

Geospatial intelligence & integrated assessment of assets at Flood risk



Prof. Fernando Nardi - Prof. Antonio Annis



REGIONE
LAZIO



BUSINESS
INCUBATION
CENTRE

Lazio



UNIVERSITÀ
PER STRANIERI
DI PERUGIA



TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA

Who we are and our skills

Distributed rainfall-induced flood wave propagation

https://www.flo-2d.com

FLO-2D Software, INC
P.O. Box 66
Nutrioso, AZ 85932
Phone: (928) 339-1935

HOME PRODUCTS WEBINARS DOWNLOADS PRODUCT SUPPORT TRAINING CONTACT US FORUM SHORT COURSE QGIS PLUGIN

SHOP FLO-2D TECHNOLOGY

Our software is used by engineers, floodplain managers, consultants and students worldwide.

READ MORE

Welcome to FLO-2D Software

FLO-2D PRO = Comprehensive, Affordable and Easy Flood Modeling

The FLO-2D model was conceptualized in 1986 to predict mudflow hydraulics. The US Federal Emergency Management Agency (FEMA) supported the initial model development and first application to Telluride, Colorado in 1988. Over the past 30 years, FLO-2D has become the most widely

Design hydrograph and 2D hydraulic modelling



Product

2006



Services

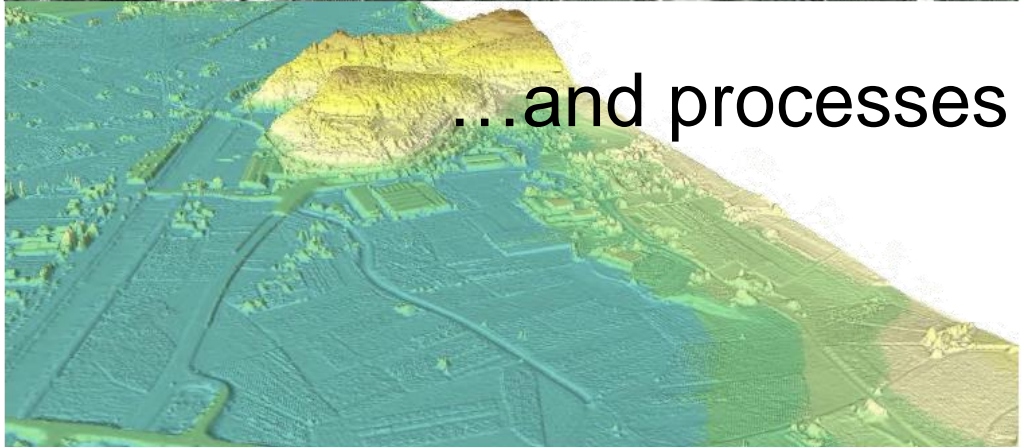


2012

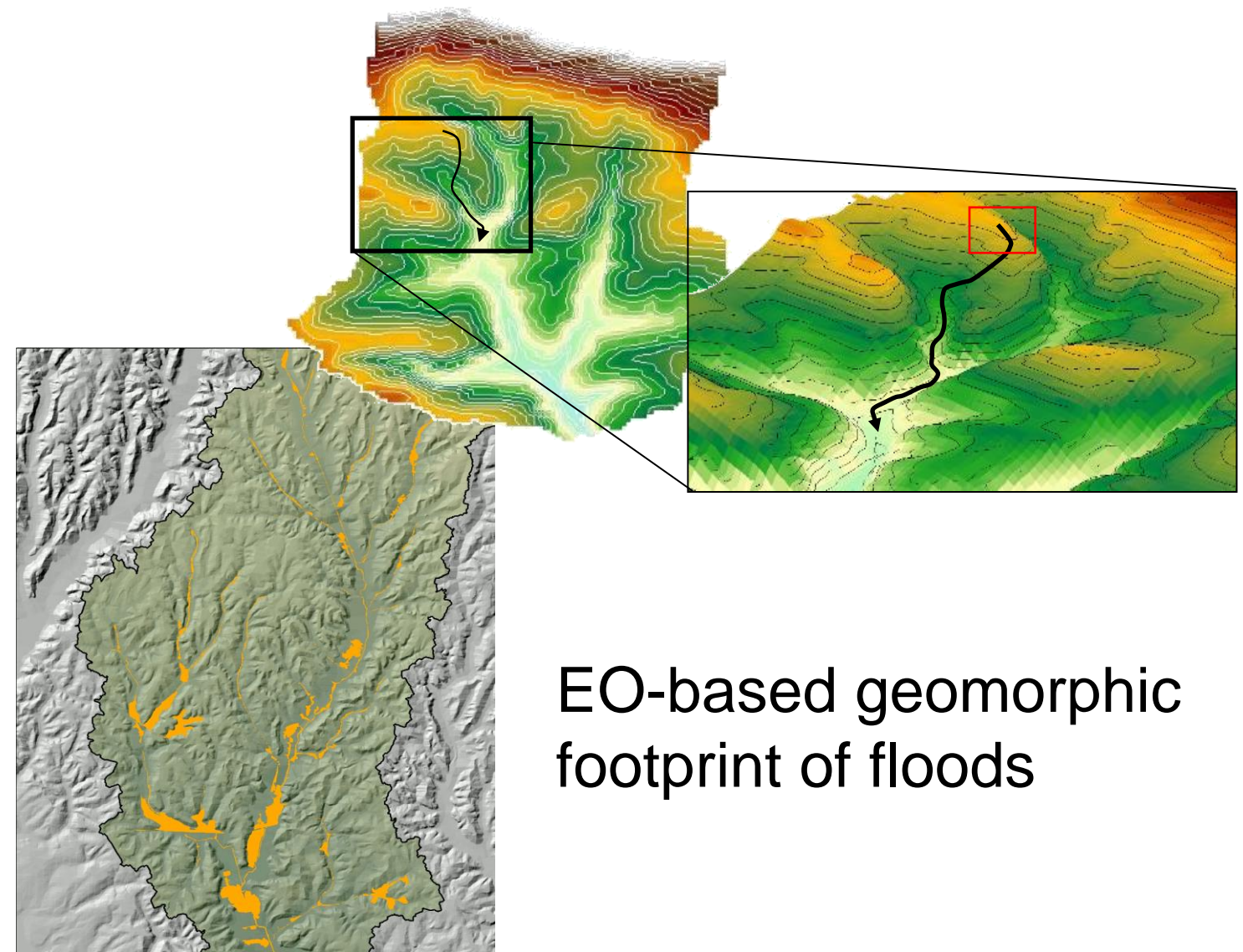
2021
GRIDDIT

Towards global flood hazard/damage datasets for parametric insurance and infrastructure management

Observing urban and natural features...



...and processes



EO-based geomorphic footprint of floods

Our Step ahead - Science-driven algorithms for flood location and impact intelligence: REBIT



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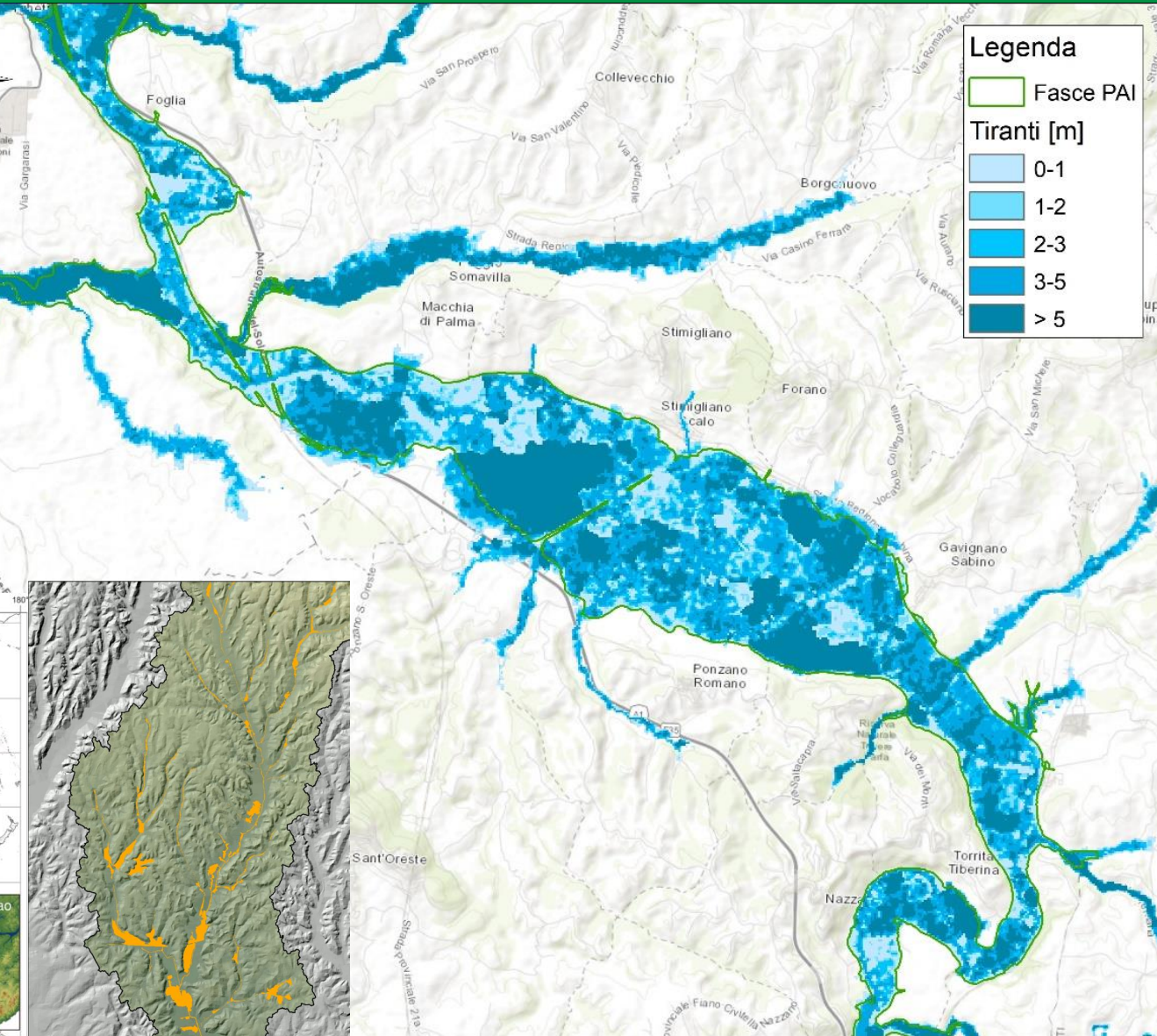
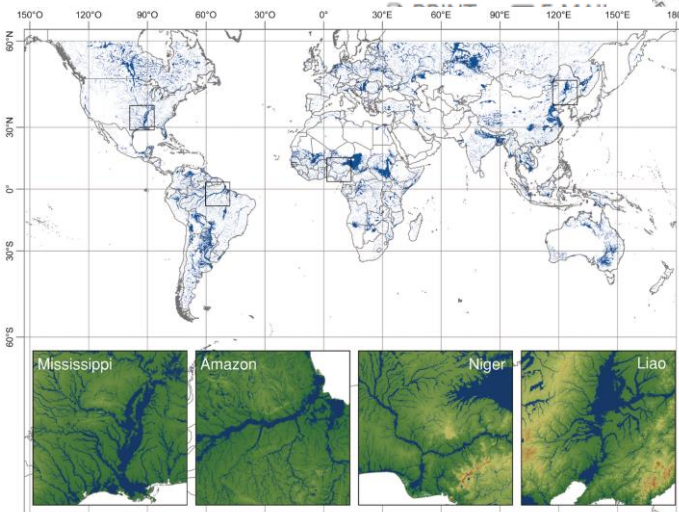
PUBLIC RELEASE: 15-JAN-2019

Researchers develop new zoning tool that provides global topographic datasets in minutes

ARIZONA STATE UNIVERSITY



Fluvial landscapes and the availability of water are of paramount importance for human safety and socioeconomic growth. Hydrologists know that identifying the boundaries of floodplains is often the first crucial step for any urban development or environmental protection plan.



Lazio

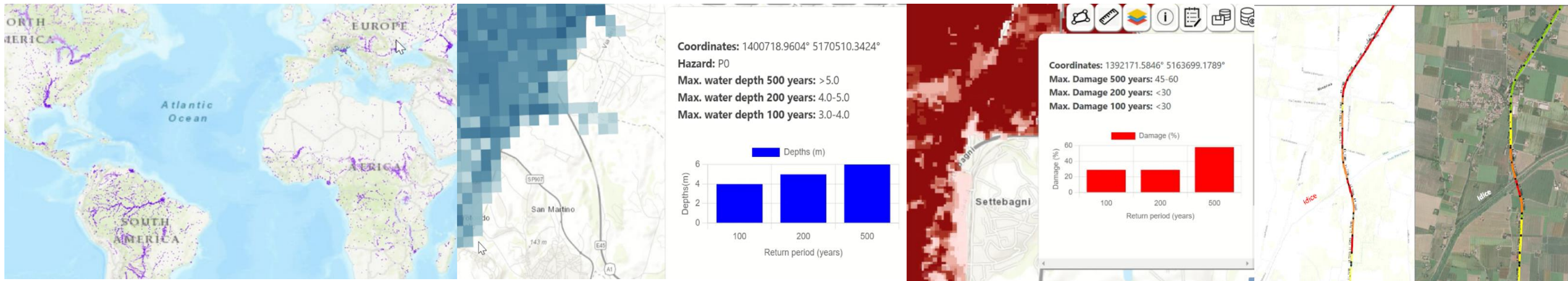
REBIT Insurance Flood Value proposition



Global High-resolution granular flood hazard data



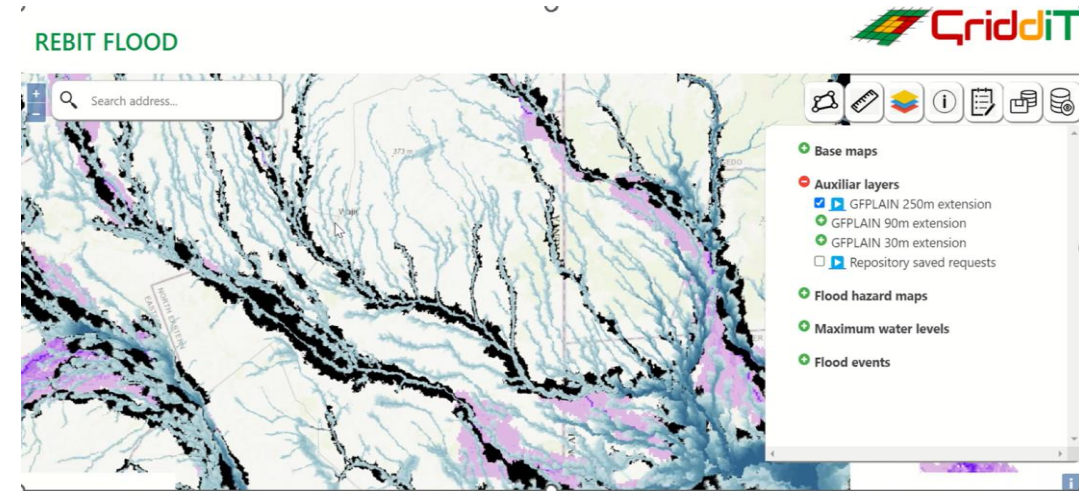
Parcel/building/asset portfolio-scale risk assessment



Geospatial intelligence & integrated assessment of assets at Flood risk

Geospatial intelligence & Flood analytics

Flood hazard and damage/cost analytics derived from science-driven numerical hydro-models to produce distributed and parametric assessment of assets at flood risk



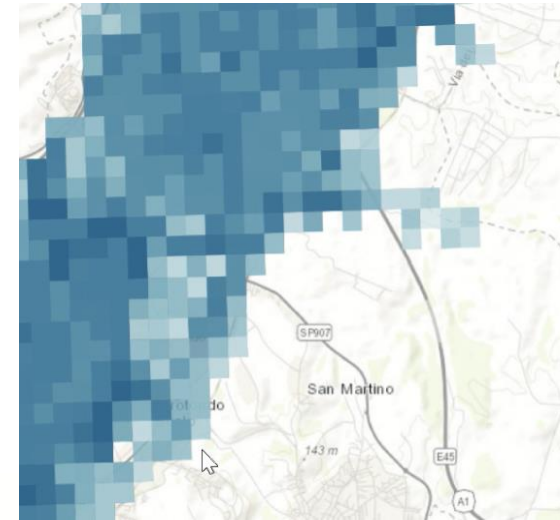
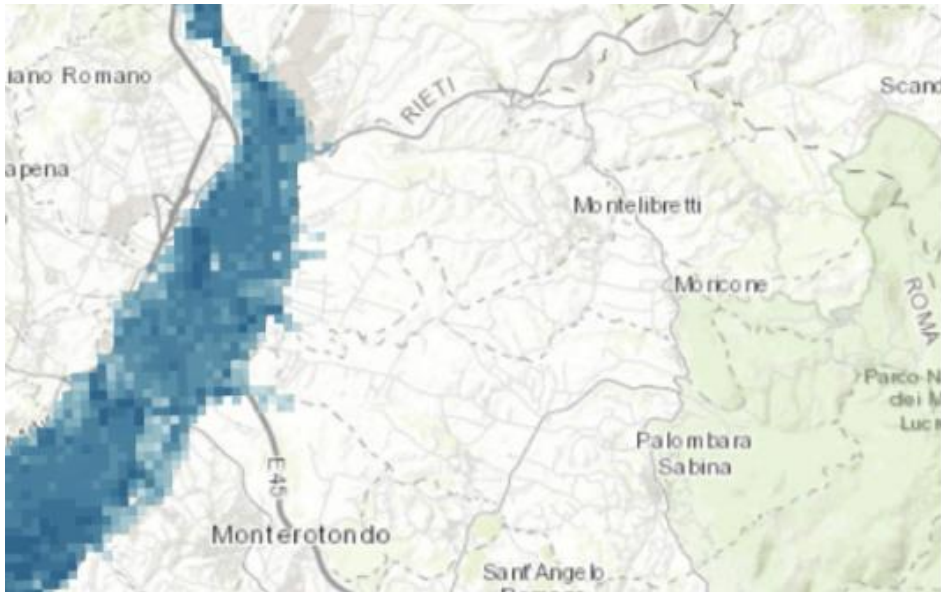
Global
Homogeneous
Flexible
Accurate
Scalable
Validated

Distributed parameters for insurance

Distributed mapping of maximum flood flow depths

Scaled to fit your needs resolution

Scale to project future climate uncertainties



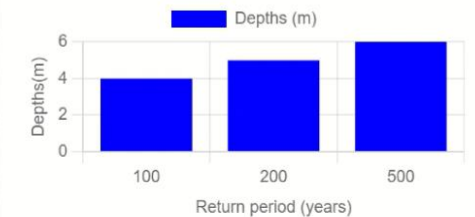
Coordinates: 1400718.9604° 5170510.3424°

Hazard: P0

Max. water depth 500 years: >5.0

Max. water depth 200 years: 4.0-5.0

Max. water depth 100 years: 3.0-4.0



Maximum water levels

+ Resolution 20 meters

+ Resolution 30 meters

+ Resolution 90 meters

- Resolution 250 meters

Italy

Return period: 500 yrs

Return period: 200 yrs

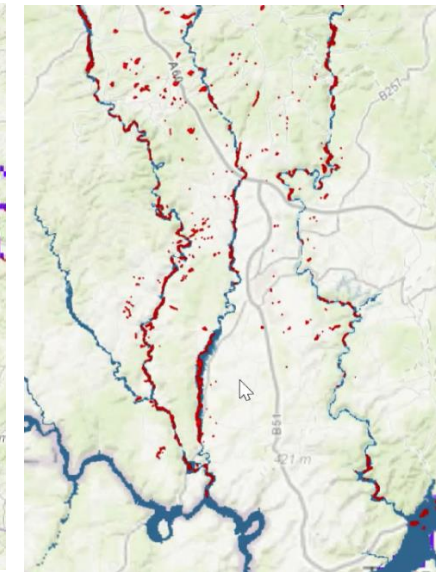
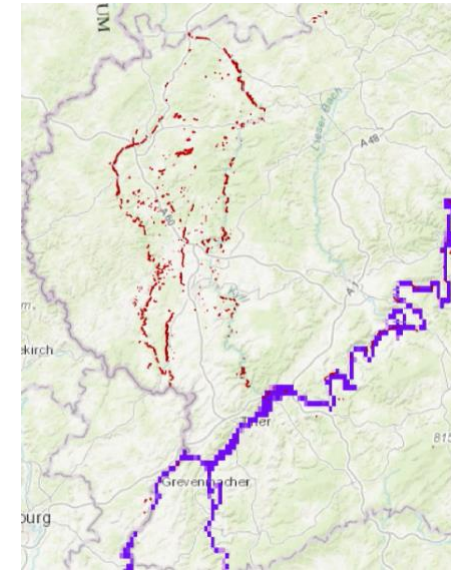
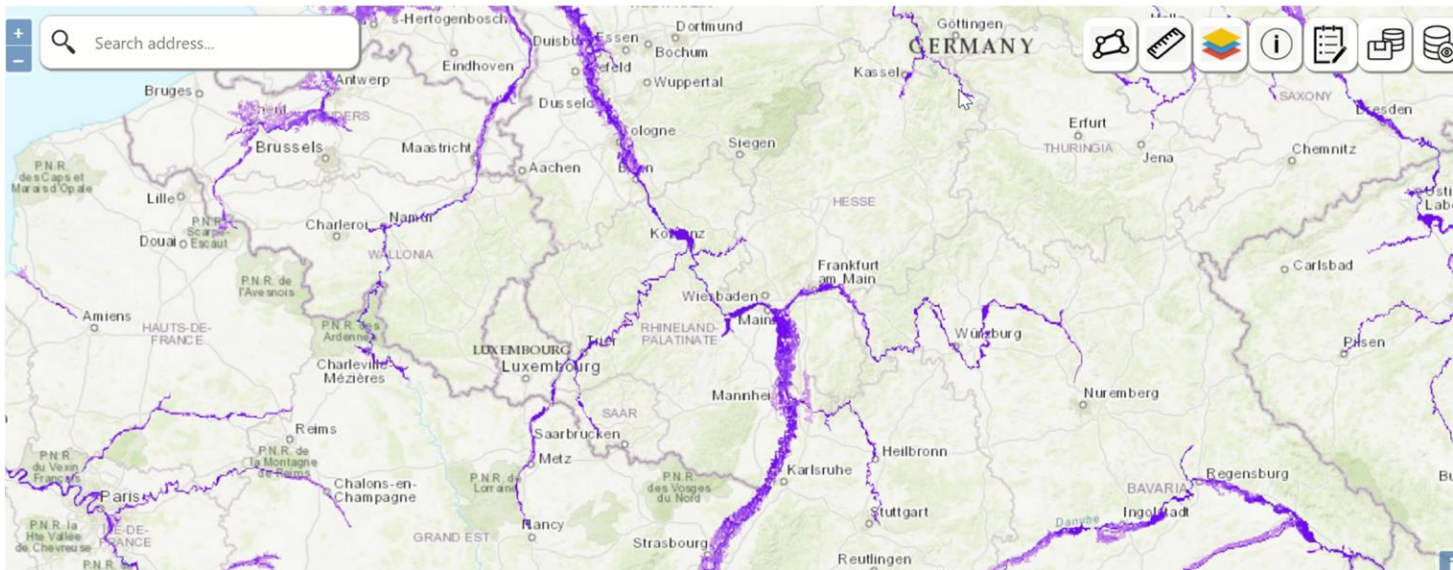
Return period: 100 yrs

Science-driven validation in real flood events

Mastering global flood hazard pre-event mapping

Post-event satellite observations proved **REBIT** accuracy and complete coverage of flood extents from large to remote/minor fluvial and urban systems

REBIT FLOOD



NO DATA

REBIT

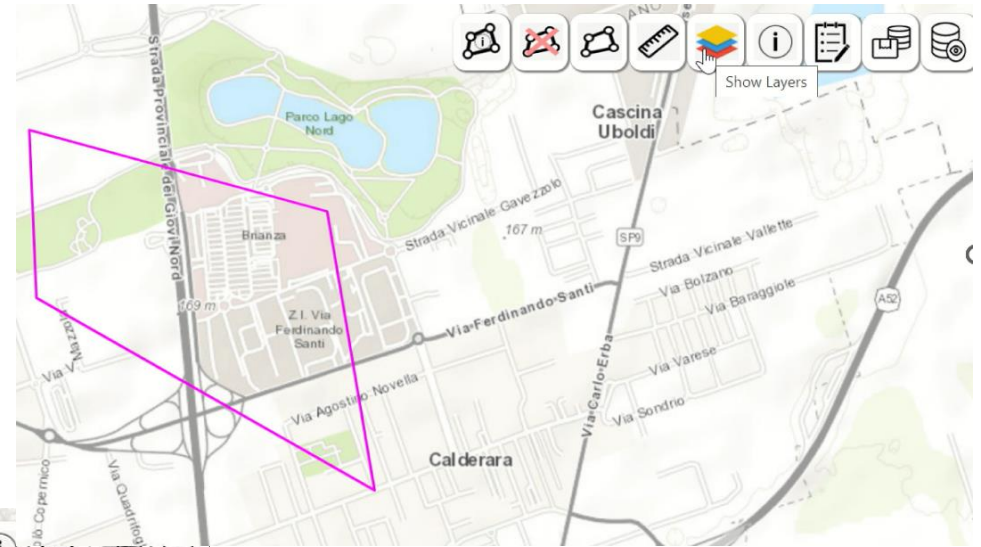
Focused on

**Pre-event
Assessment**



REBIT Solution Functionalities

- Expert-designed reporting
- Understanding flood perils
- Distributed geo-tagged reporting



Search address...

Id request:

Dat:

Attach file request: Nessun file selezionato

Save area in the DB

Area's description

Info:

Coordinates: 1246786.8021° 5437634.8764°

Hazard: P0

Max. water depth 500 years: 1.5-2.0

Max. water depth 200 years: 0.0-0.3

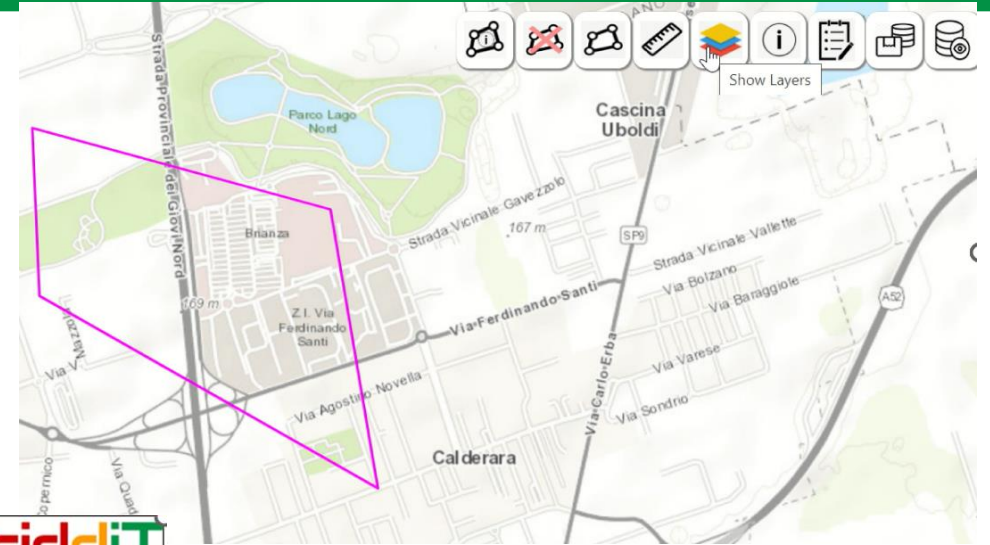
Max. water depth 100 years:

REBIT Solution flexibility

Works in complex domains

Scale to fit the area of interest

Matching user and case requirements

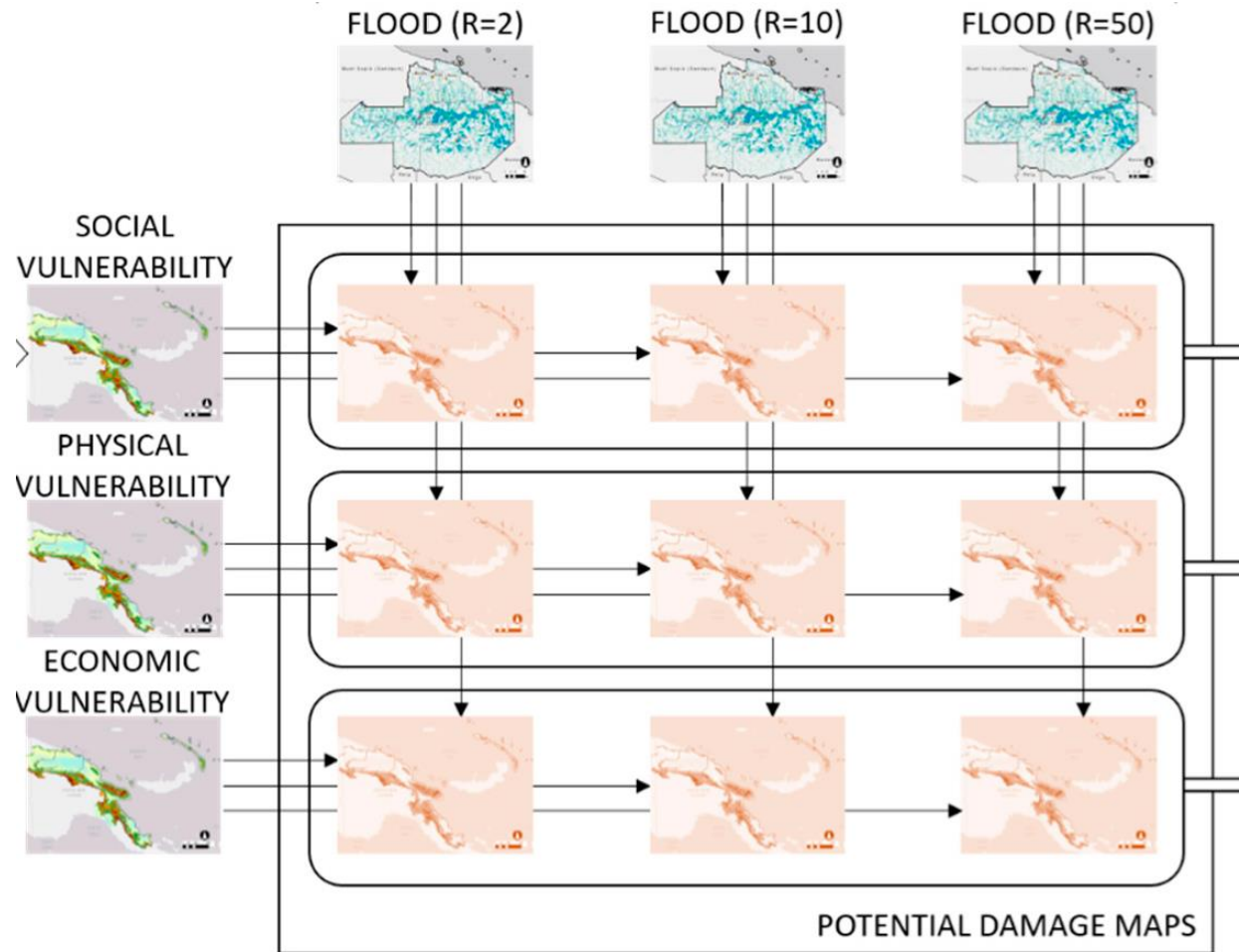


REBIT FLOOD

Search address...

- JRC Return period: 200 yrs
- Return period: 100 yrs
- ITALLY
- Maximum water levels
 - Resolution 20 meters
 - Marche (Italy)
 - Seveso (Italy)
 - Return period: 500 yrs
 - Return period: 200 yrs
 - Return period: 100 yrs
 - Resolution 30 meters
 - Resolution 90 meters
 - Resolution 250 meters
 - Italy
 - Return period: 500 yrs
 - Return period: 200 yrs

REBIT: From hazard to damage



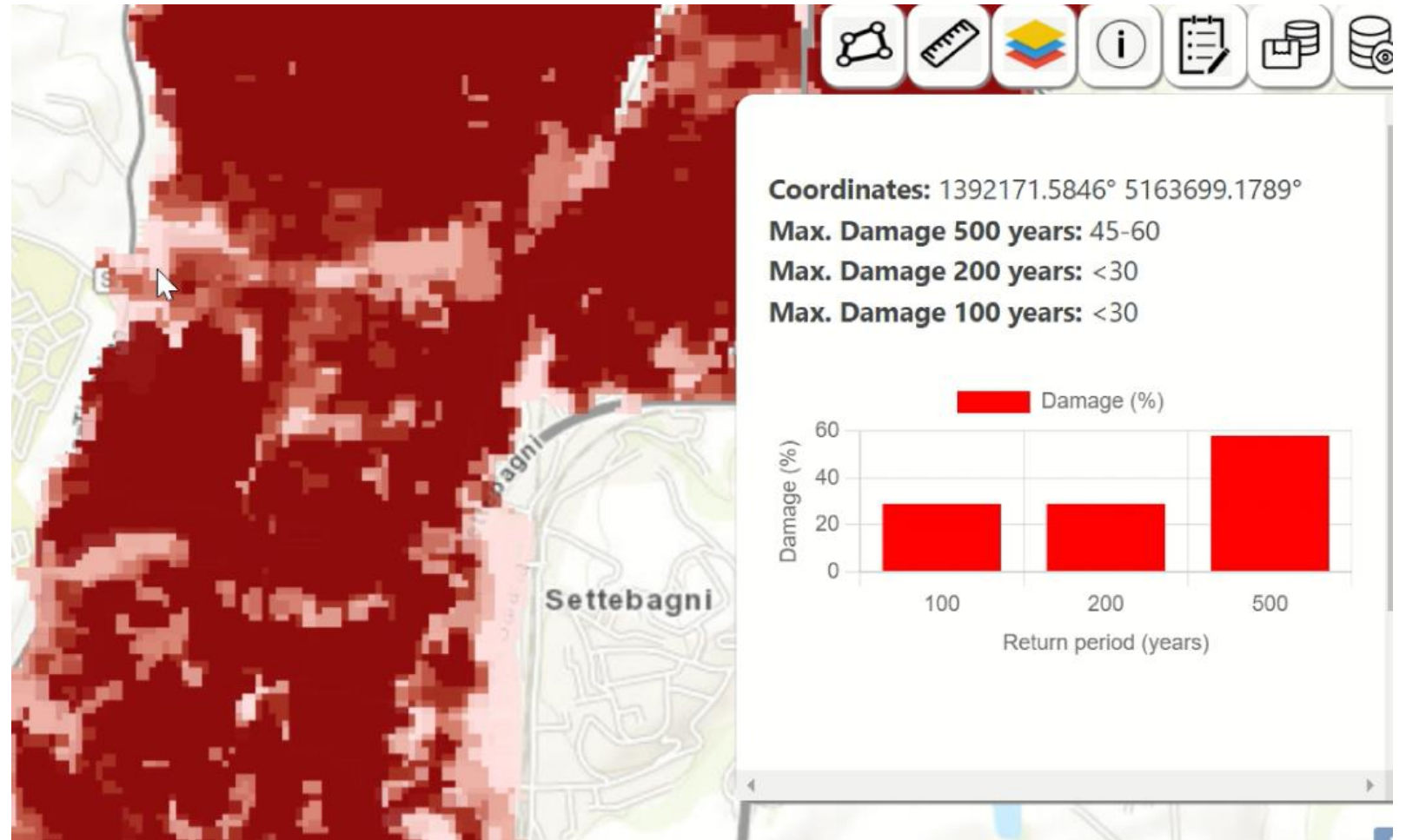
Intersection with publicly available or client provided data to retrieve elements at risk and flood vulnerability

Portfolio at flood risk

Accurate parametric
damage estimation

Flood damage at
scale

Integrated
Asset/Cost flood risk
assessment



REBIT Insurance Flood Value proposition

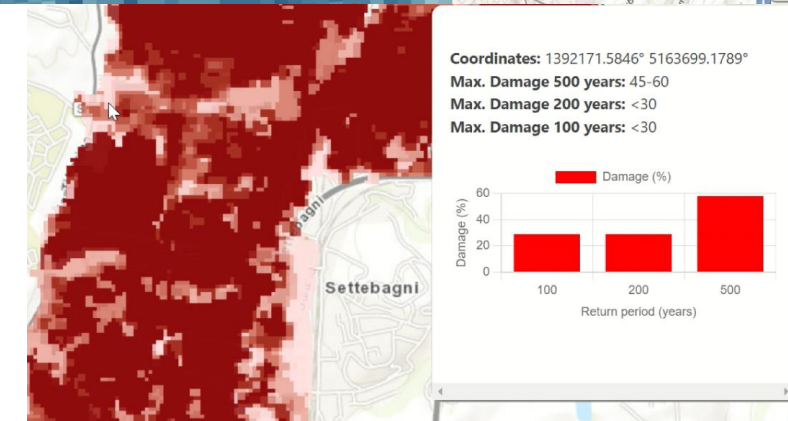
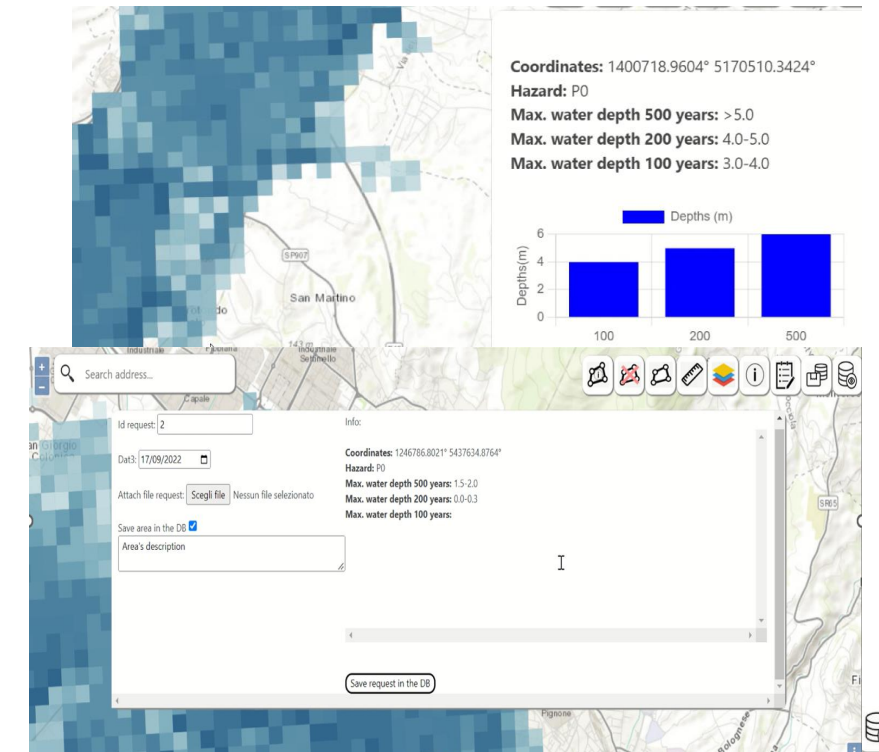
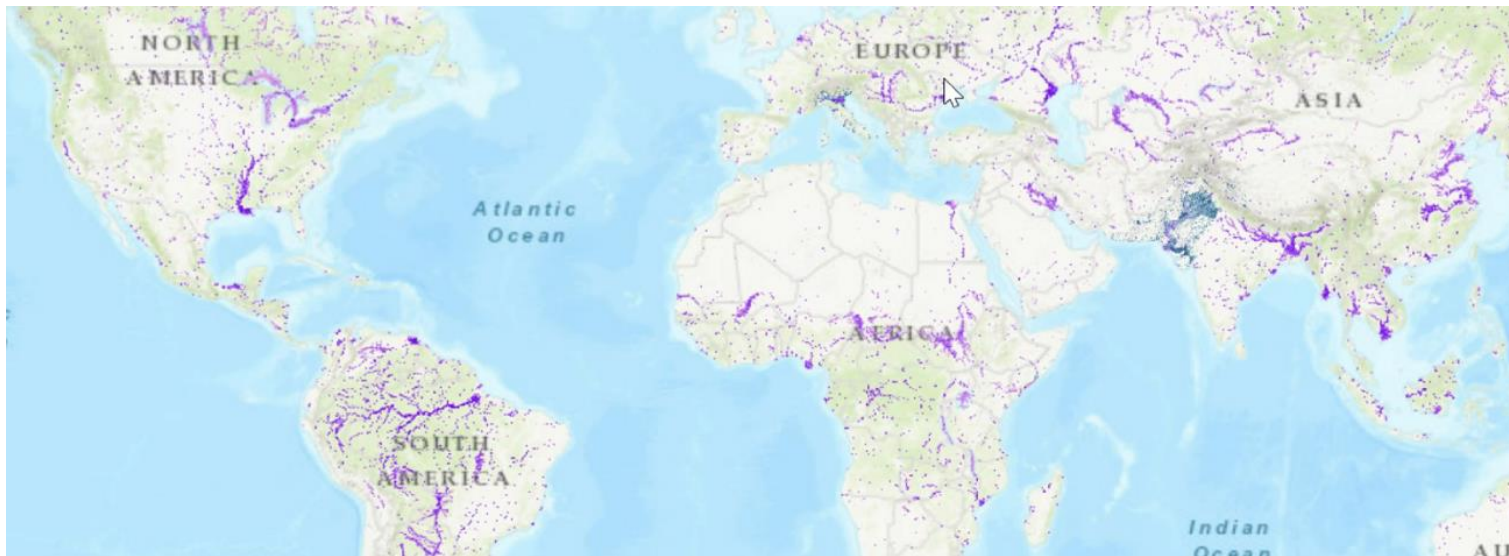
Global flood depths per frequency (Tr Climate)

Parametric pre-event flood analytics in urban remote areas

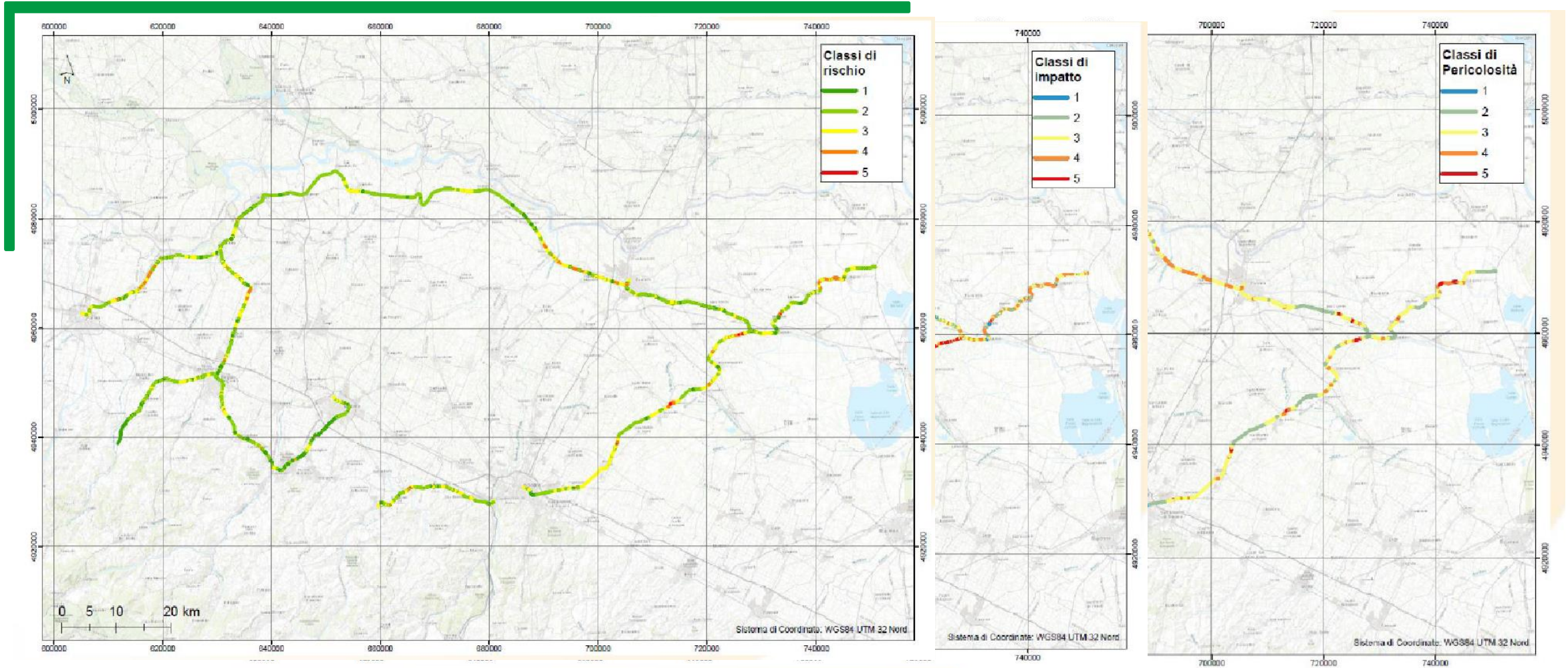
Integrated cost/damage analysis

Risk assessment and management

Expert reporting and geo-interface



From hazard to risk in infrastructure networks



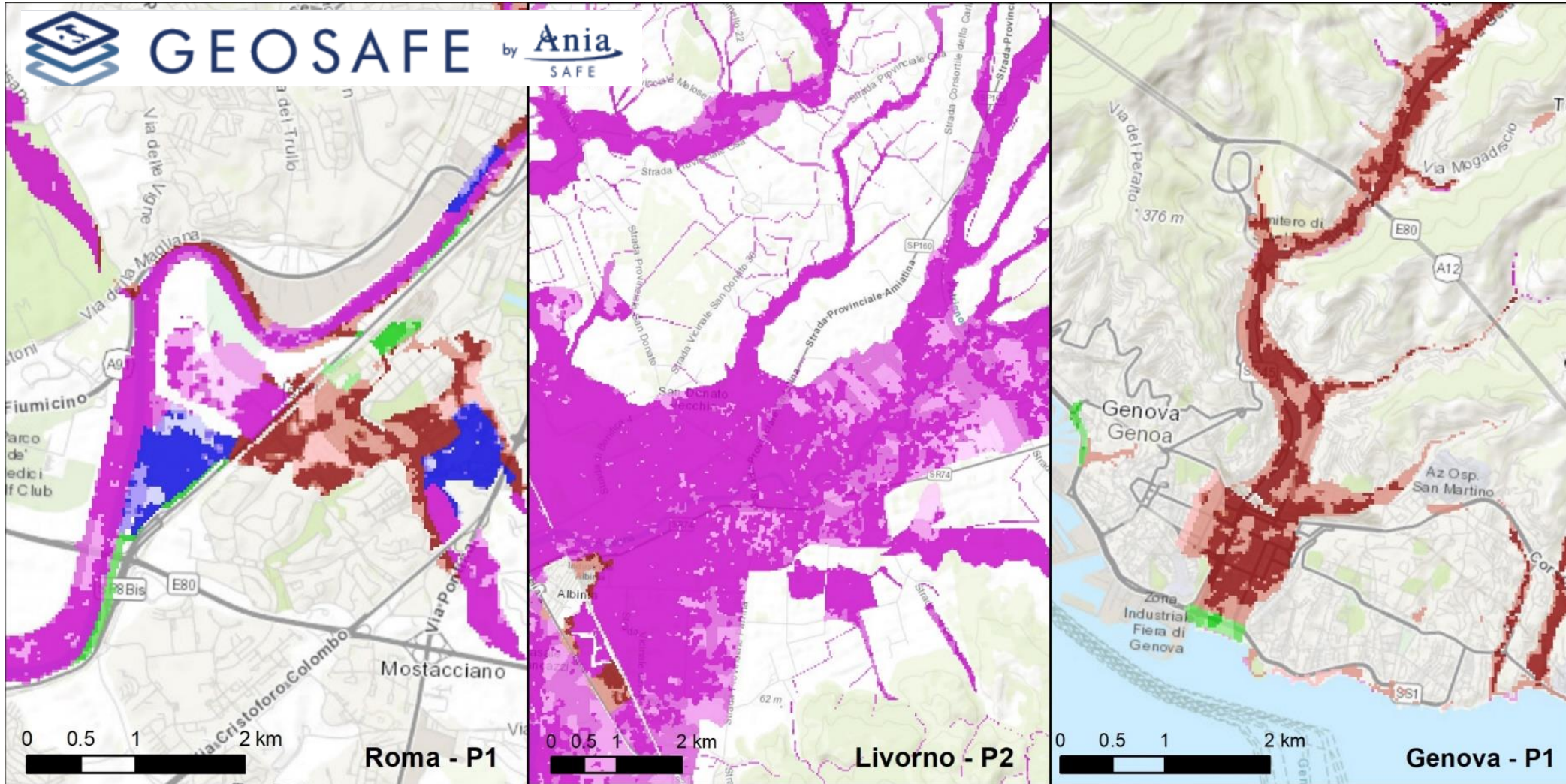
REBIT for ANIA GEOSAFE

PROGETTO ANIA GEOSAFE

Stima dei tiranti idrici e del massimo danno potenziale su scala nazionale



REBIT for ANIA GEOSAFE



REBIT for ANIA GEOSAFE



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Il sistema informativo geografico

A SUPPORTO DELLA VALUTAZIONE DEL RISCHIO

LEGGI DI PIÙ



Cos'è GeoSafe

GEOSAFE è un servizio innovativo pensato da ANIA SAFE, per tutte le imprese, come strumento di supporto alle diverse fasi del processo di business e di valutazione del rischio.



Cosa permette di fare

Il portale mette a disposizione delle imprese gli elementi per definire criticità e rischi correlati alle aree del territorio nazionale. Il servizio è erogato grazie a un sistema informativo geografico che aiuta il processo di valutazione delle tipologie di rischio presenti in una zona, e quindi la stipula dei contratti di assicurazione.



De


Il ris
nats
pro
dan

Mappe

rischio
sismico

rischio idraulico
e idrogeologico

rischio
climatico



Report
 Informazioni individuate

INPUT

Indirizzo Via Emilio Longoni, 00155, Roma, ITA
Coordinate Lat: 41.900675 Long: 12.60397

PERICOLOSITA' DEL TERRITORIO

Pericolosità idraulica nessuna
Pericolosità idrogeologica nessuna
Evento franoso No
Classificazione sismica

Indicatore = Rapporto Composizione + Indice Vecchiaia + Numero Indice (ISTAT 2011)
 R_c 35% = Edifici_{mu} Comune / Totale Edifici Comune
 I_v 53% = Rapporto Edifici < 1970 / Totale Edifici Comune
 N_c 13% = Edifici a carenze o insufficiente conservazione / Totale Edifici Comune

Indicatore ANIA idraulico = 1/10 (rischio nullo)
 1 X 2 3 4 5 6 7 8 9 10

Indicatore ANIA idrogeologico = 1/10 (rischio nullo)
 1 X 2 3 4 5 6 7 8 9 10


Indicatore ANIA sismico = 0/10 (I)
 1 2 3 4 5 6 7 8 9 10

VALORE	LIVELLO	DESCRIZIONE
8 - 10	ALTO	Frequenza alta Legame territorio pericolosità alto Carenze edificato
5 - 7	MEDIO	Frequenza media Potenziale pericolosità
2 - 4	BASSO	Frequenza bassa Difficilmente ipotizzabile



MAPPE

LOCALITA' - ORTOFOTO




PERICOLOSITA' IDRAULICA E GEOLOGICA



Pericolosità idraulica (Mappa ISPRA 2018)
 ■ Aree a pericolosità idraulica elevata P3
 ■ Aree a pericolosità idraulica media P2
 ■ Aree a pericolosità idraulica bassa P1
Pericolosità idrogeologica (Mappa ISPRA 2018)
 ■ Molto elevata P4
 ■ Elevata P3
 ■ Media P2
 ■ Moderata P1
 ■ Aree di Attenzione AA

PERICOLOSITA' SISMICA



Sismicità alta
 ■ Zona 1 ■ Zona 1-2A
Sismicità medio alta
 ■ Zona 2 ■ Zona 2-3 ■ Zona 2A
 ■ Zona 2A-2B ■ Zona 2B ■ Zona 2A-3A-3B
 ■ Zona 2B-3A
Sismicità medio bassa
 ■ Zona 3 ■ Zona 3A ■ Zona 3A-3B
 ■ Zona 3B ■ Zona 3S ■ Zona 3-4
Sismicità bassa
 ■ Zona 4

GRIDDIT Srl



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