

A MACHINE-LEARNING APPROACH FOR THE RECONSTRUCTION OF THE GROUND SHAKING FIELDS IN REAL-TIME

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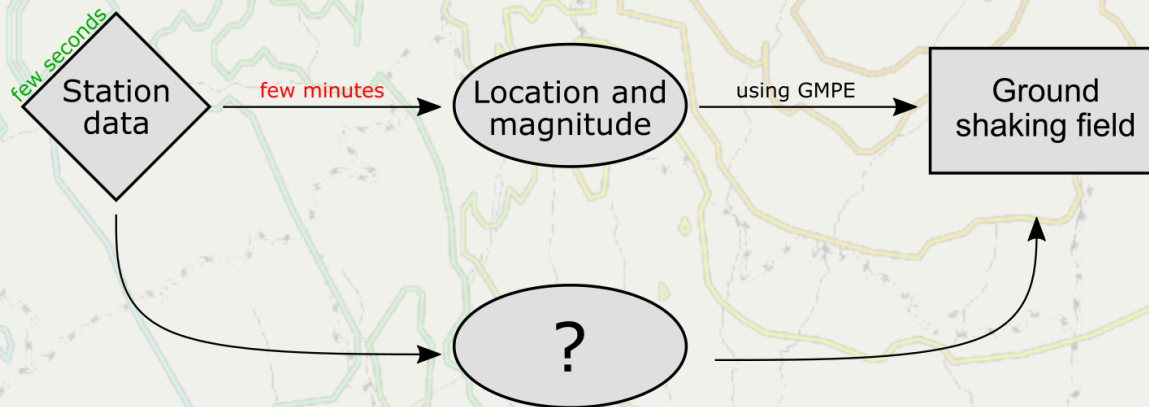


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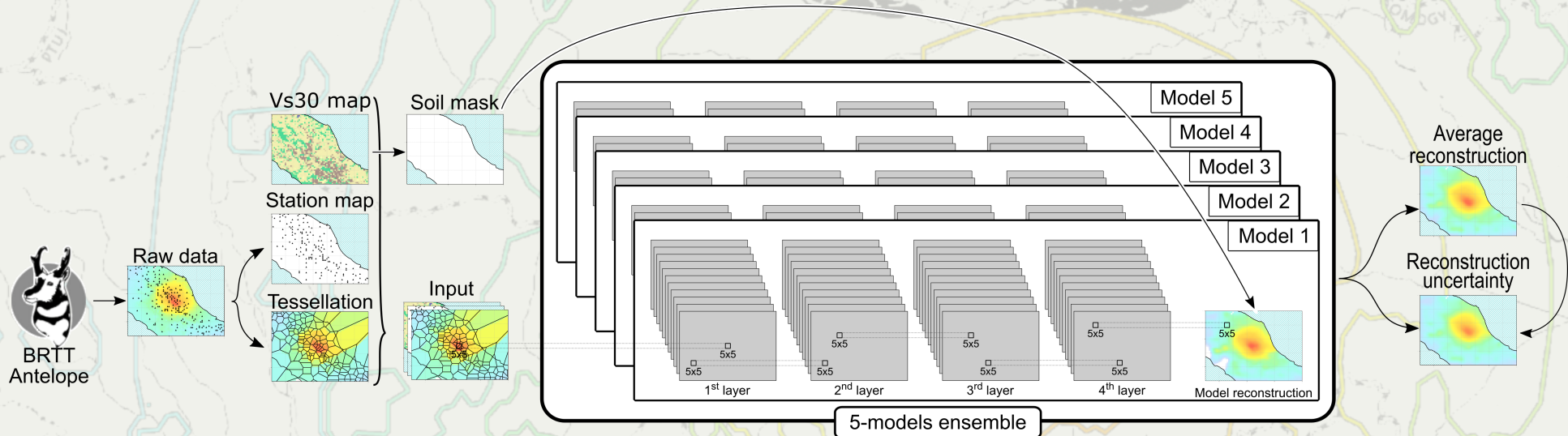
GROUND SHAKING FIELD

- Spatial representation of the effects of an earthquake in terms of a ground motion parameter
- Post-emergency management
- Limited number of seismic stations



IMPLEMENTED WORKFLOW

(MODEL ARCHITECTURE ADAPTED FROM FUKAMI ET AL., 2020)

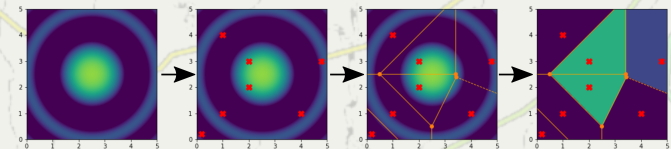


CONVOLUTIONAL NEURAL NETWORK

1	1	1	0	0
0	1	1	1	0
0	0	1	1	1
0	0	1	1	0
0	1	1	0	0

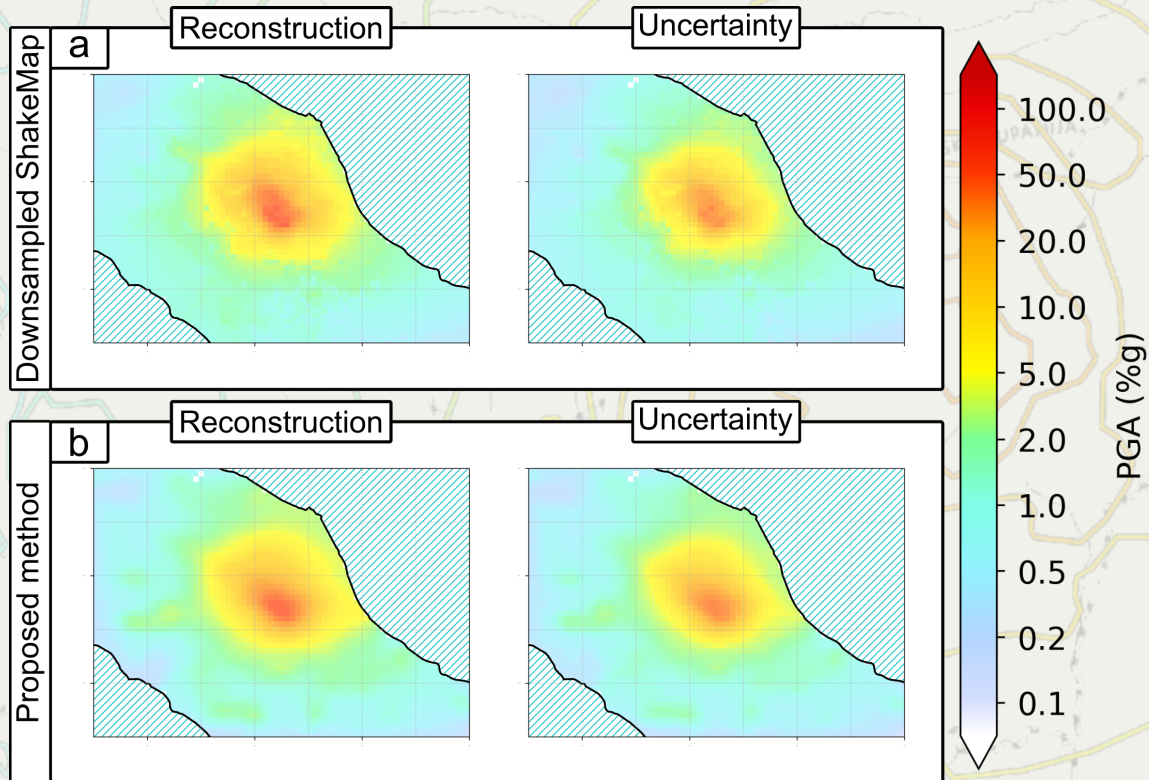
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VORONOI TESSELLATION

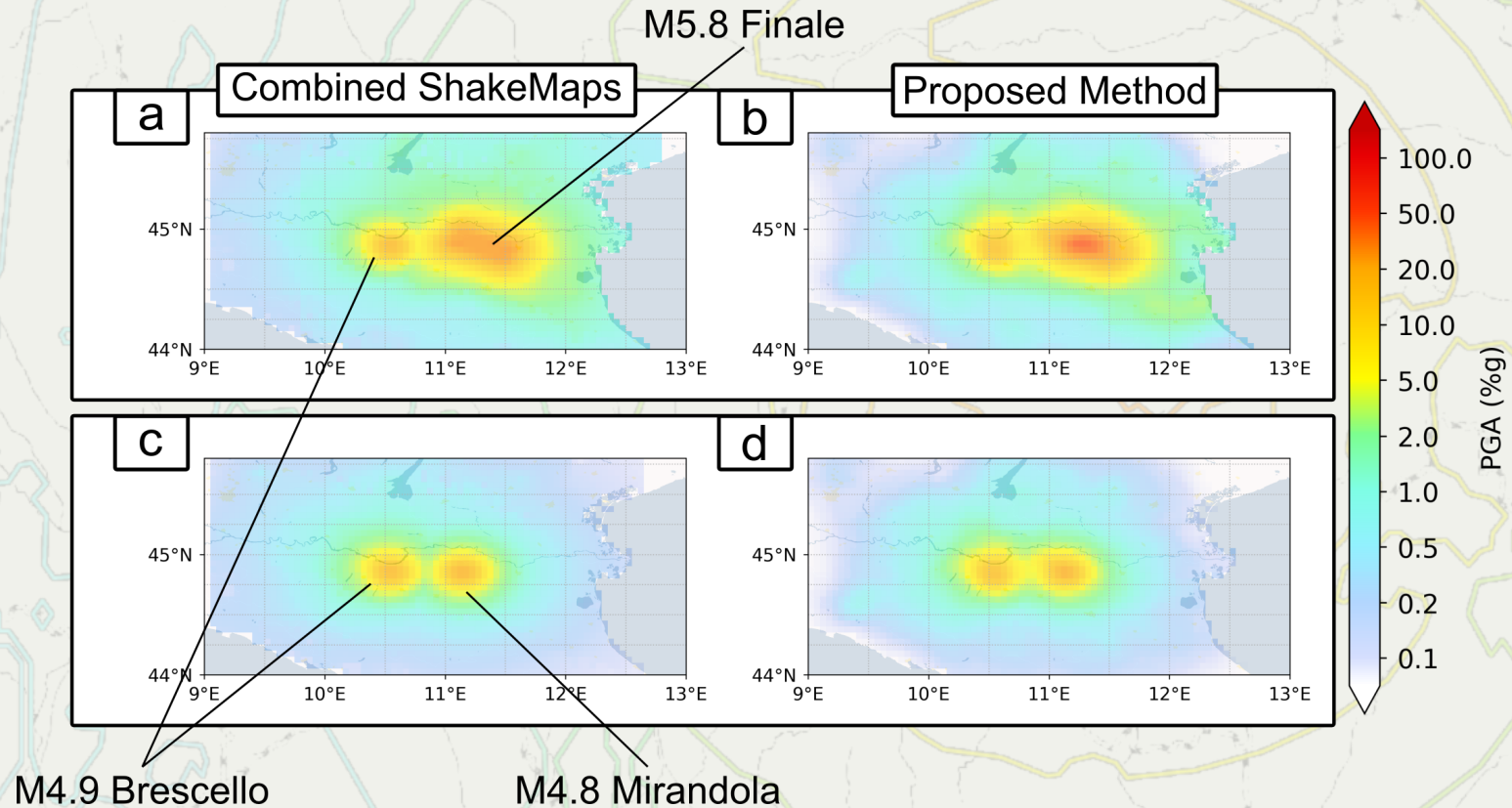


OUTPUT COMPARISON

(2016 M6.5 NORCIA EARTHQUAKE)



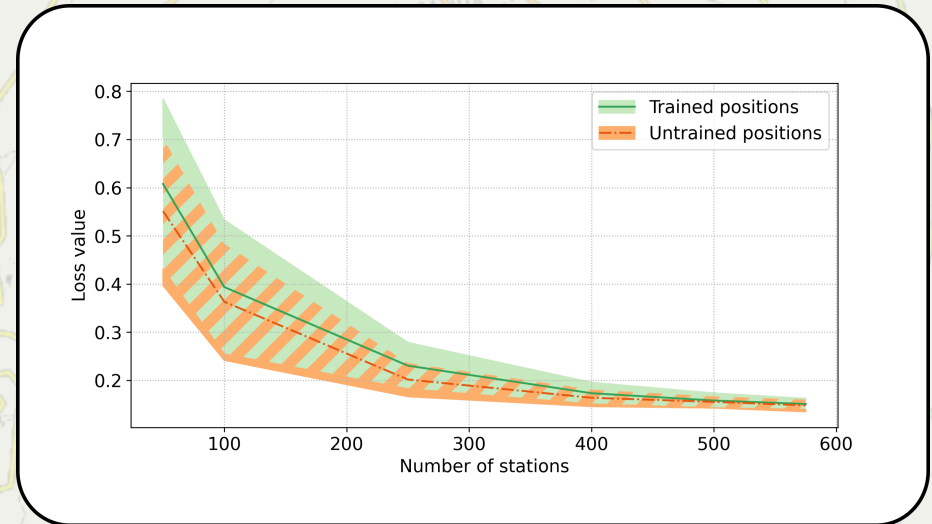
SIMULTANEOUS EVENTS



ROBUSTNESS TO NETWORK CHANGES

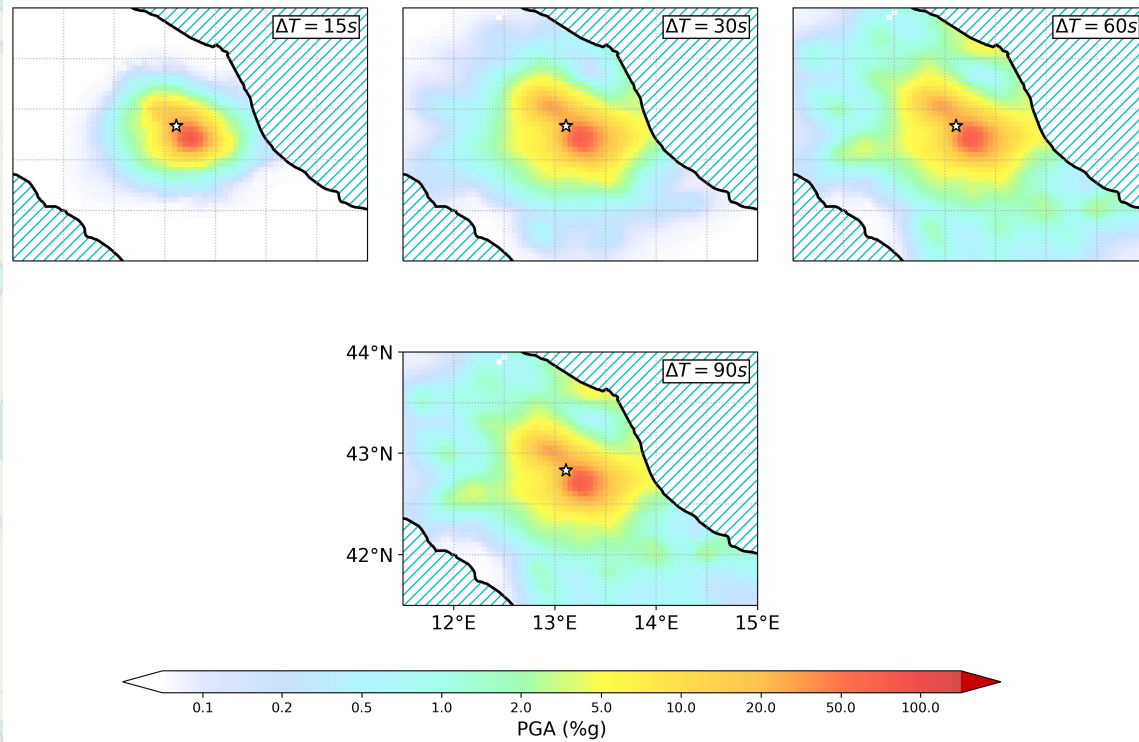
Possible causes:

- Data transmission problems
- Addition/Removal of stations
- Temporary problems



REAL-TIME CAPABILITIES

(2016 M6.5 NORCIA EARTHQUAKE)



CONCLUSIONS

The developed method:

- Can fill a "temporal gap" in the seismic monitoring
- Has results comparable with (resampled) ShakeMap
- Has useful feature for real-time applications
- Is extensible (parameters and areas)

A paper about this work is under review at BSSA

Thanks for the attention and stay tuned!