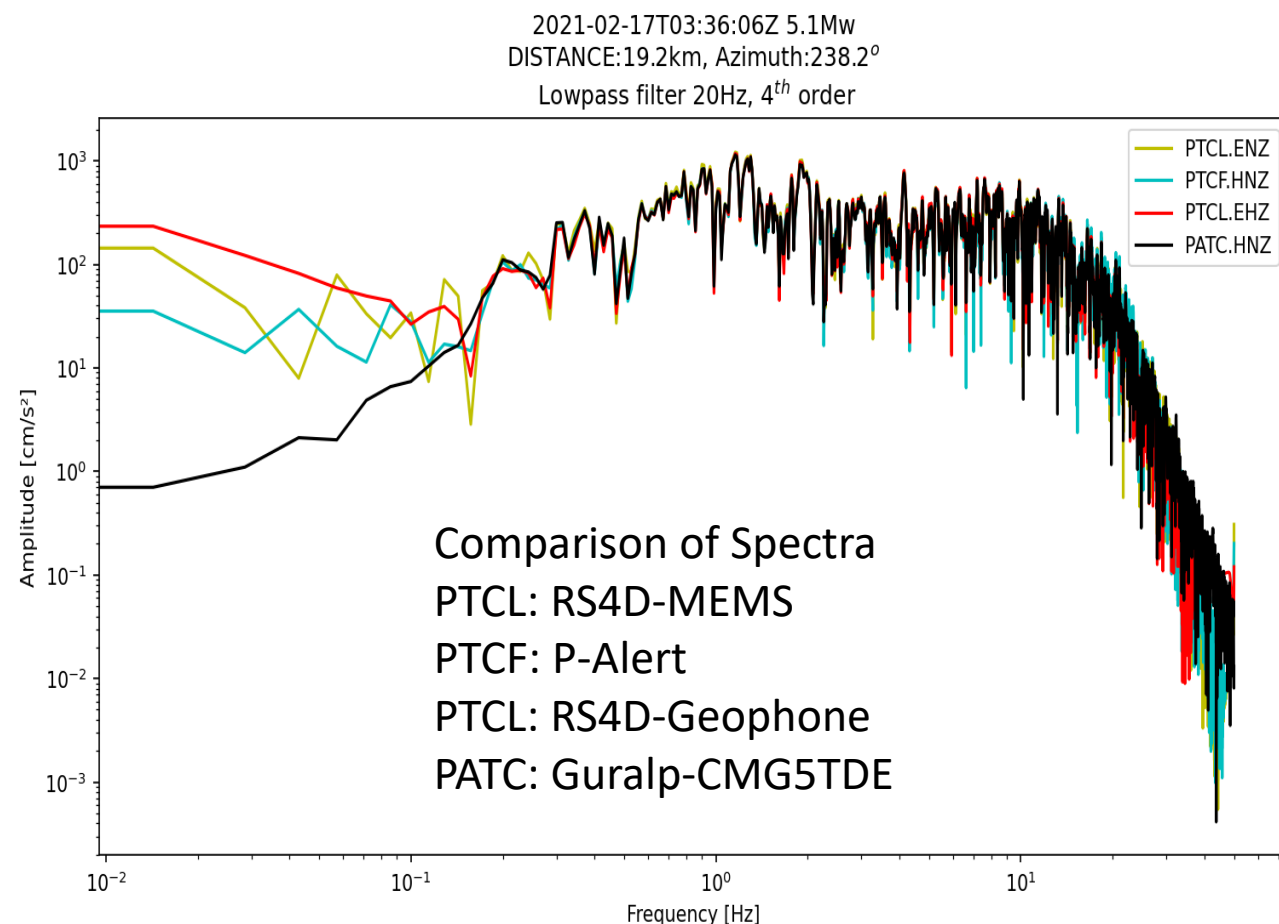


(left) ShakeMap
event
(marked with star)

Patras site PATC
(marked with arrow)

SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	None	None	None	Very light	Light	Moderate	Moderate/heavy	Heavy	Very heavy
PGA(g)	<0.0464	0.297	2.76	6.2	11.5	21.5	40.1	74.7	>139
PGV(cm/s)	<0.0215	0.135	1.41	4.65	9.64	20	41.4	85.8	>178
INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X

Scale based on Worden et al. (2012)
△ Seismic Instrument ○ Reported Intensity ★ Epicenter
Version 1: Processed 2021-04-05T23:22:20Z



simple
 waveform comparison

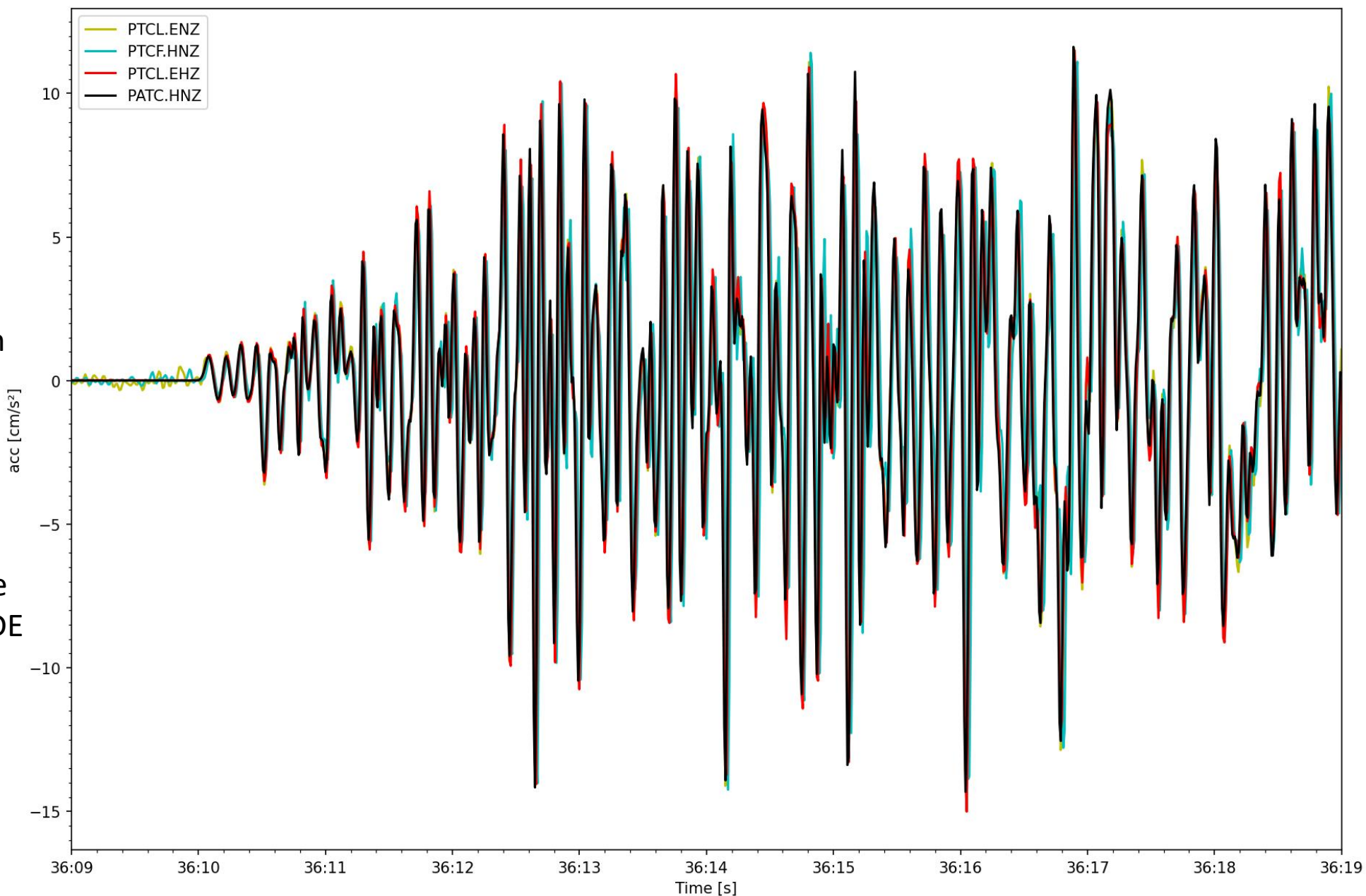
P-Arrival

PTCL: RS4D-MEMS

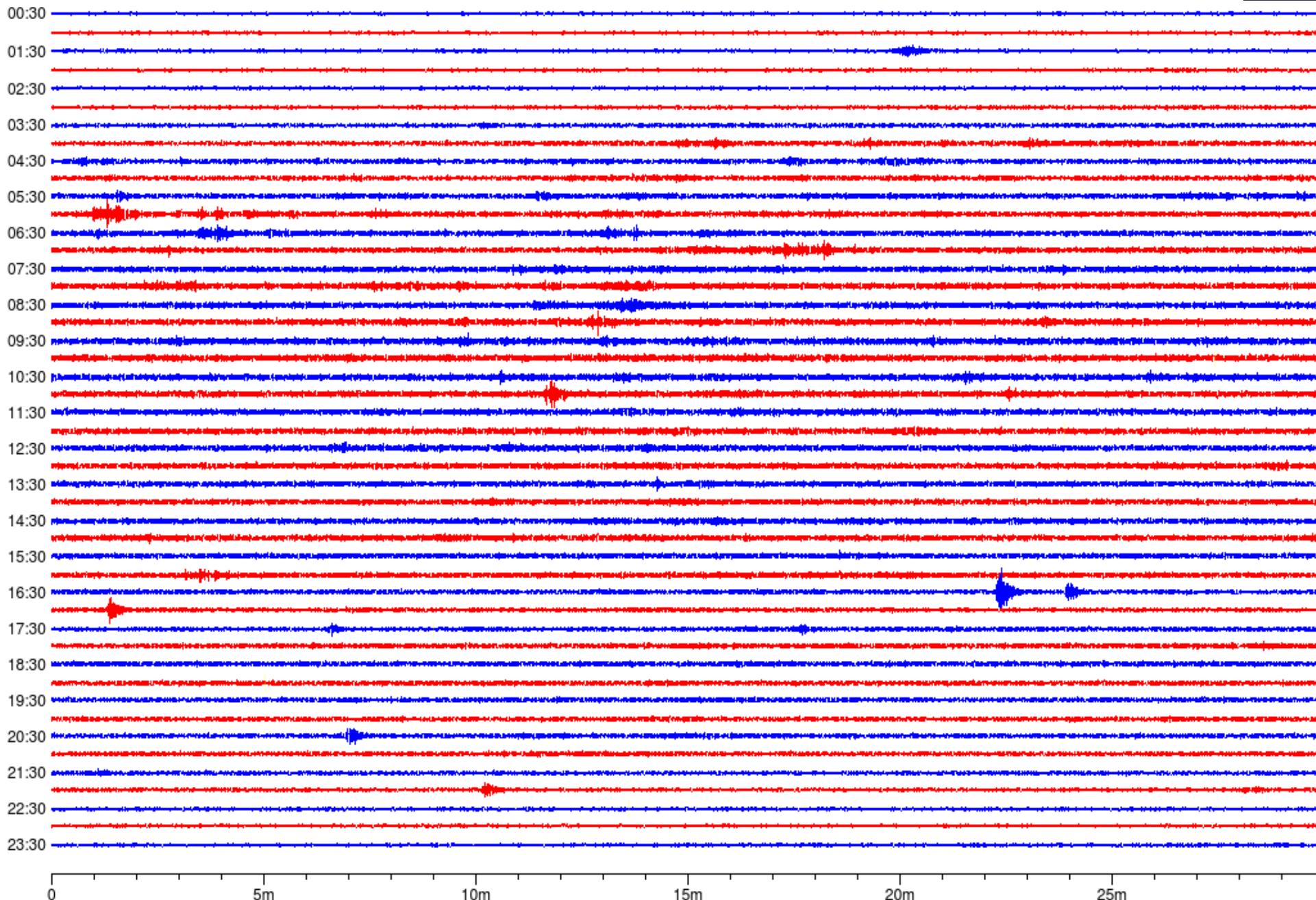
PTCF: P-Alert

PTCL: RS4D-Geophone

PATC: Guralp-CMG5TDE

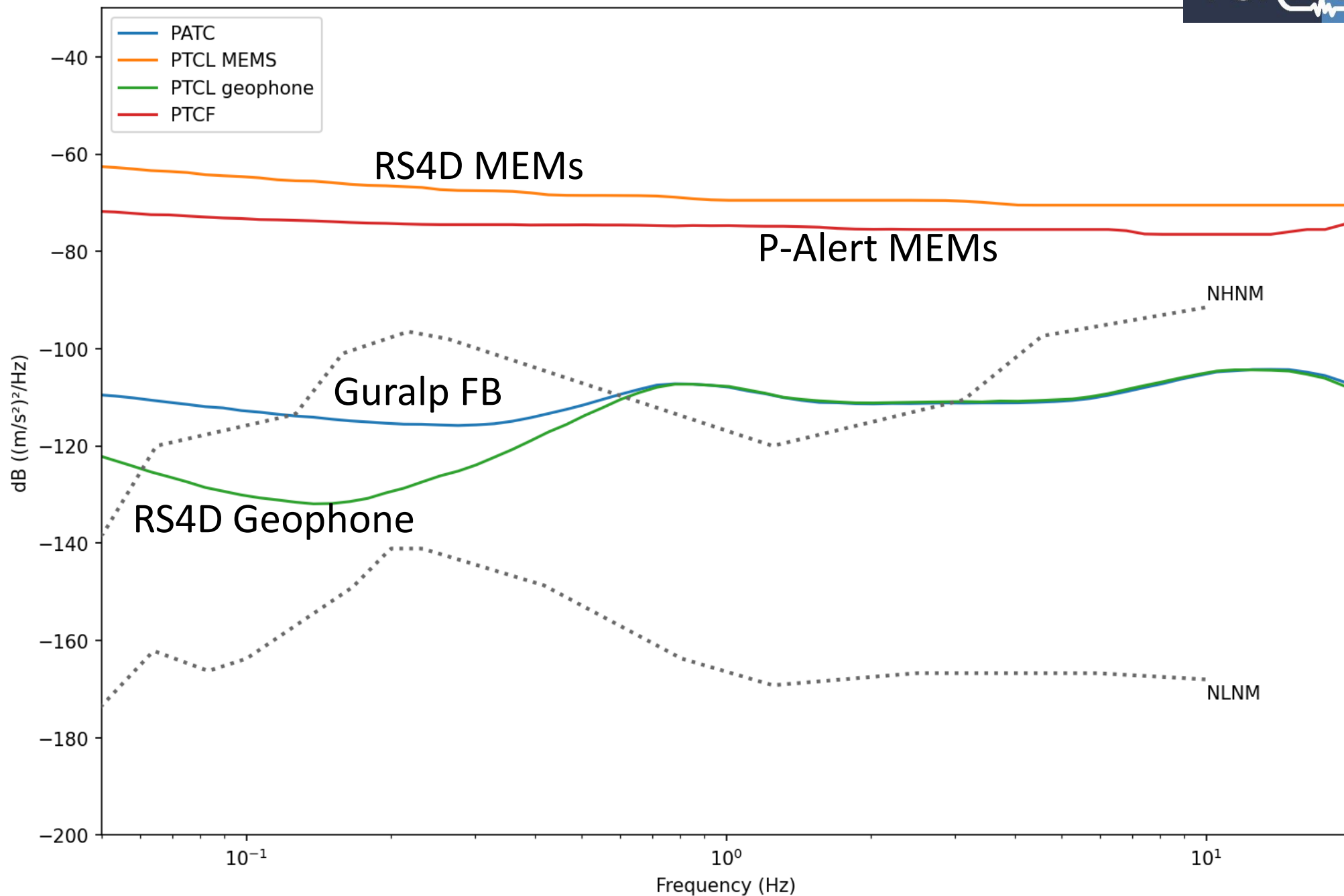


IL.PTCL.00.EHZ
IL.PTCL.00.EHZ



PATC

day selection



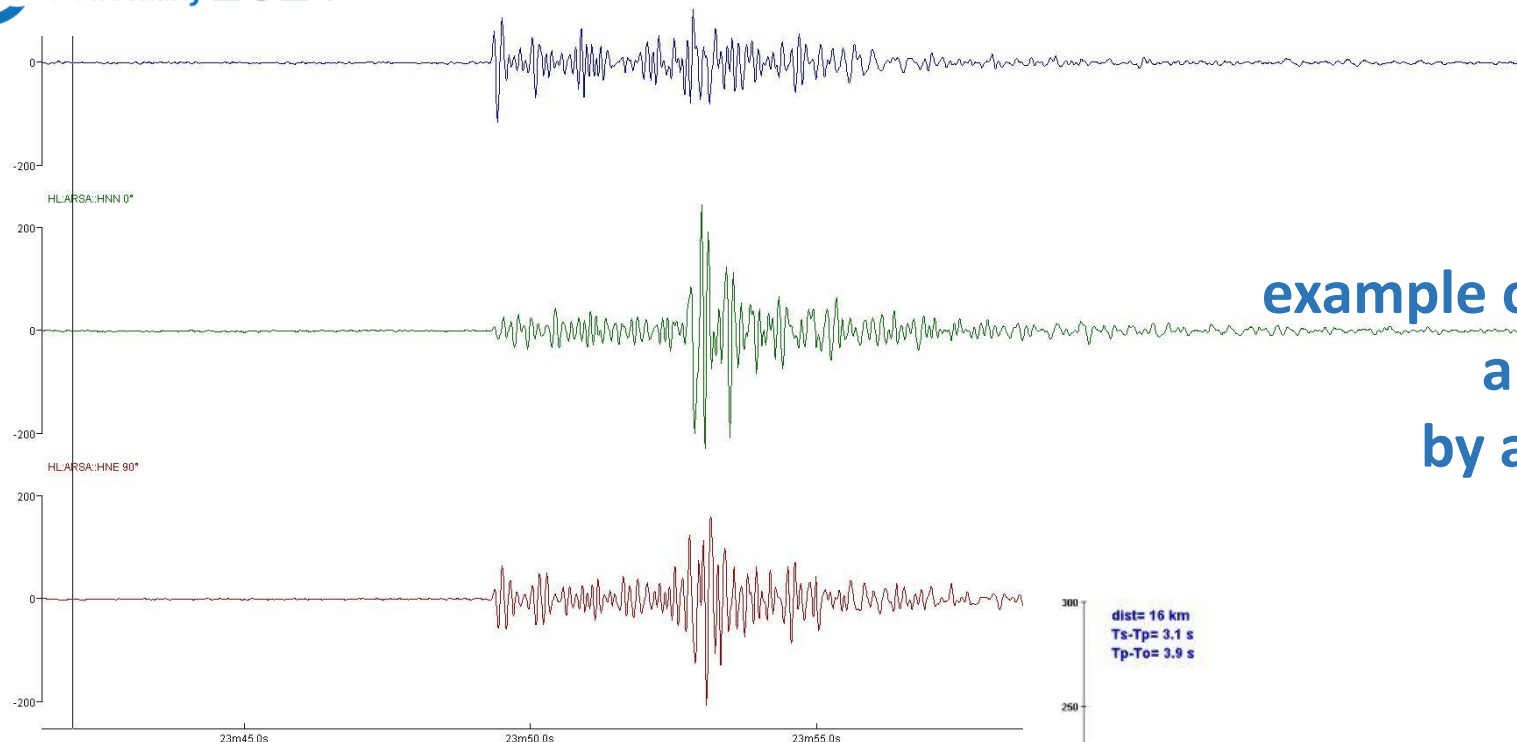
PATC

day selection



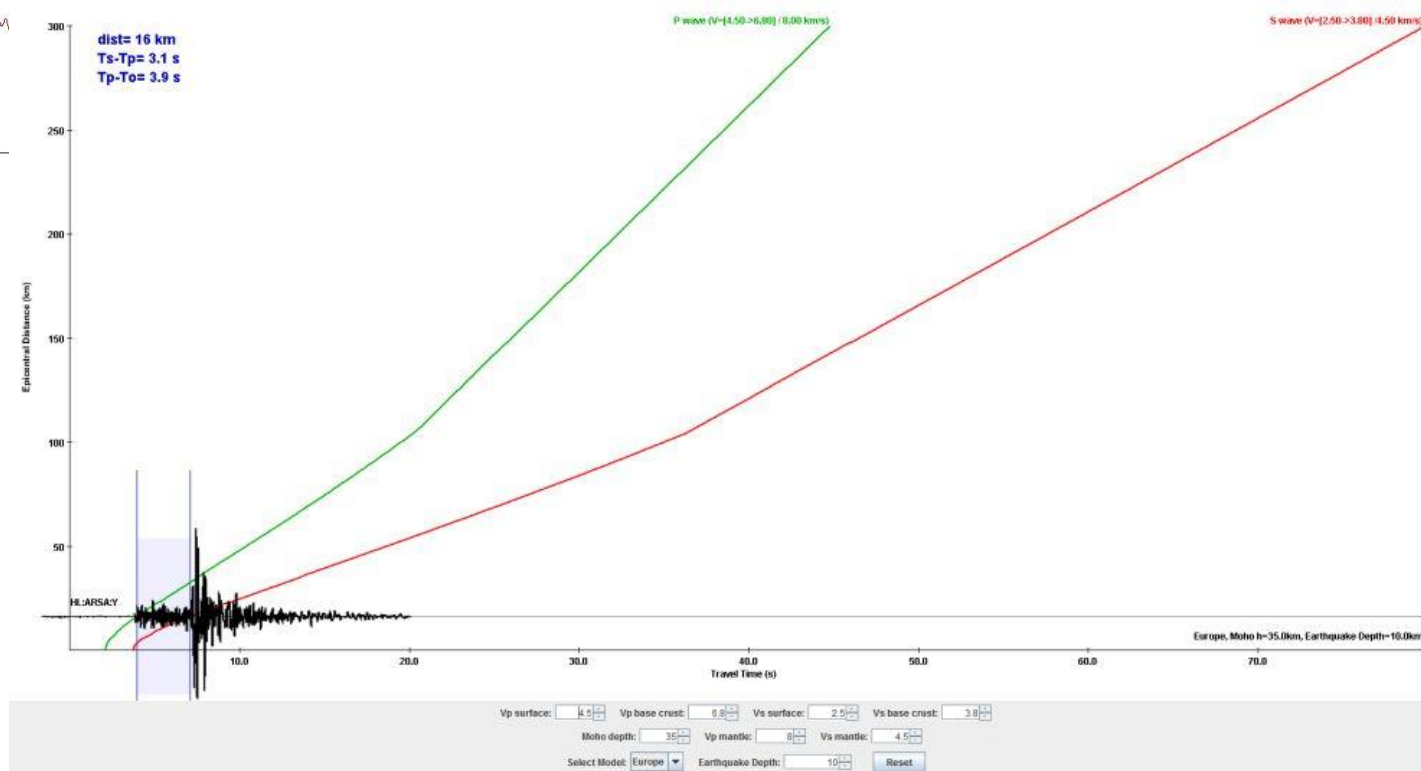
collaborate with teachers and use School Seismology to raise Awareness – Resilience
use deployed sensors in schools for the TURNkey EEW Platform
but also in School Seismology and Local Community Reporting

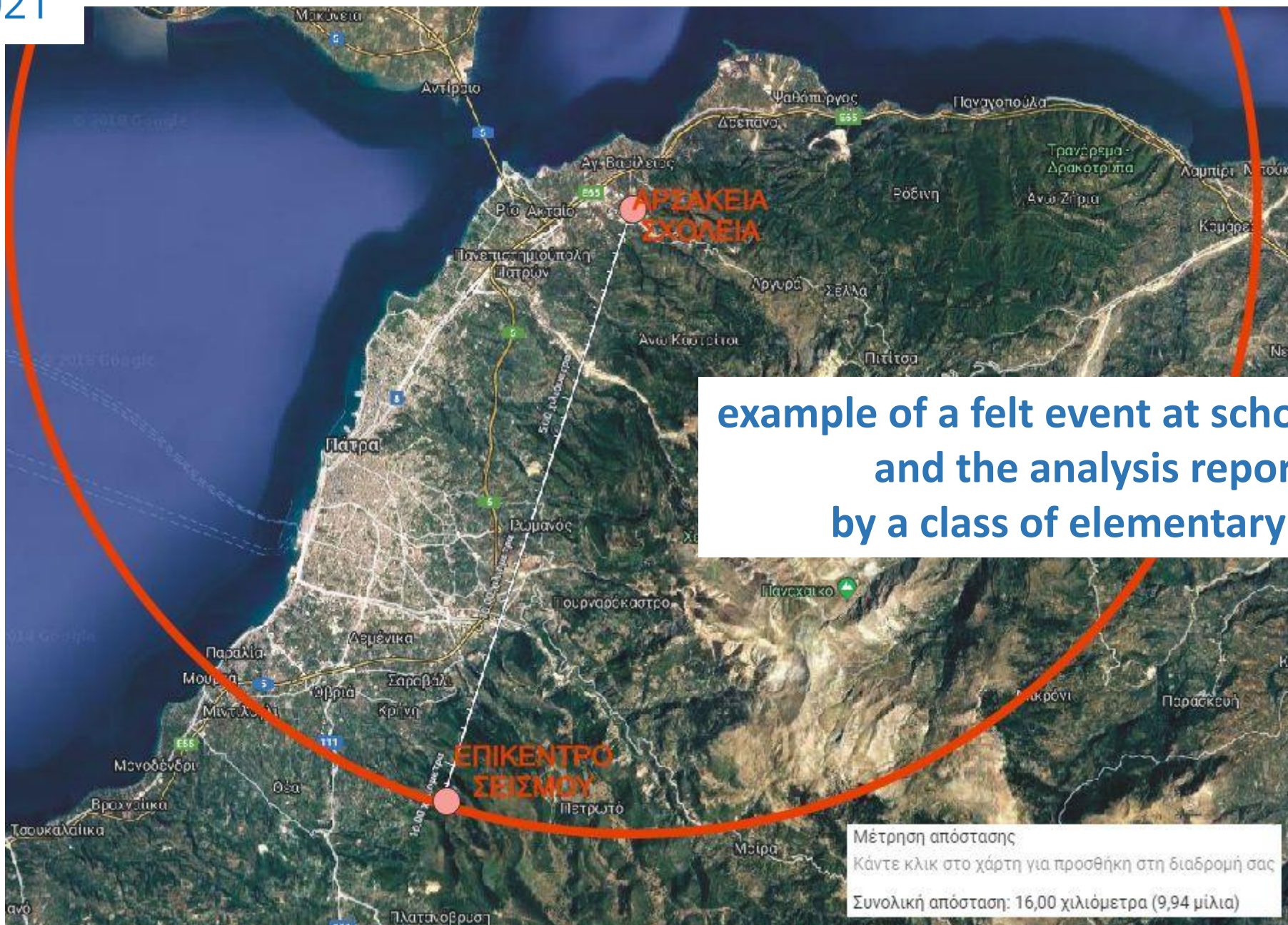




example of a felt event at schools in Patras
and the analysis reported
by a class of elementary pupils

2021-04-02 05:15:52.41
3.6ML South of Patras city





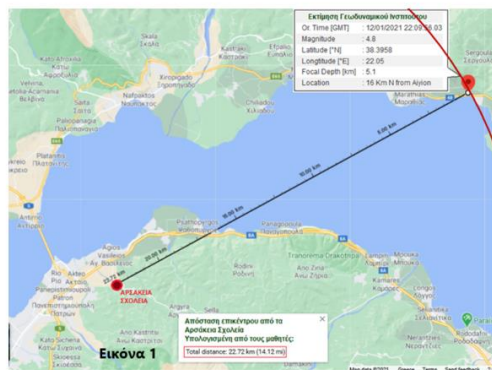


Raise Awareness of Local Civil Protection Agencies Inform Media and use School Venues to reach Students, Parents, Teachers etc Through them involve the Local Community **School – Citizen Sesimology / Civil Protection Agencies**

THE BEST - Ειδήσεις, ΕΙΣΗΓΕΙΣ ΠΑΤΡΑ - ΔΥΤΙΚΗ ΕΛΛΑΔΑ SPORTS BEST VIEW WELL BEING
Neta

ΚΟΙΝΩΝΙΑ / 14/01/2021, 10:44

Αρσάκειο Λύκειο Πάτρας: Οι μαθητές παρακολουθούν κι επεξεργάζονται τους σεισμούς των τελευταίων ωρών σε πραγματικό χρόνο!



κατανοή των 1.400 νέων κρουσμάτων

3. Κοινωνικός Πάθος είναι μέχρι τώρα οι νεκροί στην Ελλάδα

4. Δύο Πάθος επιδόματα, συντάξεις, αναδομάνε Τι καταβάλλεται τη Μεγάλη Εβδομάδα

Δημοφιλή

1 Τα ζώδια σήμερα Κυριακή 25 Απριλίου 2021

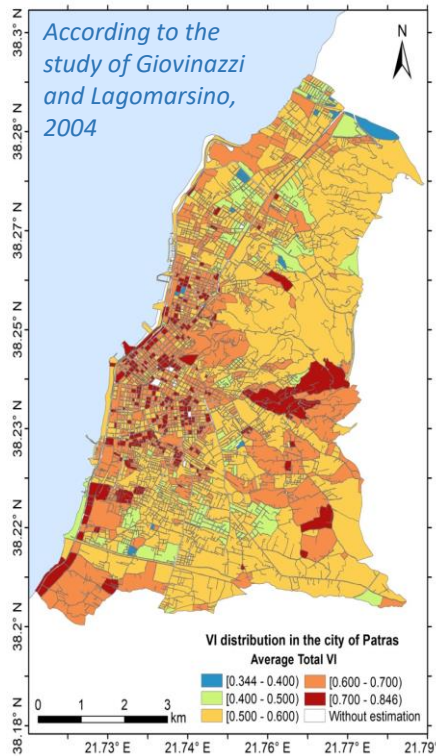
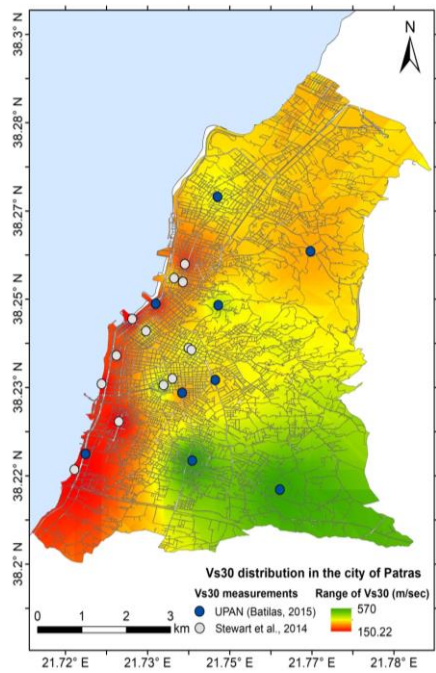
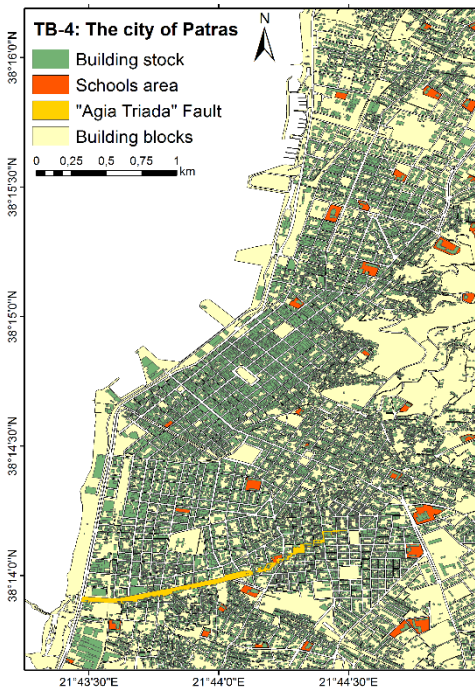
Όπως συνέβη και με τον πρόσφατο σεισμό των 4,8 Ρίχτερ

Ο καλύτερος τρόπος για να απομυθοποιηθεί κανείς ένα φαινόμενο που προκαλεί φόβο, όπως ο σεισμός είναι να το μελετήσει και να κατανοήσει τα αίτια που το προκαλούν.

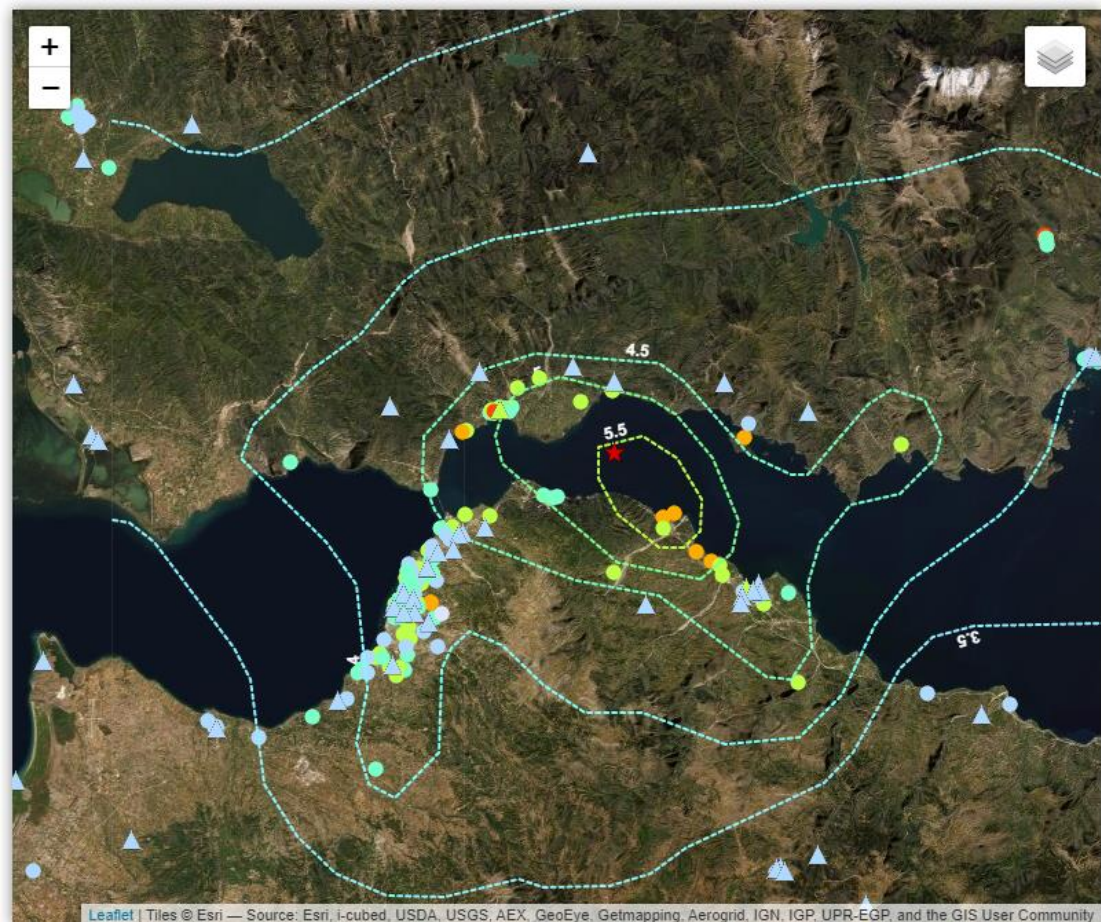
Πάτρα: Βαλάντας προκηρύσσει...



first indications of raised resilience are seen in the increased use of the EMSC LastQuake smartphone API in Patras city during the last felt events. Encouraging that Citizen Seismology can be successfully performed in Patras and Achaia



a dedicated GIS platform with various information is being built; Vs30 map, faults in the city, vulnerability map, individual school buildings, location of school in the city, population of students etc. is available to TURNkey platform for an EEW system applied in TB4 Achaia (Patras, Aigion, Kalavrita towns)



Aim to raise resilience in Achaia schools and pass important information to Civil Protection Agencies and first responders

if possible aim to raise an **Alert**

pupils are trained
Raise Awareness



Thank you - Ευχαριστώ

