European Federation of Geologists – Presentation

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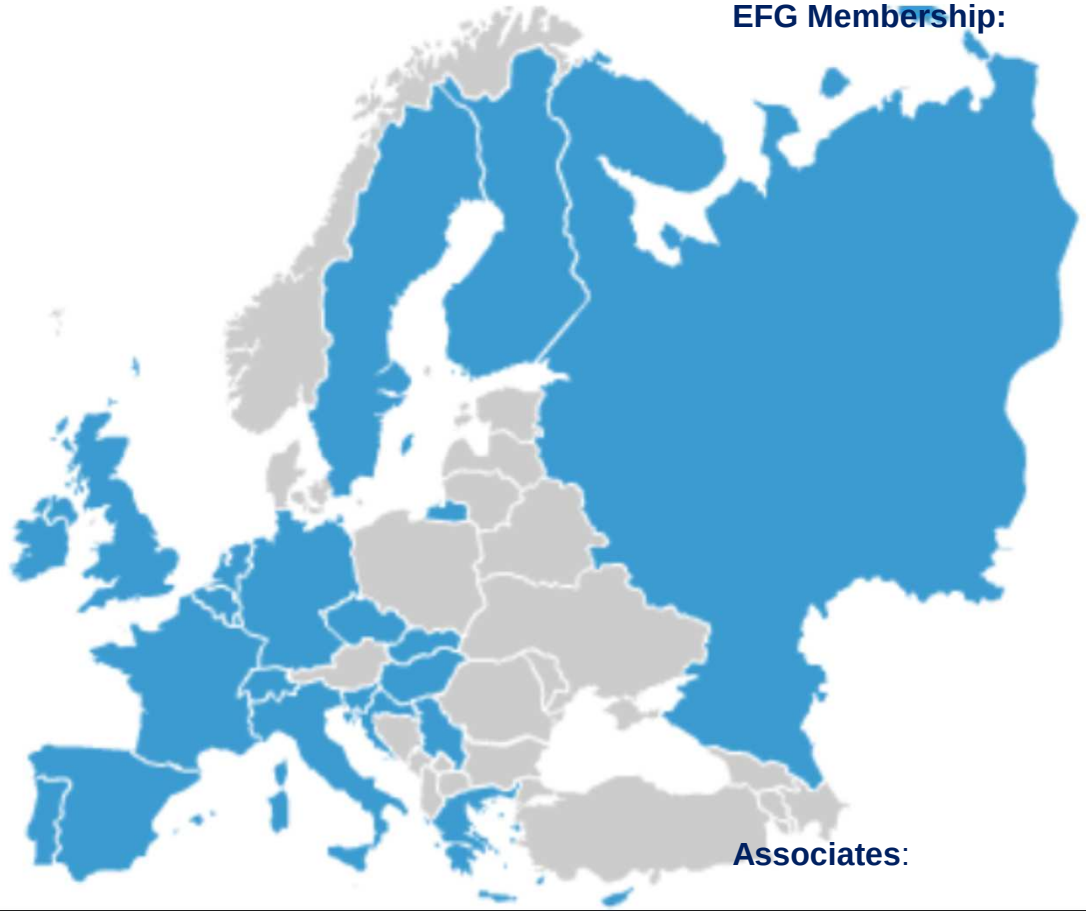
WG F MEETING, 17 October 2012
BRUSSELS, BELGIUM

What is EFG?

The EUROPEAN FEDERATION OF GEOLOGISTS, EFG, is a non-governmental organisation that was established in 1981 and today includes 21 national association members. It is the representative body for the geological profession in Europe.



EFG Membership:

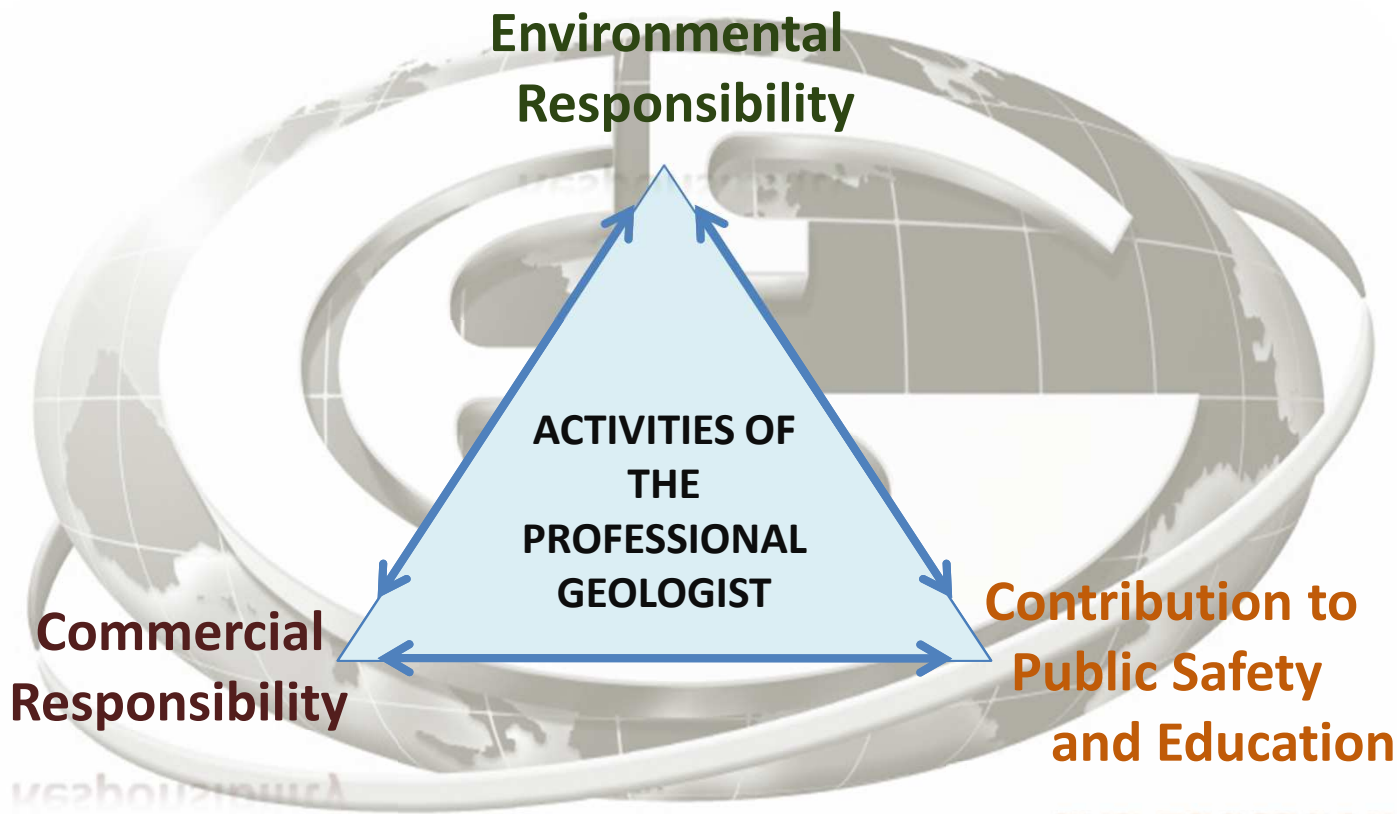
Belgium-Luxembourg, UBLG
Croatia, CGS
Cyprus, CAGME
Czech Republic, CAEG
Finland, YKL
France, FGS
Germany, BDG
Greece, AGG
Hungary, MFT
Ireland, IGI
Italy, CNG
Netherlands, KNGMG
Portugal, APG
Russia, NAEN
Serbia, SGS
Slovakia, UGAS
Slovenia, SGD
Spain, ICOG
Sweden, Na
Switzerland, CHGEOL
United Kingdom, GSL

Associates:

USA, AIPG
Canada, Geoscientists Canada

Goals of the EFG

EFG Mission: Promoting the profession and practice of geology and its relevance



Activities of the EFG

The EFG delivers its objectives through activity relating to:

- EU policies & environmental protection
- Education & outreach
- Free movement & professional titles
- Professionalism & ethics
- Supporting EFG Members

Others activities:

- Affiliate member of the International Union of Geological Sciences, IUGS
- Member of the Pan-European Reserves and Resources Reporting Committee, PERC
- Official Partner of Sustainable Energy Europe

IUGS
International Union of Geological Sciences

EFG Panel of Experts

To contribute to the development of European Policies of interest to geologists and geological issues around Europe.

How can we comunicate Geology at Policy level?

By Advice Documents

By European Worshops and Conferences

By Stand exhitions

By European Projects

How can we ensure a good qualitity contribution at Political level?

By experts on the diferent Geology activities

EFG Panel of Experts

- PE on Geothermal Energy
- PE on CO2 Geological Storage
- PE on Hydrogeology
- PE on Natural Hazards & Climate Change
- PE on Soil Protection and Geological Heritage
- PE on Resources and Reserves - Oil and Gas
- PE on Resources and Reserves – Minerals and their sustainable use

PE on Natural Hazards & Climate Change

- Coordinator: Andy Gibson, Andy.Gibson@port.ac.uk
- Number of experts: 43
- Countries :

  From EFG Members: Belgium, Czech R, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Portugal, Russian, Serbia, Slovakia, Spain, Sweden, Switzerland and United Kingdom

  No EFG Countries: Norway, Bulgaria

- EFG expert for the WG F: Dr Domenico Calcaterra, Full Professor of Engineering Geology, Federico II University of Naples

PE on Natural Hazards & Climate Change

Developed activity

- ✓ Workshop on "Managing Natural Hazards", Tenerife, 10 May 2012
- ✓ International geohazards conference: European Federation of Geologists and "Consiglio Nazionale dei Geologi d'Italia" (Italian National Council of Geologists), May 2007
- ✓ Geoscientific recommendations regarding natural hazards to be considered in the Seventh Framework Programme 2007 – 2013, March 2006
- ✓ EFG and EuroGeoSurvey amendements on the proposal for a Directive on the assessment and management of floods, April 2006
- ✓ Geo-scientific recommendations for the Floods Directive, September 2005
- ✓ Advice Document to the European Commission on Reducing the risk from natural hazards, March 2005
- ✓ Geo-scientific Manifesto on Civil Protection against Natural Hazards, presented in the consultation meeting, organized by the European Commission, 8th February 2005, Brussels
- ✓ EFG Advice Document to the European Commission on Civil Protection and Natural Hazards, March 2003

PE on Natural Hazards & Climate Change

✓Geo-scientific recommendations for the Floods Directive, September 2005

Teams at national or river basin level

It is recommended to set up expert teams at national or river basin level to quickly investigate the complete fluvial system to locate zones at high risk, to locate zones that are suitable for retention areas, to locate zones that require high priority in geophysical quality evaluation of flood defence systems, and so on. These teams should comprise hydrologists, geologists, geophysicists, remote sensing experts and engineering geologists.

EFG Group of experts on Natural Hazards
Brussels, September 2005

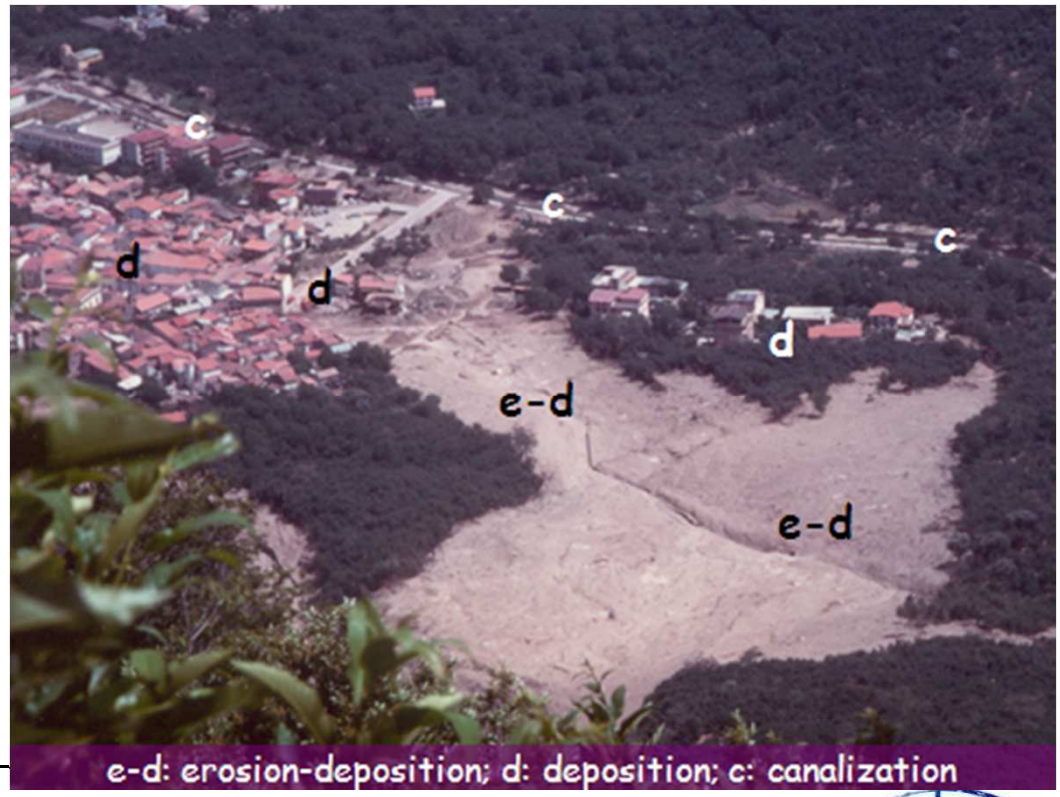
PE on Natural Hazards & Climate Change

✓ EFG and EuroGeoSurvey recommendations on the proposal for a Directive on the assessment and management of floods, April 2006

*The nature of soils as well as local **geological and hydrogeological** conditions are equally important to establish floodrisk management plans .*

Recommended to include:

- *Flood risk management plans should take into account the particular geographic, **geological, hydrogeological,** hydrologic conditions*
- ***Debris flow and mud flow** in countries where streams and rivers often cut narrow valleys with very steep slopes*
- ***Groundwater flood***



PE on Natural Hazards & Climate Change

✓ Geo-scientific Manifesto on Civil Protection against Natural Hazards, 8th February 2005, Brussels

Recommend to:

- Fully integrate Geology in land-use planning to avoid unnecessary disasters
- Install early warning systems (geo-indicators) in areas at risk
- Educate society to improve the understanding of mechanisms behind natural hazards

FEDERATION EUROPEENNE DES GEOLOGUES
EUROPEAN FEDERATION OF GEOLOGISTS
FEDERACION EUROPEA DE GEOLOGOS

Geo-scientific Manifesto on Civil Protection against Natural Hazards

Being prepared and taking preventive and mitigation measures

Supported by:

- European Federation of Geologists
- EuroGeoSurveys
- International Association of Engineering Geology
- European Association of Geoscientists and Engineers
- International Union of Geological Sciences
- World Geologists

EFG European projects

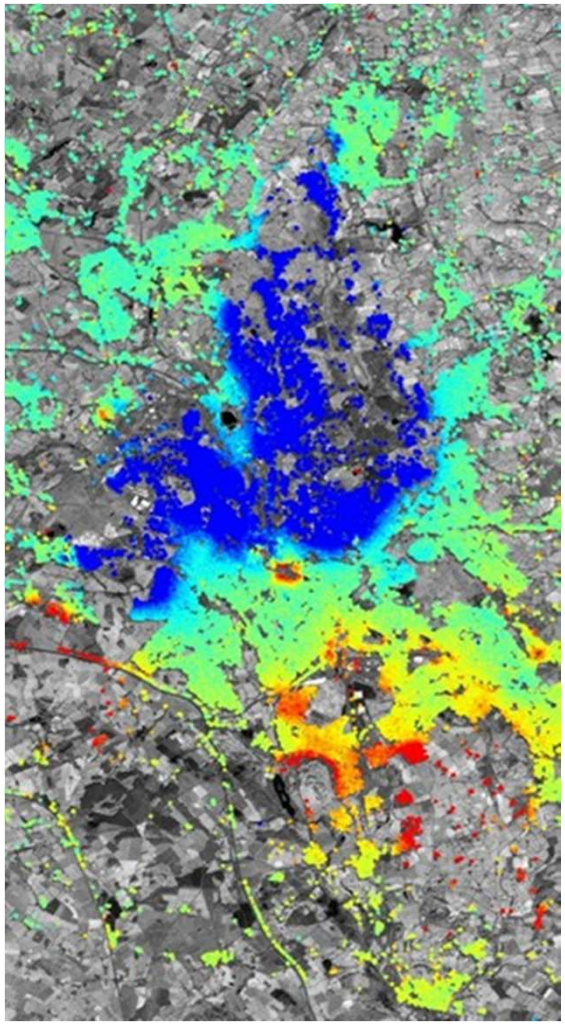
TERRAIN MOTION SERVICES

Ground motion information services in support of policies aimed at protecting the citizen against natural and anthropogenic ground motion hazards

Two linked Projects with EFG involvement:

Terrafirma – ESA funded project to evolve a sustainable market

PanGeo – free hazard information through the Urban Atlas



EFG European projects

What are geohazards?

Geohazards are natural and man-made phenomena that make the ground unstable.

Terrain motion can be related to subsidence, landslides, tectonic activity, flooding, coastal erosion, unstable buildings and infrastructure, and even poor engineering standards.

Risks from geohazards are increasing as cities become bigger.

Geohazards cost the EU hundreds of lives and billions of Euros each year

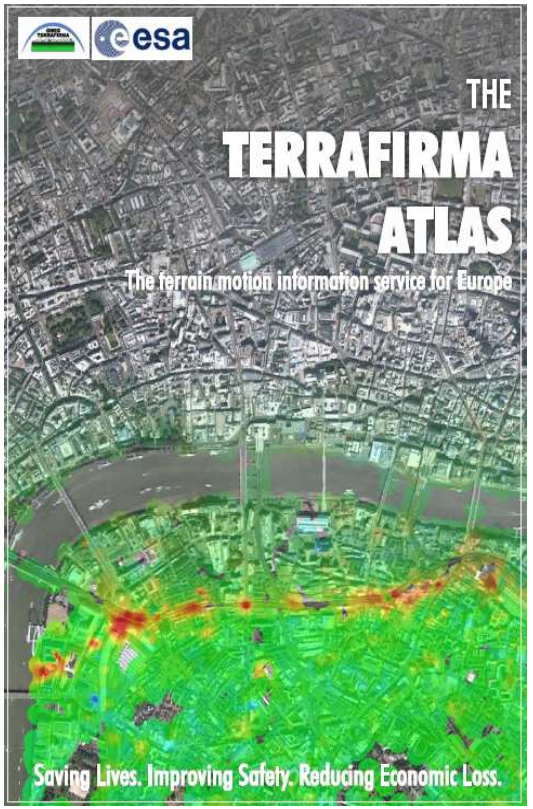
TERRAFIRMA

A pan-European Ground Motion Hazard information service

European Space Agency (ESA) funded under the GMES Service Element Program as part of the Global Monitoring for Environment and Security initiative of the European Union.

Terrafirma started in 2003 and ESA funding will continue until 2012. Its continuation beyond 2012 depends on users.

Terrafirma services help to identify and mitigate risk.



www.terrafirma.eu.com

TERRAFIRMA

Technology InSar: Interferometric Synthetic aperture radar

The technology underpinning Terrafirma services is SAR data analysis using Persistent Scatterer Interferometry (PSI).

PSI InSar compares the phase difference between ten to a hundred radar scenes to derive the measurement of terrain motion.

Benefits:

- Non invasive survey method able to measure millimetric motions
- Over wide areas in both urban and non-urban environments.
- A substantial global archive of scenes exists dating back to 1991.

These data, in combination with geological expertise, are delivered to users to identify and mitigate risk.

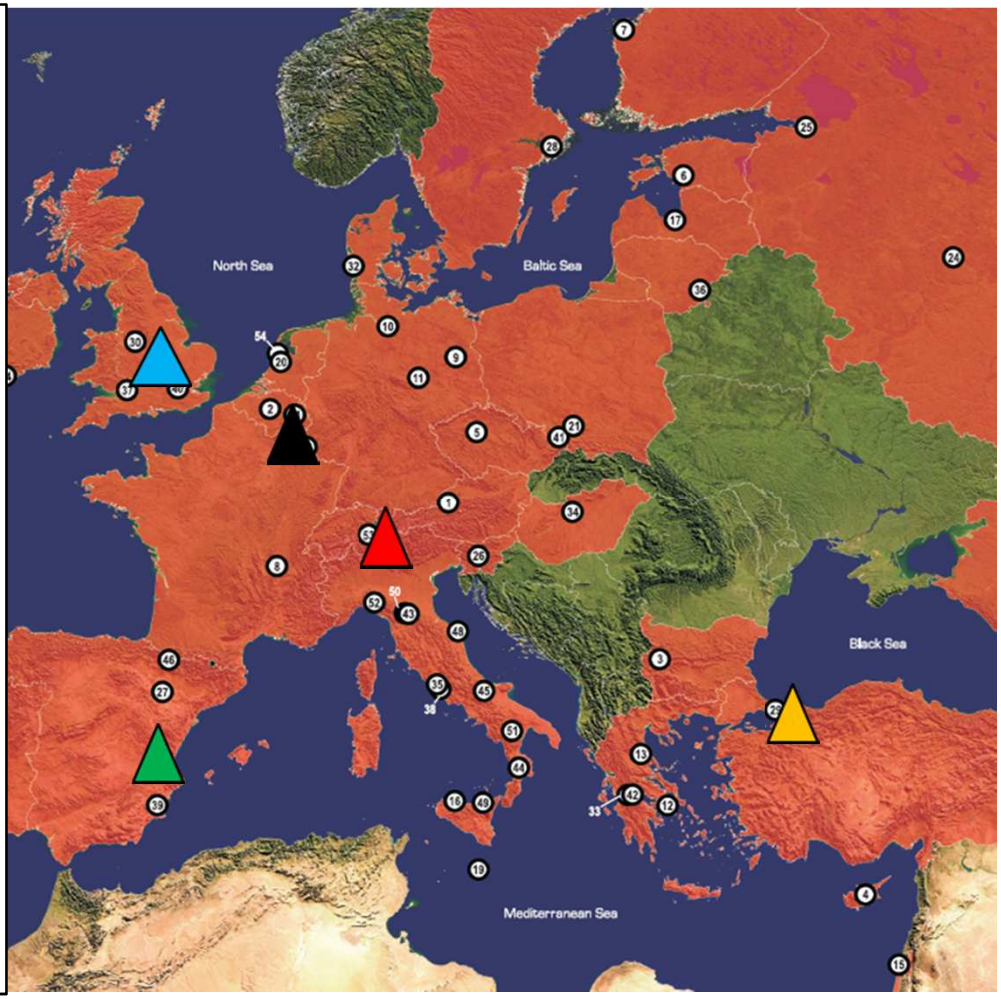
TERRAFIRMA

Coverage

Circles are Phases 1 and 2 (2003 – 2009)

Stage 3 service delivery

- Groundwater
- Flood
- Landslide
- Abandoned Mines
- Tectonics



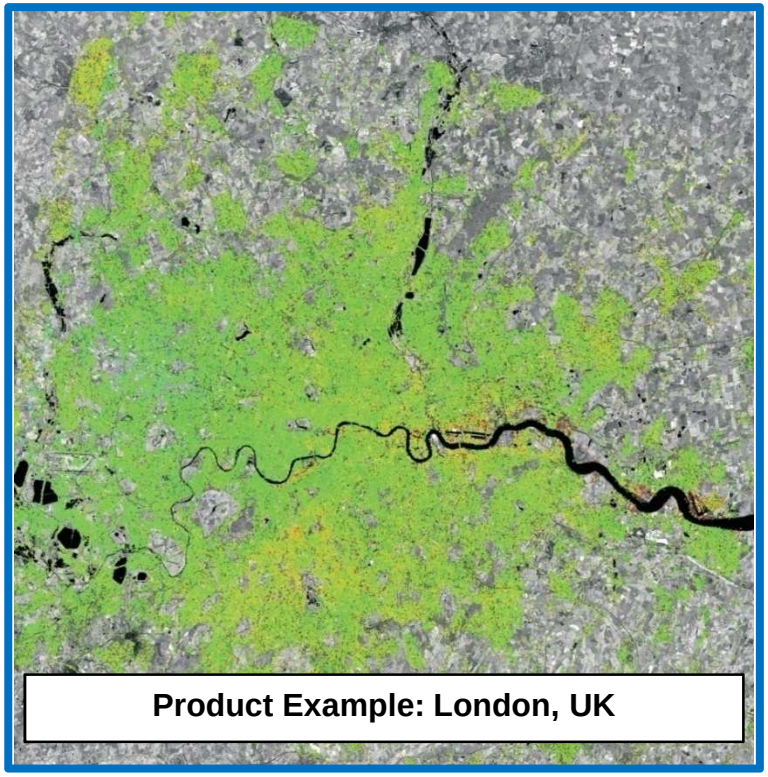
TERRAFIRMA

Flood Products

Objective: The flood theme is comprised of a portfolio of services that assess flood risk and advanced subsidence mapping service.

Terrafirma's Flood Products have been conceived for application in:

The flood defence monitoring service focuses on flood protection systems such as dikes and dams.



Product Example: London, UK

TERRAFIRMA

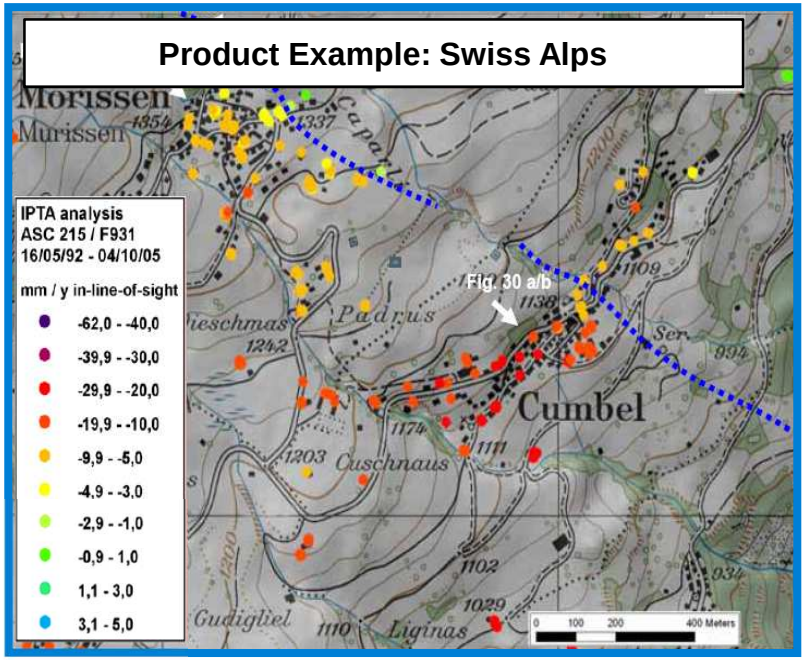
Landslide Products

Objective: deliver geo-hazard information for mass movement areas affecting urban areas, mountainous zones and infrastructure.

Terrafirma's Landslide Products have been conceived for application in:

- Mountainous areas where access is difficult

-Identification of full extent and rate of movements



PanGeo

Enabling access to Geological information in support of GMES

PanGeo is a 3-year EC FP7 R&D 'Space' project, started in Feb 2011 and will continue until 2014.

Objective: to provide free, online information on geohazards for 52 of the largest towns in the EU .

PanGeo

How will this be achieved PanGeo objective?

- **Make the products:**
  - Satellite ‘terrain-motion maps’ will be made available to National Geological Surveys for 2 towns in their country.
  - Geological Surveys make a GIS ‘Ground Stability Layer’ and ‘Geohazard Summary’ based on the terrain-motion maps and their own in situ data.
- **Make the products available via an INSPIRE-compliant web-portal:**
  - Add ‘tags’ to products to allow harvesting by a web-portal.
  - Merge with the EC’s 25m landcover/use data to provide exposure-indicators.
  - Portal based upon that produced for One-Geology Europe

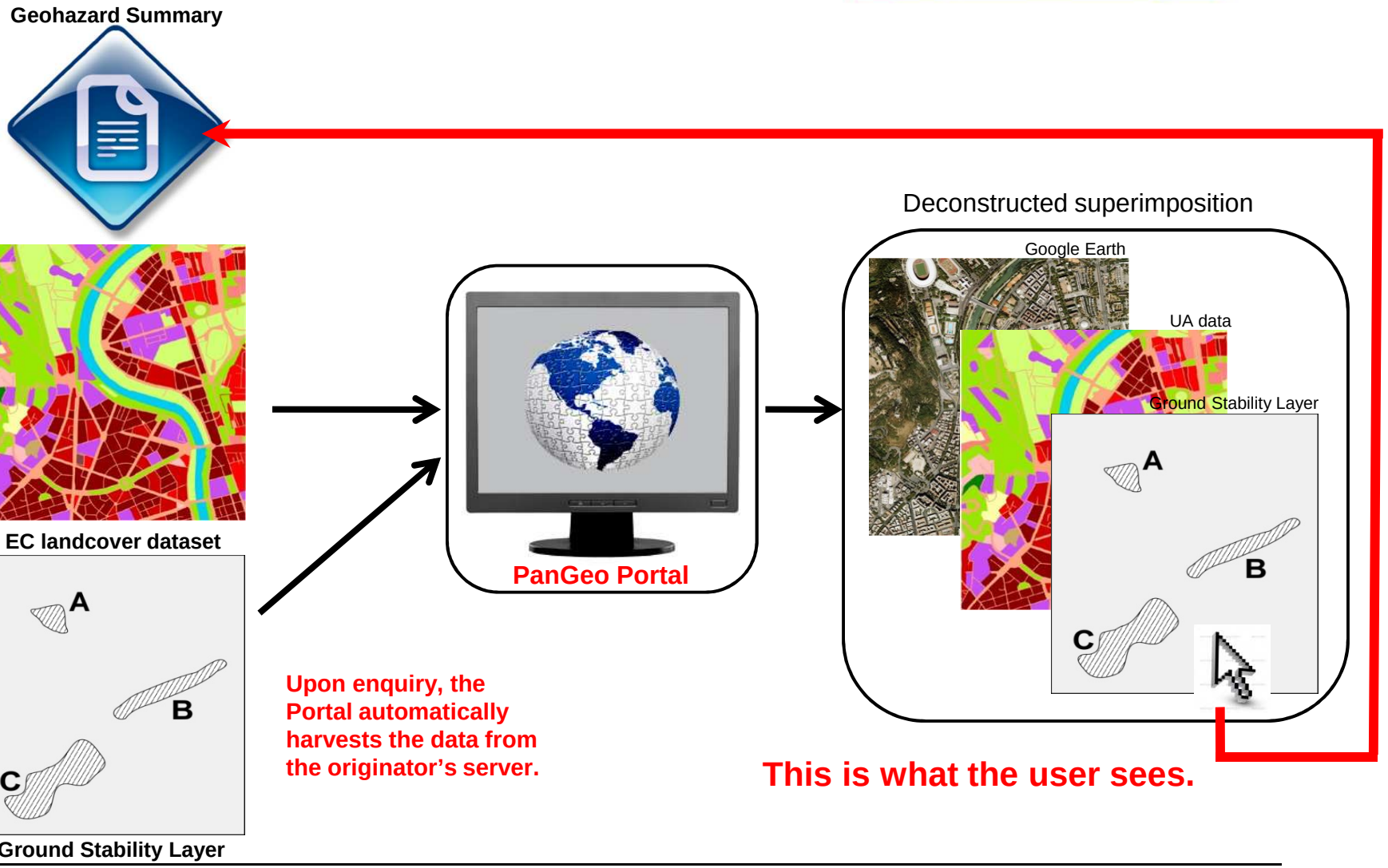
52 towns to be PanGeo'd

Count	Country	Town 1	Town 2
1	Austria	**Saltzburg**	**Vienna**
2	Belgium	**Brussels**	**Liege**
3	Bulgaria	**Sofia**	**Varna**
4	Cyprus	**Lefkosia**	Only one Urban Atlas town
5	Czech Republic	**Prague**	**Ostrava**
6	Denmark	**Copenhagen**	**Aarhus**
7	Estonia	**Tallinn**	**Tartu**
8	Finland	**Helsinki**	**Turku**
9	France	**Lyon**	**Toulouse**
10	Germany	**Berlin**	**Hannover**
11	Greece	**Athens**	**Larissa**
12	Hungary	**Budapest**	**Miskolc**
13	Ireland	**Cork**	**Dublin**
14	Italy	**Palermo**	**Rome**
15	Latvia	**Riga**	**Liepaja**
16	Lithuania	**Vilnius**	**Kaunas**
17	Luxembourg	**Luxembourg**	Only one Urban Atlas town
18	Malta	**Valetta**	**Gozo**
19	Netherlands	**Amsterdam**	**Rotterdam**
20	Poland	**Warsaw**	**Nowy Sacz**
21	Portugal	**Lisbon**	**Faro**
22	Romania	**Bucurest**	**Cluj-Napoca**
23	Slovakia	**Kosice**	**Presov**
24	Slovenia	**Ljubljana**	**Maribor**
25	Spain	**Zaragoza**	**Murcia**
26	Sweden	**Stockholm**	**Göteborg**
27	UK	**Stoke**	**London**

PanGeo Service concept

- For each town: GIS 'Ground Stability Layer' and compile a 'Geohazard Summary' document.
- PanGeo Portal will automatically intersect the Ground Stability Layer with 25m land cover data to reveal areas influenced by a geohazard.
- Clicking on the areas highlighted as influenced by a geohazard, will link to interpretative text in the Geohazard Summary document.
- All maps to be downloadable and compatible for ingestion into users' GIS.
- The PanGeo website will also provide comprehensive information on all aspects of the service.

PanGeo Service mechanics



Conclusions

- Currently, there is little contribution of Geology in on the assessment and management of floods
- Fully integrate Geology in land-use planning to avoid unnecessary disasters
- Teams at national or river basin level should comprise hydrologists, geologists, geophysicists, remote sensing experts and engineering geologists
- EFG PE on Natural Hazard is glad to participate on the WG F to improve the Geology contribution on the assessment and management of floods.

Thank you

For further information:

www.eurogeologists.eu

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