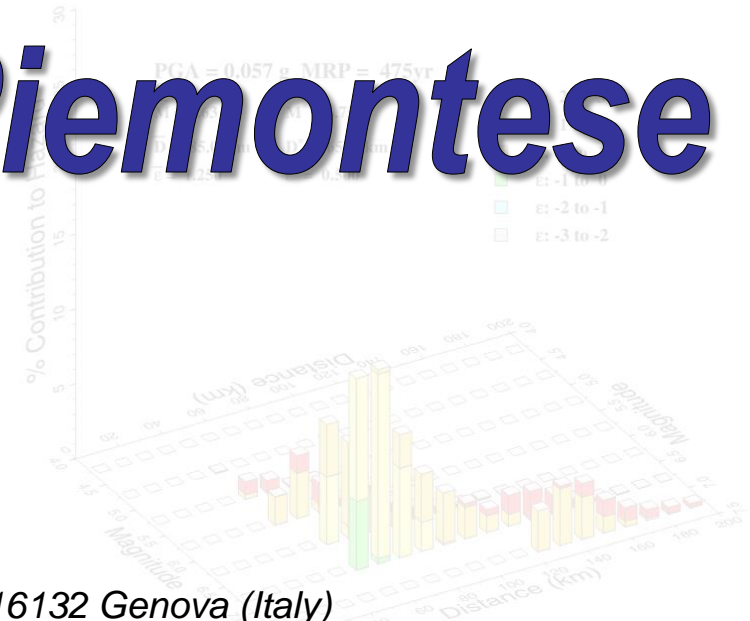
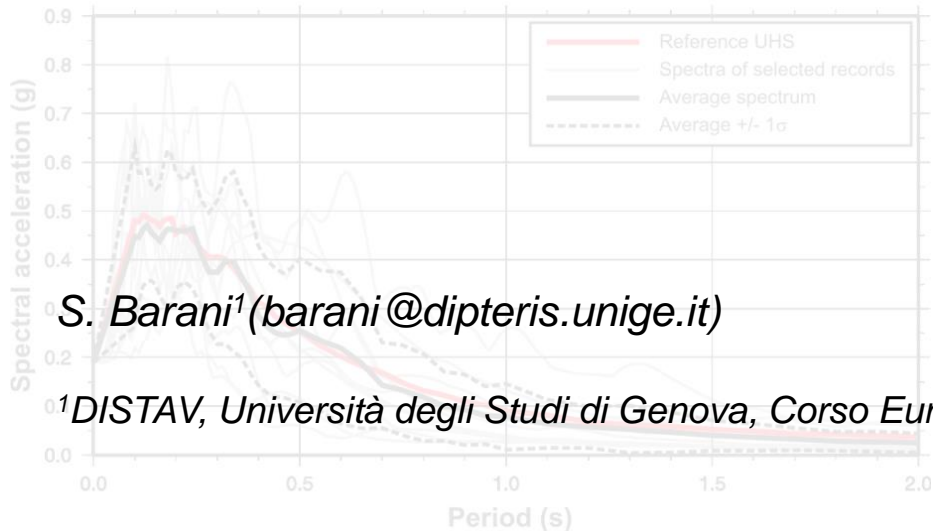


# La Pericolosità Sismica

# del Territorio Piemontese



S. Barani<sup>1</sup> ([barani@dipteris.unige.it](mailto:barani@dipteris.unige.it))

<sup>1</sup>DISTAV, Università degli Studi di Genova, Corso Europa 26, 16132 Genova (Italy)



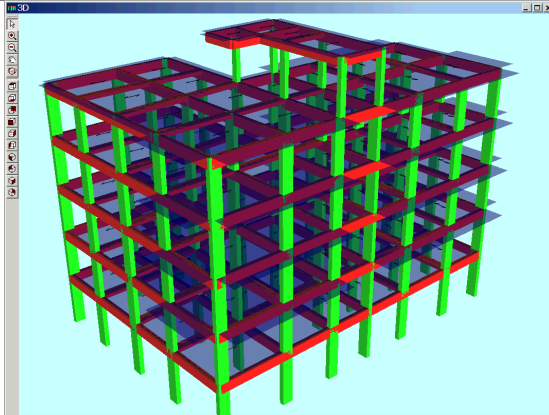
## **Seismic Risk**

$$R = H * D * E$$

*Il termine “rischio sismico” si riferisce al rischio di danneggiamento di un edificio, sistema o altra entità a causa dell’attività sismica. A fini gestionali, il rischio sismico è definito in termini di conseguenze economiche, sociali e ambientali (cioè perdite) associate al verificarsi di eventi calamitosi in una certa area in un determinato periodo di tempo.*



*La danneggiabilità  $D$  quantifica, in termini economici (vulnerabilità) o di stati limite (fragilità), l'incapacità (di un sistema o di un'unità) di resistere agli effetti di un terremoto.*



***Le norme sismiche intendono ridurre  $D$  e, di conseguenza,  $R$***



*L'esposizione **E** definisce i beni (strutture, risorse, persone, proprietà, ecc.) esposti a possibili perdite in caso di terremoto.*



***La microzonazione sismica ha lo scopo di ridurre il livello di esposizione e, di conseguenza, R***



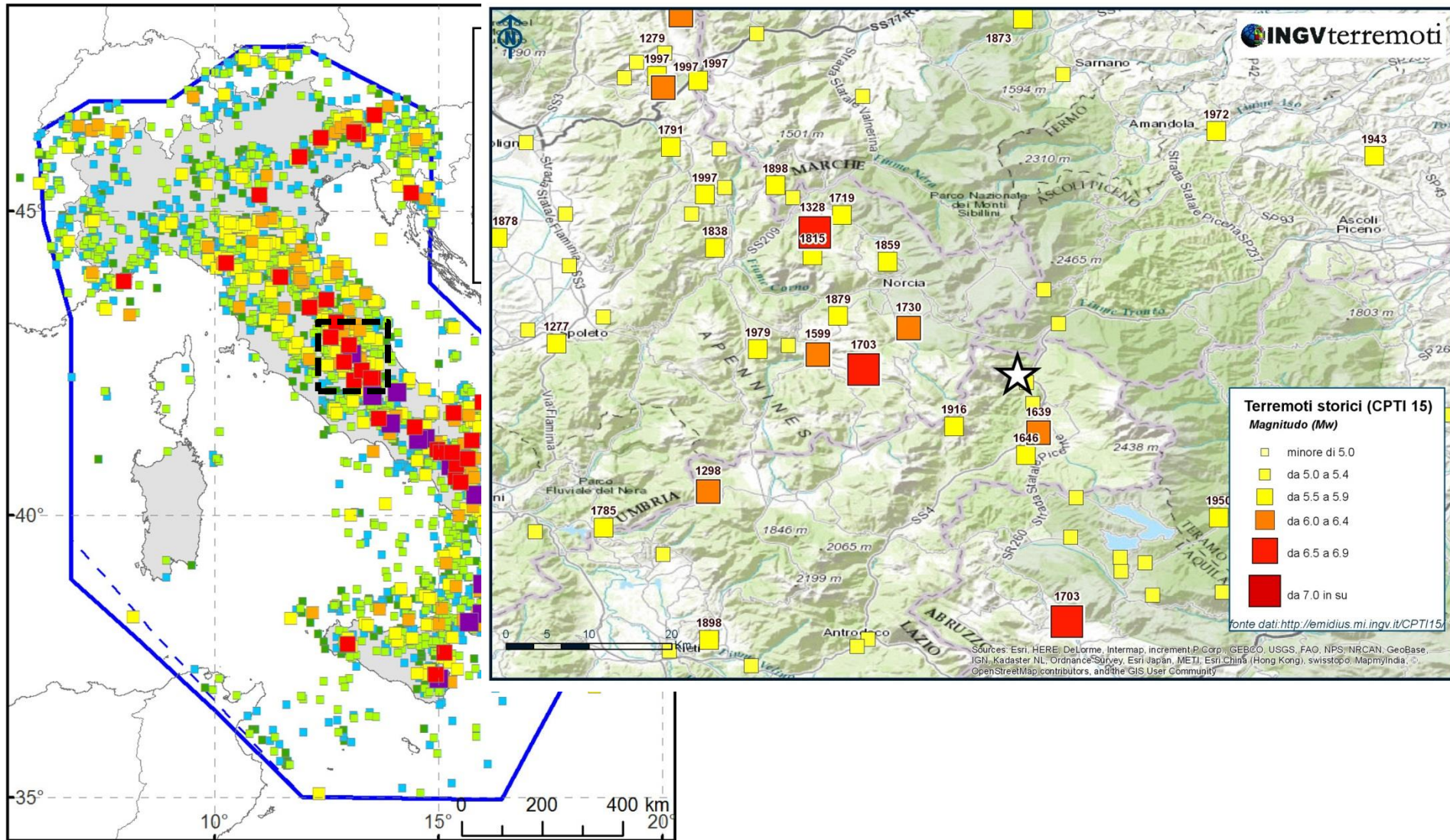
La pericolosità sismica (o Seismic Hazard) **H** è intimamente correlata alle caratteristiche geologiche di un'area. È comunemente definita come la probabilità di superare un dato livello di scuotimento in un sito in un dato periodo di tempo.



**A differenza delle altre componenti nel calcolo del rischio, H non può essere ridotto!**

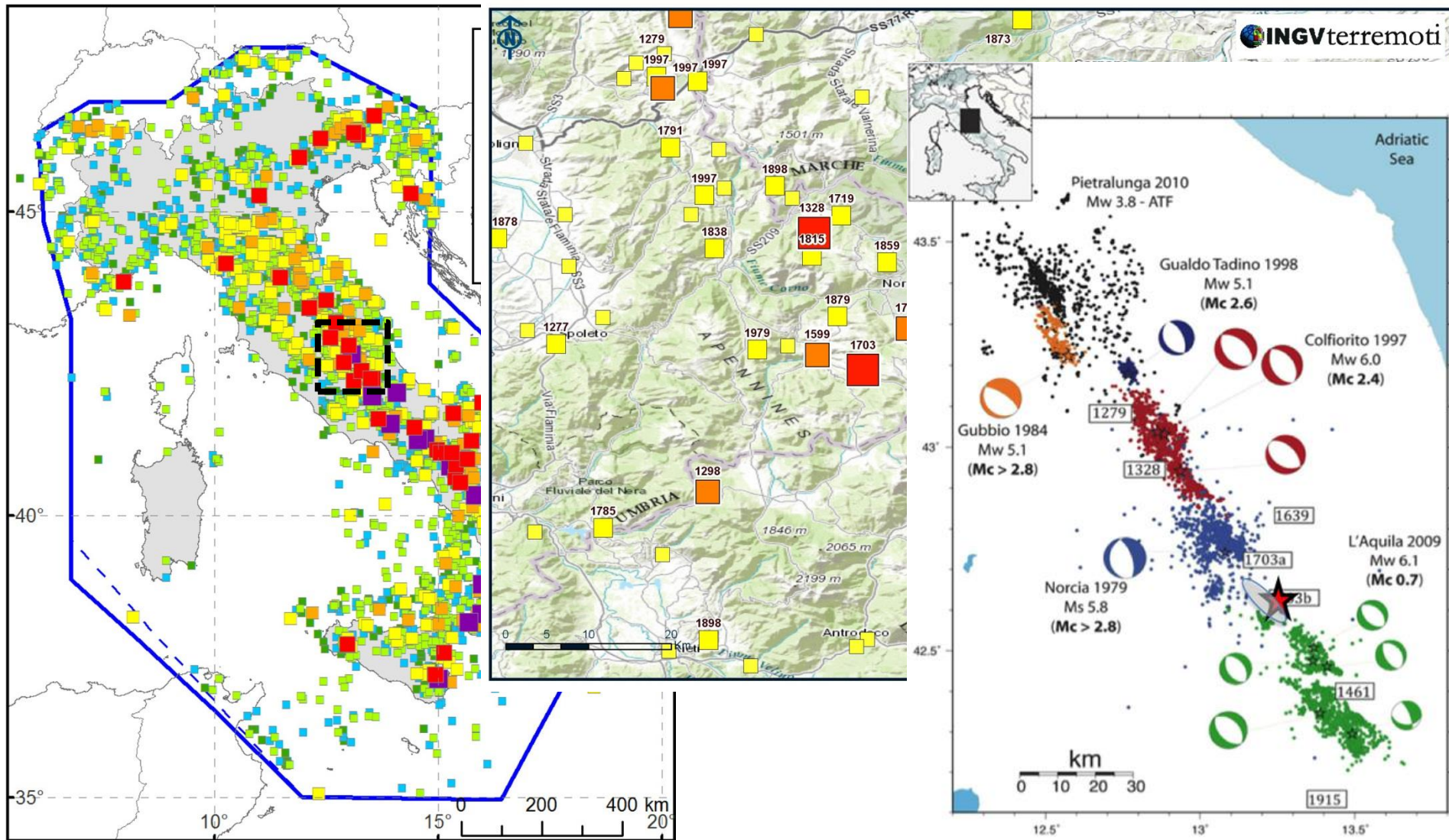


# Pericolosità Sismica e Sismicità



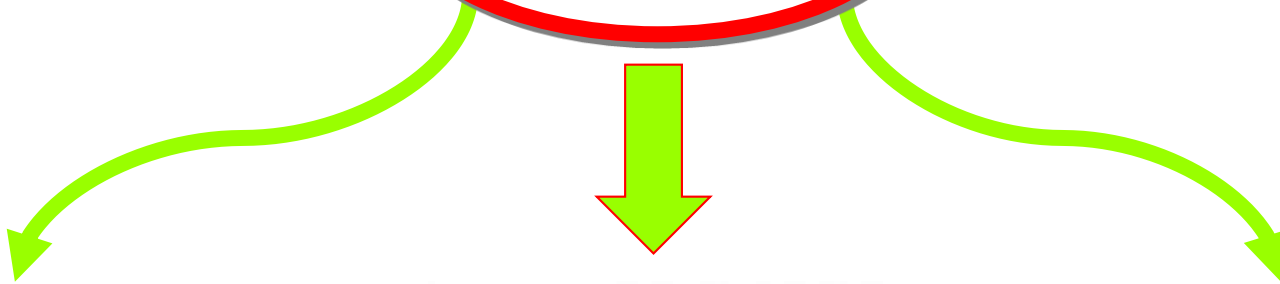


# Pericolosità Sismica e Sismicità



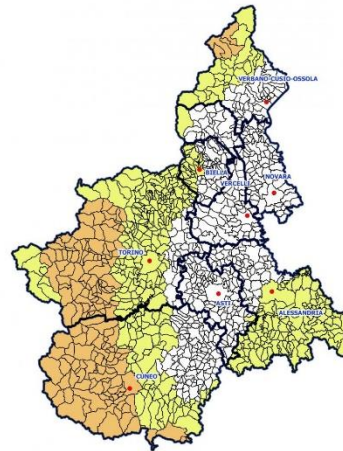


# PSHA



La presente mappa è aggiornata alla situazione amministrativa esistente alla data del 6 febbraio 2019

## PROPOSTA DI CLASSIFICAZIONE



Comuni [1181]  
zona 3 [431]  
zona 3s [165]  
zona 4 [585]

BDTRE - Ambiti amministrativi  
25 0 25 50 km

11 a. novembre 2018 ELABORAZIONE E AGGIORNAMENTO DOCUMENTAZIONE RIF. 2.01



Indirizzi e criteri per la

## MICROZONAZIONE SISMICA

Parti I e II



Presidente del Consiglio dei Ministri  
Spuntando della Presidenza del Consiglio

## NORME TECNICHE PER LE COSTRUZIONI

Approvate con Decreto Ministeriale 12 Gennaio 2018

Il presente documento è stato elaborato in attuazione dell'articolo 17 della Legge n. 47 del 28/2/2010, recante "Misure urgenti in materia di riassetto amministrativo del territorio e di altre disposizioni in materia di riassetto amministrativo del territorio".





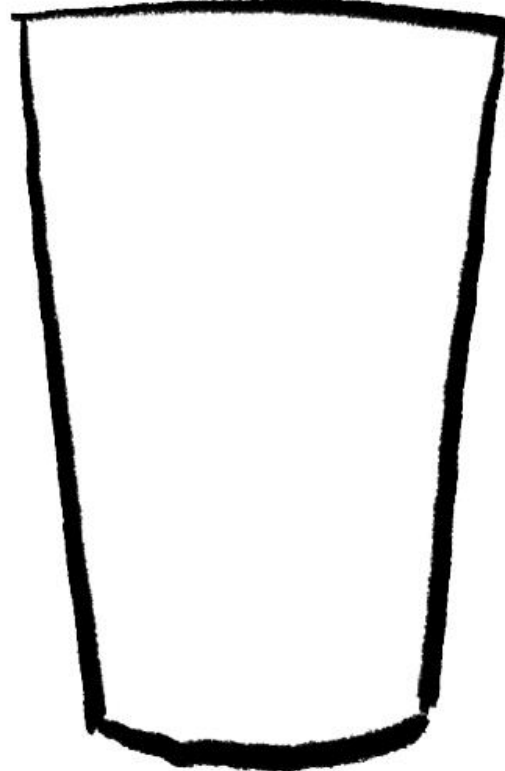


*Sorgenti Sismogenetiche*

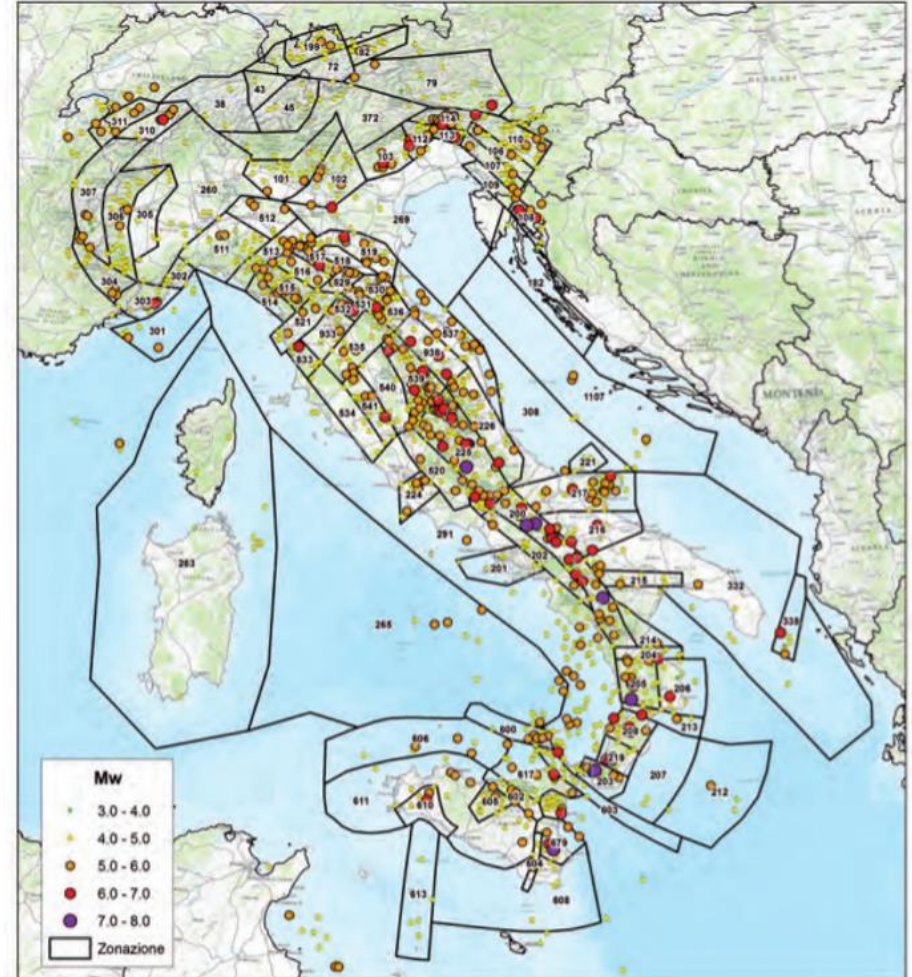
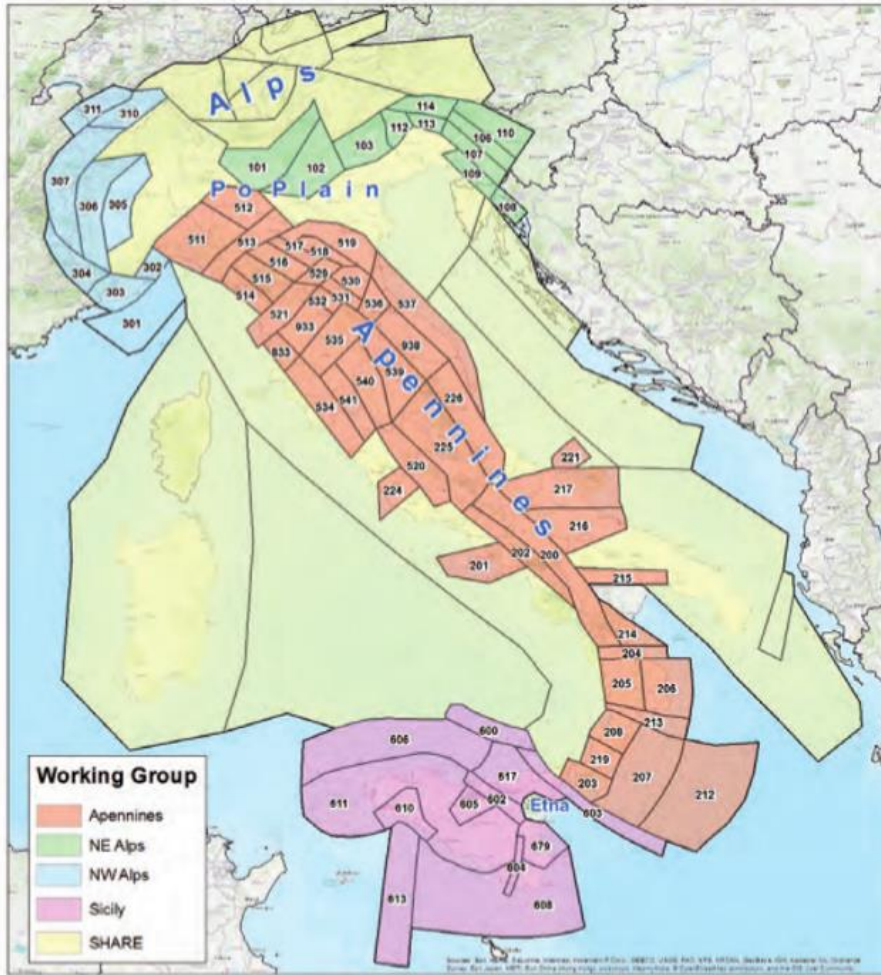
*GMPE*

*Catalogo Sismico*

*Modello di Occorrenza*

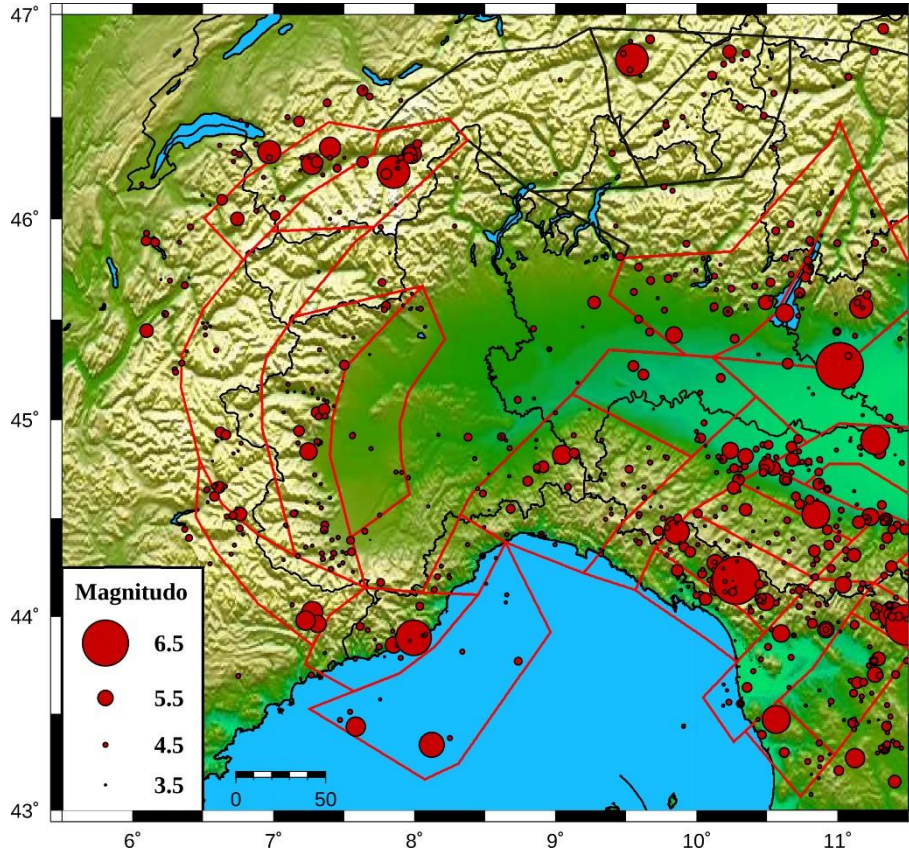


# Zonazione MA1\_MPS19 (Santulin et al., 2017, BGTA)



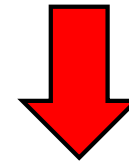


CPTI15 (1005 – 2014)

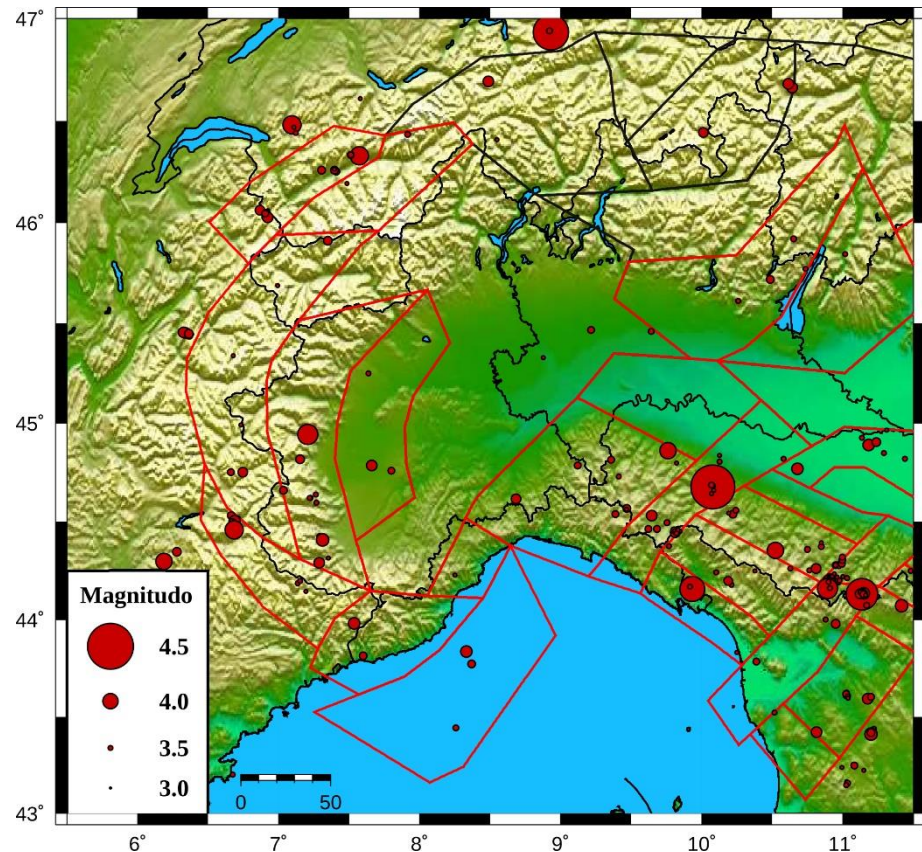


***Passato Prossimo***

***Passato Recente***

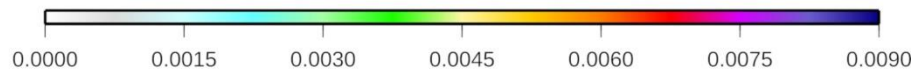
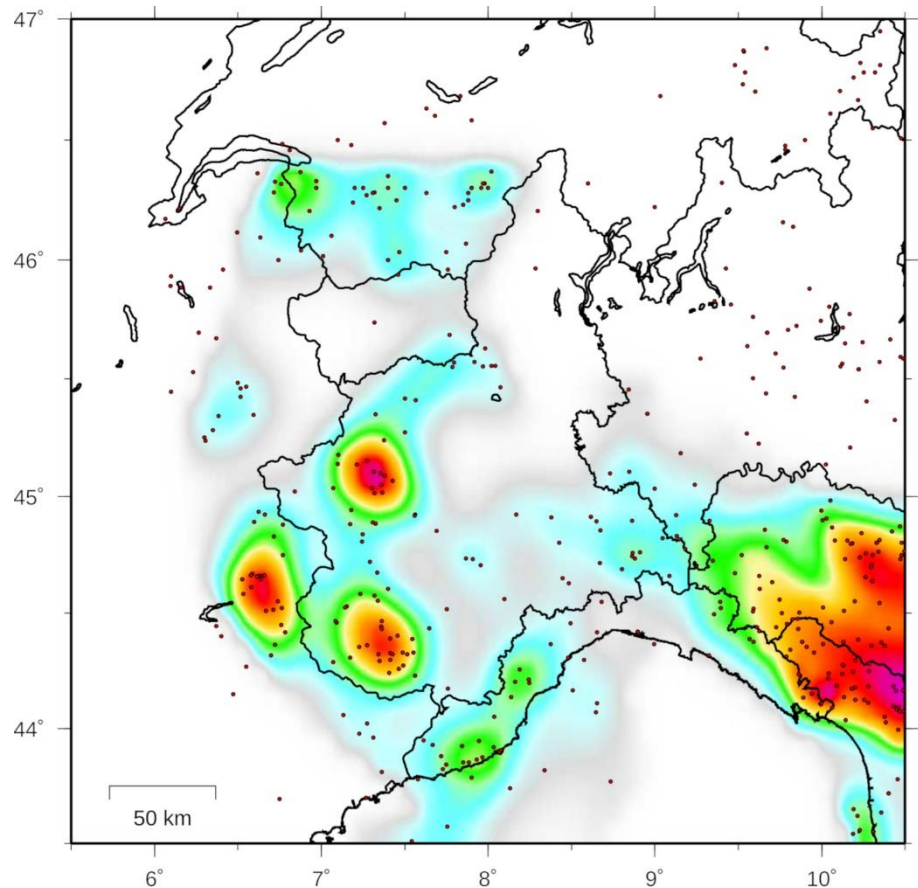
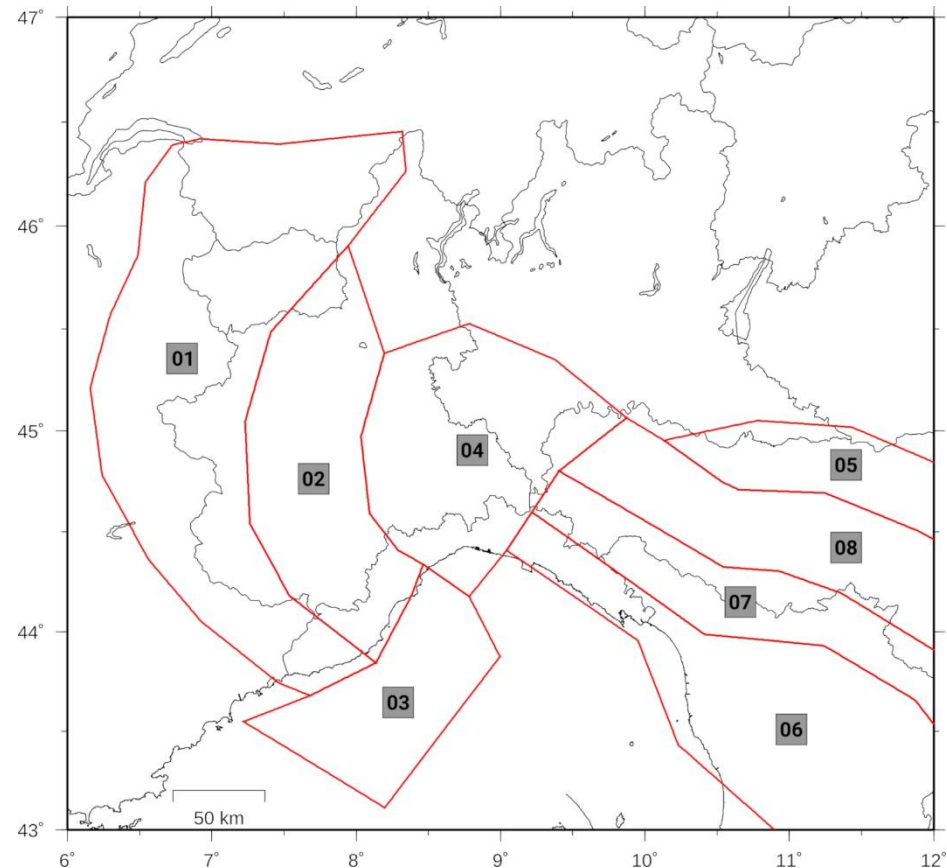


RSNI (2015 – 2017)





# *Sismicità Diffusa*



Tasso medio annuo

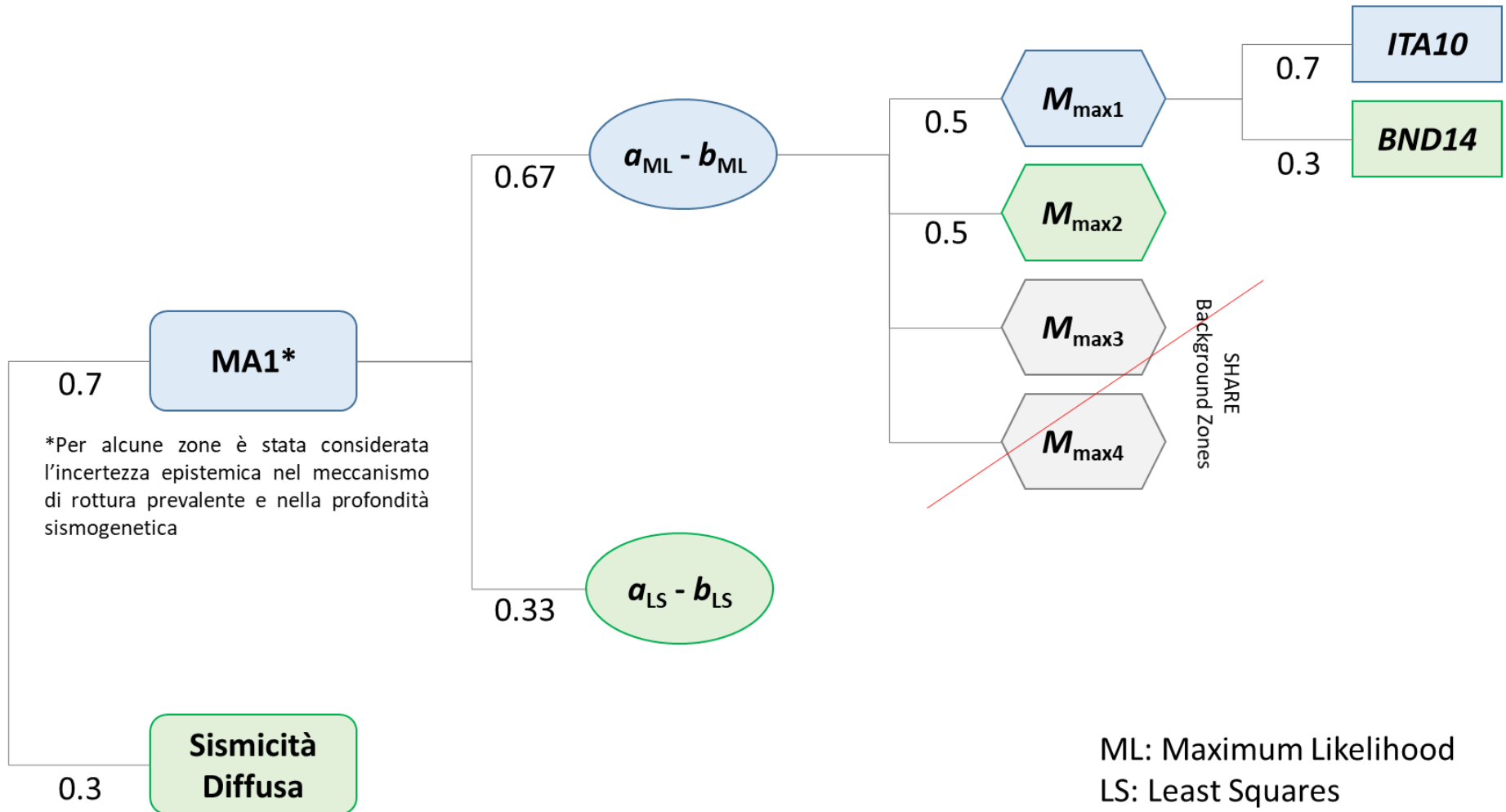
# Incertezza Epistemica: Albero Logico

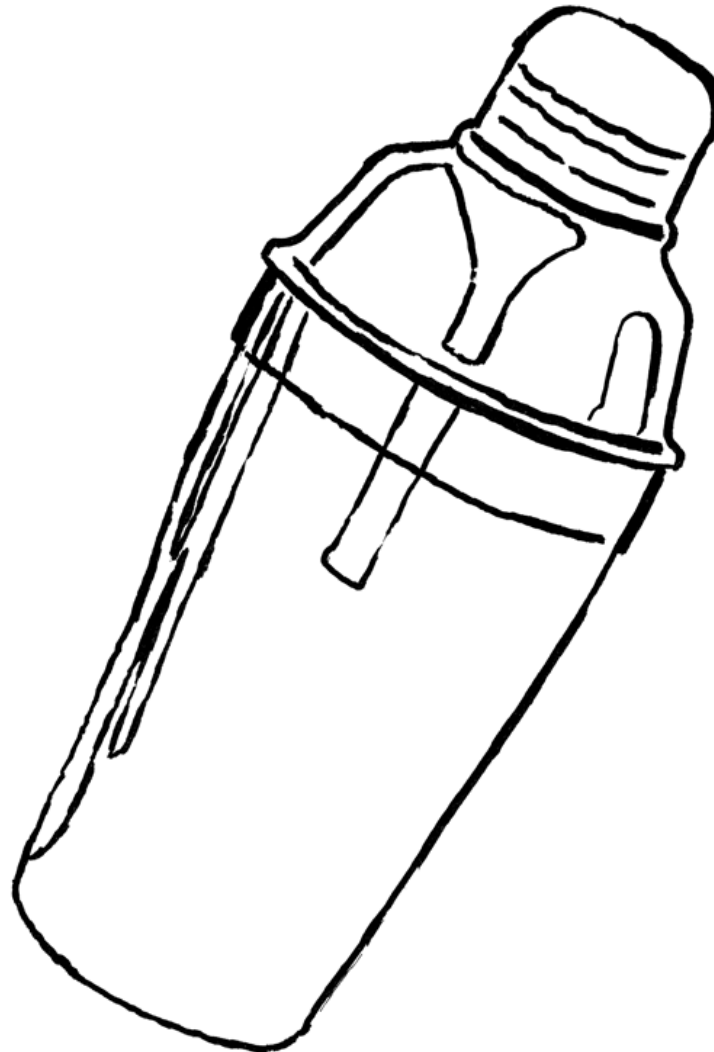
Source Model

G&R parameters

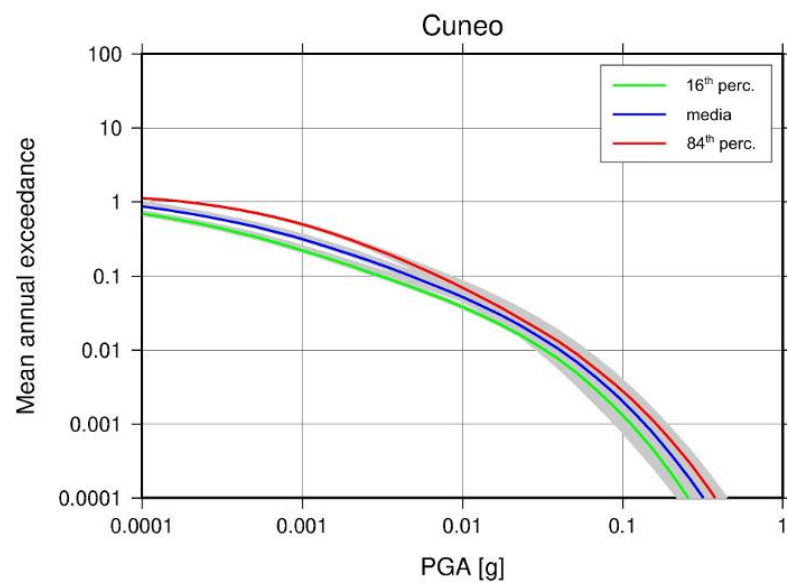
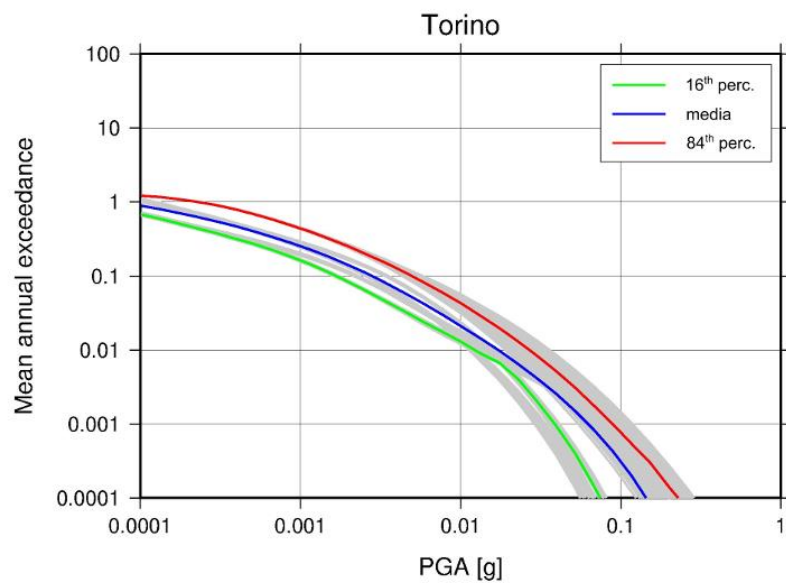
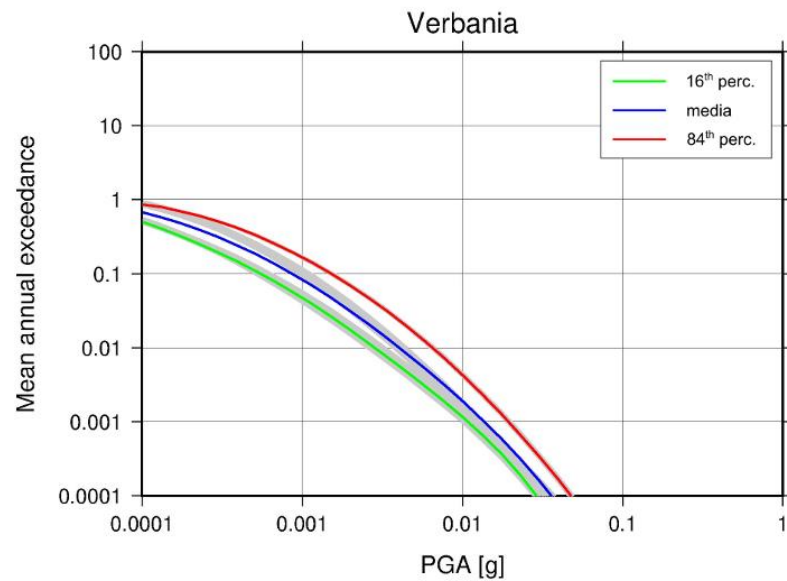
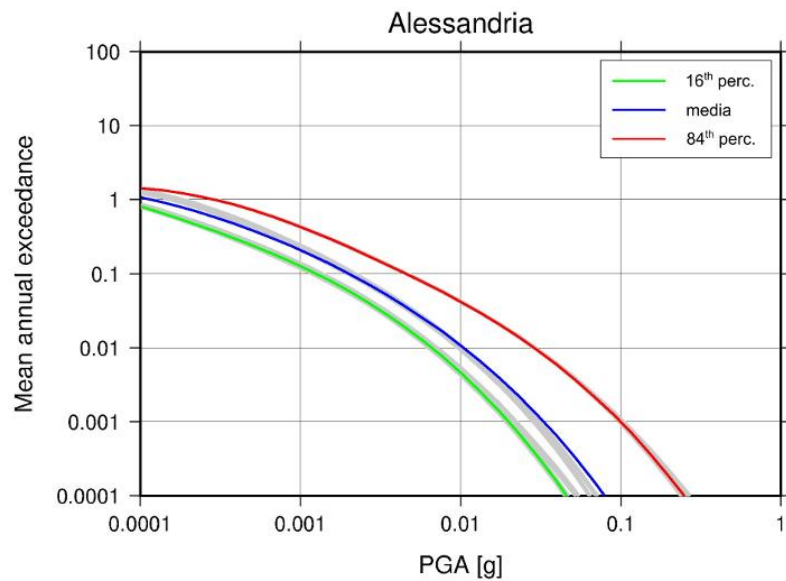
$M_{max}$

GMPE





**No pictures of the  
authors while shaking.  
Sorry!**

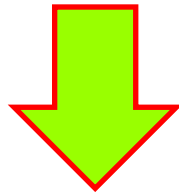




## ***Periodi...***

*...di Ritorno: 30, 50, 72, 101, 140, 201, 475, 975, 2475 anni*

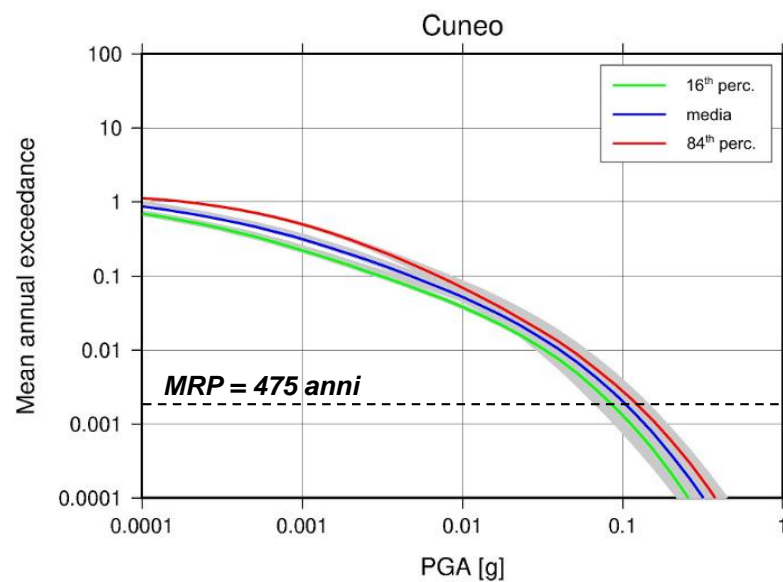
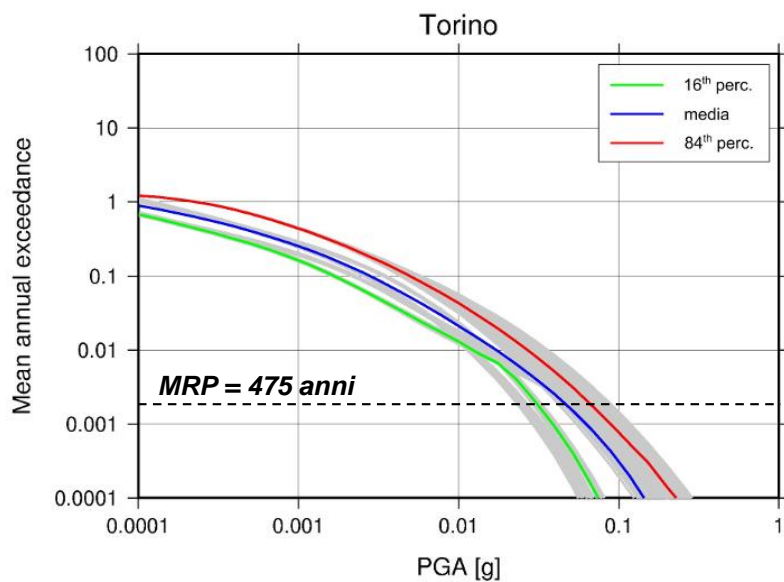
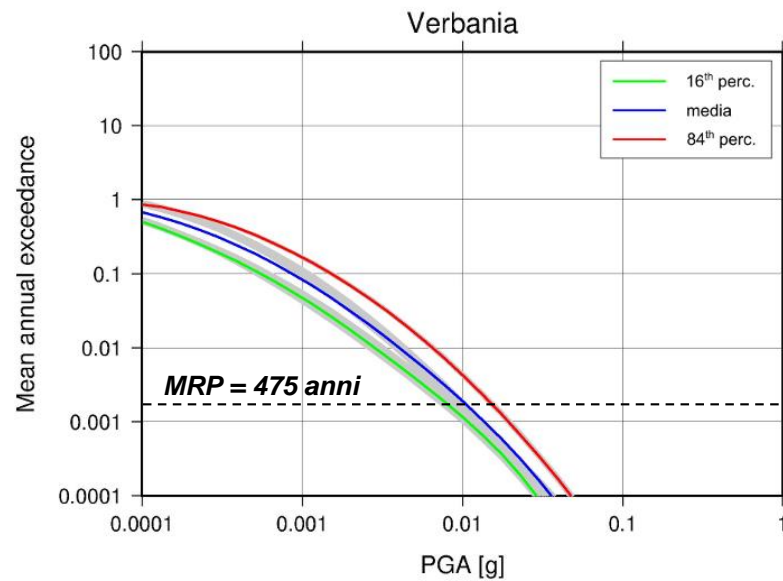
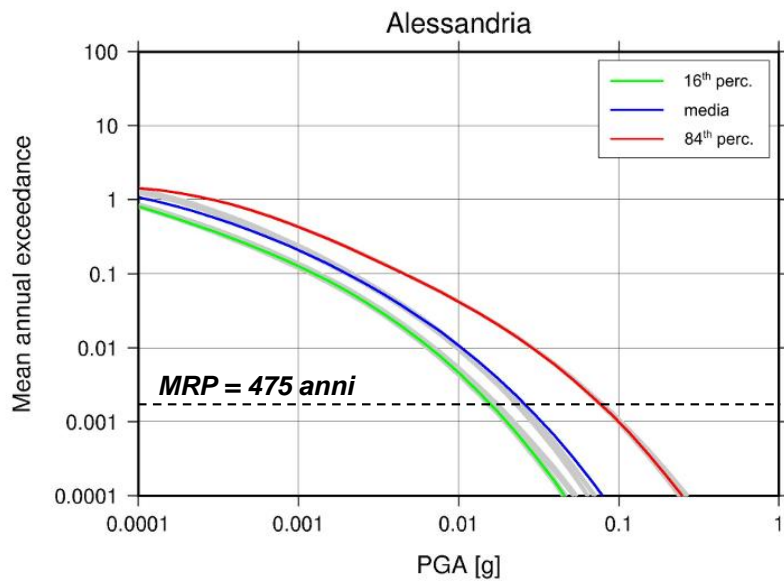
*...Spettrali: PGA, 0.05, 0.1, 0.15, 0.2, ..., 2 s*



***Classificazione  
Sismica***



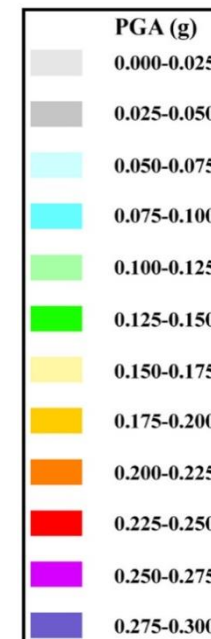
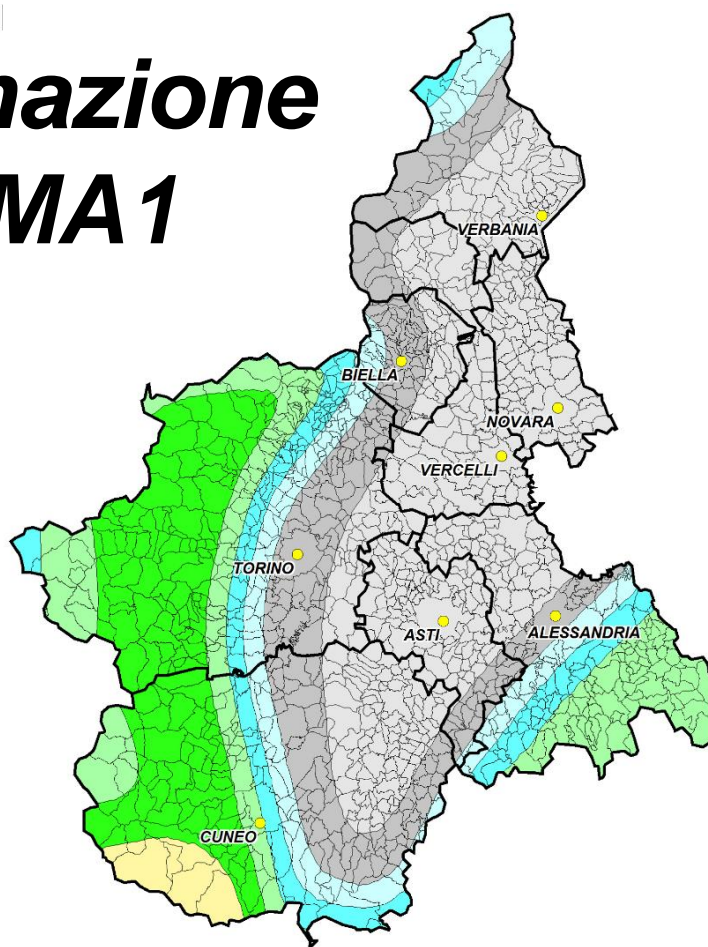
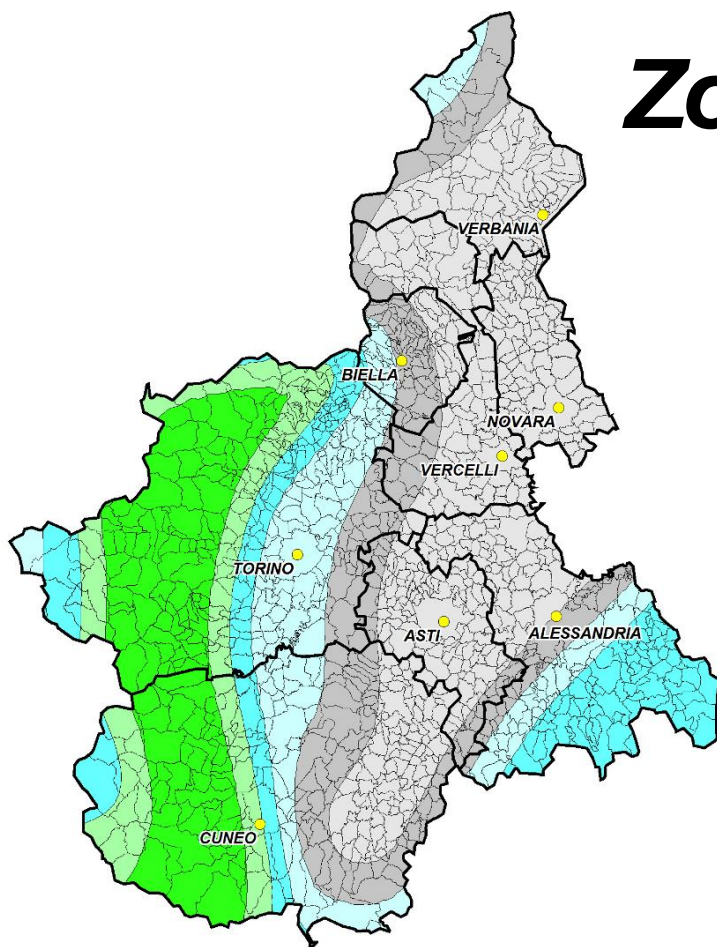






**ITA10** ← **VS** → **BND14**

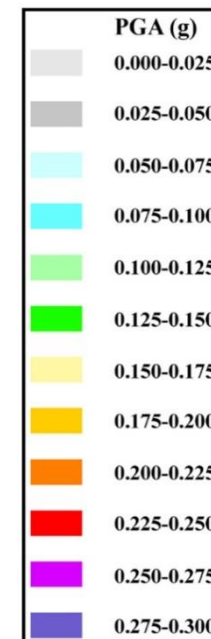
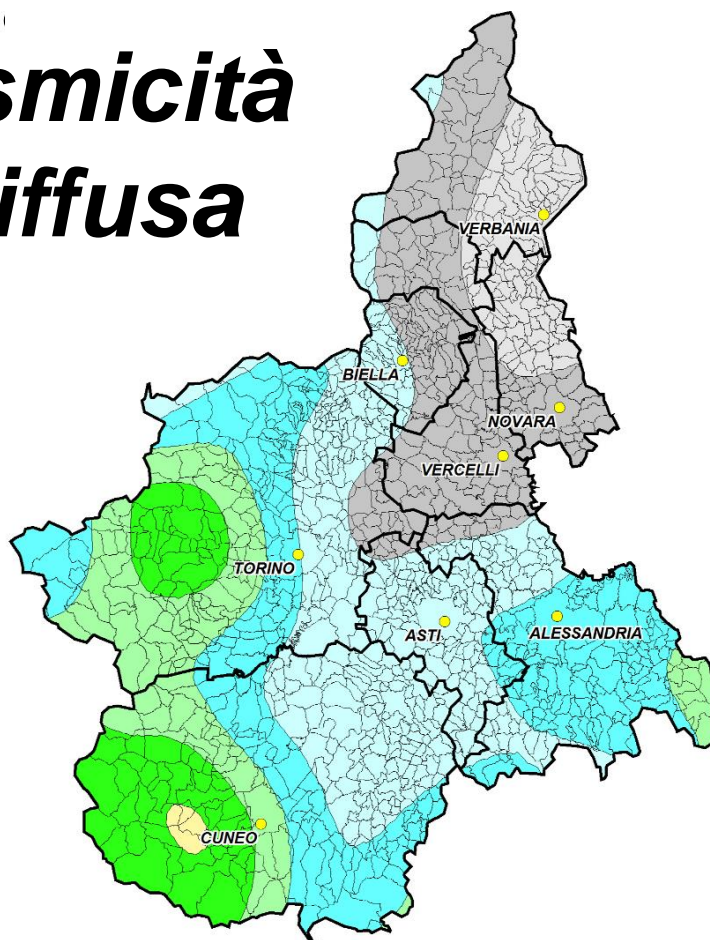
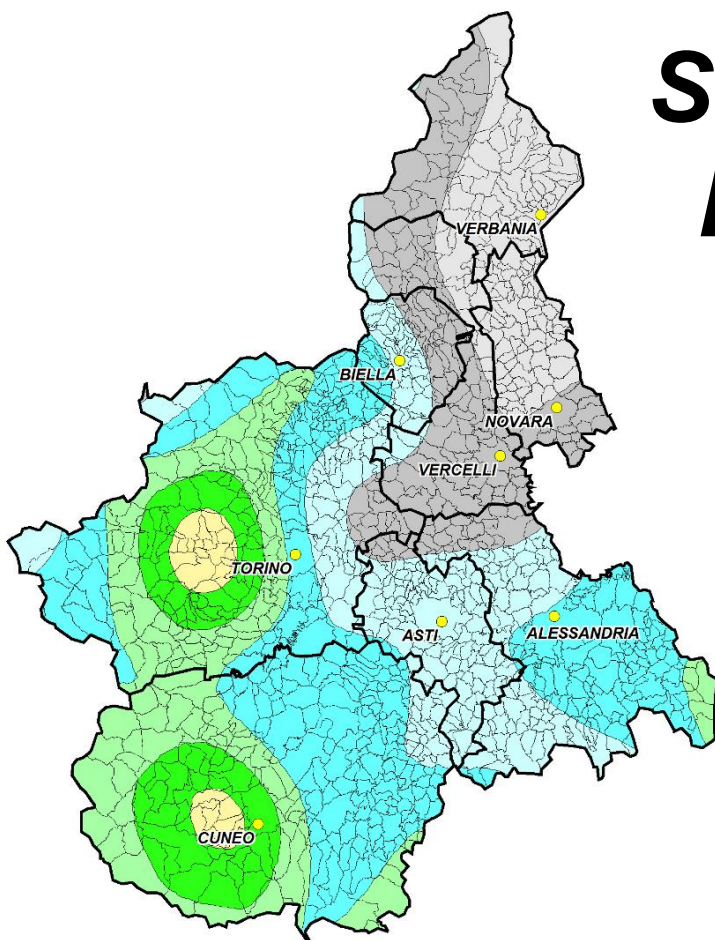
# Zonazione MA1





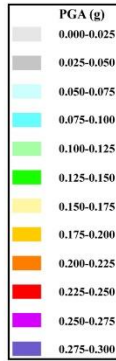
**ITA10** ← **VS** → **BND14**

# Sismicità Diffusa

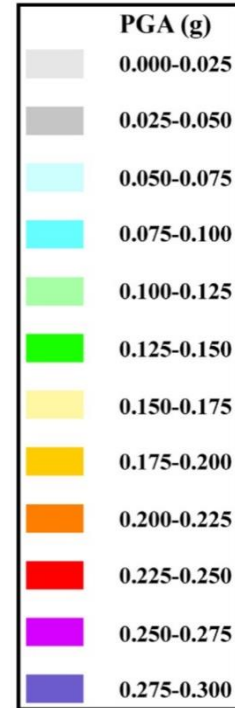




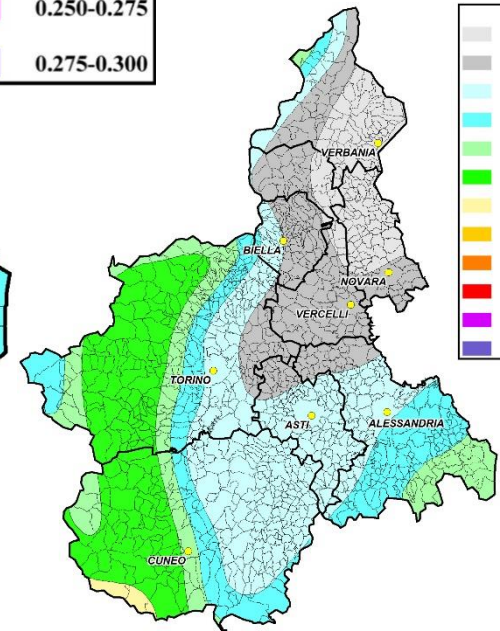
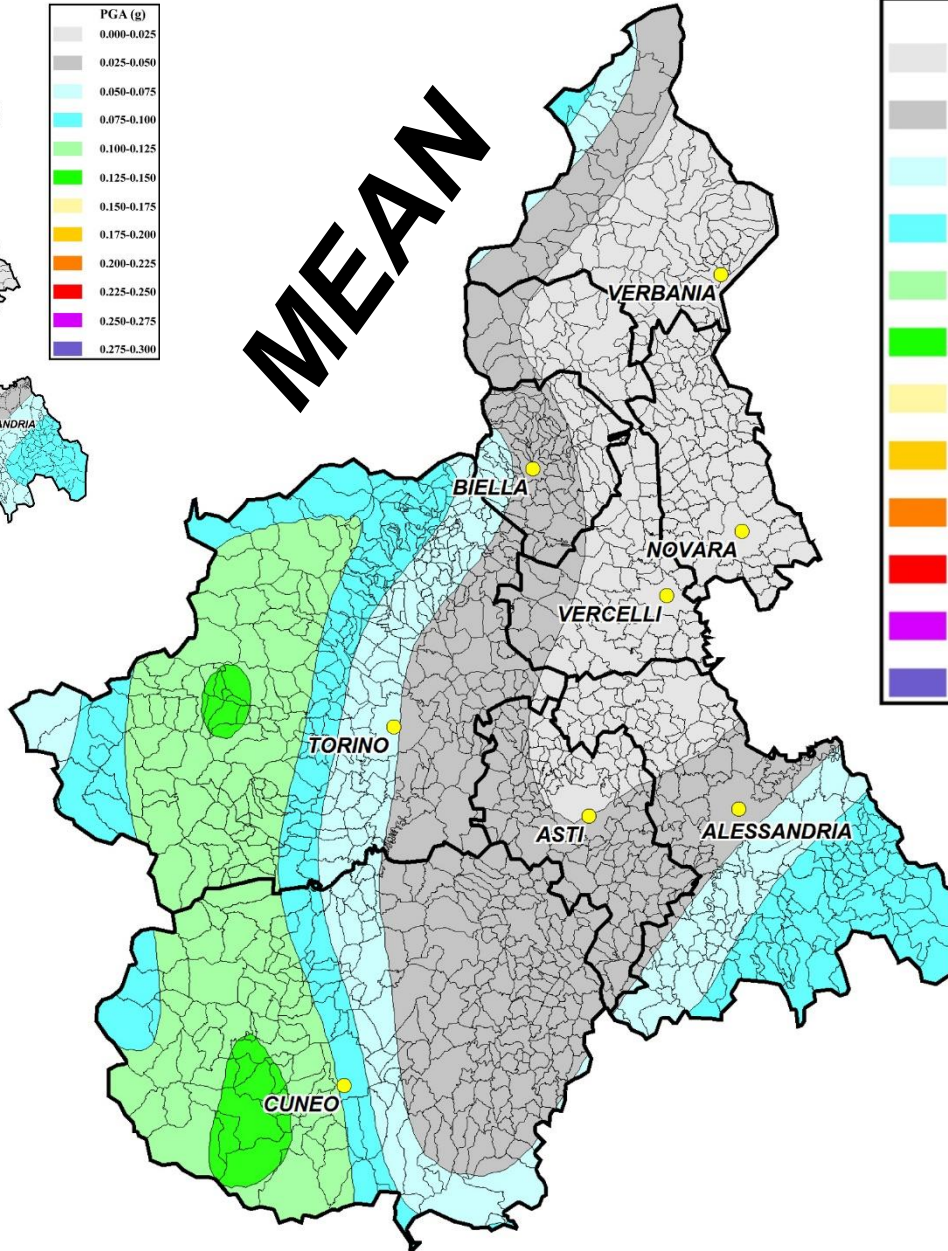
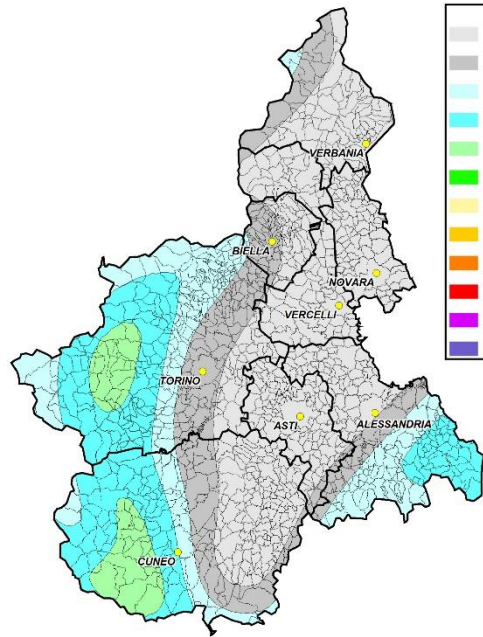
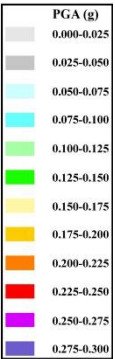
**MEAN**



**16mo percentile**

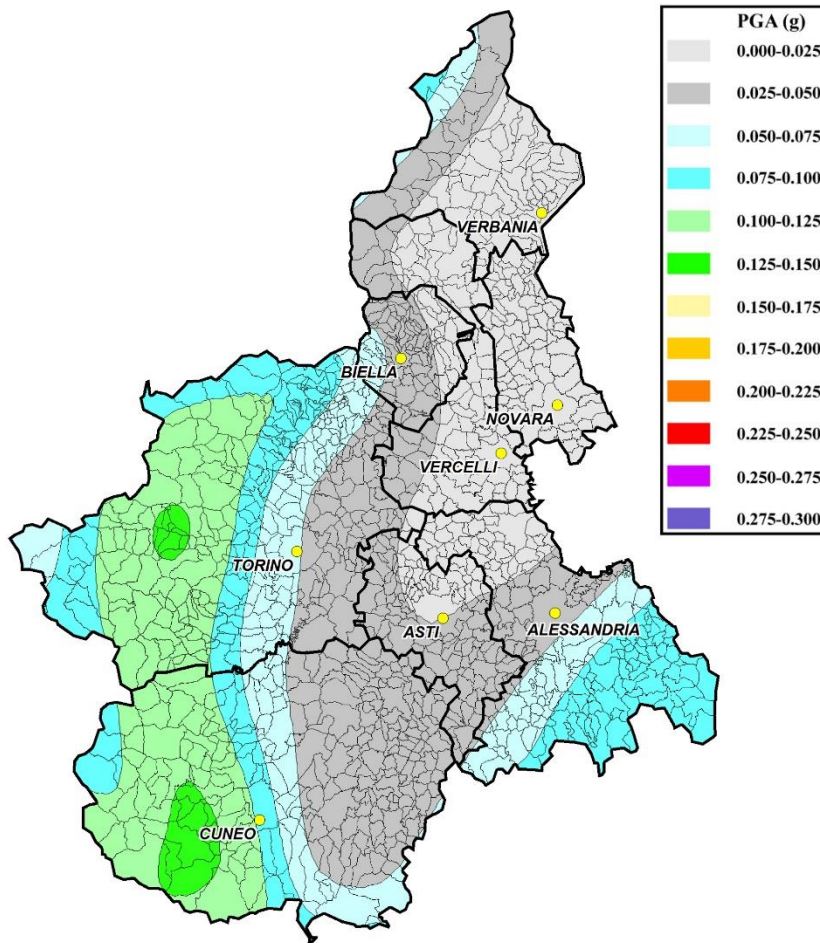


**84mo percentile**

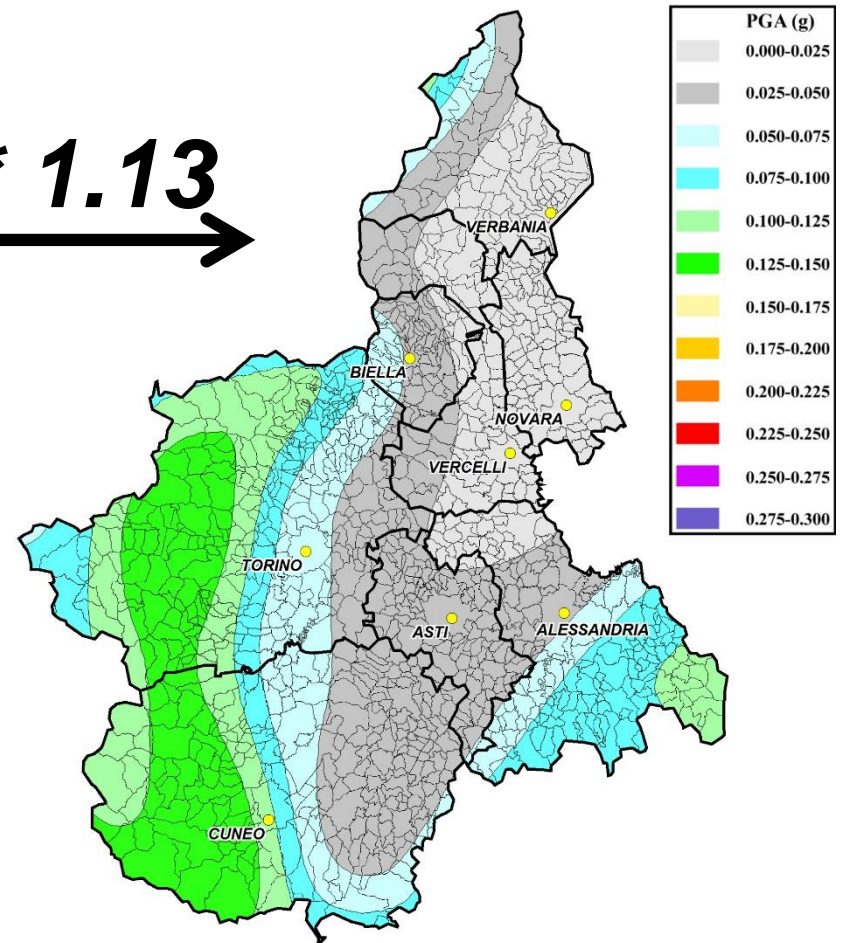




**GeoMean** ← **VS** → **MaxH**

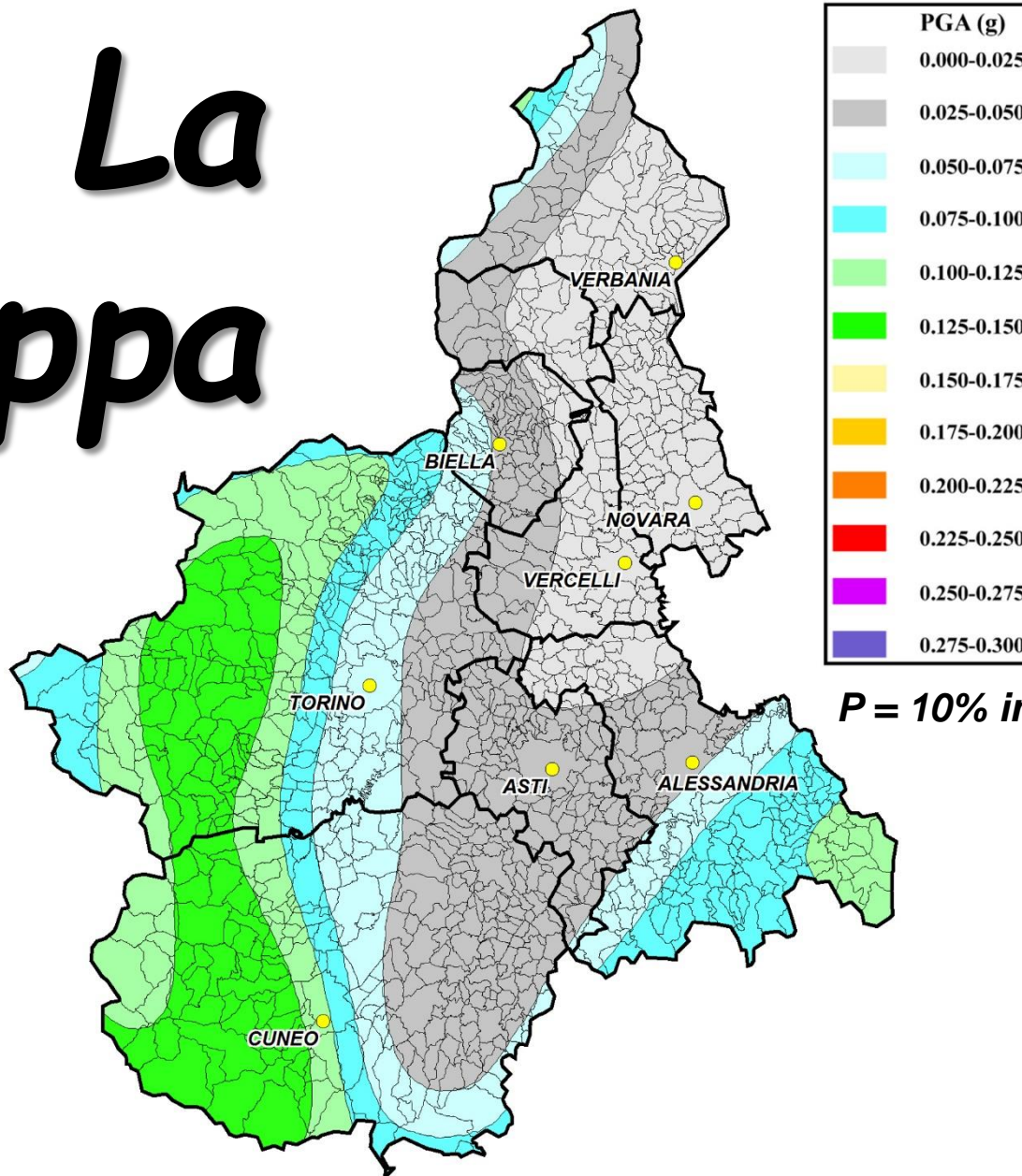


**\* 1.13**





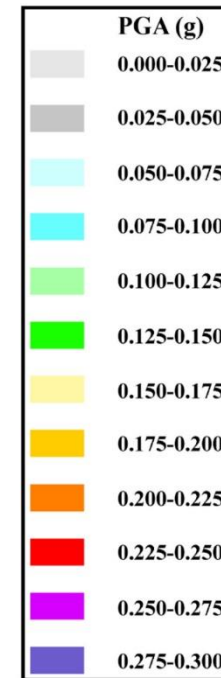
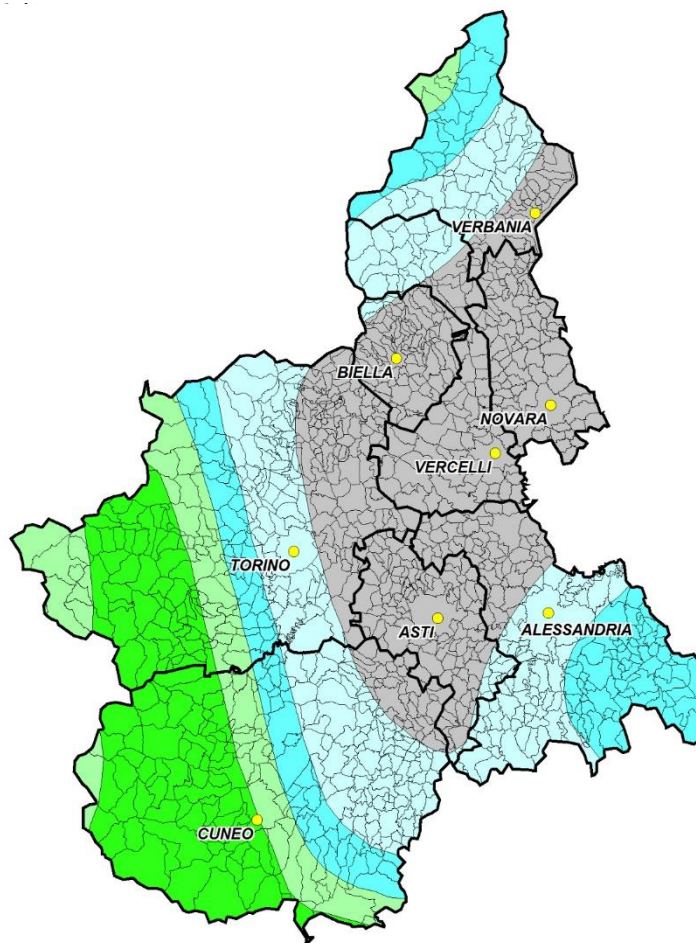
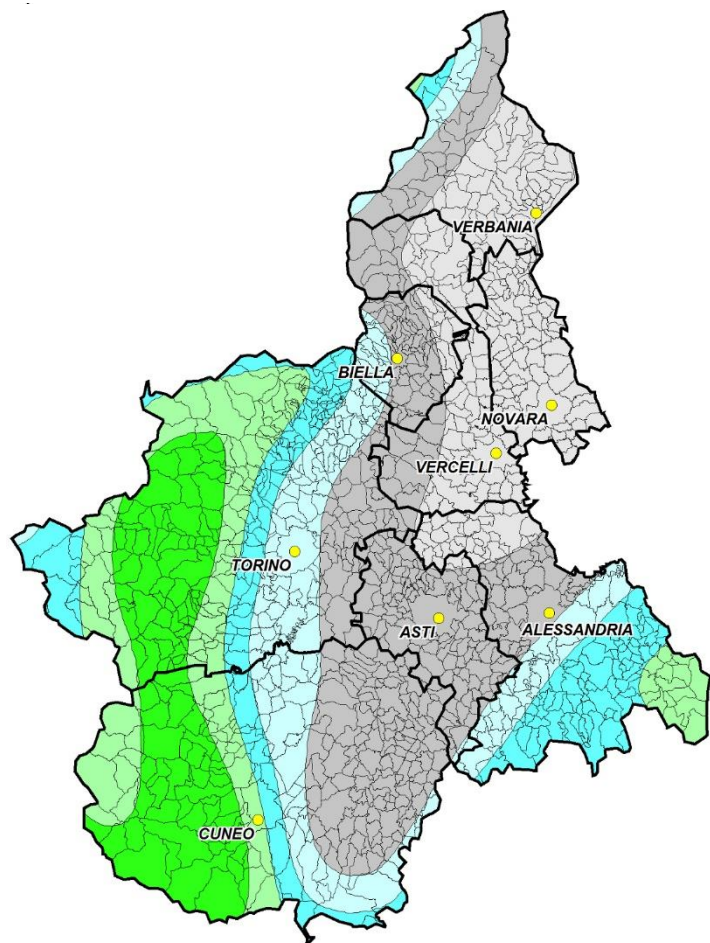
# La Mappa



*P = 10% in 50 anni*



# UNIGE ← VS → MPS04





# UNIGE – MPS04

Differenze nei valori di PGA (g)  
con probabilità di eccedenza  
del 10% in 50 anni

