TESTING THE "PRESTO" EARLY WARNING ALGORITHM WITH OGS, ARSO AND ZAMG SEISMIC DATA: FIRST RESULTS

Luca Elia[1], Andrej Gosar[2], Wolfgang Lenhardt[3], Marco Mucciarelli[4], Damiano Pesaresi[4], Matteo Picozzi[1], Mladen Živčić[2], and Aldo Zollo[1]

1 amra analysis and monitoring of environmental risk

RISSC

http://www.rissclab.unina.it

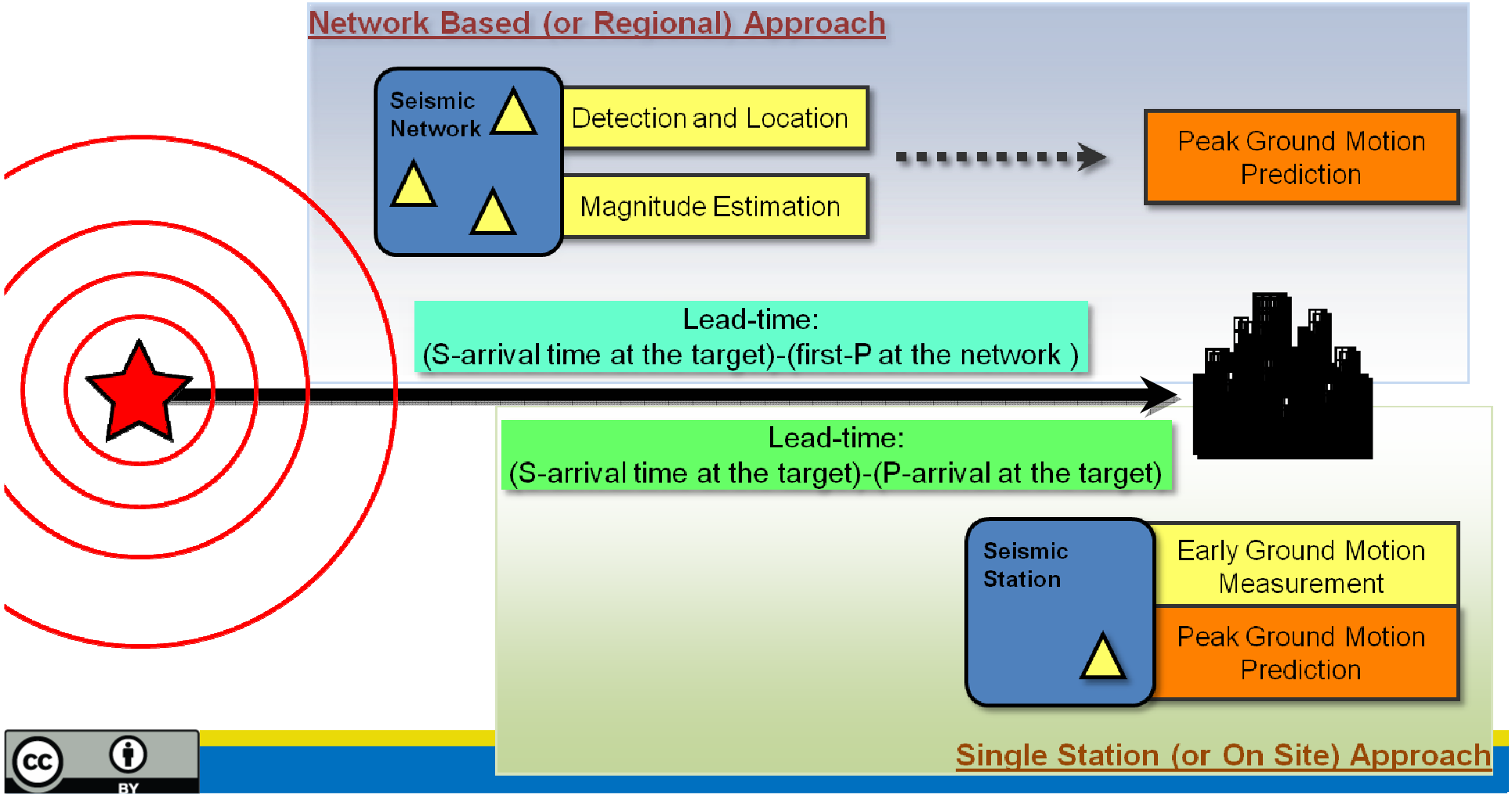
2 AGENCIJA RS ZA OKOLJE

3 ZAMG Zentralanstalt für Meteorologie und Geodynamik

4 OGS ISTITUTO NAZIONALE DI OCEANOGRAFIA E DI GEOFISICA SPERIMENTALE

Earthquake Early Warning

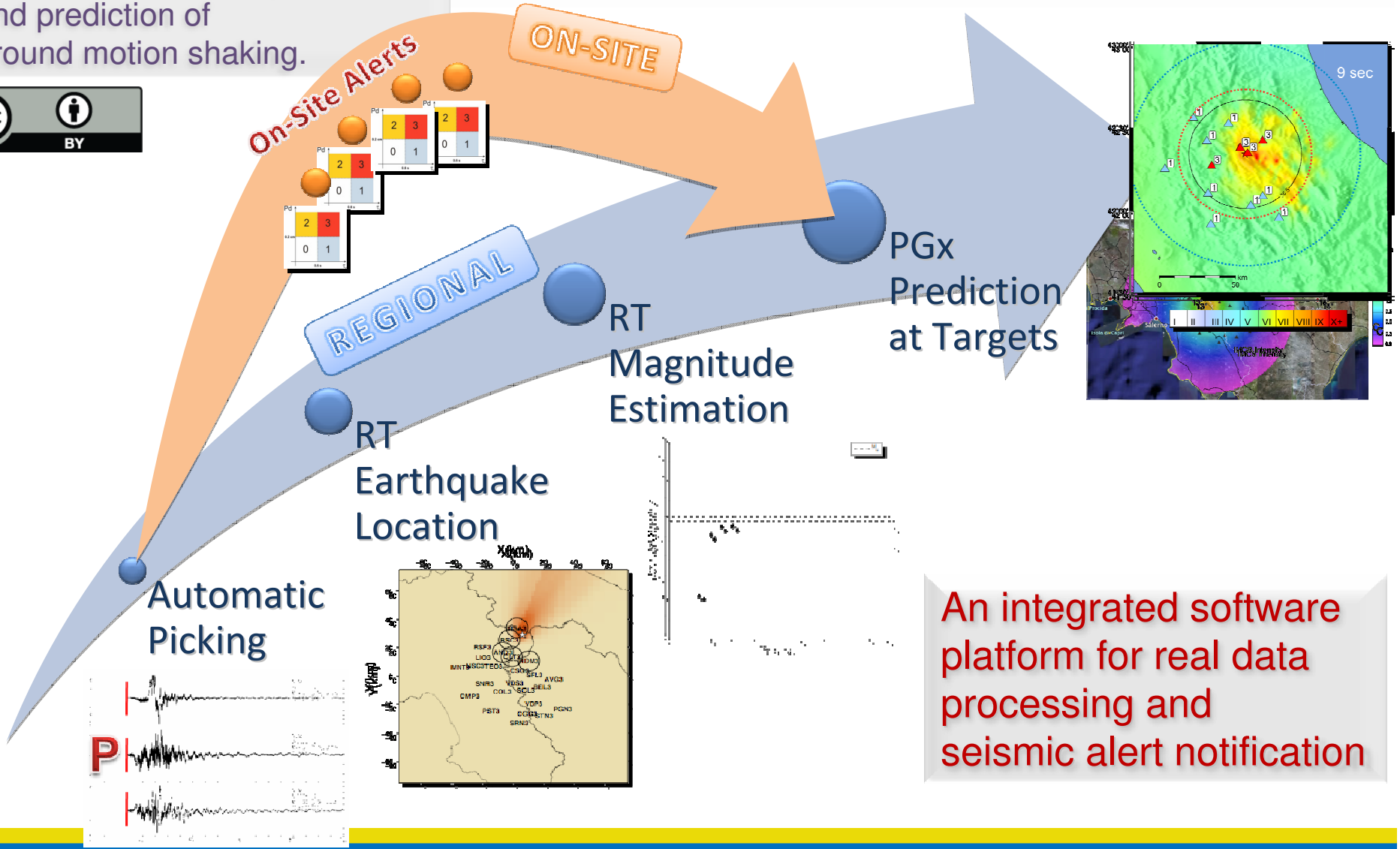
Objective: To estimate in a fast and reliable way the earthquake's damage potential



PRESTo PLUS Probabilistic and evolutionaRy Early warning SysTem

Automatic procedures for the probabilistic and evolutionary estimation of source parameters and prediction of ground motion shaking.

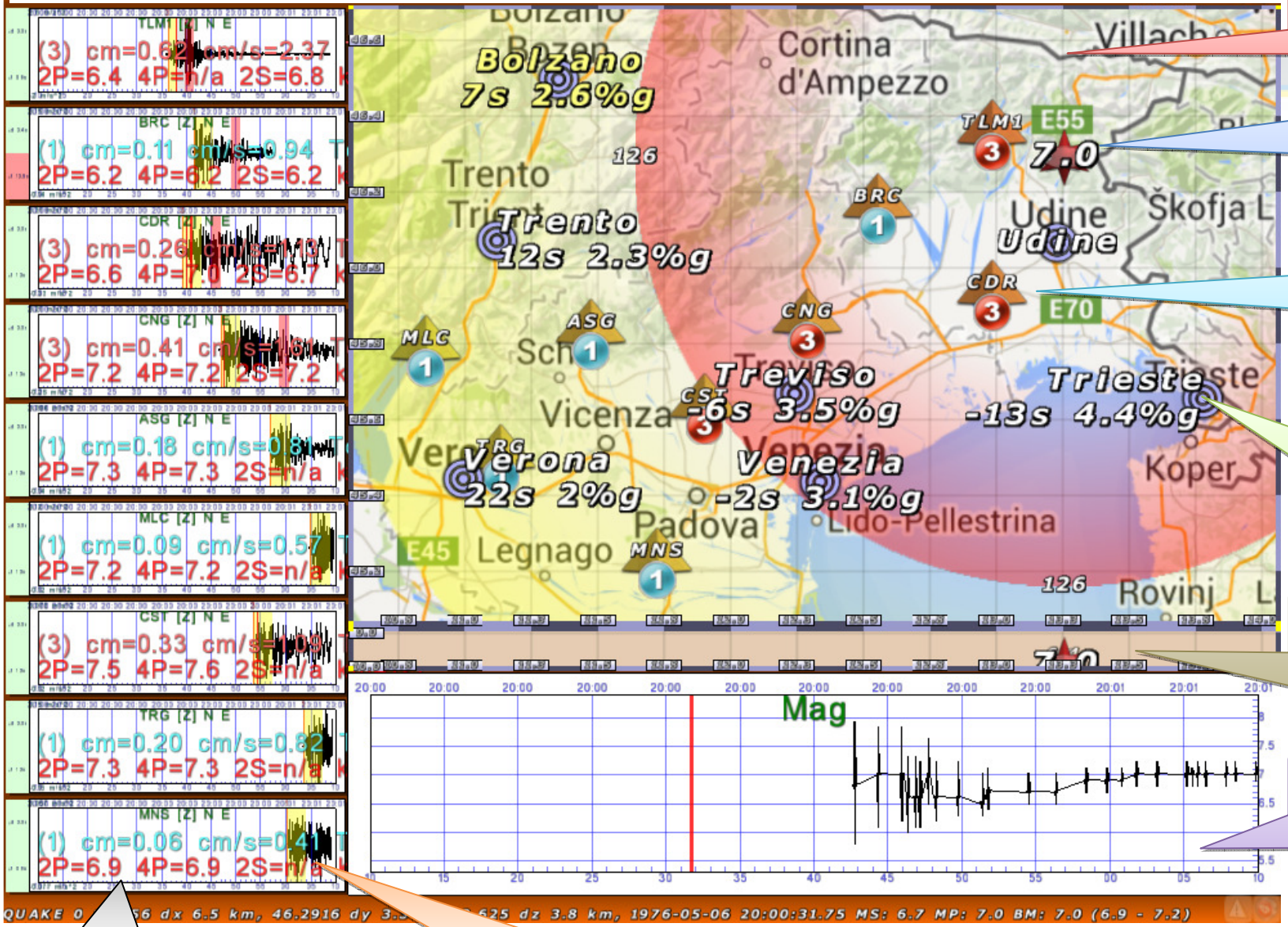
RISSC — UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II — ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA — amra ANALYSIS AND MONITORING OF ENVIRONMENTAL RISK



An integrated software platform for real data processing and seismic alert notification

Satriano & Elia (2010). PRESTo, the earthquake early warning system for Southern Italy: Concepts, capabilities and future perspectives. Soil Dyn Earthquake Eng

PRESTo PLUS Playback of the 1976 Friuli (Italy) Mw 6.5 Eqk



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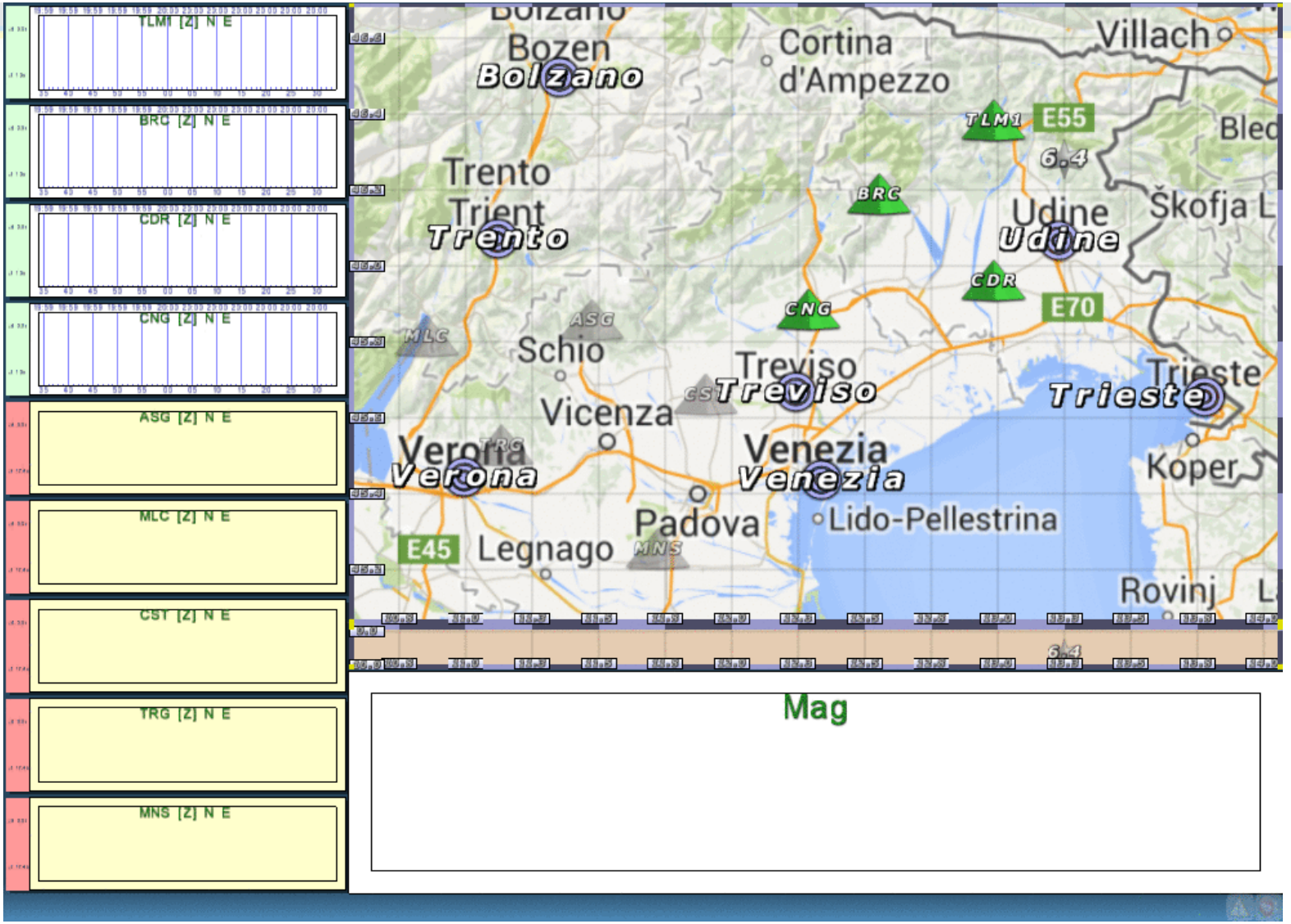
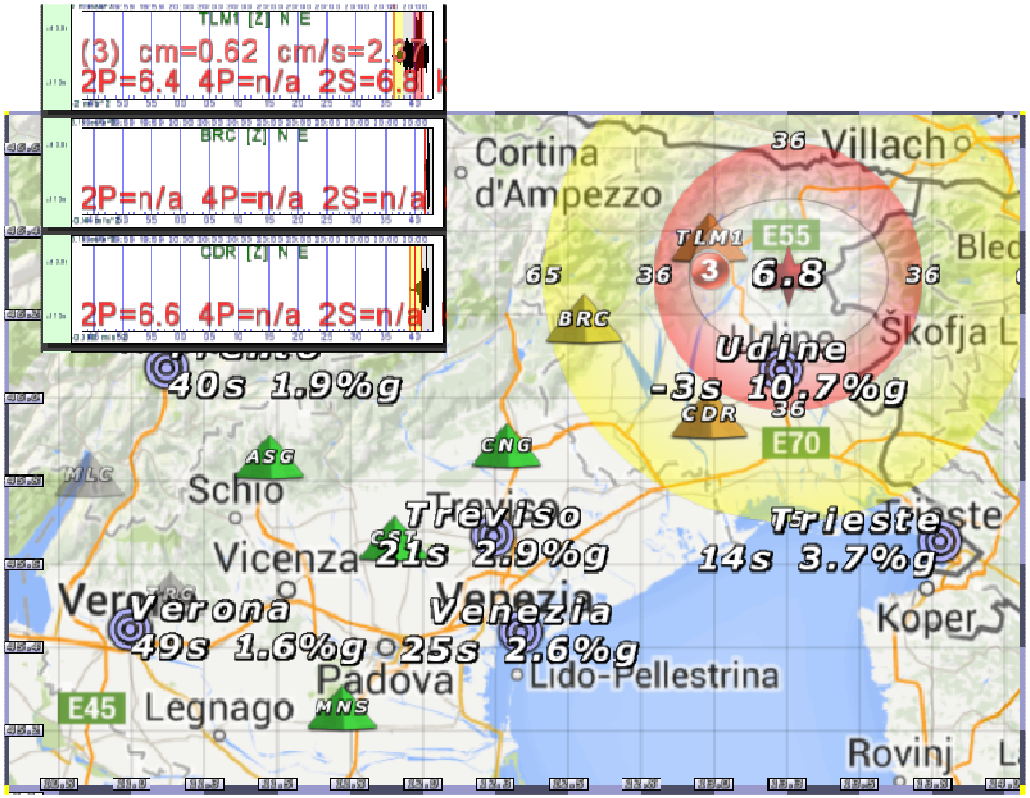


Would the EEW have been useful?



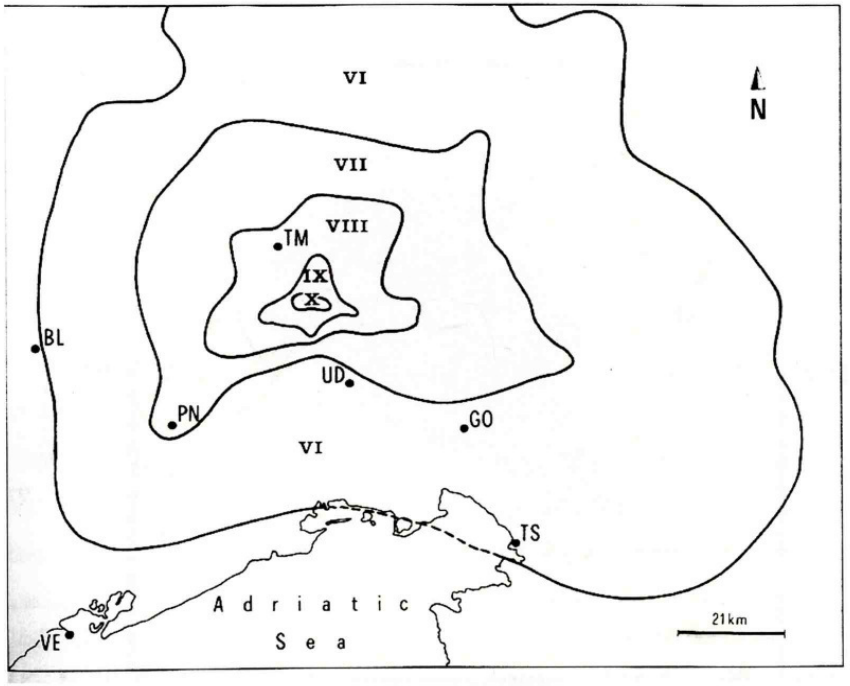
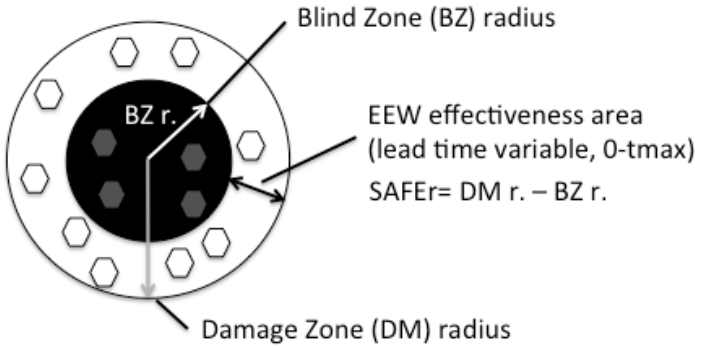


Figure 7.17 Map with the macroseismic observations of the 1976 Friuli earthquake (after Giorgetti, 1976).

- ✓ Given the 76' network configuration, the Blind zone (BZ) is about 40 km
- ✓ Municipalities in the area within the VI and VII macroseismic isolines could have been alerted

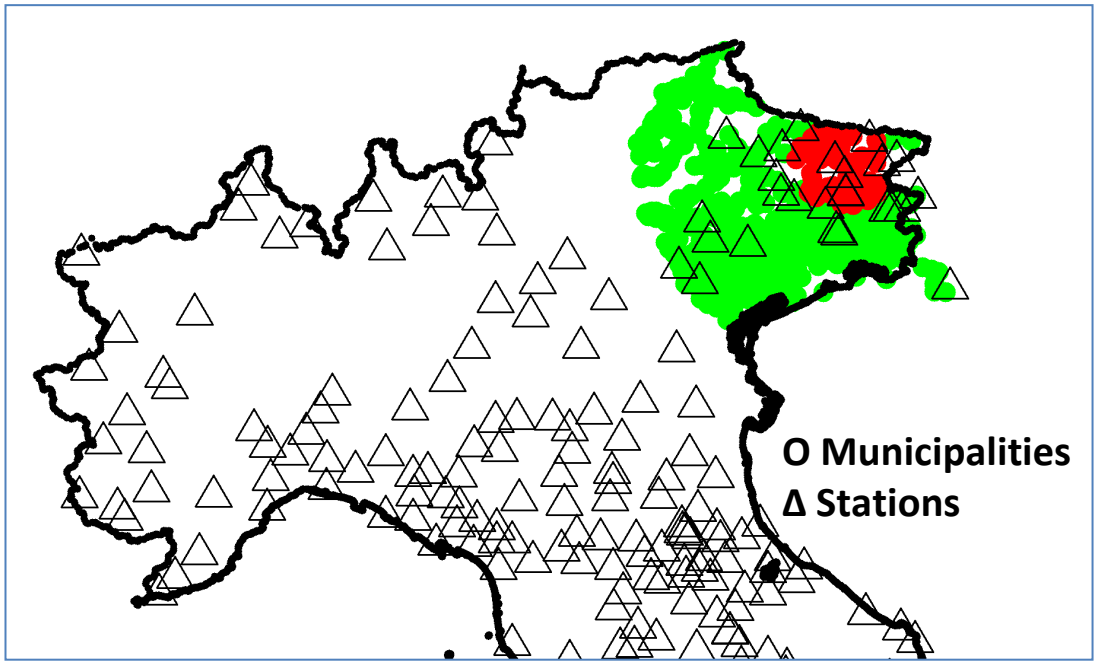
Would the EEW useful have been?



DM defined as the PGV+σ correspnding to the Instr.Int. VI class from Faccioli & Cauzzi (2006)

- ✓ With a modern network and real-time data telemtry the BZ can decrease to 30 km
- ✓ A high number of municipalities might benefit from an alert

76’ Friuli EQ. Mw 6.5 scenario



Region	Blind Zone (km)	Safer (km)	Lead-Time (s)	N. Mun. BZ	N. Mun. SZ
Friuli	30.22	97.77	32	67	462

OGS-ARSO-ZAMG PRESTo stations

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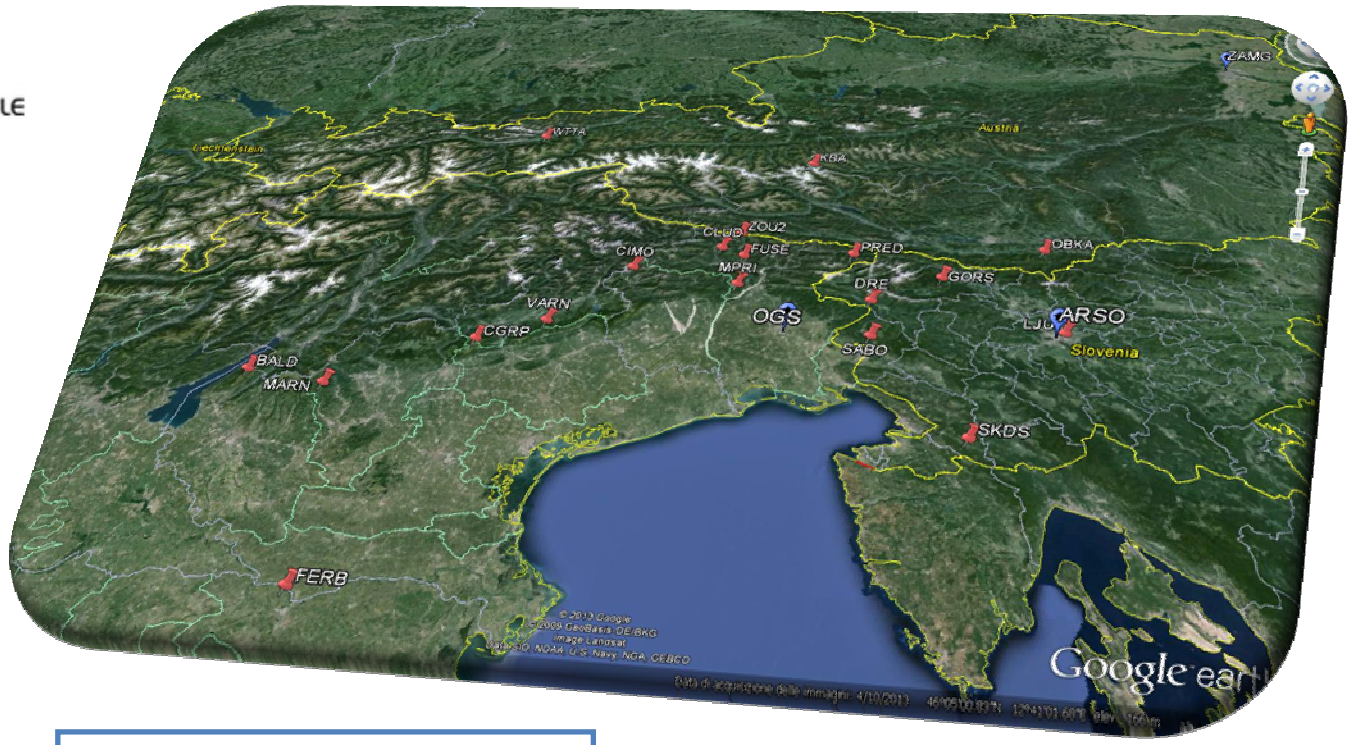
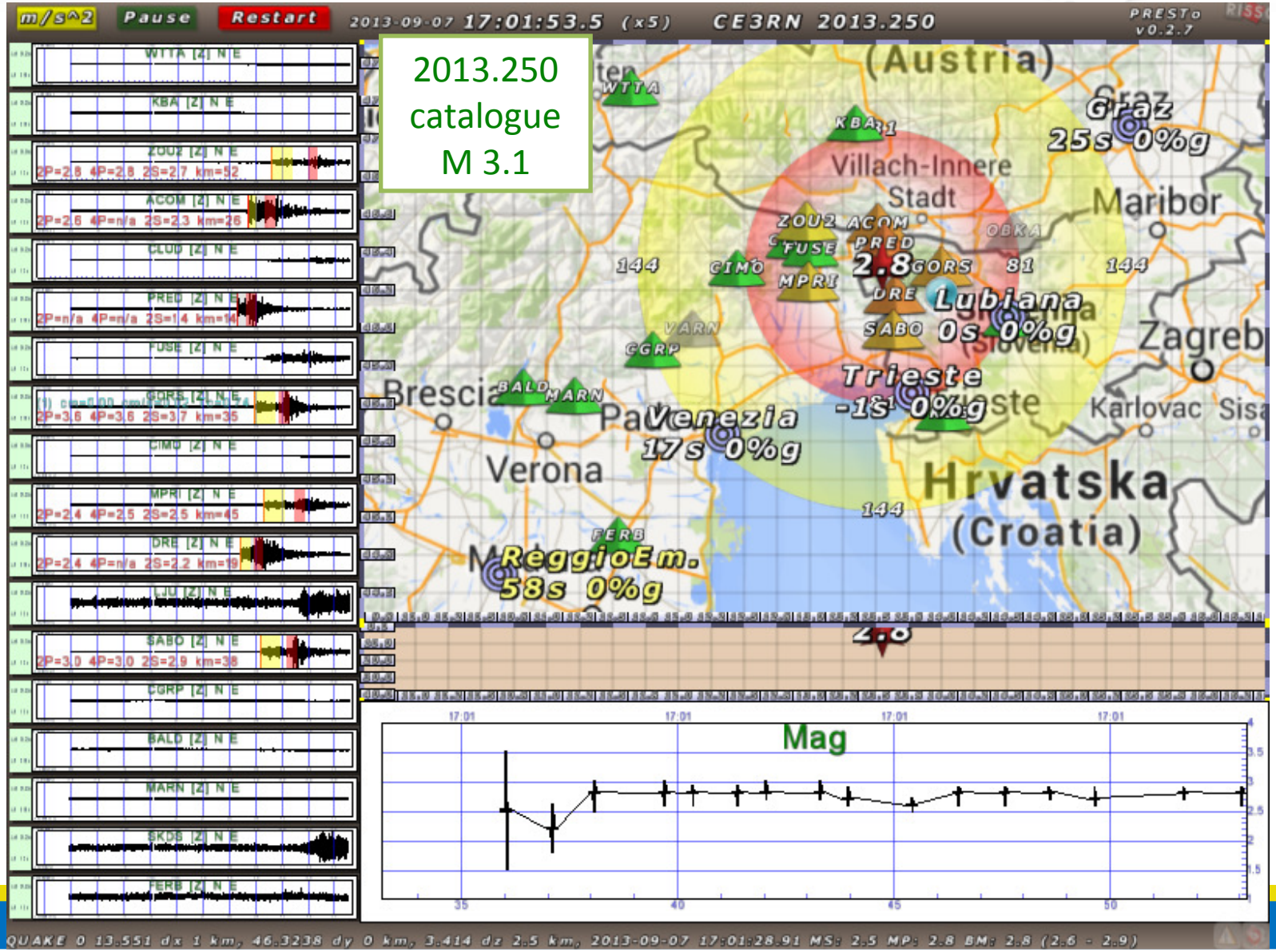


21 Stations

Some training on recorded events



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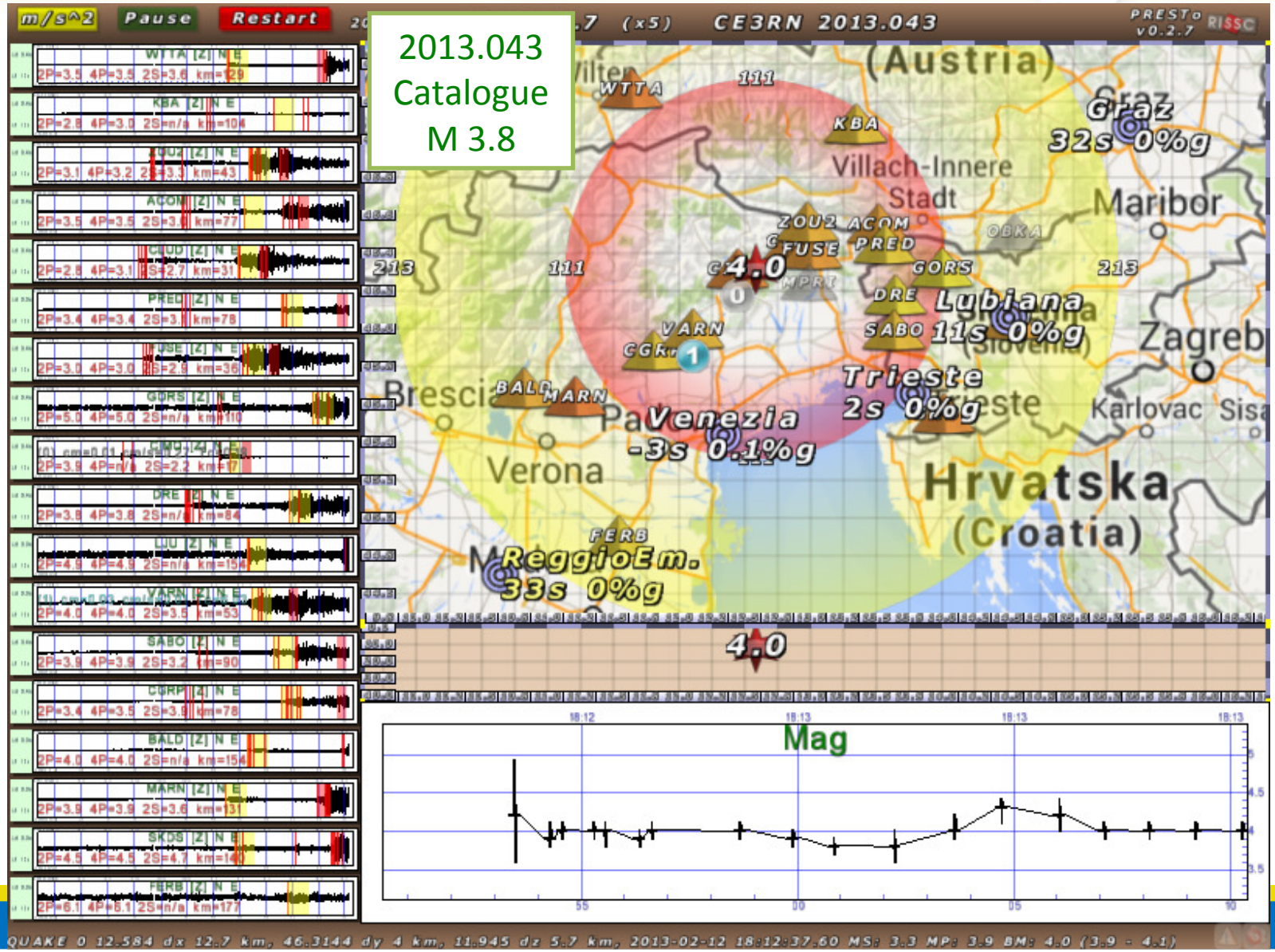
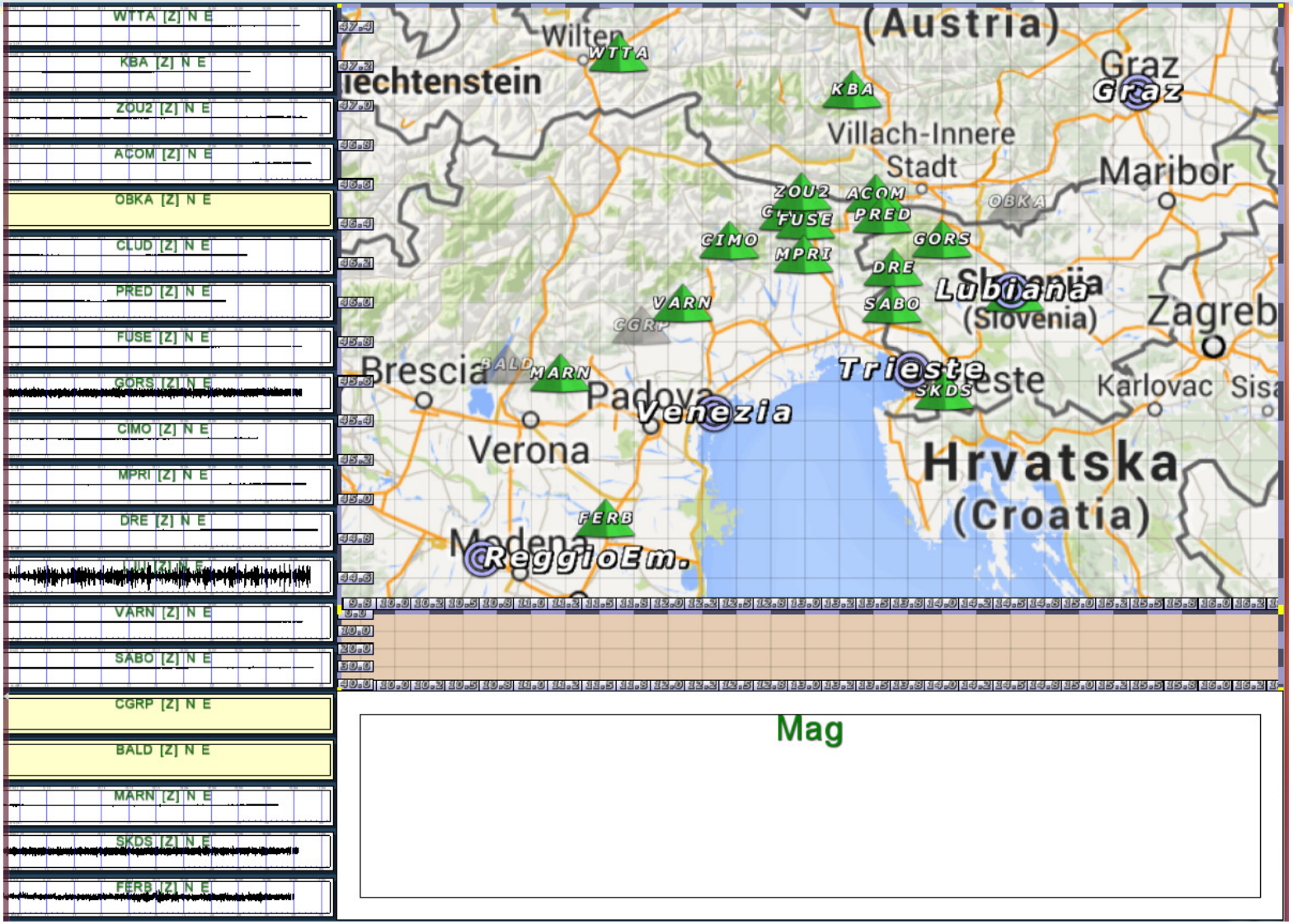


PRESTo is working in real-time since the begin of 2014



WRONG SETUP FOR EVENT DETECTION ☹

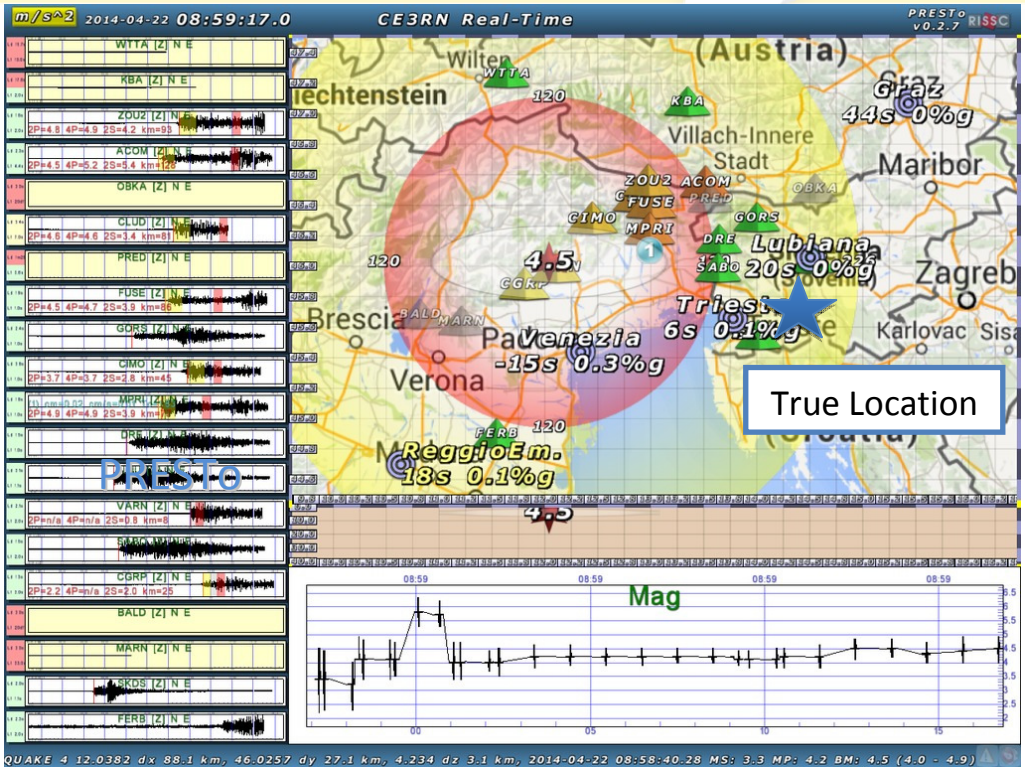
ML: **4.5**
Date: **2014-04-22 08:58:40.28 (UTC)**
Place: **North-eastern Italy**
Using **8 stations** of **CE3RN**.

The first information on location and magnitude of the earthquake was available at this time:

2014-04-22 08:58:57.21 (UTC)

i.e. about **9.7** seconds after the first P arrival detected at station ACOM at this time:

2014-04-22 08:58:47.48 (UTC)



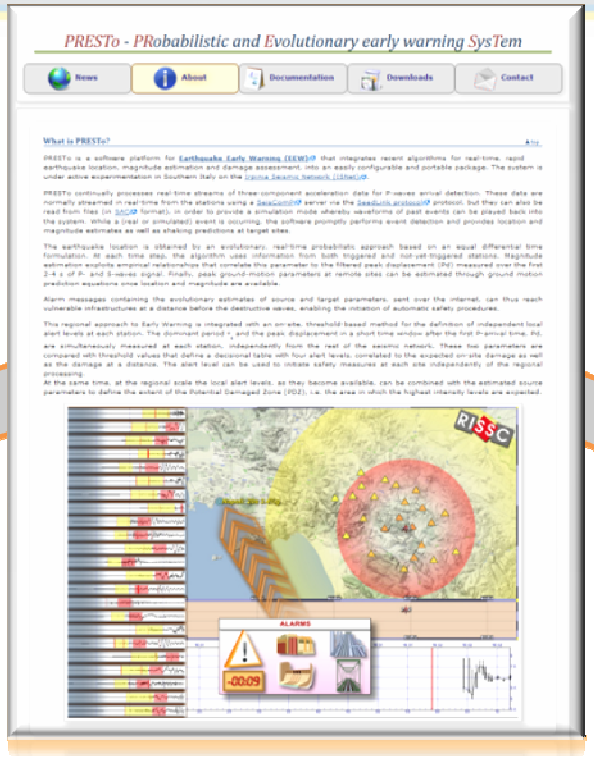
ORIGINAL BINDING PARAMETERS: 6 st. IN 6 s
THE EVENT WAS DECLARED ON THE CLUSTER OF STATIONS IN THE FRIULI AREA AND NOT ON THE SLOVENIAN ONES
(NEW BINDING PARAMETERS ARE UNDER TEST ☺)

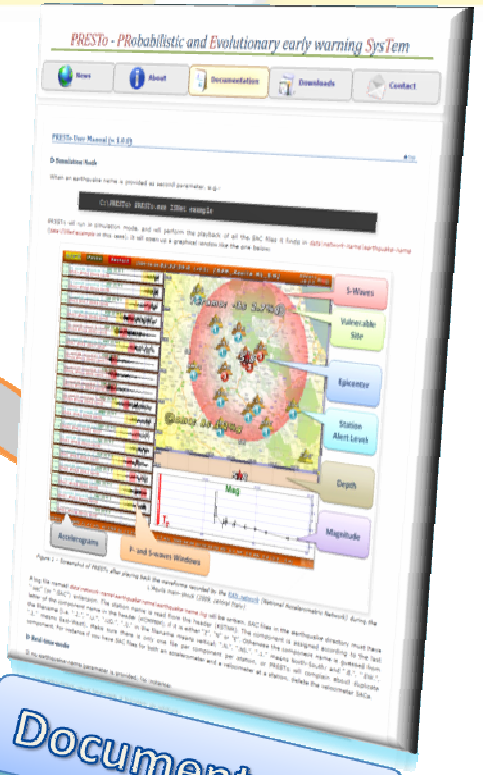
CONCLUSIONS

- ✓ OGS, ARSO, and ZMAG started a cooperation with the RISSCLab-UNINA to explore the feasibility of EEWS in North-East Italy, Slovenia and Austria region
- ✓ The first moderate event recorded in real time was worngly detected for bad tuning of binding parameters, but it is a good training for the future
- ✓ The playback of the 1976 Friuli earthquake (Mw 6,5) highlight that an EEWS might be relevant for providing real-time alerts to a large number of municipalities

Thanks for your attention

http:// prestoews . org





Downloads

Documentation

FREE SOFTWARE (GPL)

PRESTo distribution