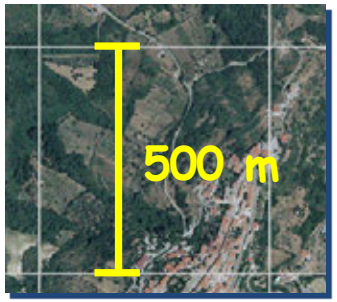
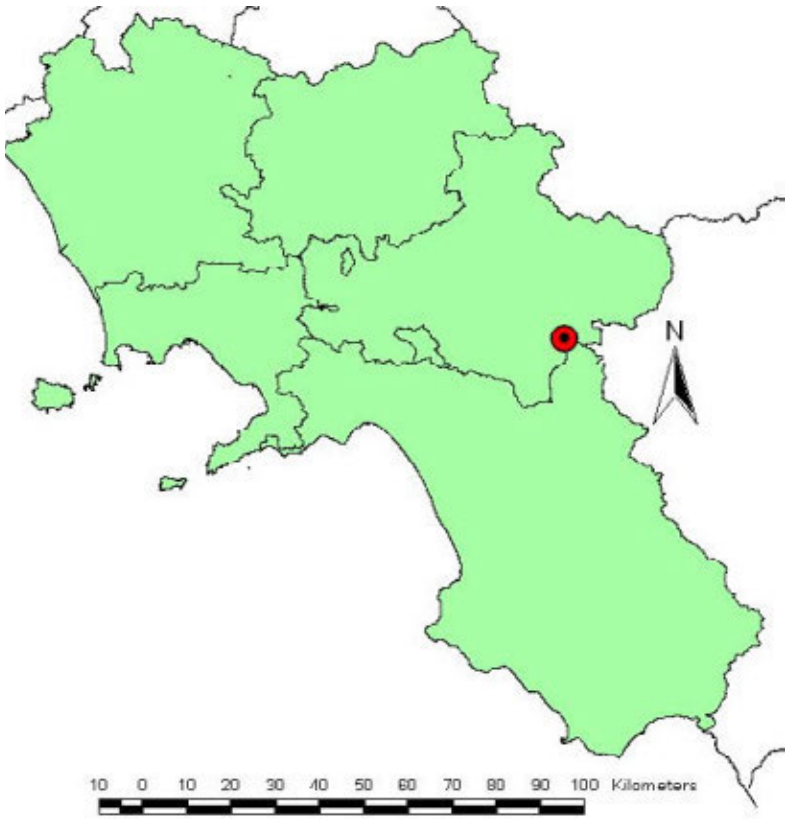
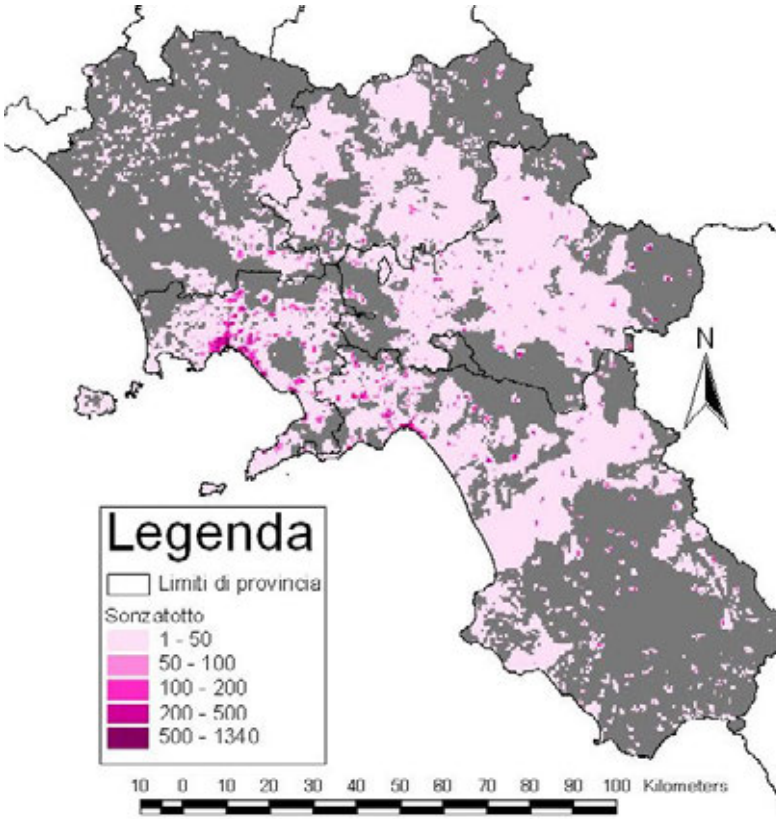
SEISMIC CASE



1980 IRPINIA EARTHQUAKE



MODEL RESULTS



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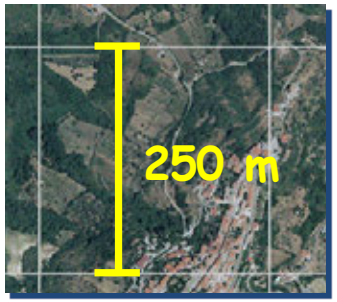
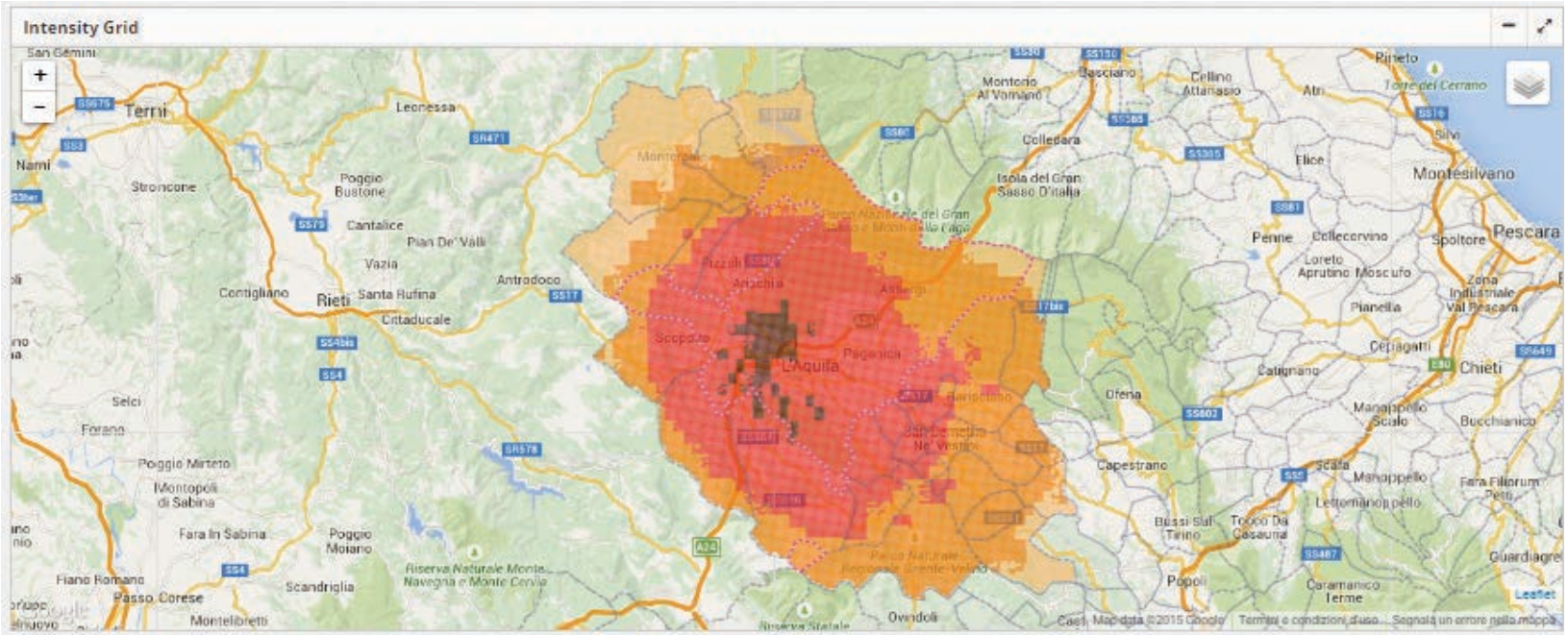
SEISMIC CASE





L'Aquila 2009 - Hazard intensity grid (CRISMA Project)

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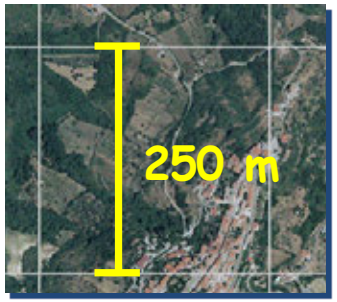
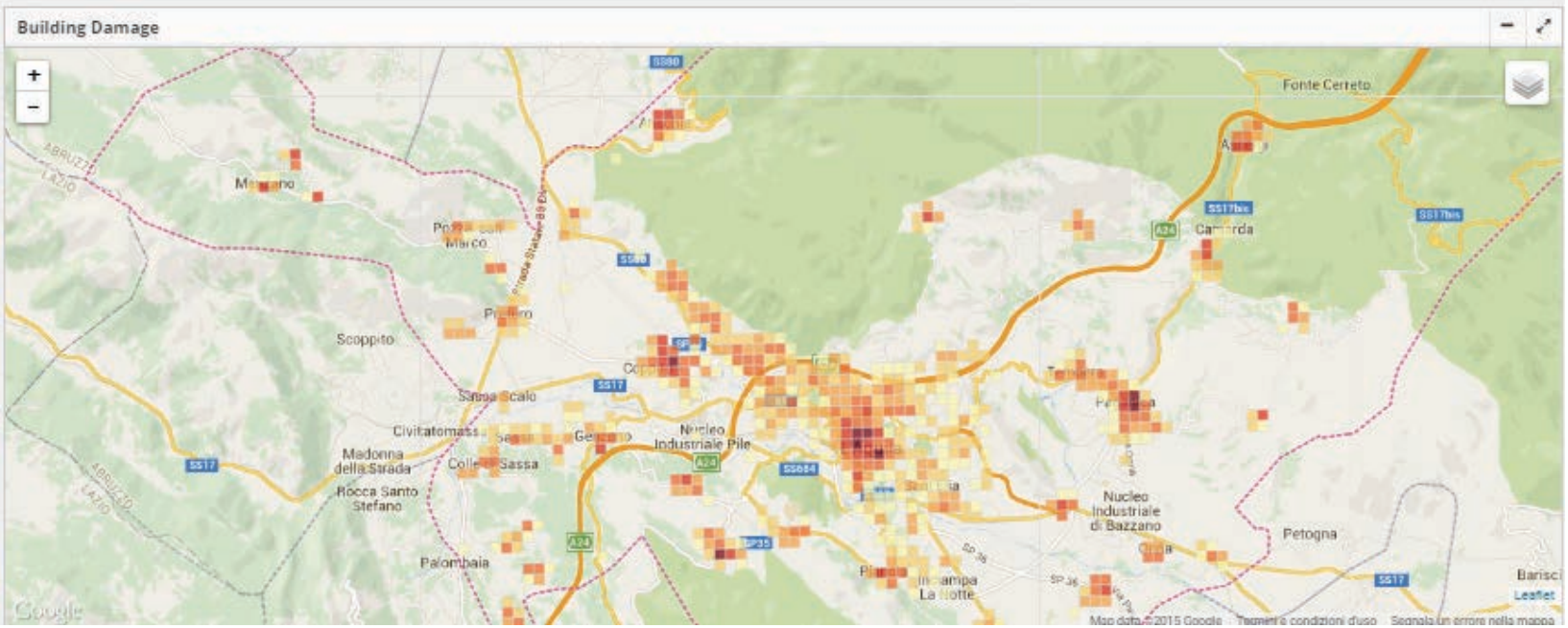
SEISMIC CASE





L'Aquila 2009 - Impact on buildings (CRISMA Project)

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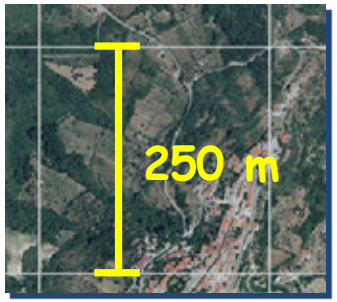
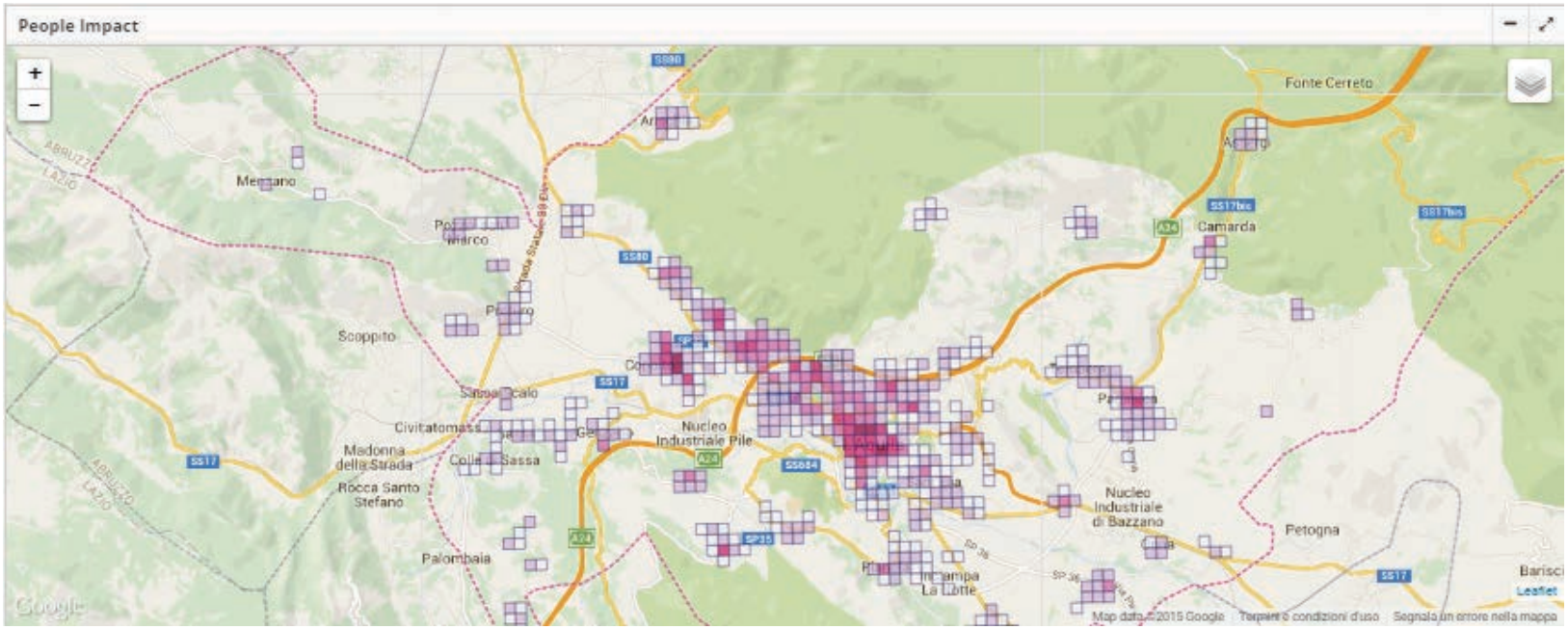
SEISMIC CASE





L'Aquila 2009 - Impact on people (CRISMA Project)

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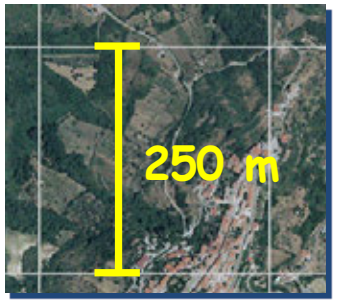
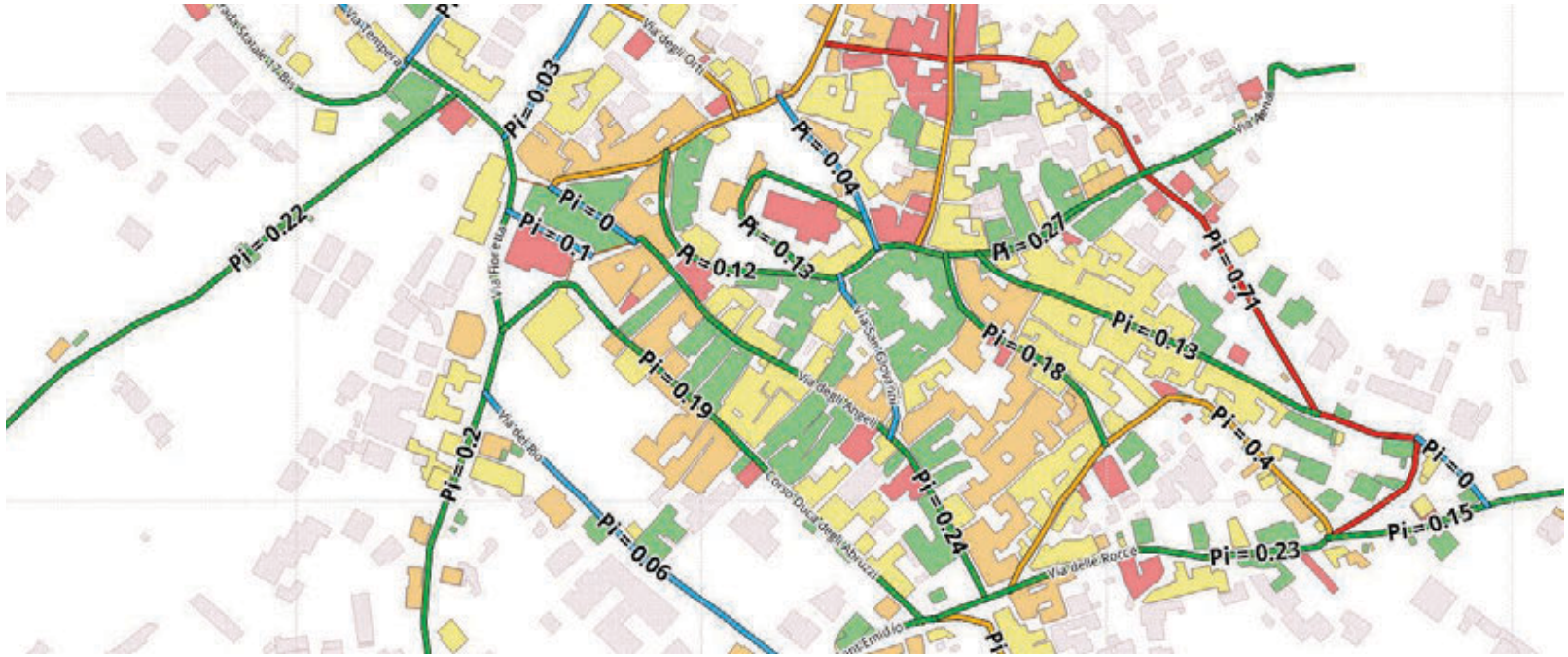
SEISMIC CASE





L'Aquila 2009 - Probability of interruption of road links (CRISMA Project)

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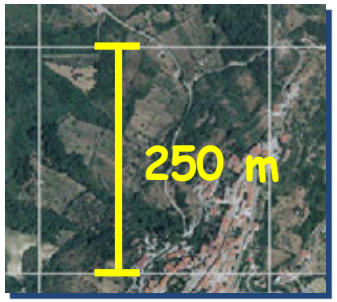
SEISMIC CASE



Scenario Path: L'Aquila Demo Study present situation / L'Aquila w/o Building Retrofitting (50 years)

L'Aquila w/o Building Retrofitting (50 years)

Indicator & Criteria

Damaged buildings

Aspect	Indicator (AVG)	Indicator (MIN)	Indicator (MAX)	Criteria (AVG)	Criteria (MIN)	Criteria (MAX)
Lost buildings (# of Buildings)	641 Buildings	197 Buildings	1,201 Buildings			
Unsafe buildings (# of Buildings)	1,395 Buildings	551 Buildings	2,679 Buildings			

Economic cost

Aspect	Indicator (AVG)	Indicator (MIN)	Indicator (MAX)	Criteria (AVG)	Criteria (MIN)	Criteria (MAX)
Direct damage cost (Euro)	5,406,462,851 Euro	4,117,817,046 Euro	6,661,334,581 Euro			
Direct restoration cost (Euro)	531,328,909 Euro	155,725,257 Euro	1,323,700,805 Euro			
Indirect damage cost (Euro)	821,362,020 Euro	709,473,795 Euro	877,547,774 Euro			

Casualties

Aspect	Indicator (AVG)	Indicator (MIN)	Indicator (MAX)	Criteria (AVG)	Criteria (MIN)	Criteria (MAX)
Number of dead (# of People)	85 People	21 People	249 People			
Number of homeless (# of People)	5,226 People	1,947 People	10,491 People			
Number of injured (# of People)	250 People	67 People	734 People			

Building retrofitting

Aspect	Indicator	Criteria
Total retrofitting cost (Euro)	0 Euro	
Retrofitted buildings (# of Buildings)	0 Buildings	

Evacuation

Aspect	Indicator	Criteria
Preemptive evacuation cost (Euro)	0 Euro	
Number of evacuated (# of People)	0 People	

L'Aquila 2009 - Table results from simulation (CRISMA Project)

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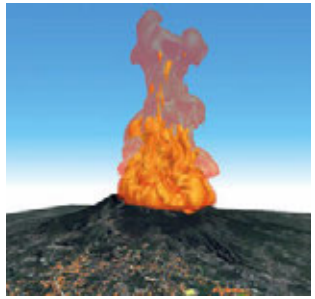
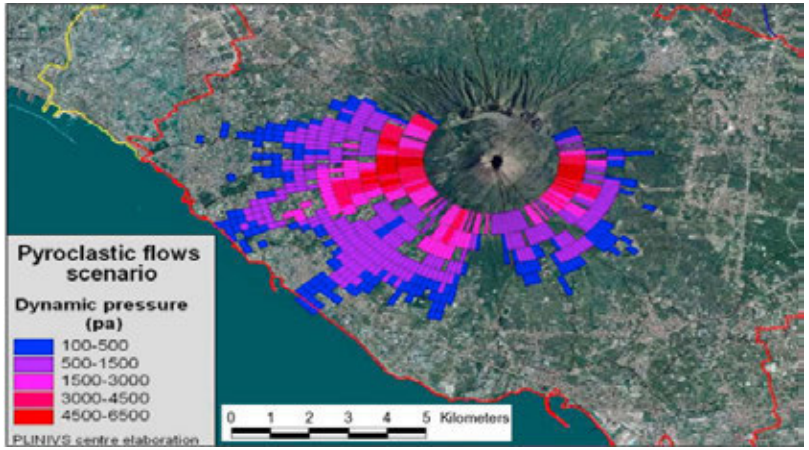
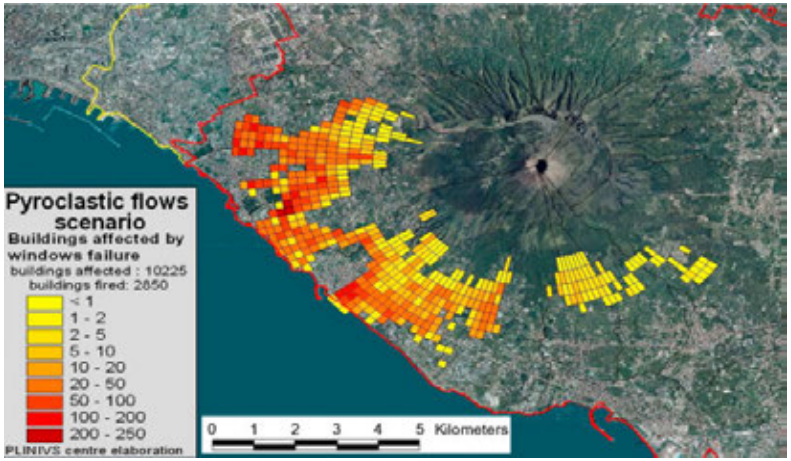
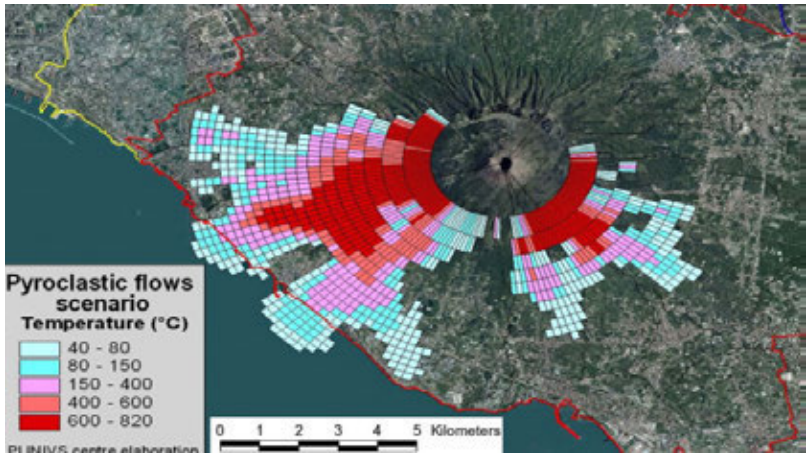
VOLCANIC CASE

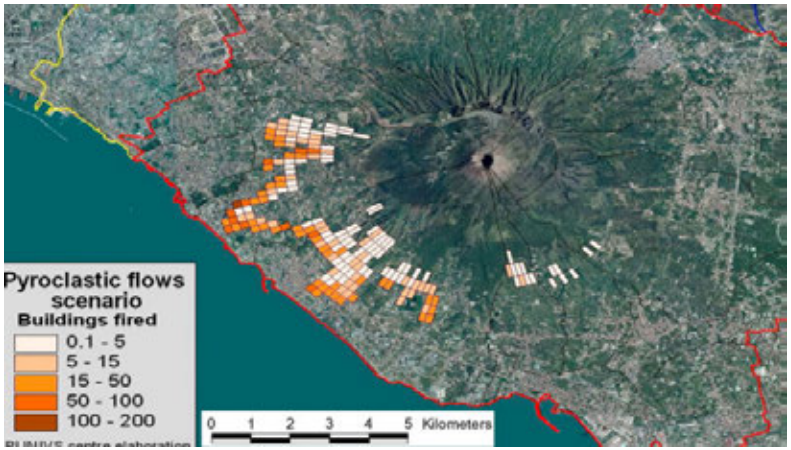
SUB-PLINIAN ERUPTION
VESUVIUS
PYROCLASTIC FLOWS











1. RISK ASSESSMENT
2. EXAMPLES OF RISK ASSESSMENT
   - Seismic
   - Volcanic
   - Hydrogeological
   - Sea flood
3. RISK ASSESSMENT AND DECISION SUPPORT
   - Emergency management
   - Emergency planning
   - Economic impact and mitigation measures assessment
   - User customized DSS
   - Technical training

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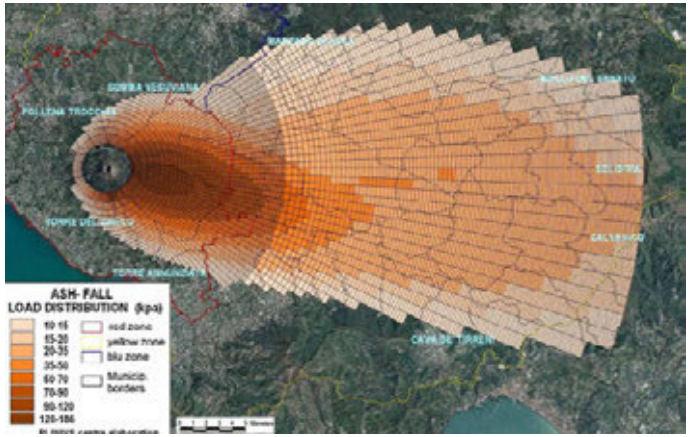
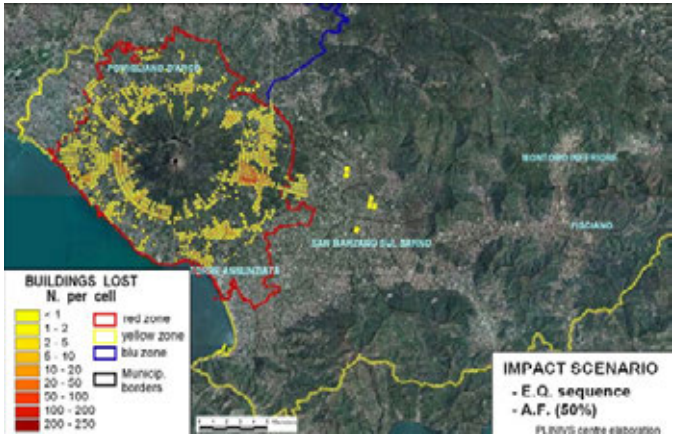
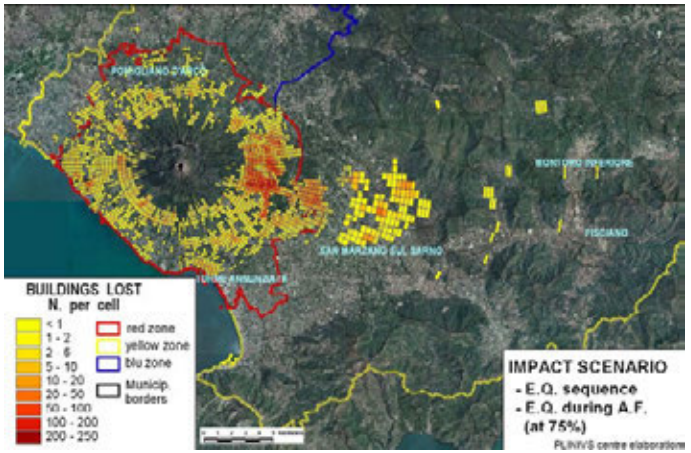
EXAMPLES of RISK ASSESSMENTS

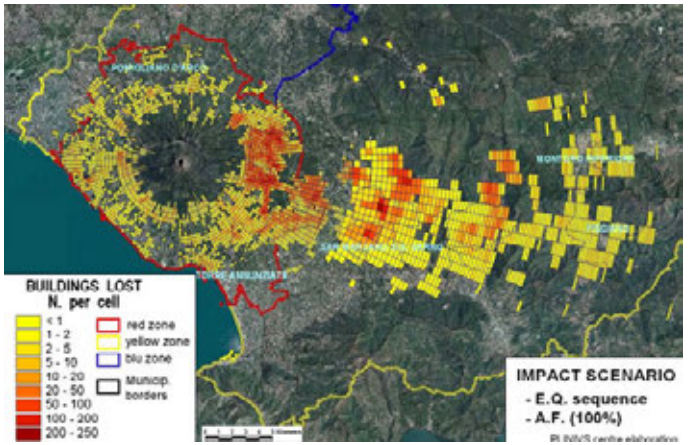
VOLCANIC CASE

SUB-PLINIAN ERUPTION
VESUVIUS
ASH FALL









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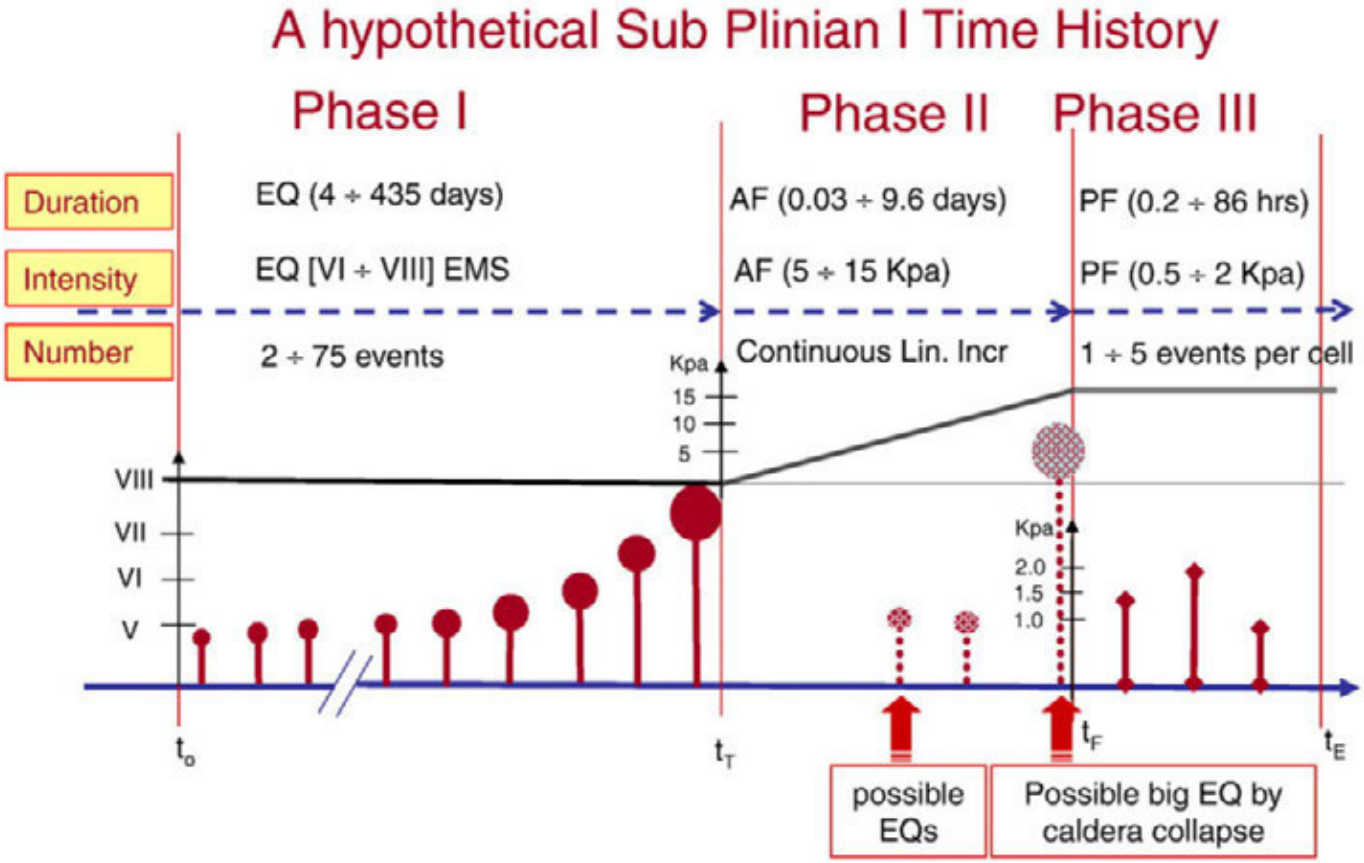
VOLCANIC CASE

ASSESSING THE CUMULATIVE IMPACTS ON PEOPLE AND BUILT ENVIRONMENT FROM A SEQUENCE OF ERUPTIVE PHENOMENA ACCORDING TO TIME/SPACE DISTRIBUTIONS.



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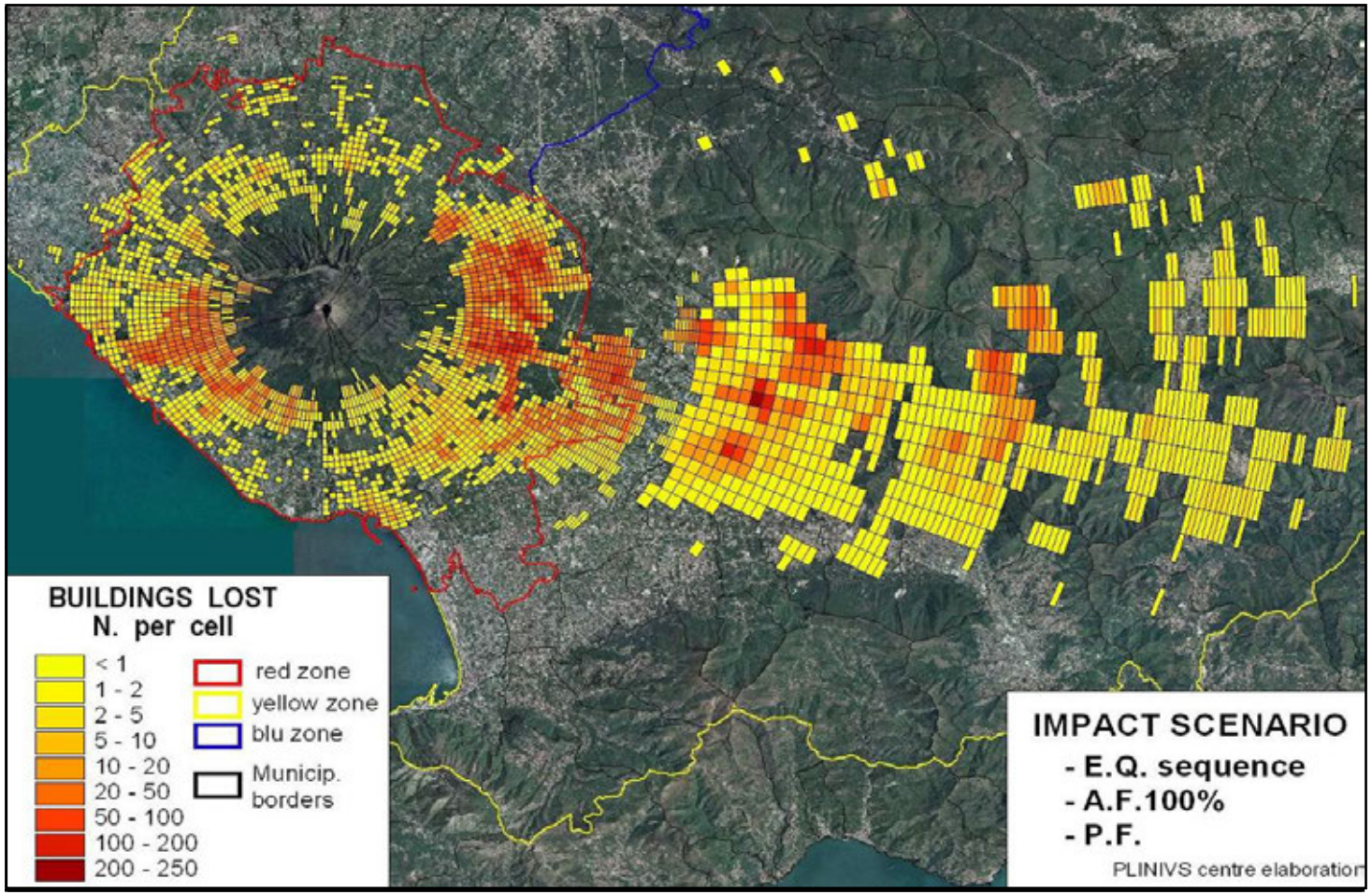
EXAMPLES of RISK ASSESSMENTS

Events	Buildings Lost (D4+D5+fired)				Casualties				
Sequence	By Step	Cumul	Fired	Total	Population in the Area (%)	Killed by Step	Killed (Cumulative)	Injuries by Step	Injuries Cumul.
PF	4351	28864	2850	31714	1.5%	3382	8440	2985	13456

• AF+PF



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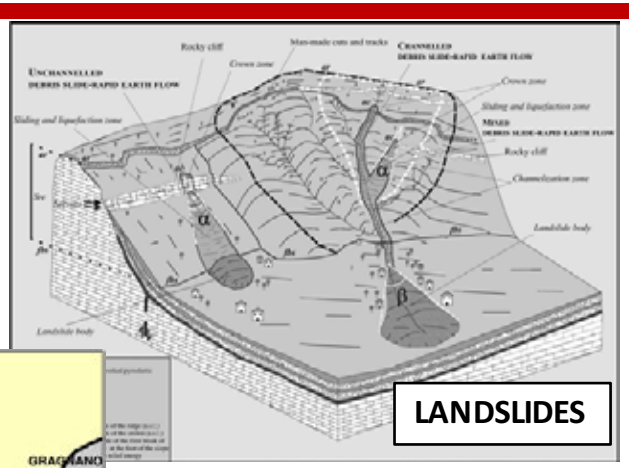
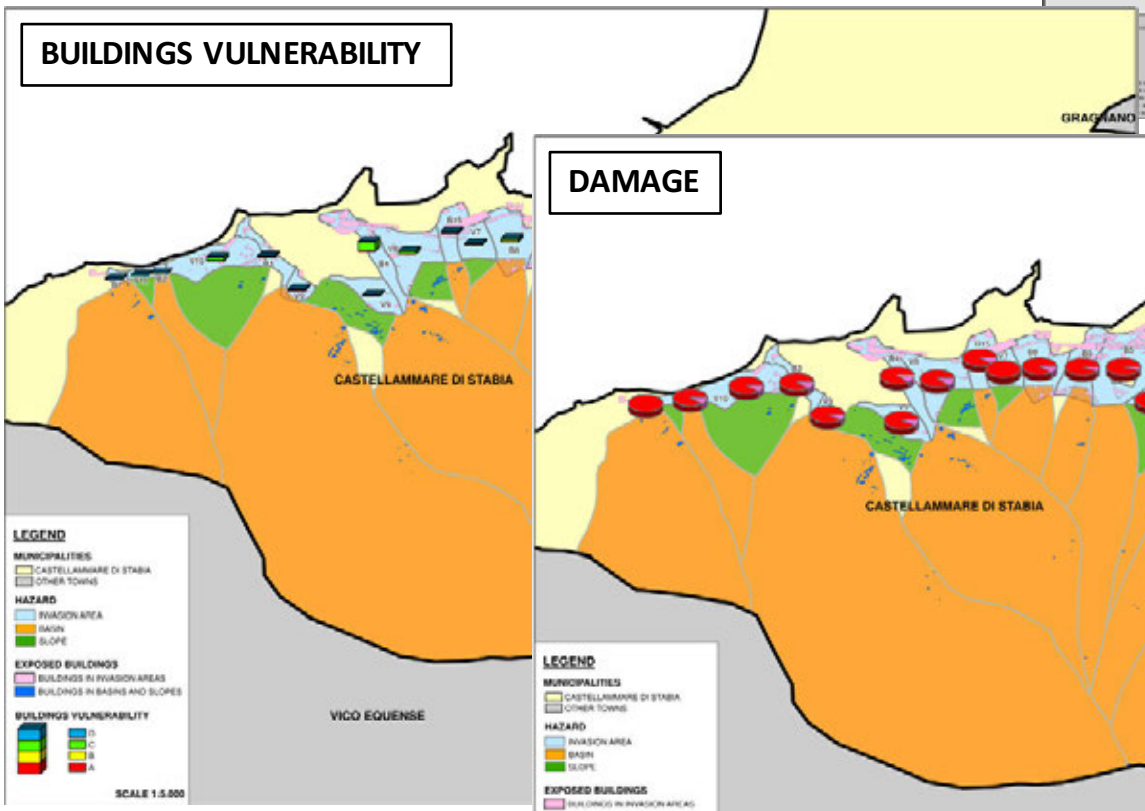
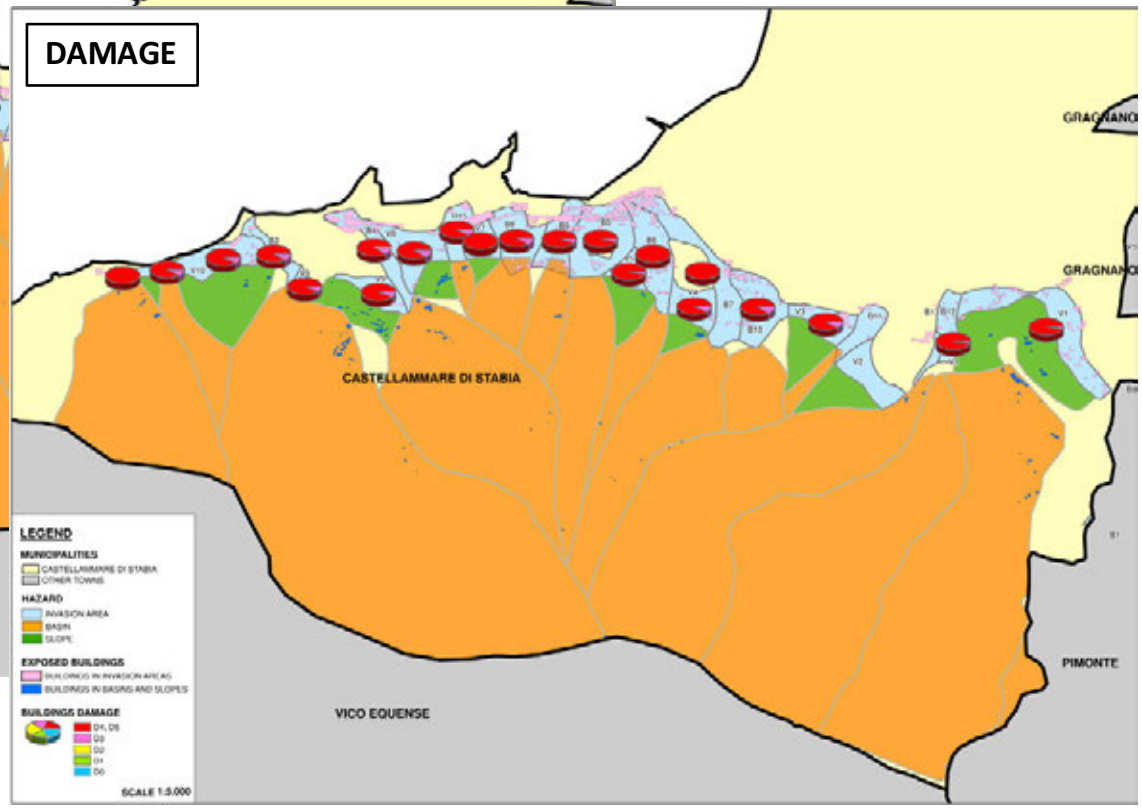
HYDROGEOLOGICAL CASE







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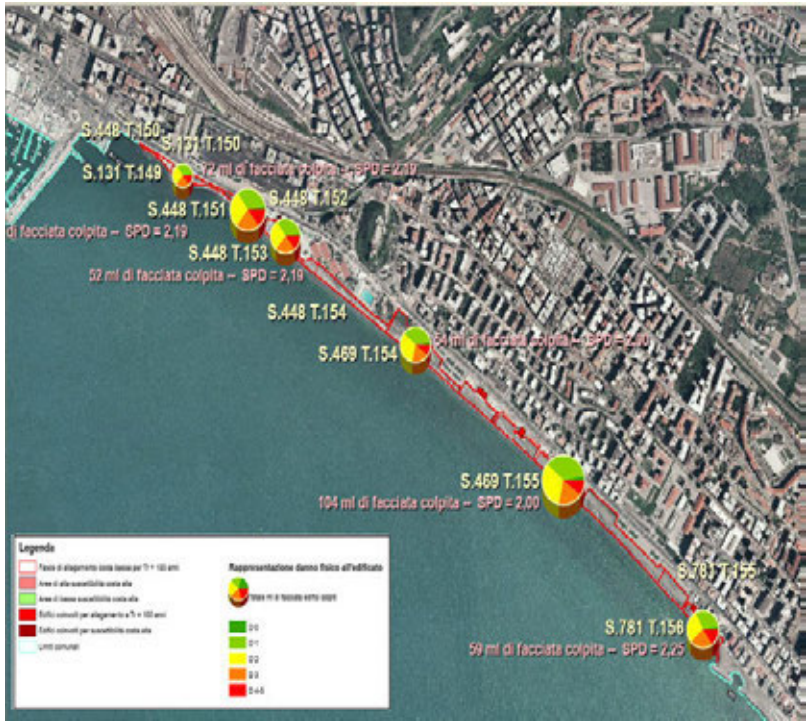
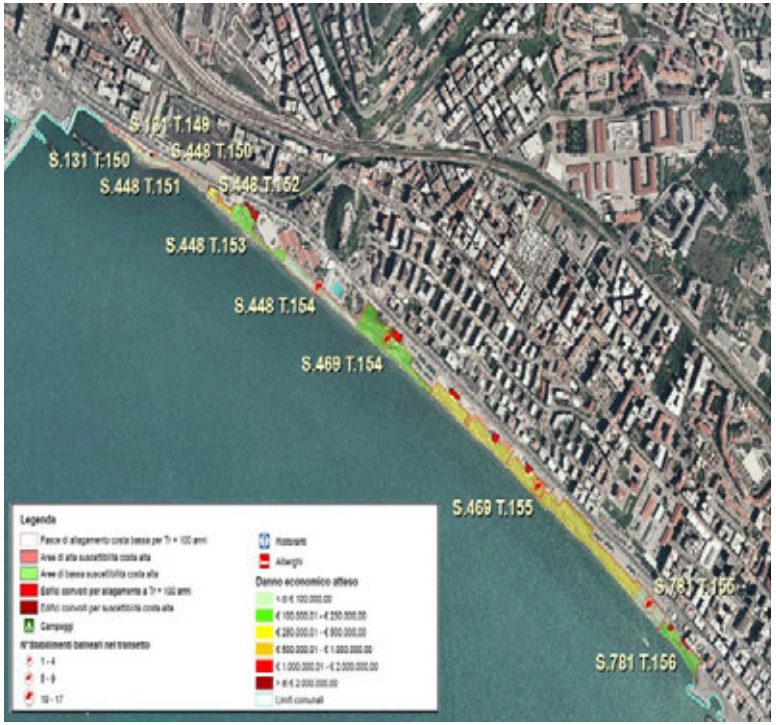
SEA FLOOD

HAZARD and VALUE

STRUCTURAL DAMAGE



ECONOMIC DAMAGE



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