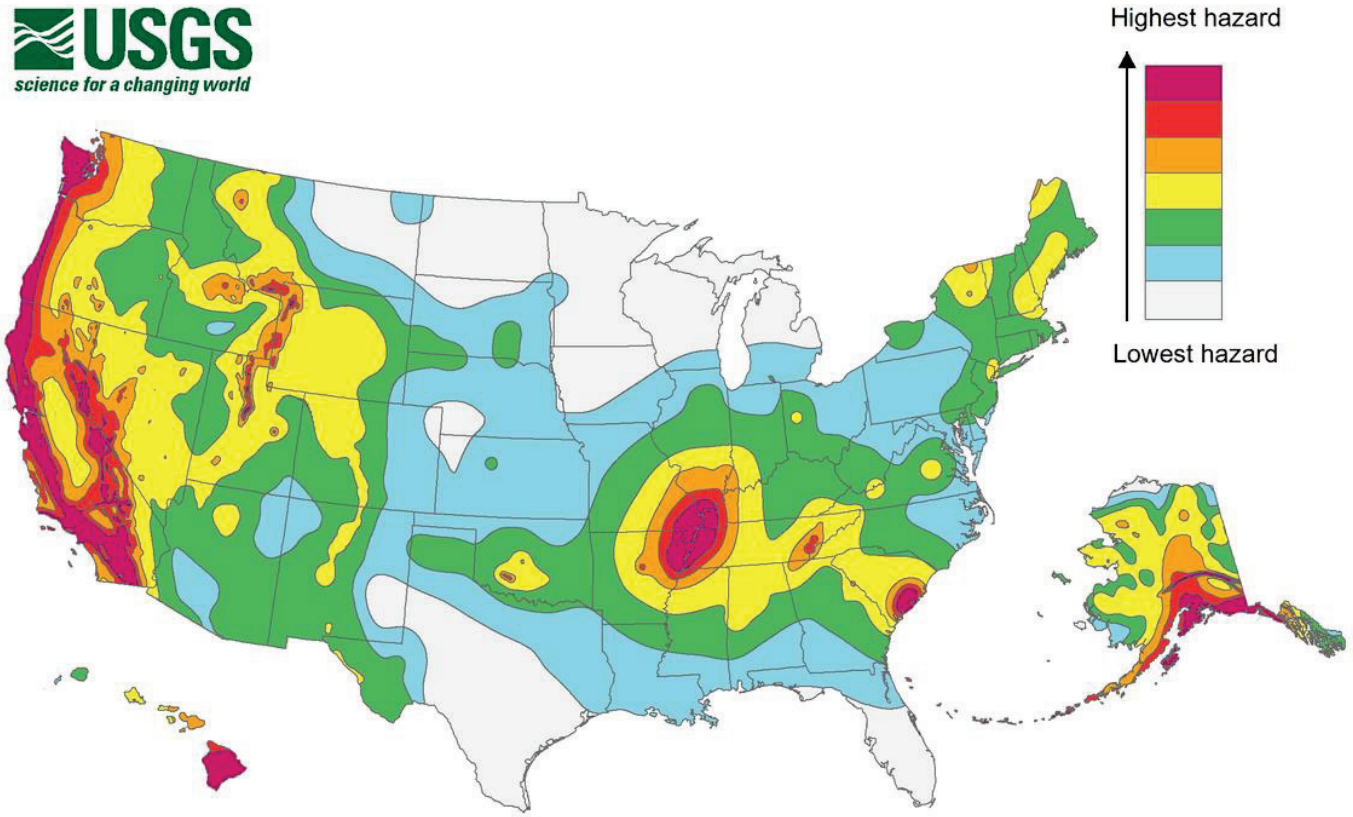
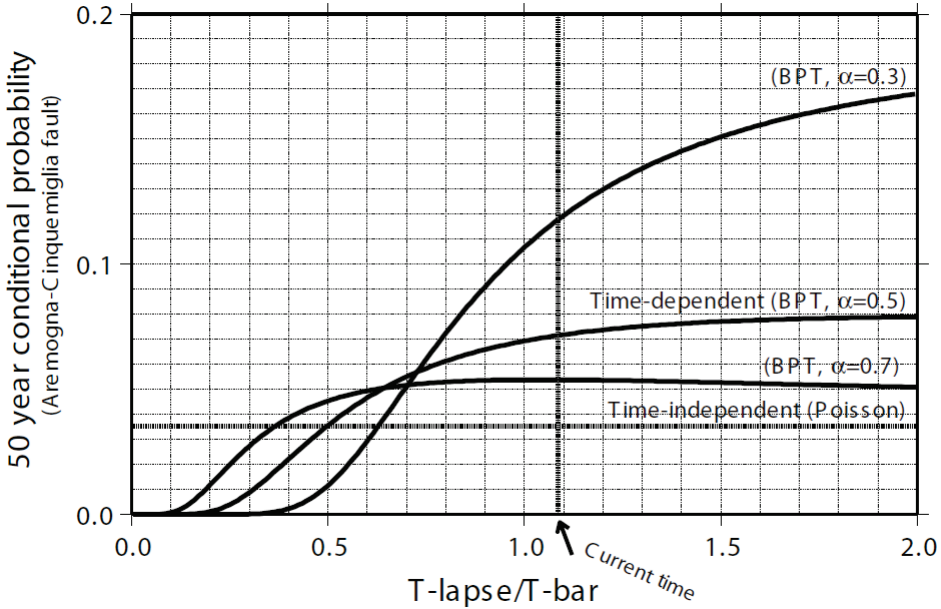

USGS
science for a changing world
Highest hazard
Lowest hazard

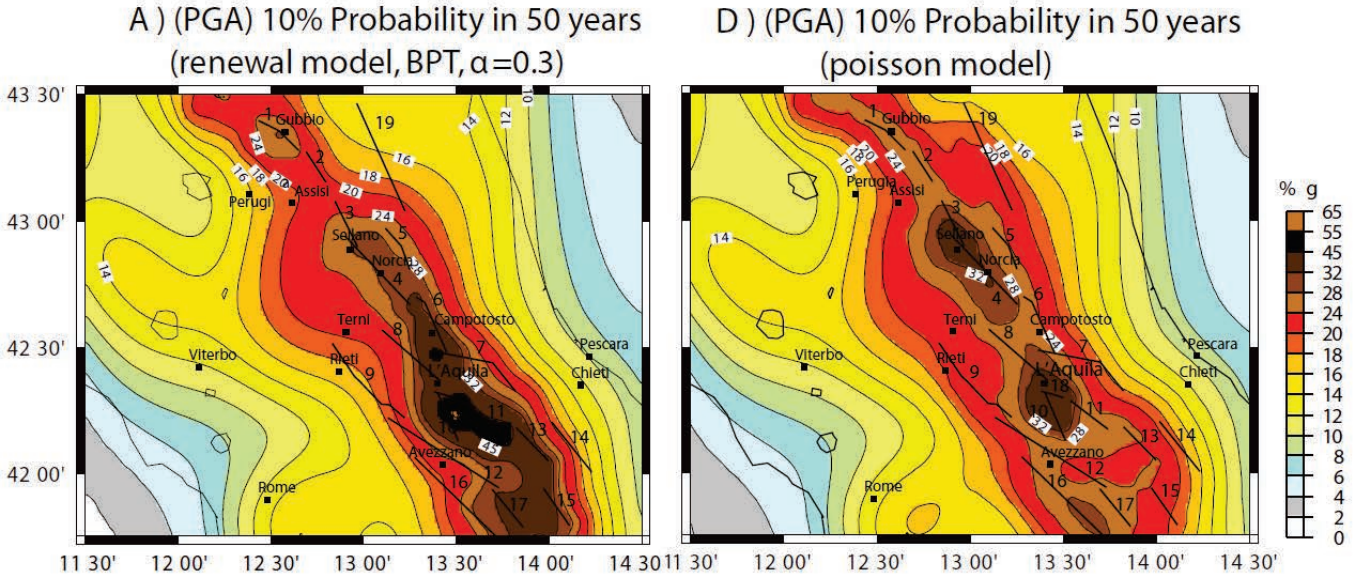
Akinci et al. 2009 BSSA

DEFINIZIONE DELLA DISTRIBUZIONE TEMPORALE

modello di Poisson (casuale e i terremoti senza memoria)
modello renewal (considera l'intervallo dall'ultimo terremoto caratteristico avvenuto)

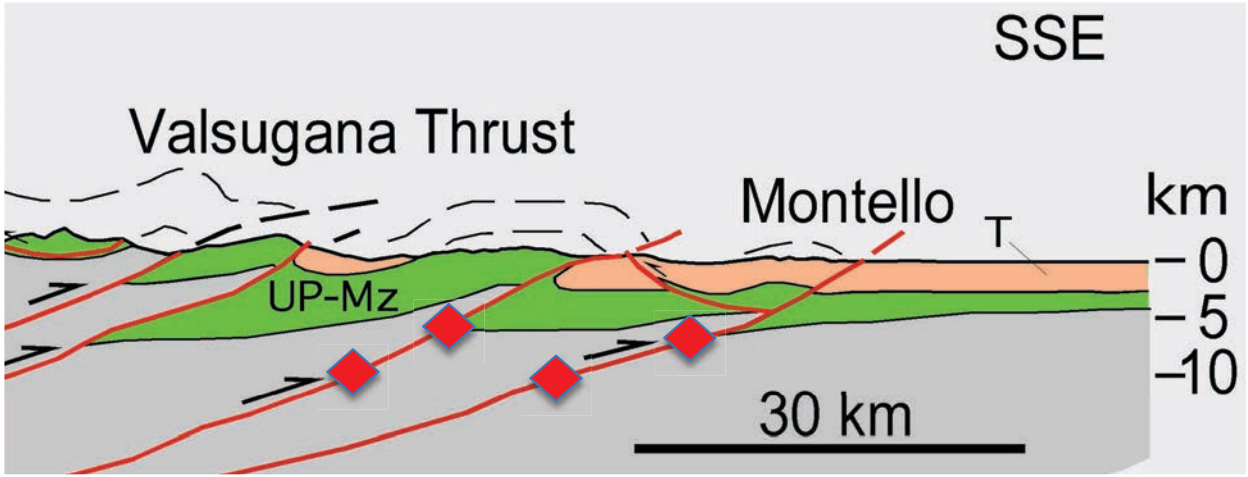


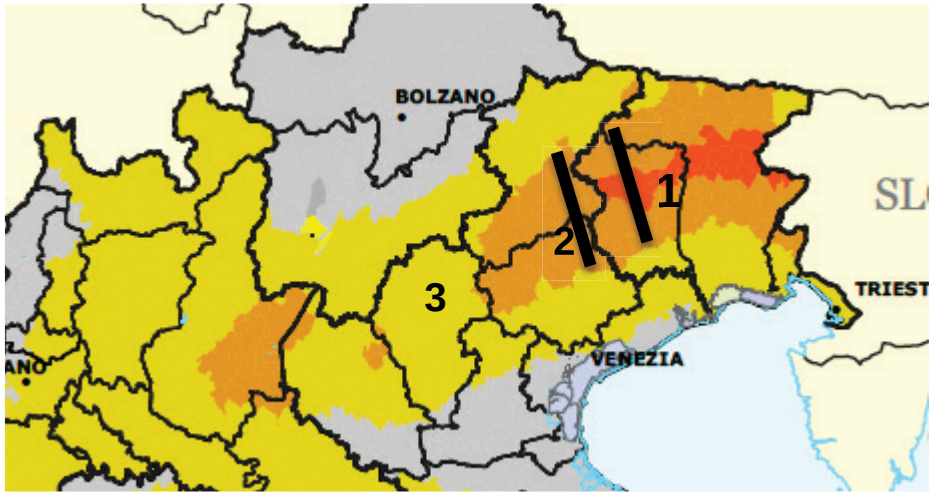
LE MAPPE DI PERICOLOSITA' TIME-DEPENDENT & TIME-INDEPENDENT
APPENINO CENTRALE



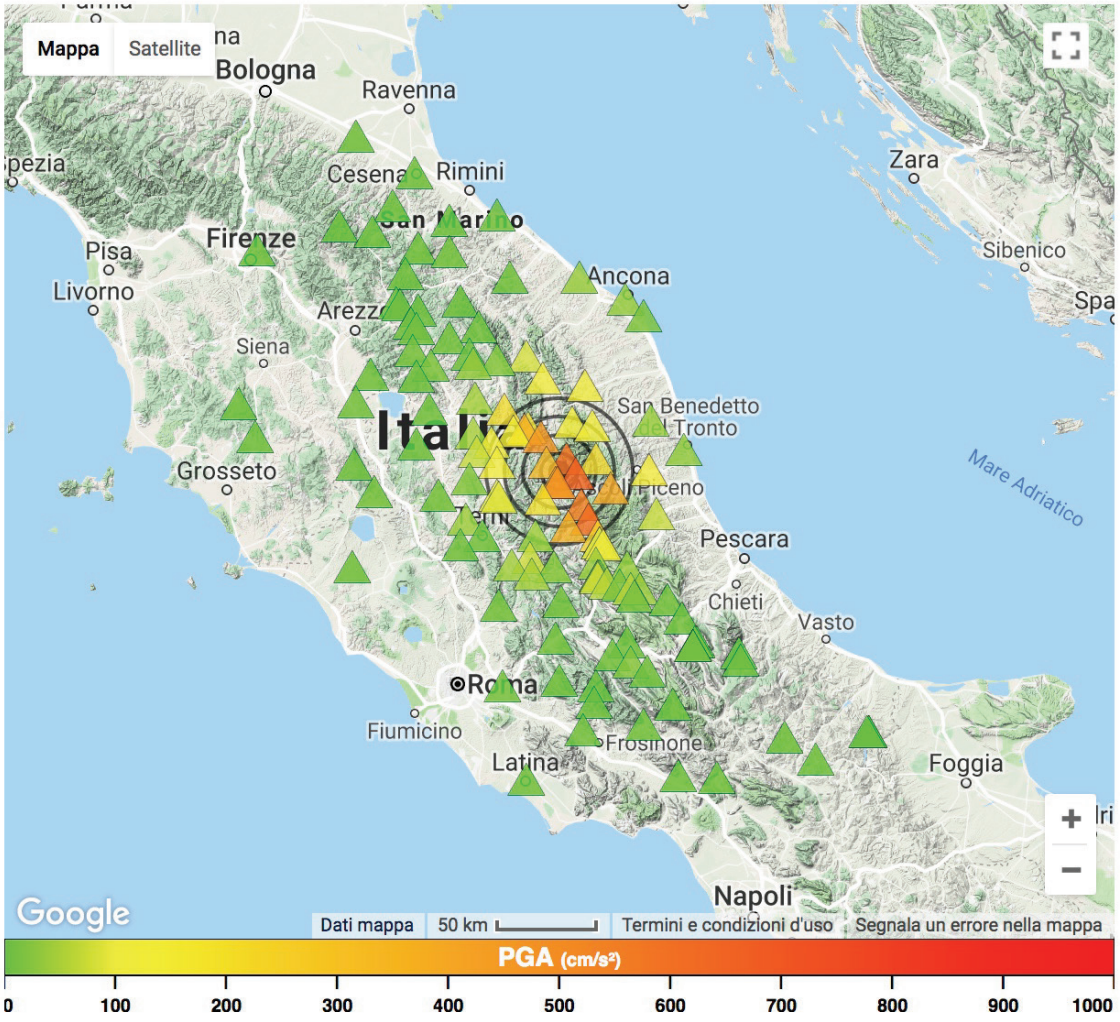
- *Le mappe (probabilità di superamento del 10% in 50 anni) indicano i valori di PGA ottenuto utilizzando il modello poissoniano e renewal.*
- *Nella mappa dipendente del tempo (con il α=0.3 e' la periodicita' alta e regolare) i valori PGA aumentano nel settore meridionale dove la probabilita' di occorrenza, dato dal modello di renewal, supera quella poissoniana, specialmente nelle sturutture che hanno una lunga lapse time rispetto al loro tempo di riccorenza.*

Akinci et al. 2009 BSSA


SSE
Valsugana Thrust
Montello
T
km
0
5
10
UP-Mz
30 km

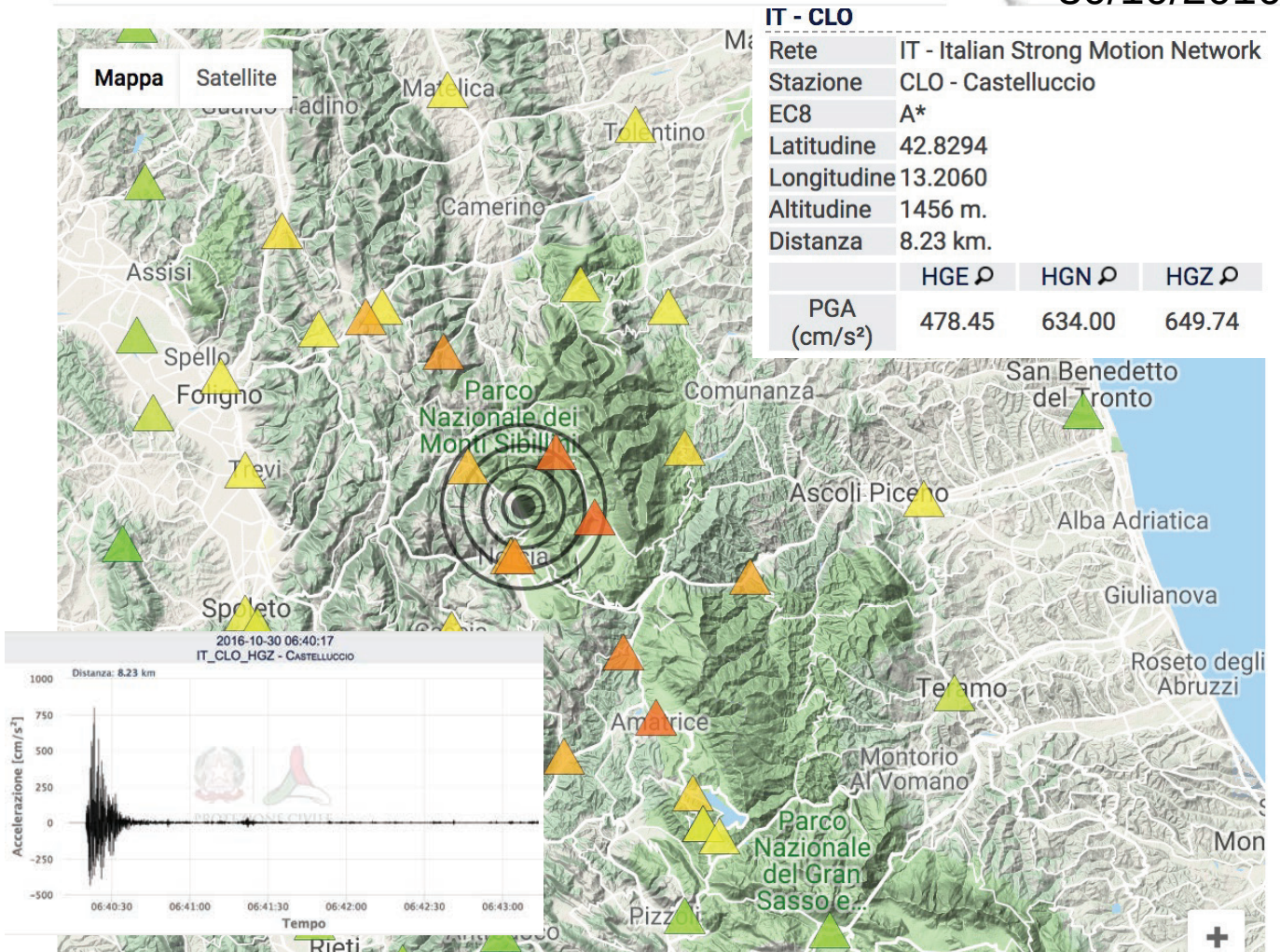

BOLZANO
1
2
3
TRIEST
VENEZIA

Rete Accelerometrica Nazionale - RAN Download



RETE ACCELEROMETRICA NAZIONALE - RAN DOWNLOAD

30/10/2016

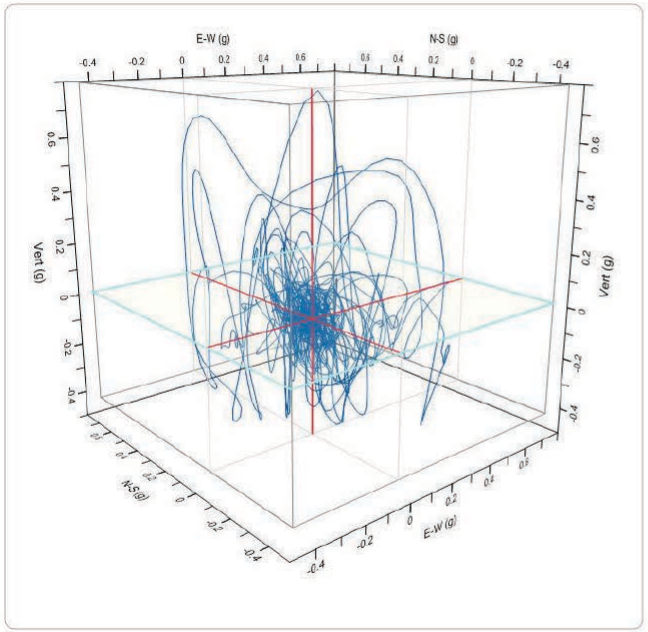


IT - CLO

Rete	IT - Italian Strong Motion Network
Stazione	CLO - Castelluccio
EC8	A*
Latitudine	42.8294
Longitudine	13.2060
Altitudine	1456 m.
Distanza	8.23 km.

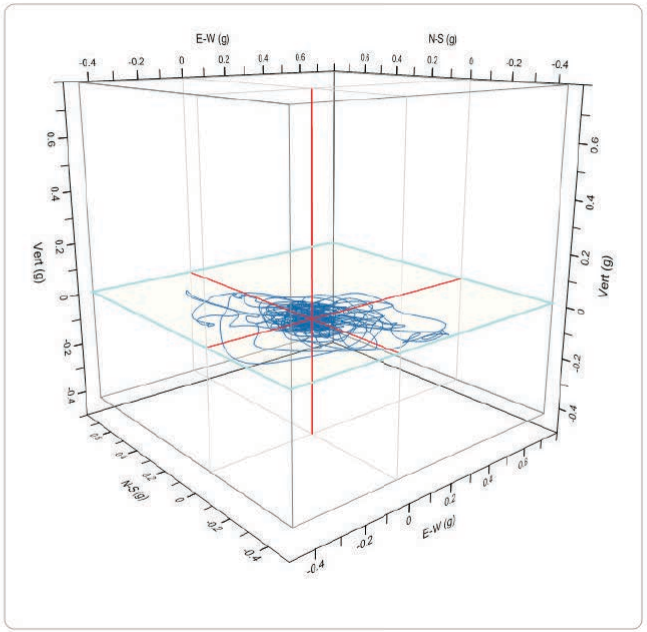
	HGE	HGN	HGZ
PGA (cm/s²)	478.45	634.00	649.74

ITALIA CENTRALE 30-10-2016 - CLO (CASTELLUCCIO DI NORCIA) - 7,8km DALL'EPICENTRO: accelerazione



Con presenza di accelerazione verticale

ITALIA CENTRALE 30-10-2016 - CLO (CASTELLUCCIO DI NORCIA) - 7,8km DALL'EPICENTRO: accelerazione



Senza presenza di accelerazione verticale

Mariani & Pugi 2019 Ingenio

rt [ITALIA CENTRALE 30-10-2016 - CLO (CASTELLUCCIO DI NORCIA) - 7.8 km]

ona Opzioni Fourier ?

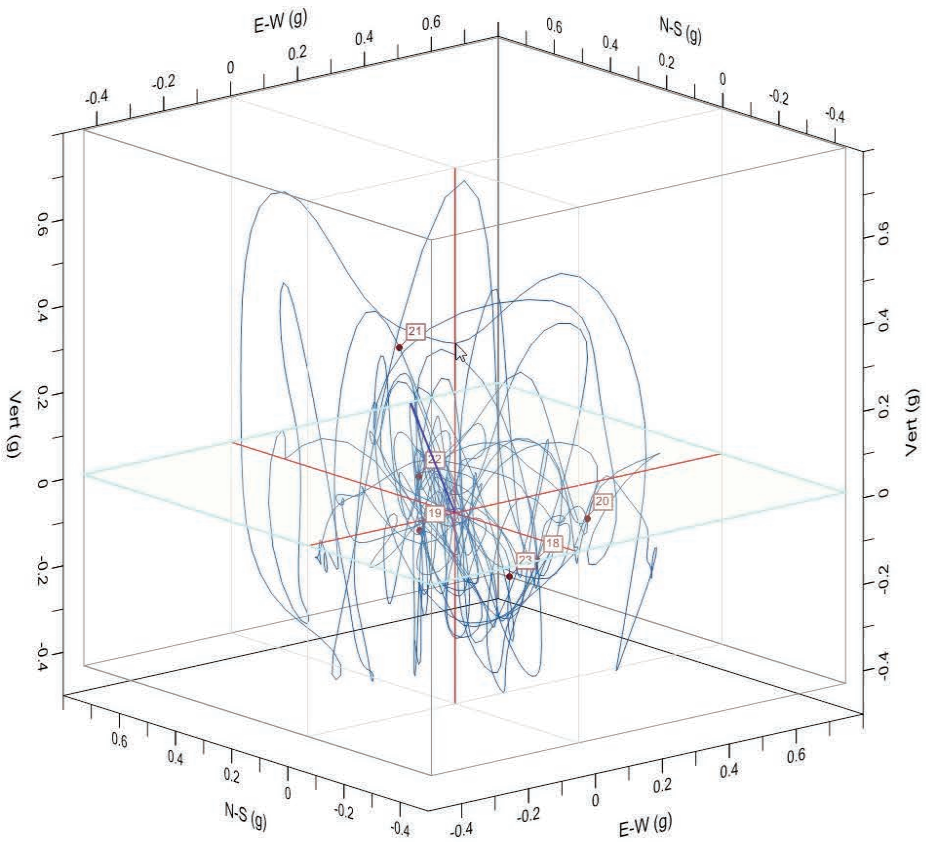
ITALIA CENTRALE 30-10-2016 - CLO (CASTELLUCCIO DI NORCIA) - 7.8 km: accelerazione

ANIMAZIONE.

NELLA PRIMA FASE
LA COSTRUZIONE
DELLA CURVA
IMPIEGA PIU' DEL
TEMPO REALE (~ 6 s)
A CAUSA DEI CALCOLI
DI ELABORAZIONE.

DOPO QUESTA PRIMA
PARTE, LA SECONDA
FASE MOSTRA
LA COSTRUZIONE
IN TEMPO REALE.

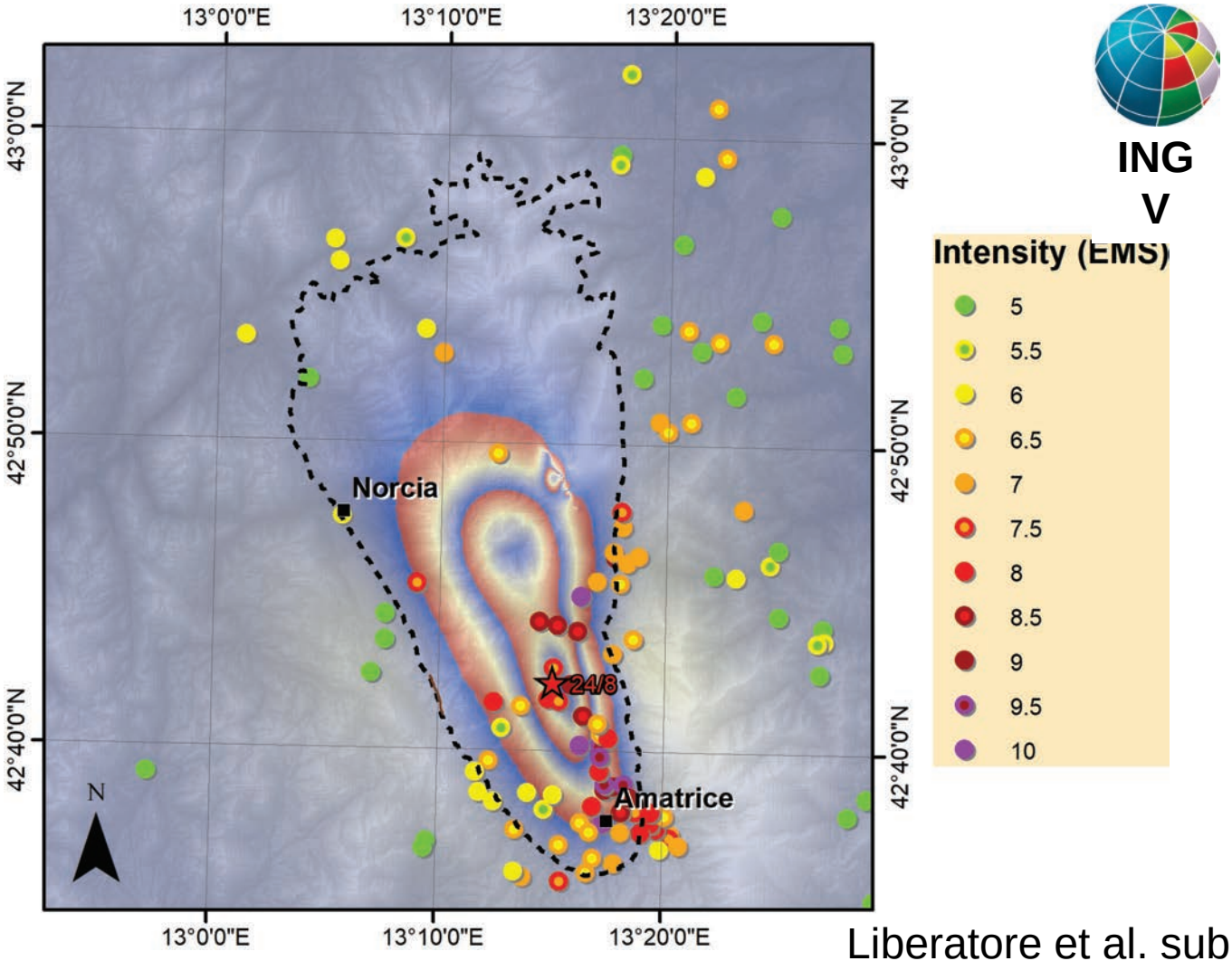
IL DISEGNO
VIENE ESEGUITO
DAL VETTORE
ACCELERAZIONE
(IN BLU) GENERATO
DALLE 3 COMPONENTI



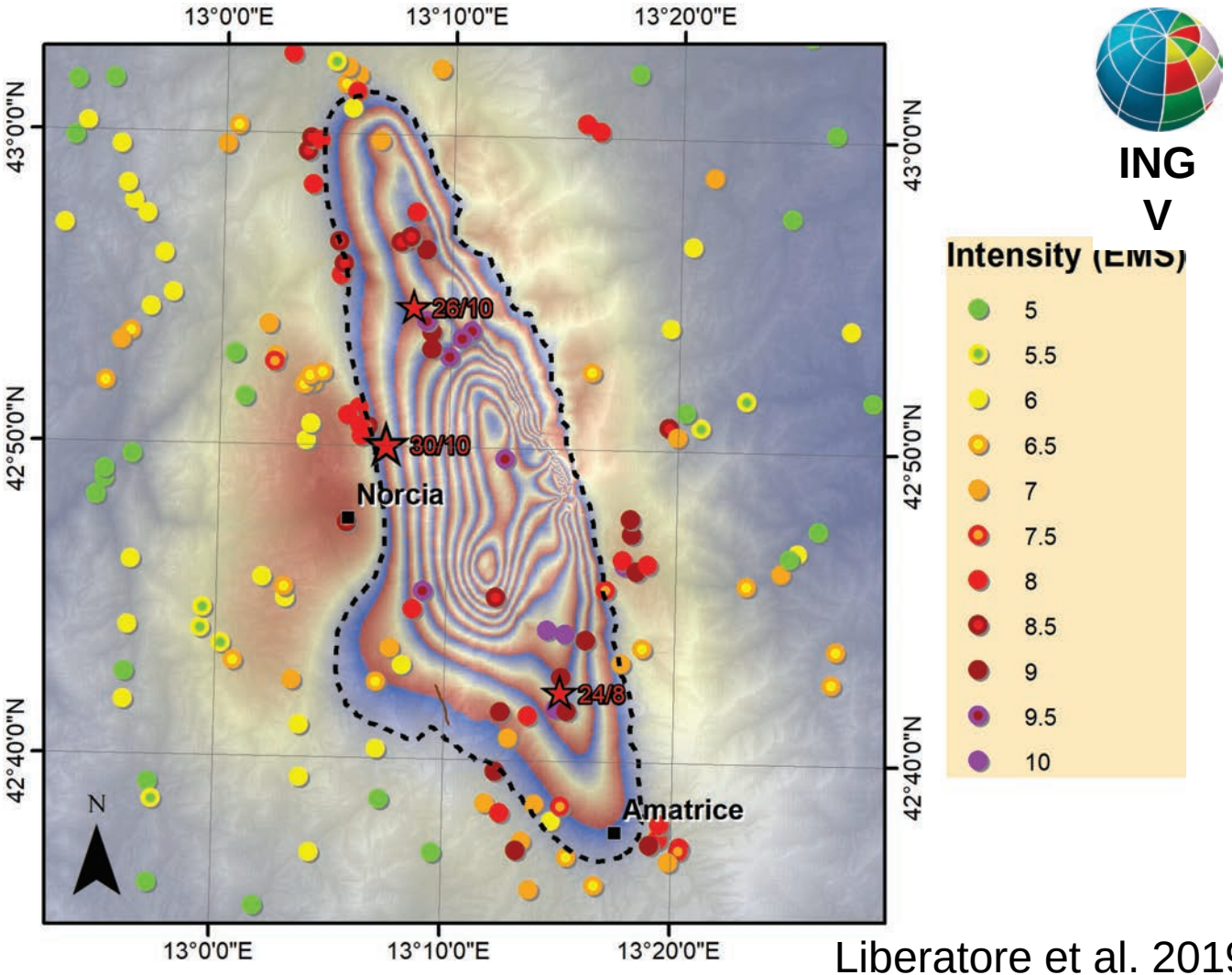
t=23.915 s, accelerazione ag (g): E-W=-0.084, N-S=+0.057, Vert=+0.259 - |ag|=0.279 - A^H=52.78°

Castelluccio 30th October 2016 Mw 6.5

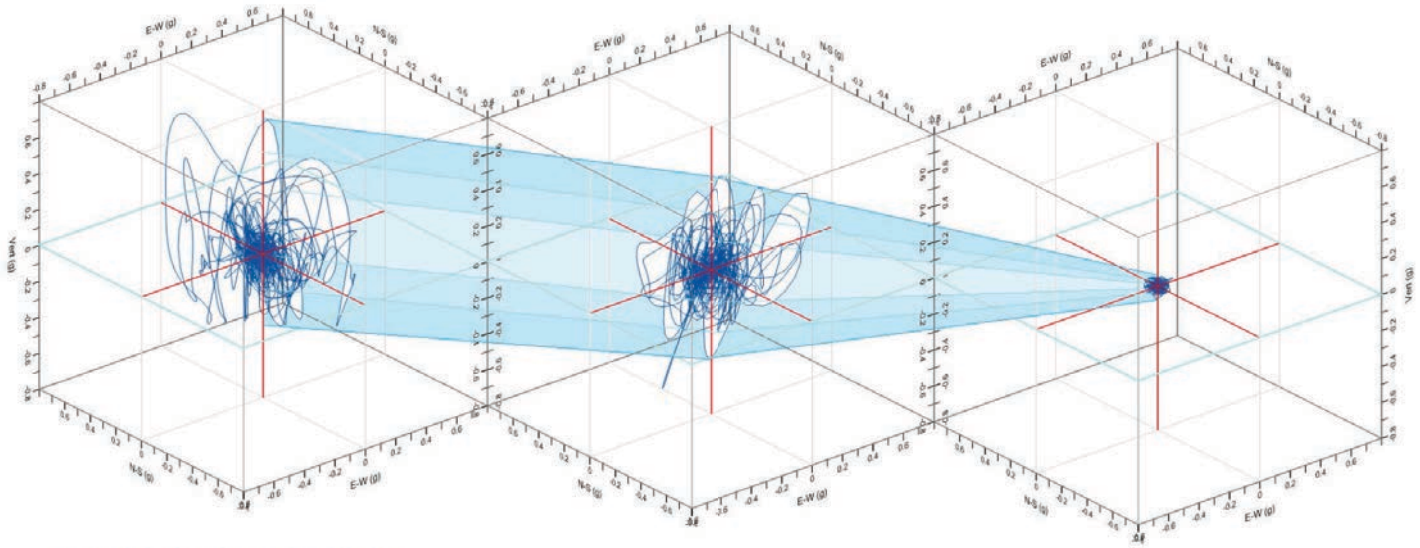
M 6.4 Durazzo 26/11/2020



Liberatore et al. submitted

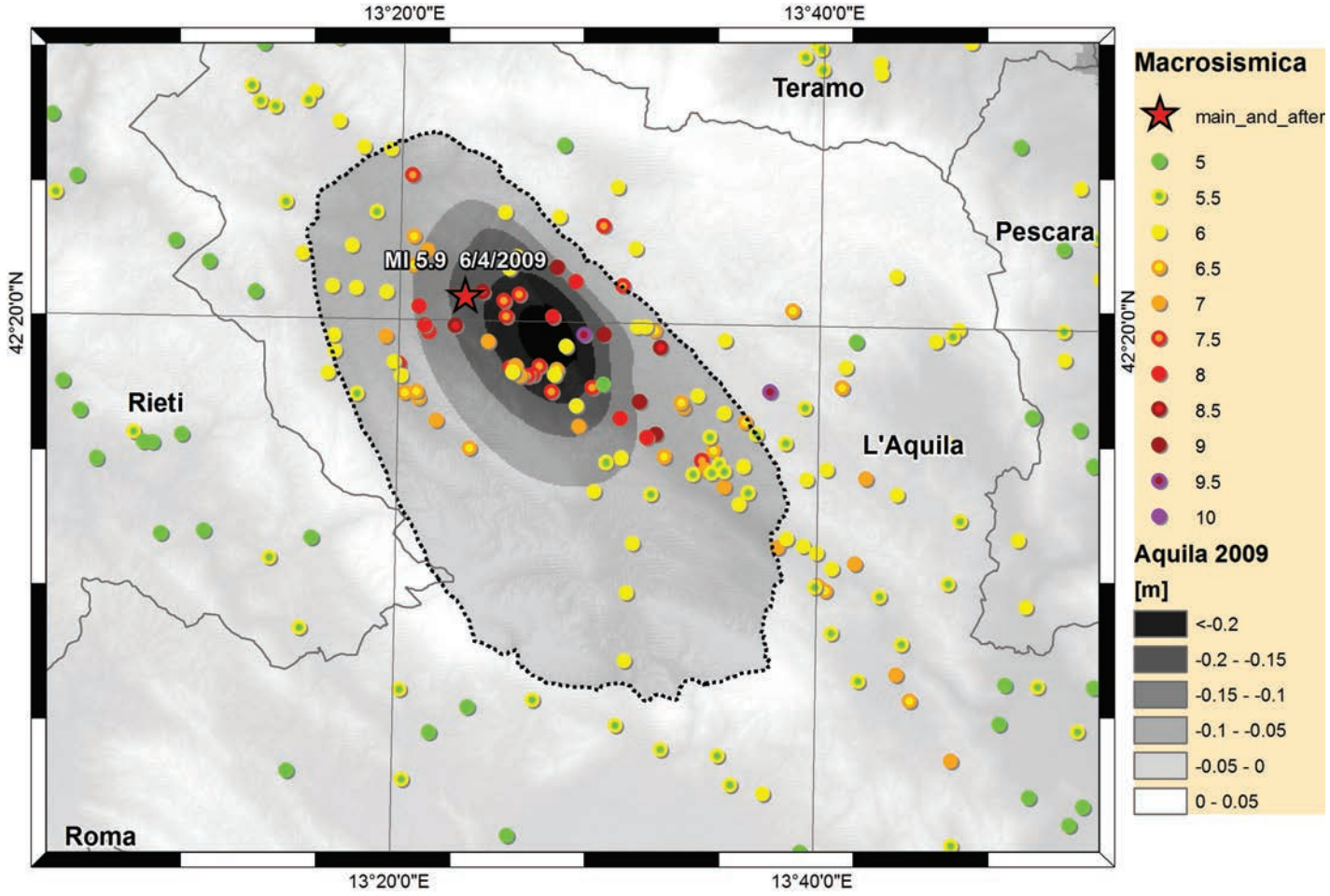


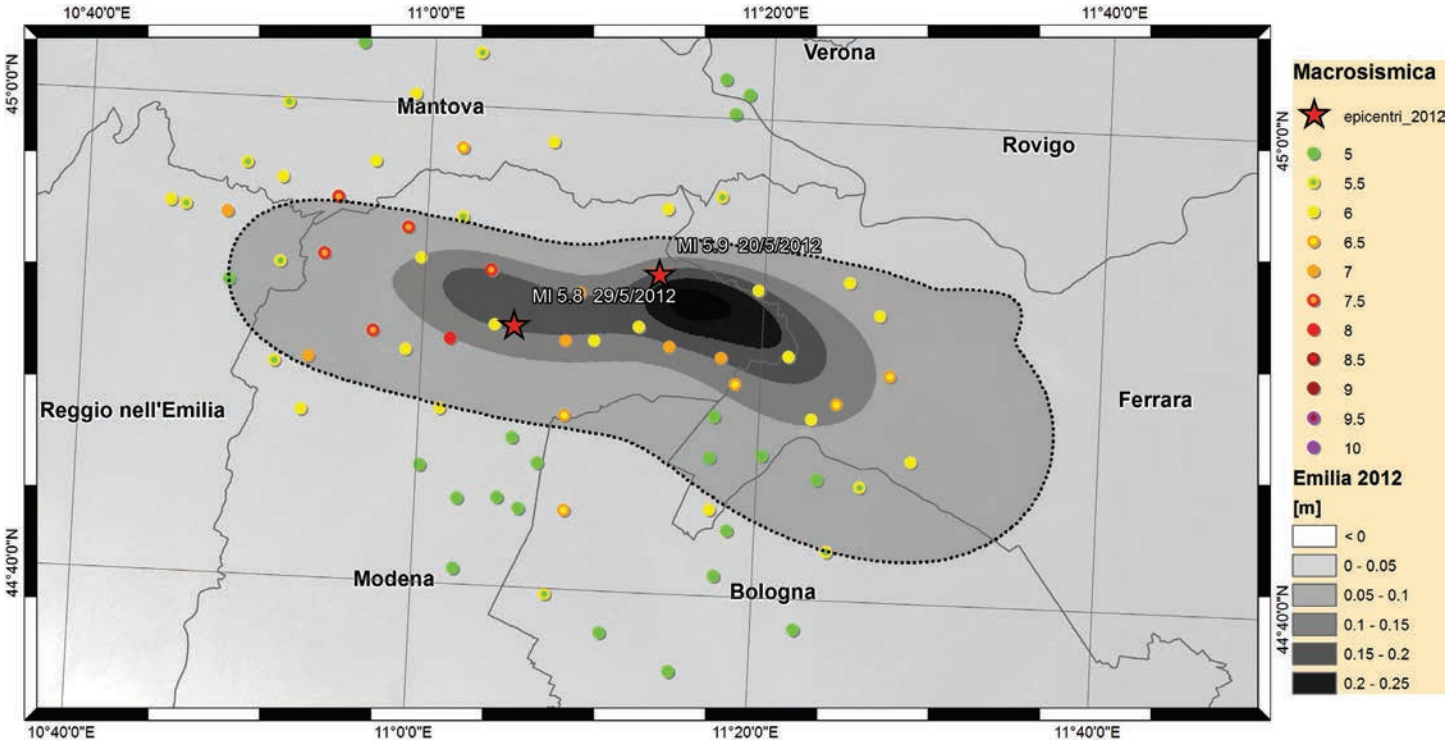
Liberatore et al. 2019

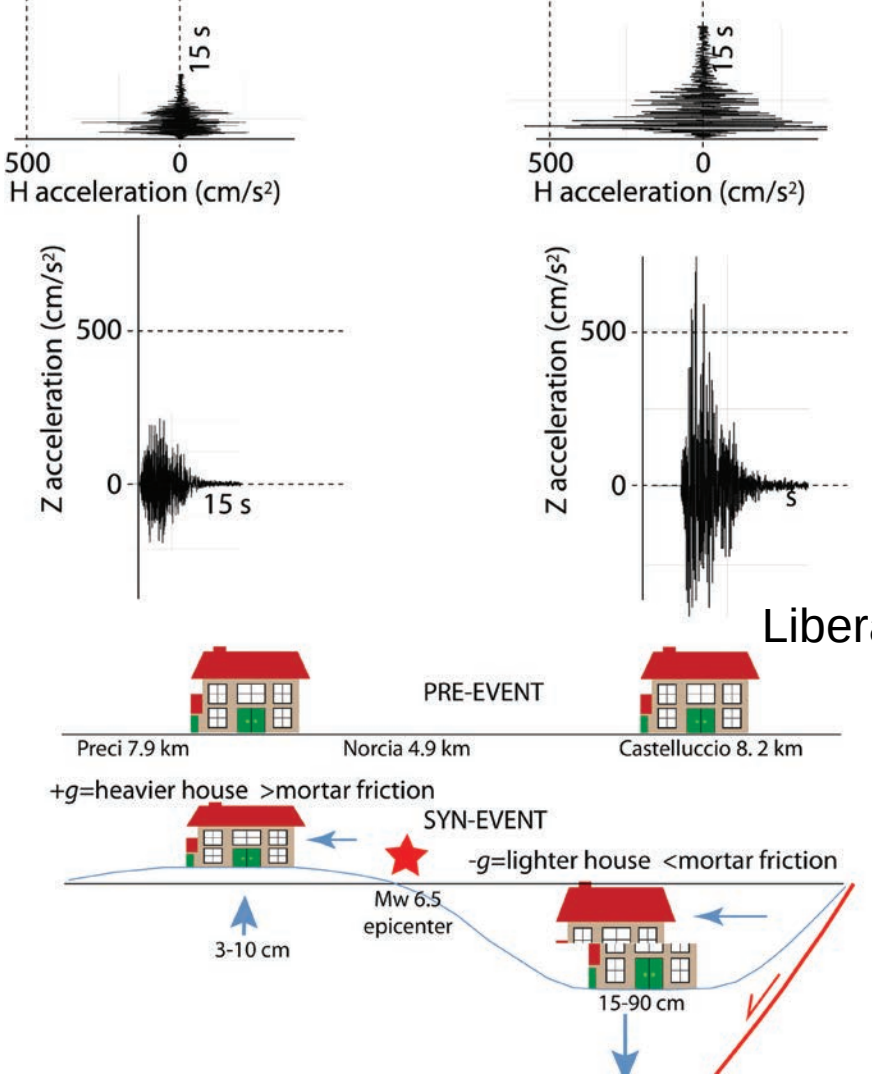


ITALIA CENTRALE, 30.10.2016
CASTELLUCCIO DI NORCIA CLO: 7.8 km → ACCUMULI ACC: 18.6 km → FABRIANO FBR: 59.1 km

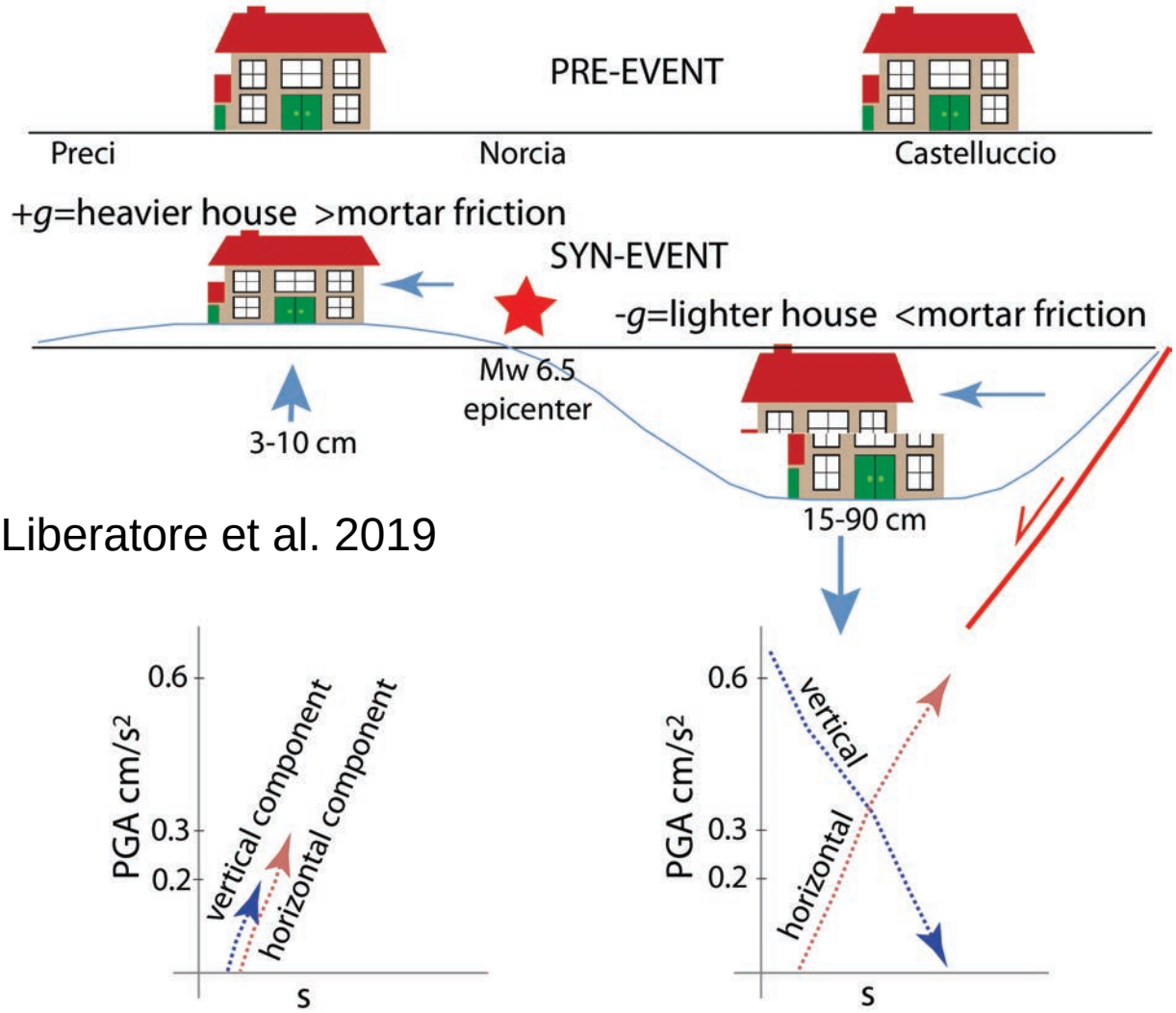
Mariani & Pugi 2019 Ingenio


13°20'0"E
13°40'0"E
42°20'0"N
Teramo
Pescara
Rieti
L'Aquila
Roma
Ml 5.9 6/4/2009
Macrosismica
main_and_after
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
10
Aquila 2009
[m]
<-0.2
-0.2 - -0.15
-0.15 - -0.1
-0.1 - -0.05
-0.05 - 0
0 - 0.05

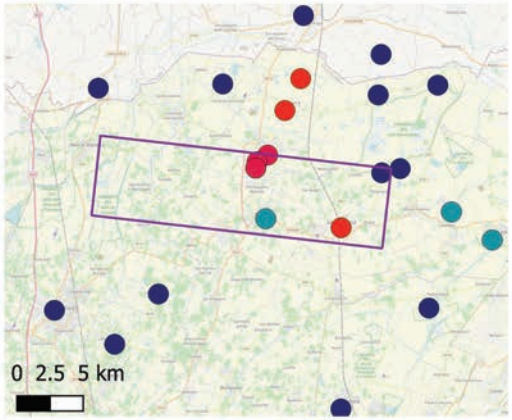

10°40'0"E
11°0'0"E
11°20'0"E
11°40'0"E
45°0'0"N
44°40'0"N
Verona
Mantova
Rovigo
Ferrara
Reggio nell'Emilia
Modena
Bologna
Ml 5.9 20/5/2012
Ml 5.8 29/5/2012
Macrosismica
epicentri_2012
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
10
Emilia 2012
[m]
< 0
0 - 0.05
0.05 - 0.1
0.1 - 0.15
0.15 - 0.2
0.2 - 0.25



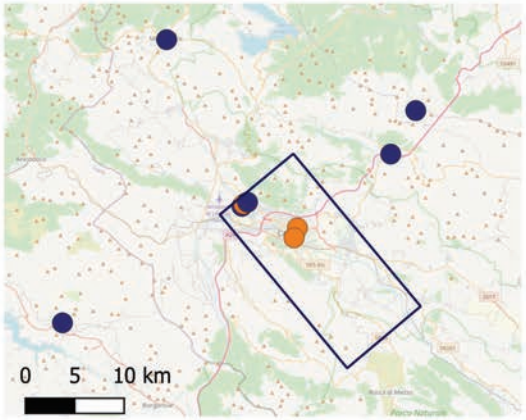
Liberatore et al. 2019



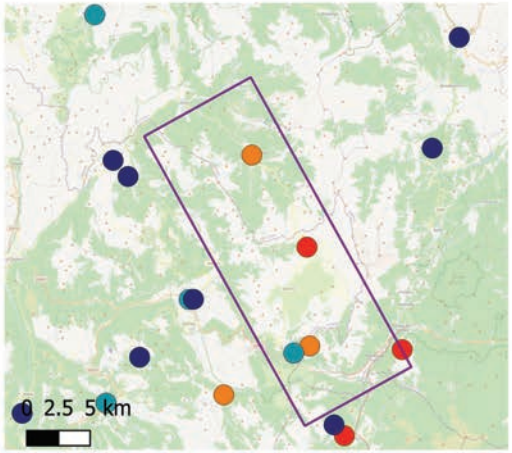
Liberatore et al. 2019



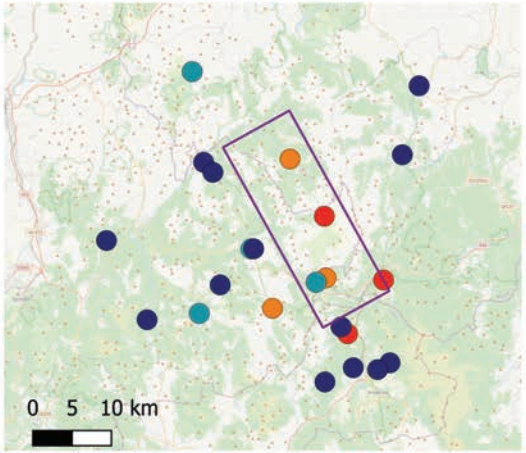
Modena 29/05/2012 ML=5.8



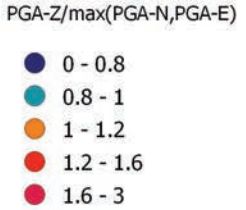
L'Aquila 06/04/2009 Mw=6.1



Macerata 26/10/2016 Mw=5.9

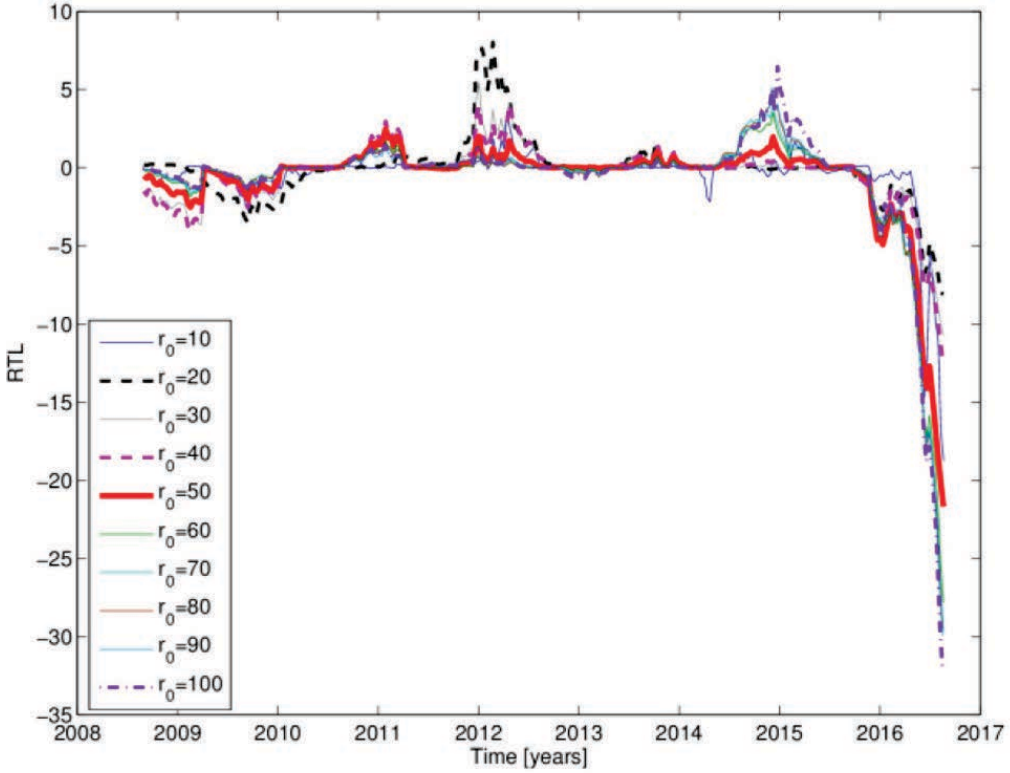


Perugia 30/10/2016 Mw=6.5

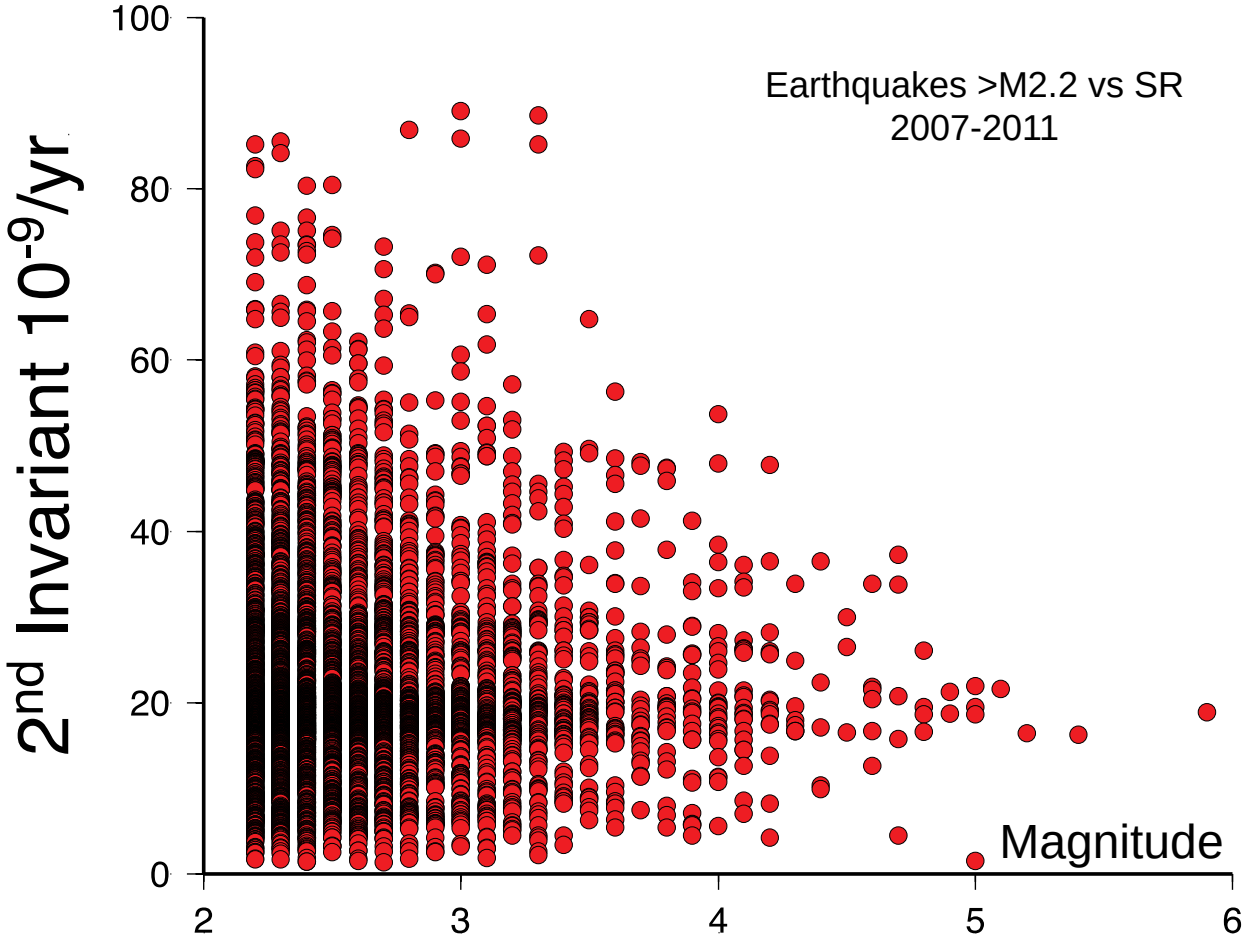


De Rubeis et al. in prep.


17



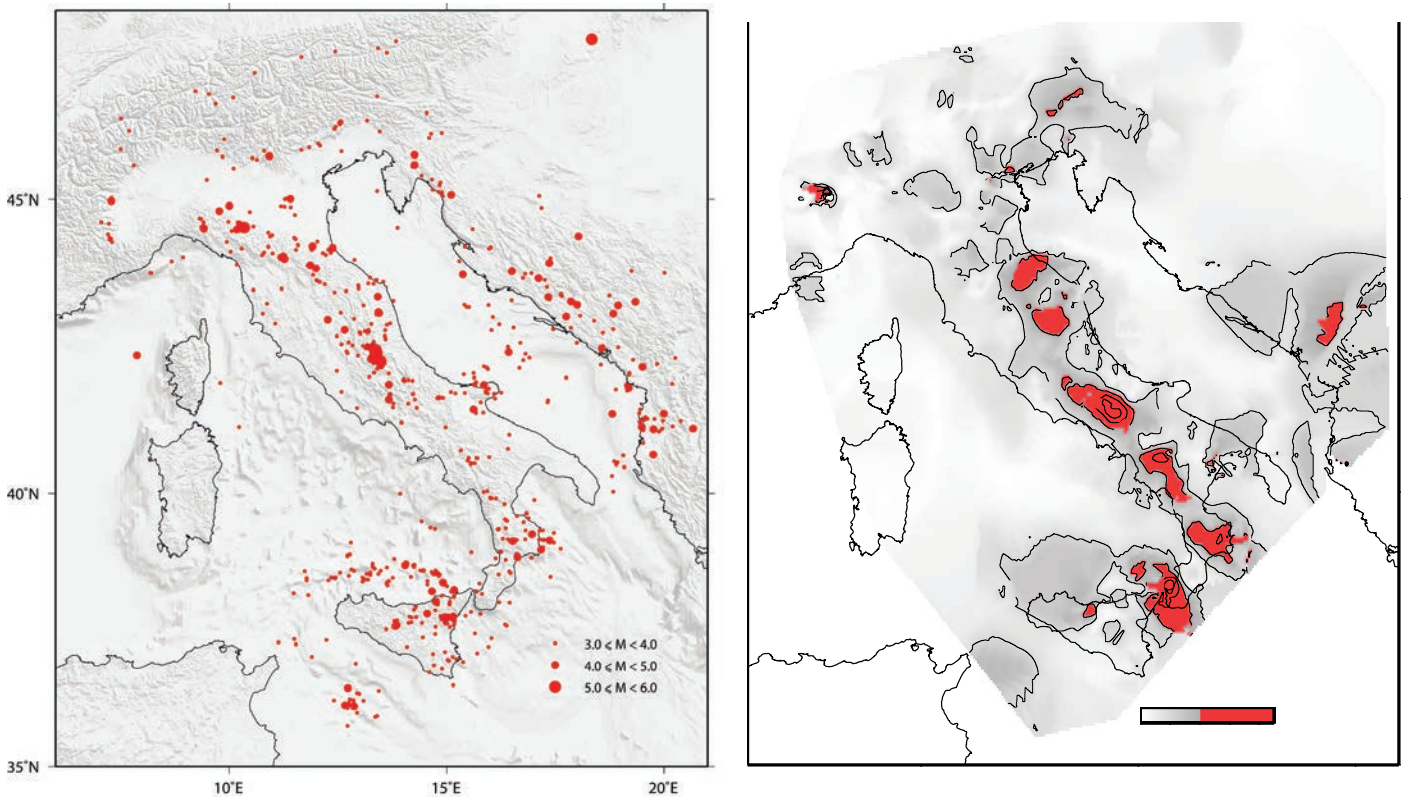
Gentili et al. 2017 PEPI



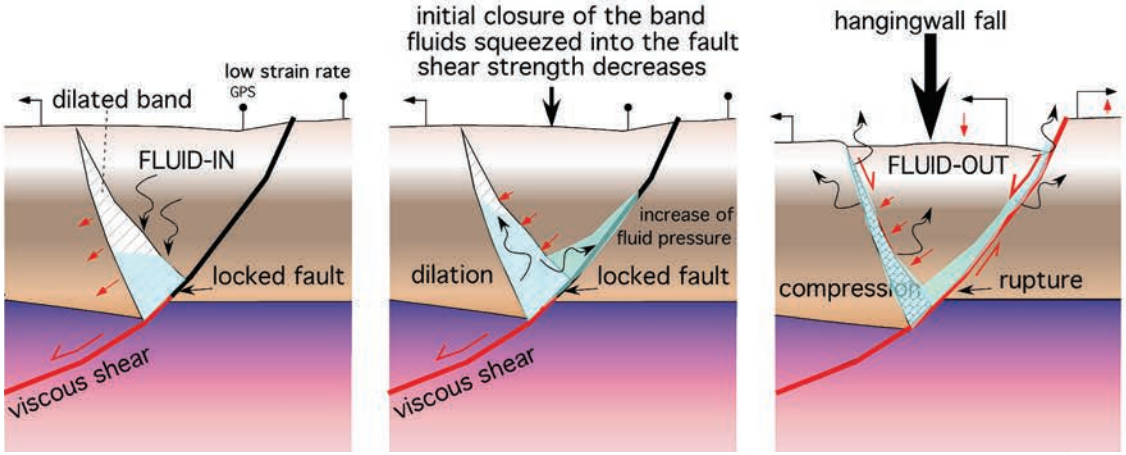
Riguzzi et al. 2012 PEPI

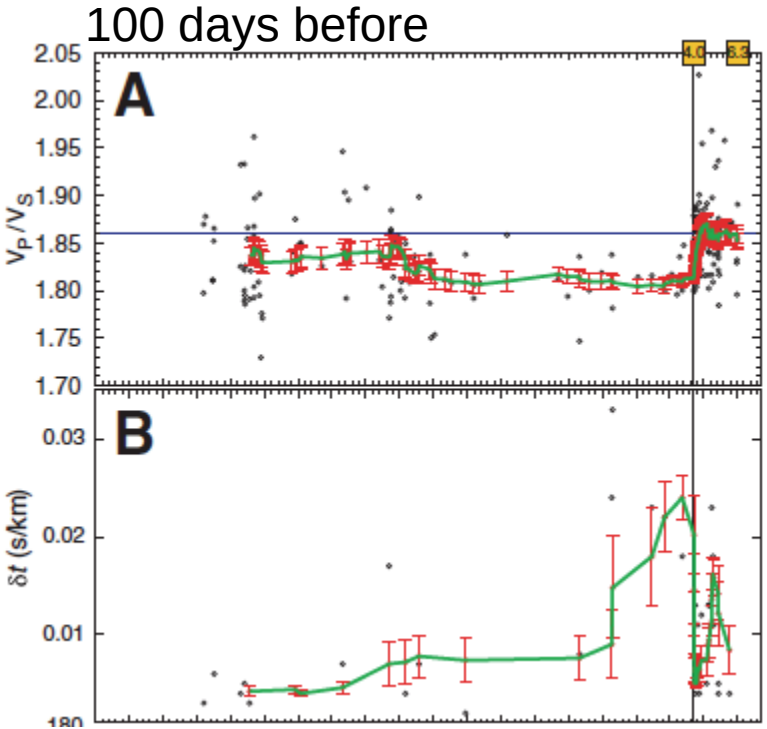
Seismicity (>M3) 2007-2011

same time frame >M4 vs SR>40 ns

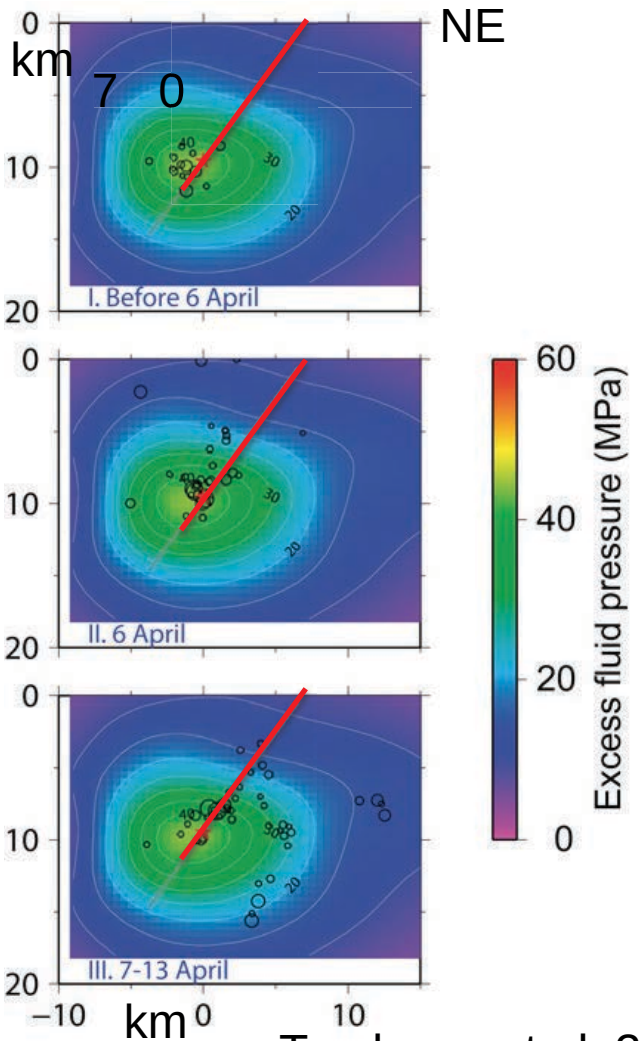


Riguzzi et al. 2012 PEPI


dilated band
low strain rate
GPS
FLUID-IN
locked fault
viscous shear
initial closure of the band
fluids squeezed into the fault
shear strength decreases
increase of
fluid pressure
dilation
locked fault
viscous shear
hangingwall fall
FLUID-OUT
compression
rupture

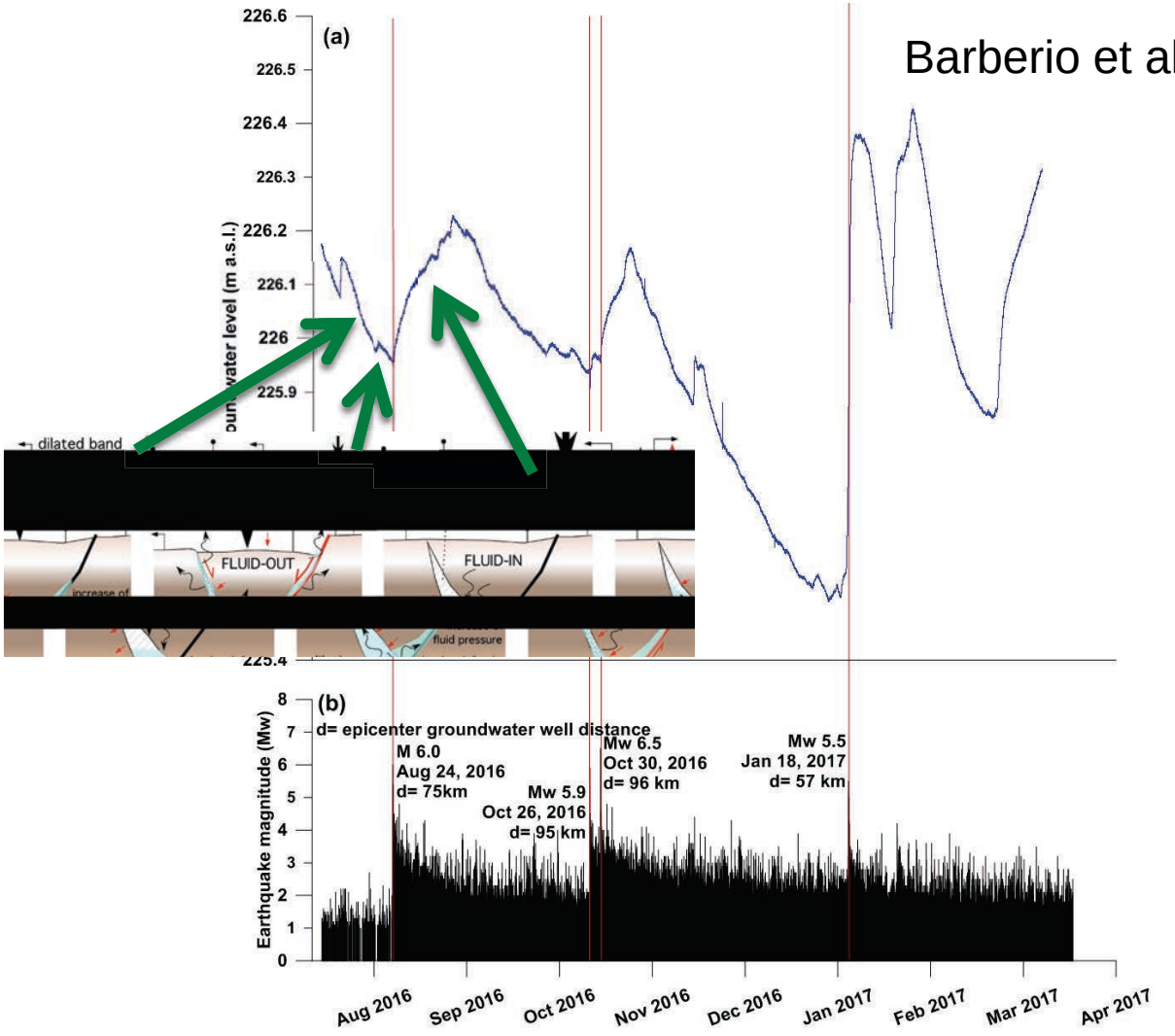


Lucente et al. 2010

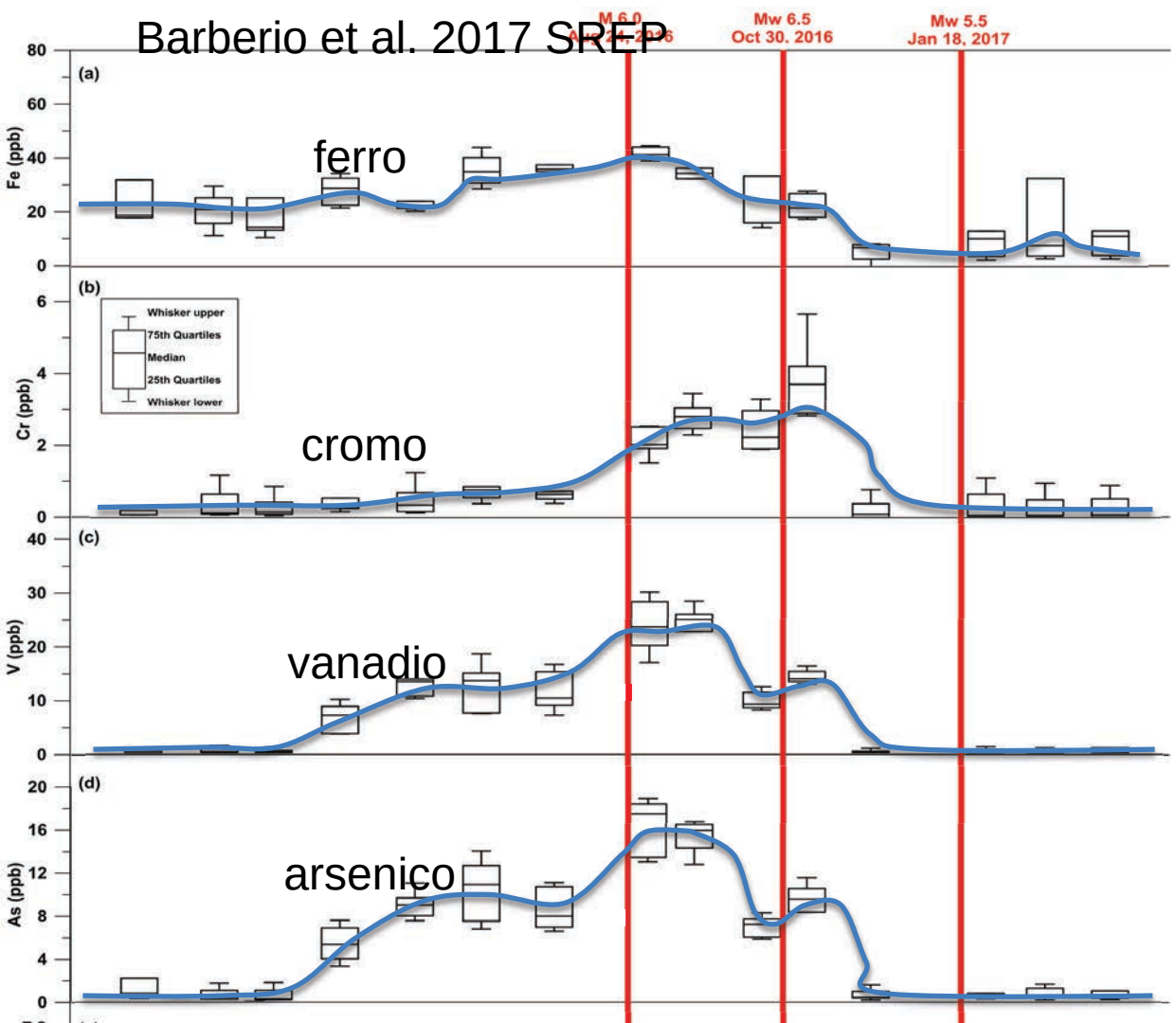


Terakawa et al. 2010

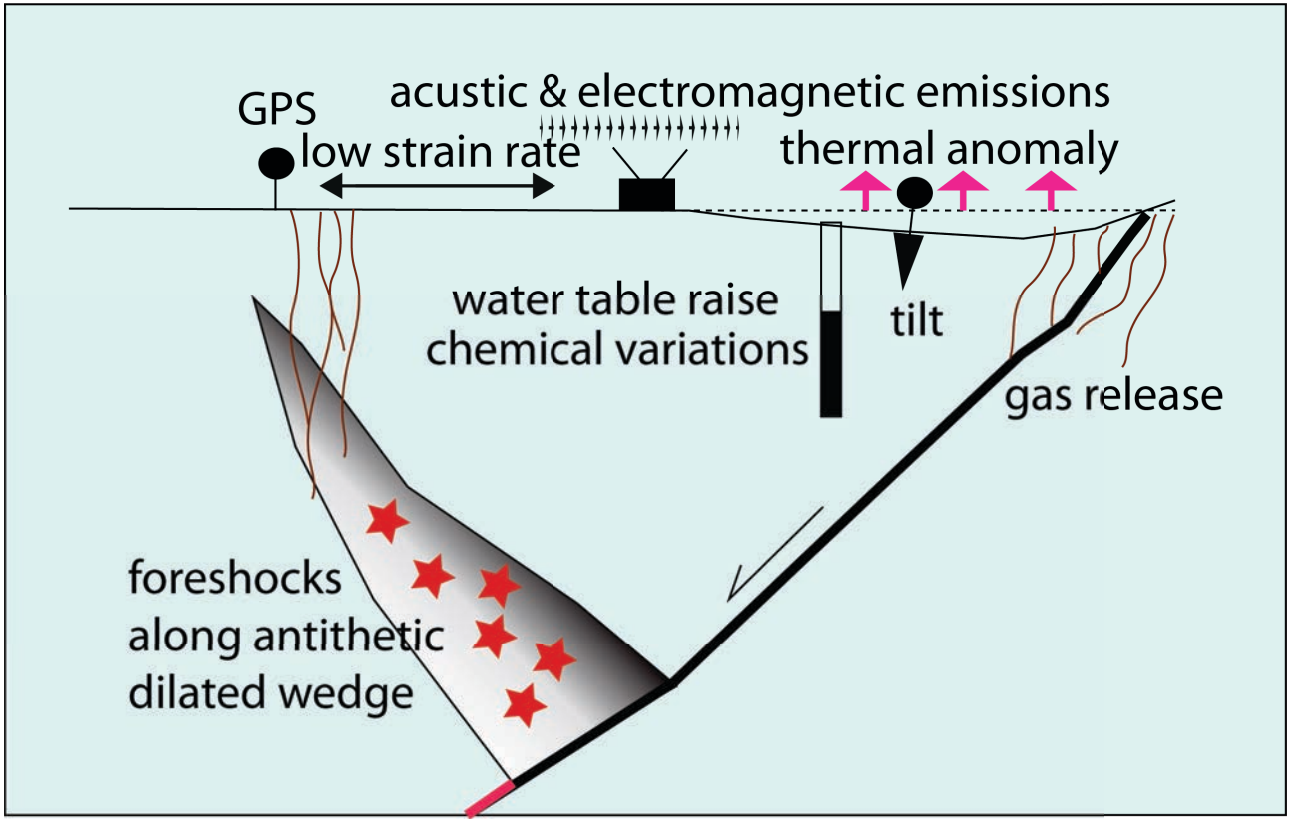
Barberio et al. 2017 SREP



Barberio et al. 2017 SREP



Graviquakes Seismic Precursors



ASCOLI SUPPLICANTE
à Piedi di
S. EMIDIO
Per la liberazione da' Terremoti
DELL' ANNO 1703.
OVERO

6%

ne VALE la pena

Low damage technologies for the next earthquakes
Stefano Pampanin

VALE

Vita

Abitazioni

Libertà

Economia