



Co-funded by the
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EO4GEO webinar

Fast disaster response - satellite technologies for surface displacement monitoring

Introduction

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Faculty of Geodesy, University of Zagreb**

Zagreb, July 12th 14th, 2021 (online)



EO4GEO Project

Sector Skills Alliance project

„Towards an innovative strategy for skills development and capacity building in the space geo-information sector supporting Copernicus user uptake

Duration: 4 years from January the 1st, 2018

Budget: 3,85 M€

Partnership: (from 16 EU Countries),

26 organisations + 22 (initially) Associated Partners

from Academia, Companies and networks, many of them Members of the Copernicus Academy Network

Addressed Copernicus Areas:

Integrated Applications, Smart Cities, Climate Change

EO4GEO Outlines

EO4GEO aims to help bridging the skills gap between supply and demand of education and training in the **space/geospatial sector** by reinforcing the existing ecosystem and **fostering the uptake and integration of space/geospatial data and services in end-user applications.**

EO4GEO will work in an multi- and interdisciplinary way and apply innovative solutions for its education and training actions including: **case based and collaborative learning scenarios**; learning-while-doing in a living lab environment; on-the-job training; the co-creation of knowledge, skills and competencies; etc.

EO4GEO will define a **long-term and sustainable strategy** to fill the gap between supply of and demand for space/geospatial education and training taking into account the current and **expected technological and non-technological developments** in the space/geospatial and related sectors (e.g. ICT).

EO4GEO Activities

The strategy will be implemented by:

- creating and maintaining an ontology-based **Body of Knowledge for the space/geospatial sector** based on previous efforts;
- developing and integrating a dynamic collaborative **platform with associated tools**;
- **designing** and developing a series of **curricula** and a rich **portfolio of training modules** directly usable in the context of Copernicus and other relevant programmes;
- conducting a series **of training actions** for a selected set of scenario's in the three sub-sectors - **integrated applications, smart cities and climate change** to test and validate the approach.

A long-term **Action Plan** will be developed and endorsed to roll-out and sustain the proposed solutions.



EO4GEO Consortium

- **GISIG (IT) (EO4GEO coordinator)**
- **KU Leuven (BE)**
- **PLUS (AT)**
- **UJI (ES)**
- **GEOF (HR)**
- **UPAT (GR)**
- **FSU-EO (DE)**
- **UT-ITC (NL)**
- **UNIBAS (IT)**
- **IGiK (PL)**
- **Planetek (IT)**
- **IGEA (SI)**
- **EPSIT (IT)**
- **NOVOGIT (SE)**
- **GIB (SE)**
- **Spatial Services (AT)**
- **CLIMATE-KIC (NL)**
- **EARSC (BE)**
- **ROSA (RO)**
- **UNEP-GRID (PL)**
- **NEREUS (BE)**
- **VITO (BE)**
- **CNR-IREA (IT)**
- **VRI IES (LV)**
- **ISPRA (IT)**
- **ALFA (IT)**

Webinar: Fast disaster response - satellite technologies for surface displacement monitoring

- about the usage of EO, GNSS and GIS technologies for fast disaster response with emphasis on surface displacement monitoring and delivery of computed information to public.
- The webinar includes theory and practice about InSAR and GNSS technology and targets geo-professionals and researchers who are interested in disaster risk reduction and management of catastrophic events.



Webinar: Fast disaster response - satellite technologies for surface displacement monitoring

- The webinar is organized by the University of Zagreb Faculty of Geodesy EO4GEO team in collaboration with Erasmus+ projects GEOBIZ, SEED4NA and UN4DRR.
- Open to everybody

GEOBIZ Project



- Erasmus+ CBHE project
- „Business driven problem-based learning for academic excellence in geoinformatics”
- Focusing on practical part of technology driven courses in field of geo-studies (geodesy, geoinformatics, geography, ...)
- Business-academia cooperation should be platform for courses modernization
- Partners from Western Balkans and Moldova

SEED4NA Project



- Erasmus+ CBHE project
- „SDI & EO Education and Training for North Africa”
- Focused on raising capacities of academic institutions in NA regarding SDI & EO to foster development of SDI and better use of EO.
- North Africa partners from Alger, Egypt, Morocco and Tunis

UN4DRR Project



- Erasmus+ CBHE project
- „University Network for Disaster Risk Reduction and Management in Indian Ocean Rim”
- Aims to modernize academic programs related to Disaster Risk Reduction and management integrating GIS/RS applications.
-
- Indian Ocean Rim partners from Indonesia, Maldives and Sri Lanka



Presenters

- Dr. sc. Marijan Grgić, postdoctoral researcher, Chair of State Survey
- Assist. prof. Danijel Šugar, Chair of Satellite Geodesy
- Prof. Željko Bačić, Chair of Satellite Geodesy

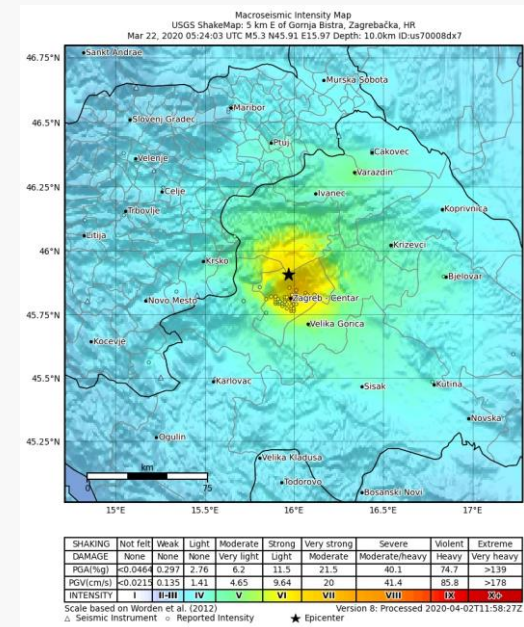


Topic

- Catastrophic earthquakes
- Any natural disaster with catastrophic consequences
- Occurring frequently worldwide

Zagreb earthquake

- Occurred on March 22nd 2020, at 06:24 CET
- Location: Zagreb and surrounding
- Epicenter: 7 km north of Zagreb center
- Hypocenter: 10 km depth
- Magnitude: 5,5 on Richter scale
- Human loss: 1
- Damage: 30.000 buildings

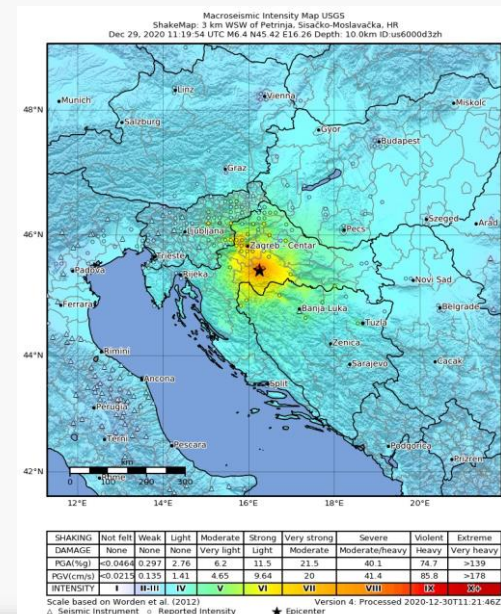


Zagreb earthquake



Petrinja earthquakes

- Occurred on December 28th 2020, at 6:28 CET and 29th December 2020, at 12:19 CET
- Location: vicinity of Petrinja
- Magnitude: 5,0 and 6,2 on Richter scale
- Human loss: 7
- Damage: 64.000 buildings



Petrinja earthquakes



Catastrophic earthquakes

- Cause:
 - Damage
 - Human loss
 - Panic
 - Humanitarian crisis
 - Lack of goods



Catastrophic earthquakes

- Require fast reaction of:
 - Rescue teams
 - City & State services
 - Police (security)
 - Communication services
 - Military
- Therefore, civil protection plans and services are created

Catastrophic earthquakes

- Regardless to the level of civil protection organization and available resources to conduct rescue and recovery activities natural events with catastrophic consequences are always resulting in situations in which capacities of rescue services are overloaded and insufficient.
- Support is usually needed from everybody who can offer it ...

Panic/Fear

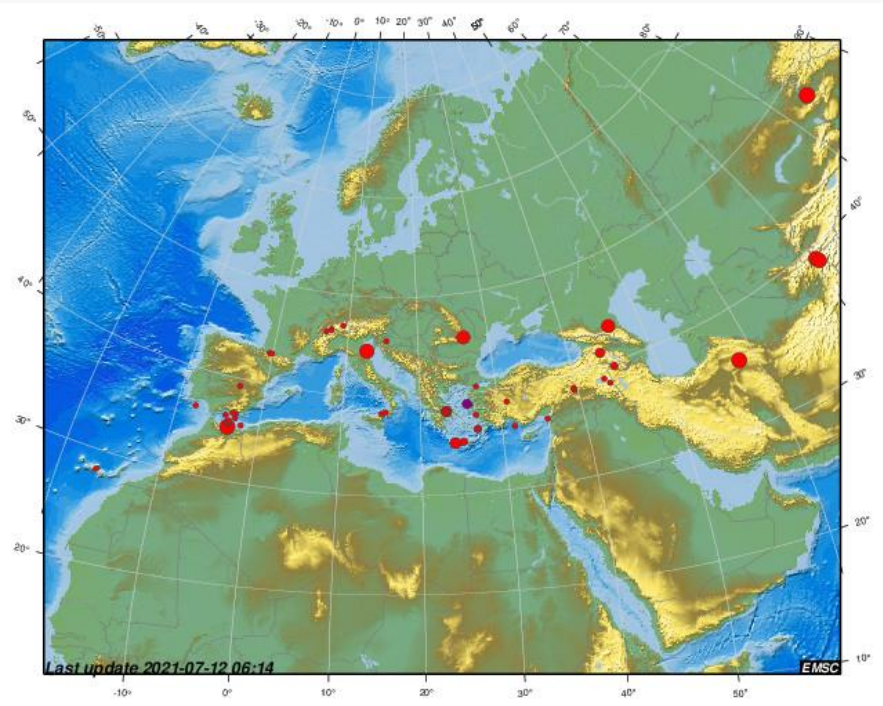
- Appears usually in case of catastrophic earthquakes
- In very first minutes it is rather shock (panic) followed by fear.
- In following hours and days level of negative feelings relate, beside visible rescue activities, to the level and quality of information provided to
 - Rescue services
 - Citizens
- If proper information lack – disinformation take over causing additional problems

Which information is required?

- Question raised by services and citizens:
 - What and where has happened?
 - Why has happened?
 - What are the consequences (human and material and geo-related)?
 - Who is in charge?
 - Where can I get help?
 - Where and how can I help?

Zagreb & Petrinja earthquakes

- European Mediterranean Seismological Centre – EMSC
- Citizens can provide testimonies and photos
- Several times after Zagreb and Petrinja earthquakes EMSC asked people from Croatia to stop sharing their info since they blocked the EMSC webpage ...



Contribution of professional geo-society

- Providing information about:
 - What and where has happened?
 - Why has happened?
- Geophysics, Seismologists
 - What are geo-related consequences
- Surveyors and other geo-professions



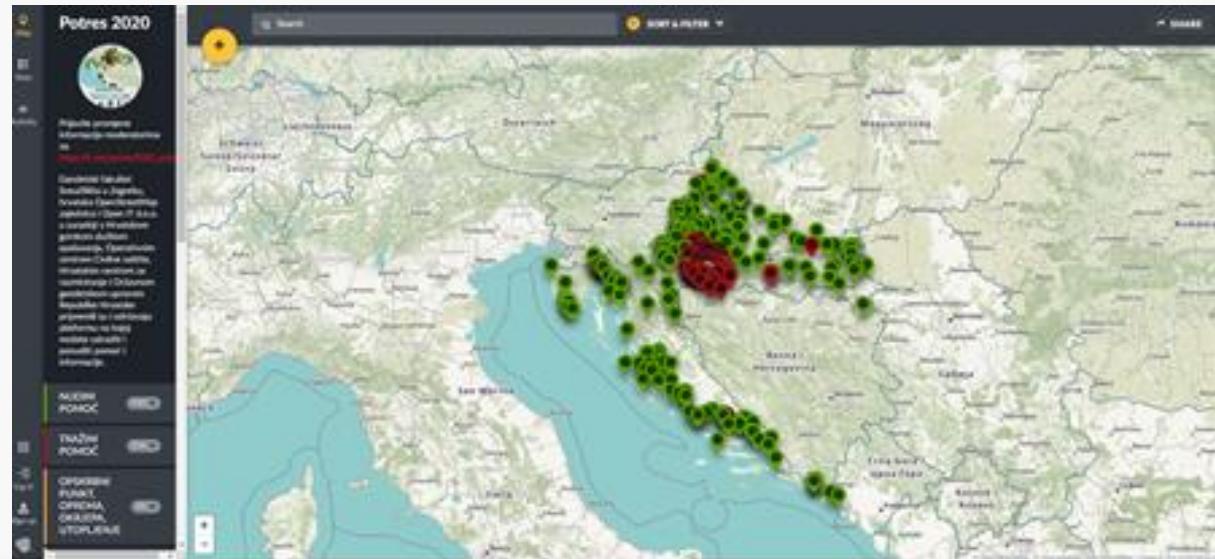
Contribution of professional geo-society

- Providing information about:
 - Where can I get help?
 - Where and how can I help?
- Geo & IT professionals

Examples of established web services

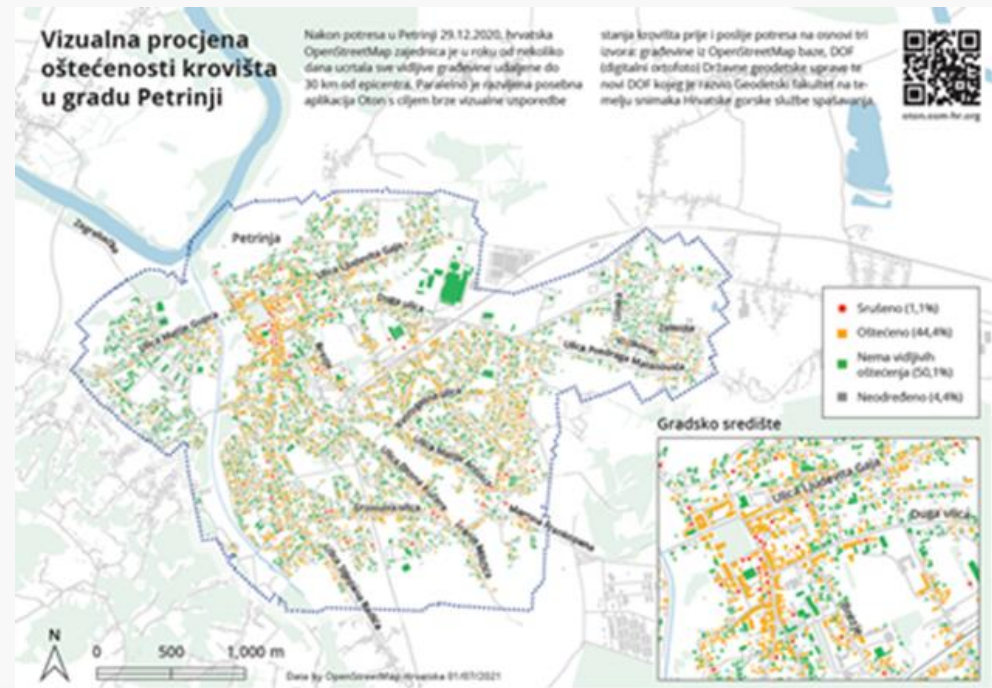
- Already on December 30th Faculty of Geodesy has, in cooperation with Croatian OpenStreetMap community and OpenIT company, established ushahidi-platform – digital interactive map with standardized categories for easy input of supply and need for assistance in an earthquake-threatened area.

<https://potres2020.openit.hr/>



Examples of established web services

- Following the Earthquake 2020 platform, another network application was created in collaboration with OpenStreetMap community developers named „Oton“ for assessing the condition of roofing in the Banije area.



What are geo-related consequences?

- Our focus is on surface displacements:
 - Horizontal & vertical
 - Static – permanent
 - Kinematic – temporal
- Using InSAR and GNSS satellite systems



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www.eo4geo.eu



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