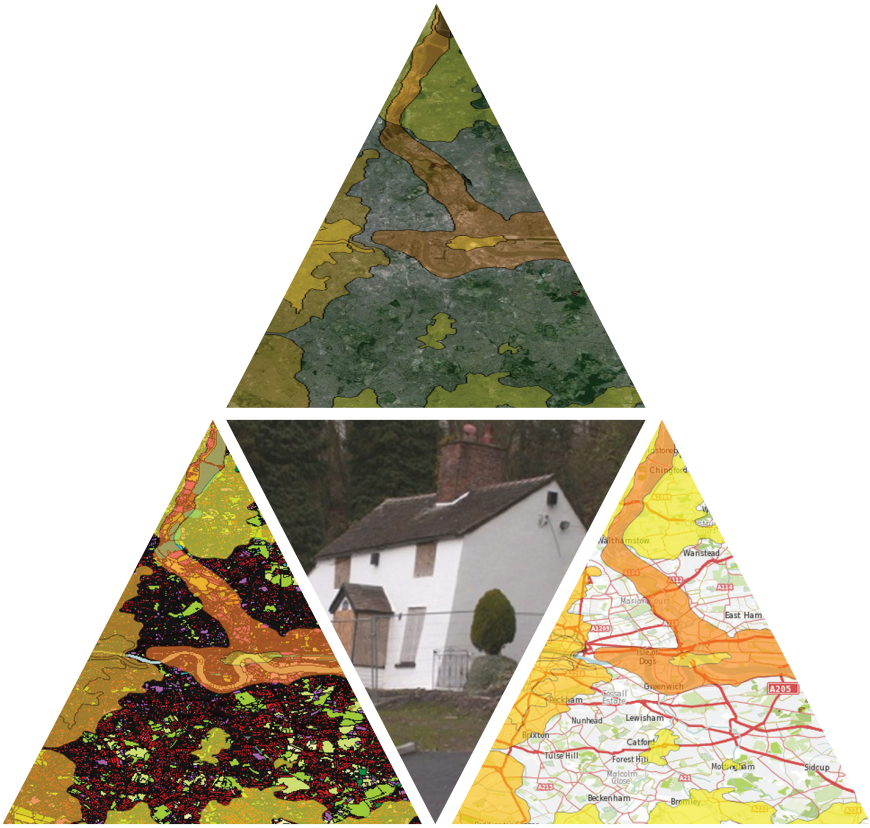
PanGeo

A Geohazard Information Service for Europe



www.pangeoproject.eu

Overview

PanGeo is an online service that provides users with open access to geohazard information across European cities and towns down to a mapping scale of 1:10,000. **Geohazards** are natural and man-made phenomena that make the ground unstable and in a built environment can be both costly and dangerous. **PanGeo's** unique geohazard products have been created to improve decision making and reduce risk.

What are Geohazards?

In PanGeo, the geohazards include: earthquakes, landslides, mineral workings, groundwater abstraction and recharge, shrink and swell clays, soluble rocks, compressible ground, collapsible deposits, landfill and rockfall. Many of these geohazards manifest as subsidence.

Who is PanGeo aimed at?

- Local Authorities
- National Geological Surveys
- EU and EC policy makers
- Commercial businesses
- The Public

Which towns are included?

To date PanGeo covers 52 major towns and cities across 27 European countries which represents approximately 13% of the EU population. The vision for PanGeo is to increase our coverage within Europe to incorporate many more.

How is the service accessed?

Go to **www.pangeoproject.eu** to view towns and cities already available online. Navigate to "Access to PanGeo Data" and follow the instructions. All information is accessible online.

If you are interested in having PanGeo products generated for your town or city, please visit our website and either click on "PanGeo My Town" or email the contact team for further information and conditions.

www.pangeoproject.eu

Service

PanGeo provides open access* to validated and INSPIRE compliant geohazard products for cities and towns. Products are generated by the European geological surveys; using satellite derived terrain motion data and integrated with geological information.

Service products:

• **Ground Stability Layer (GSL)** which maps, using attributed vector polygons, all the areas of a given town that are affected by terrain motion.

• **Geohazard Description (GHD)** a document that describes the geological reasons for the discovered motions.

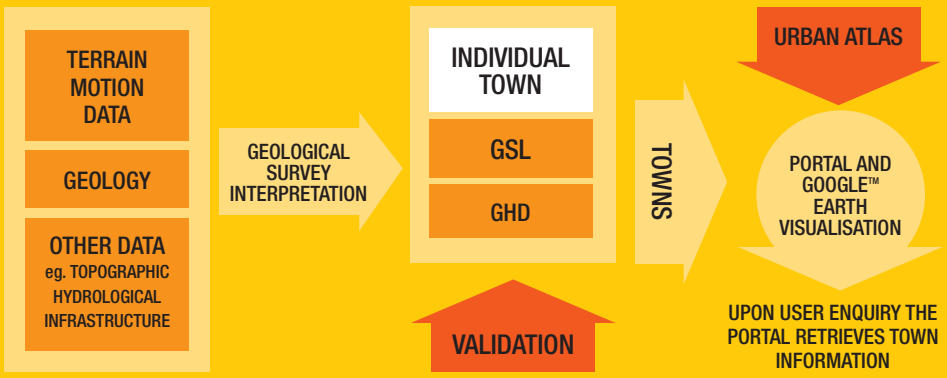
Access to Service

Access to the GSL and the GHD for a town is via the PanGeo website (www.pangeoproject.eu). A user can view the data on the PanGeo portal, built on One Geology Europe infrastructure, or via Google Earth. Upon user enquiry the portal retrieves information on individual town GSL polygons and automatically integrates it with the Urban Atlas dataset. The products can be downloaded and integrated into a user's own system.

The future for PanGeo is to increase the service provision to include new towns across Europe in a sustainable manner.

* free access to sites produced as part of the PanGeo EC FP7 Copernicus project.

Service Mechanics



www.pangeoproject.eu

The PanGeo Product for Rome

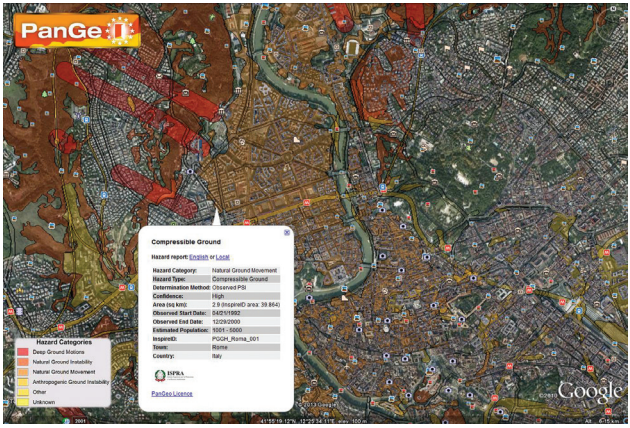
In the framework of PanGeo, The Geological Survey of Italy (ISPRA) in collaboration with the Urban Planning Department of Roma Capitale has developed a detailed Geohazard map of Rome.

The analysis of Roma Capitale has identified 31 areas of geological hazard, divided between observed hazards and potentially dangerous geological hazards.

The largest polygon corresponds to volcanic (uplift) of the Latium volcano. The Tiber River and its tributaries (which comprises potentially compressible ground of soft alluvial deposit) displays areas of ground motion as a consequence of the natural compaction of unconsolidated sediments combined with anthropogenic factors.

PanGeo has facilitated an improved knowledge of geohazards in the Roma territorial municipality. The knowledge of geohazards is mandatory to establish appropriate mitigation measures both for existing man-made structures and for urban planning purposes.

"PanGeo provides a positive stimulus for developing critical knowledge and practical applications for better management of the urban environment." *Source: Roma Capitale.*



Screen shot of PanGeo Portal. Ground Stability Layers visualized in Google™ Earth.

A sink hole in Stazione San Pietro street (www.roma.republica.it)

1:10,000 scale plan with GSL overlaid on Piano Regolatore Vigente, serie 3 - Sistemi e Regole.*

ISPRA
Istituto Superiore per la Protezione e la Ricerca Ambientale

ROMA CAPITALE

Adapted from: Succhiarelli C., et al., 2013, Il Progetto Europeo PanGeo: monitoraggio dei movimenti del suolo urbanizzato di Roma Capitale mediante dati satellitari PSI. 14a Conferenza Italiana Utenti ESRI; Comerci et al., 2013, Geohazard Description for Rome. PanGeo Project.

Benefits of PanGeo

- Improved knowledge of geohazards
- Open access to geohazard information
- Validated products within an INSPIRE compliant service
- Products can be easily ingested into users own systems
- Development of productive collaboration between users and Geological Surveys
- Incorporate landcover use and population statistics

Value statements

PanGeo products provide important indications and highlight potential geohazard areas where Local Authorities should focus activities. *Source: Roma Capitale.*

PanGeo information is very pertinent for use in urban planning documents concerning potential exposure of population at risk. *Source: AUAT (Toulouse).*

The PanGeo service is considered suitable for Space Planning and Disaster Preparedness. *Source: Roma Capitale.*

Integration with other programmes

Integration with complementary datasets including the “Urban Atlas” land use and population data. This aids generation of further statistics.

The statistics are a powerful outcome of the PanGeo project enabling geohazards to be related to land use and population.

Source: British Geological Survey

Screenshot of PanGeo GSL on Palermo, Italy and surrounding areas visualised in Google™ Earth.

Contact Team

Claire Roberts
claire.roberts@cgg.com
Carole Holway
carole.holway@cgg.com
NPA Satellite Mapping
Crockham Park Edenbridge
Kent TN8 6SR, UK
Tel: +44 (0)1732 865023
www.pangeoproject.eu

The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 262371.

Core Team

- NPA Satellite Mapping, UK
- British Geological Survey (NERC), UK
- Landmark Information Group, UK
- TNO, Netherlands
- Systèmes d'information à Référence Spatiale, France
- Consorci Institut de Geomàtica, Spain
- Bureau de Recherches Géologiques et Minières, France
- EuroGeoSurveys, Belgium
- European Federation of Geologists, Belgium
- AB Consulting, UK
- Tele-Rilevamento Europa T.R.E. s.r.l., Italy
- Gamma Remote Sensing, Switzerland
- Altamira Information, Spain

Geological Survey Team

- Geologische Bundesanstalt, Austria
- Institut Royal des Sciences Naturellesde Belgique, RBINS, Belgium
- University of Mining and Geology 'St. Ivan Rilski', Bulgaria
- Ministry of Agriculture, Natural Resources and Environment,Cyprus
- Ceska Geologicka Sluzba, Czech Republic
- Geological Survey of Denmark and Greenland
- Eesti Geoloogiakeskus, OÜ, Estonia
- Geologian tutkimuskeskus, Finland
- BGR, Germany
- Ethniko Kentro Viosimis Kai Aeiforou Anaptyxis, EKBAA-IGME, Greece
- Magyar Földtani és Geofizikai Intézet (MFGI), Hungary
- Department of Communications, Energy and Natural Resources, Ireland
- Istituto Superiore per la Protezione e la Ricerca Ambientale, ISPRA, Italy
- Latvijas Universitate, Latvia
- Lietuvos geologijos tarnyba prie Aplinkos ministerijos, LGT, Lithuania
- Service Géologique du Luxembourg, Luxembourg
- Malta Resources Authority, Malta
- Panstwowy Instytut Geologiczny, Poland
- Laboratório Nacional de Energia e Geologia, I. P., Portugal
- Institutul Geologic al Romaniei, Romania
- Statny Geologicky Ustav Dionyza Stura, Slovakia
- Geološki zavod Slovenije, Slovenia
- Istituto Geológico y Minero de España, Spain
- Sveriges Geologiska Undersokning, Sweden