EuroSDR

European Spatial Data Research

GeoData and Tools for Education and Research: A panorama of approaches from EuroSDR members (survey results)

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EuroSDR Survey: Initiatives for Providing Data and Tools for Research and Education

Motivation

Geographical data and analysis are a key asset in different levels of education and research.

Engaging with education and research communities is a precious investment to improve geodata value and reusability:

- Feedback on the data usability from different (pedagogical and/or scientific) perspectives
- Learning students to use complex geodata prior they use and promote them in practice
- Investigate the design of new products to answer emerging needs

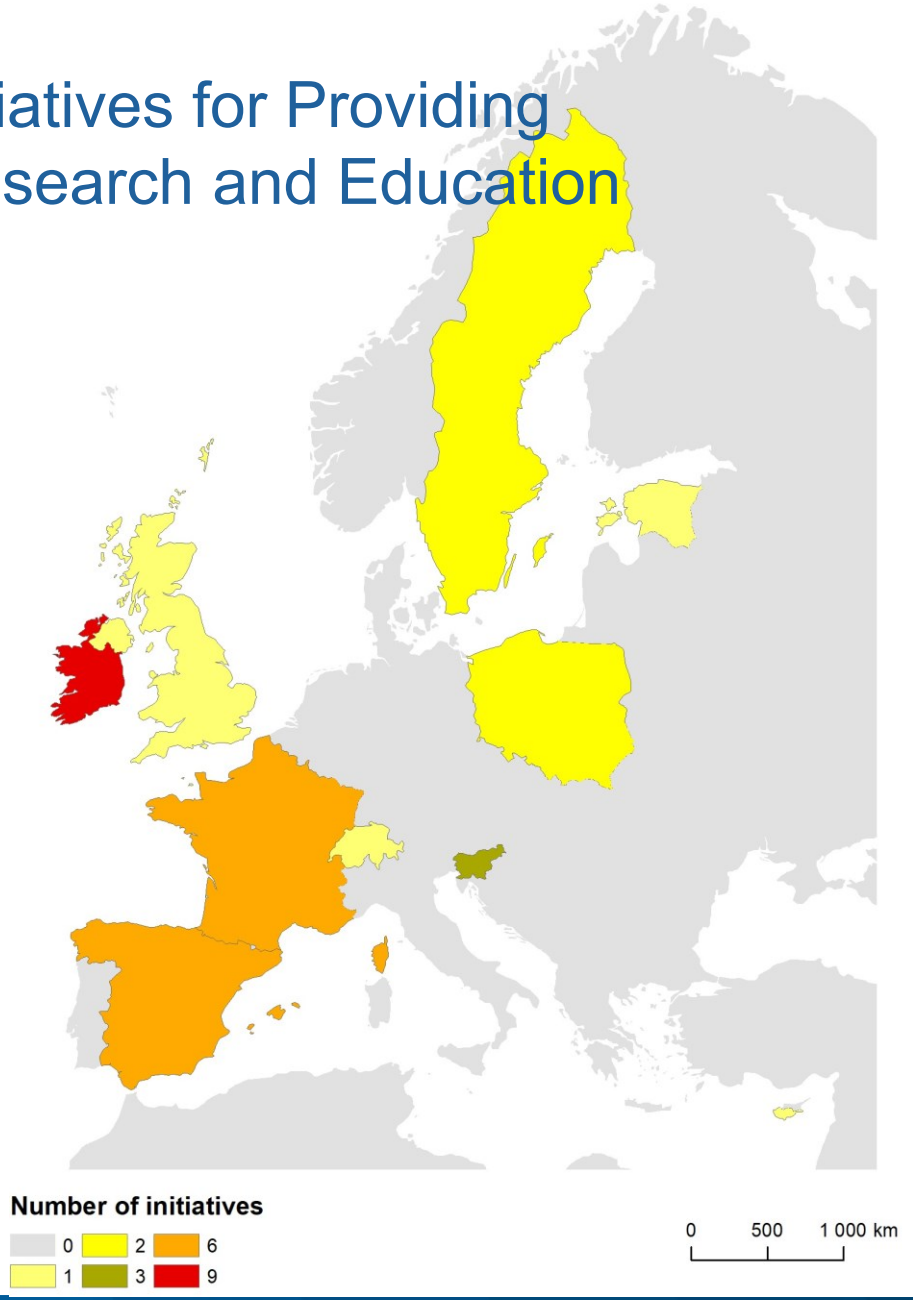
EuroSDR Survey: Initiatives for Providing Data and Tools for Research and Education

Survey objectives

- to study existing initiatives in terms of practices and projects at EuroSDR organizations to provide data and tools to pupils, students, teachers, and scientists for research and/or education purposes

Launched in May 2019; additional call in spring 2020

Responses from 10 NMCAs and 4 organizations; in total 32 initiatives



Questions

- **What?** (provide a short description of your initiative)
- *Eg : license, datasets, maps, digital platform to share pedagogic projects, sensors for teachers and pupils, minecraft services, escape games to learn to use data, …*
- **Target Group?** (describe associated user communities including their level expertise)
- **Partnership?** (incl. your organization, please describe how associated partnerships are arranged)
- **Level of adoption?** (describe the level of adoption of the relevant data and tools by the target group)
- **Level of maturity/maintenance?** (present the level of implementation maturity of your initiative including maintenance aspects)
- **Perspectives?** (future developments)
- **Url, references?** (add relevant reference materials related to the data and/or tools of your initiative)

Overview on reported types of initiatives and target audience

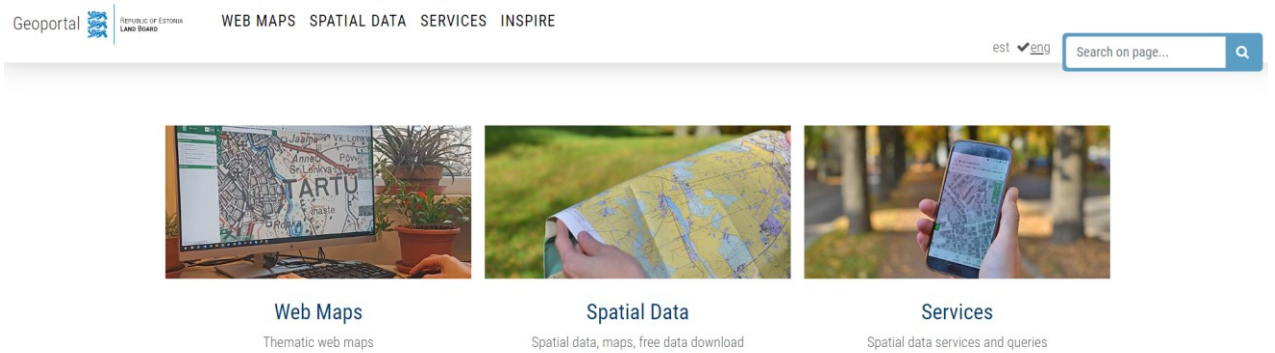
A diverse range of data and tools for education and/or research purposes are provided, such as:

- Open data geoportals
- Data portfolios for education on 1st, 2nd and 3rd level
- Professional training support
- Project/theme/research-oriented dataset for the general public
- Specific services for education, mapping and GI-promotion
- Data support for people with special needs
- Data support for gaming

Examples of initiatives

Open data geoportals

Geoportal of the Estonian Land Board https://geoportaal.maaamet.ee/eng/

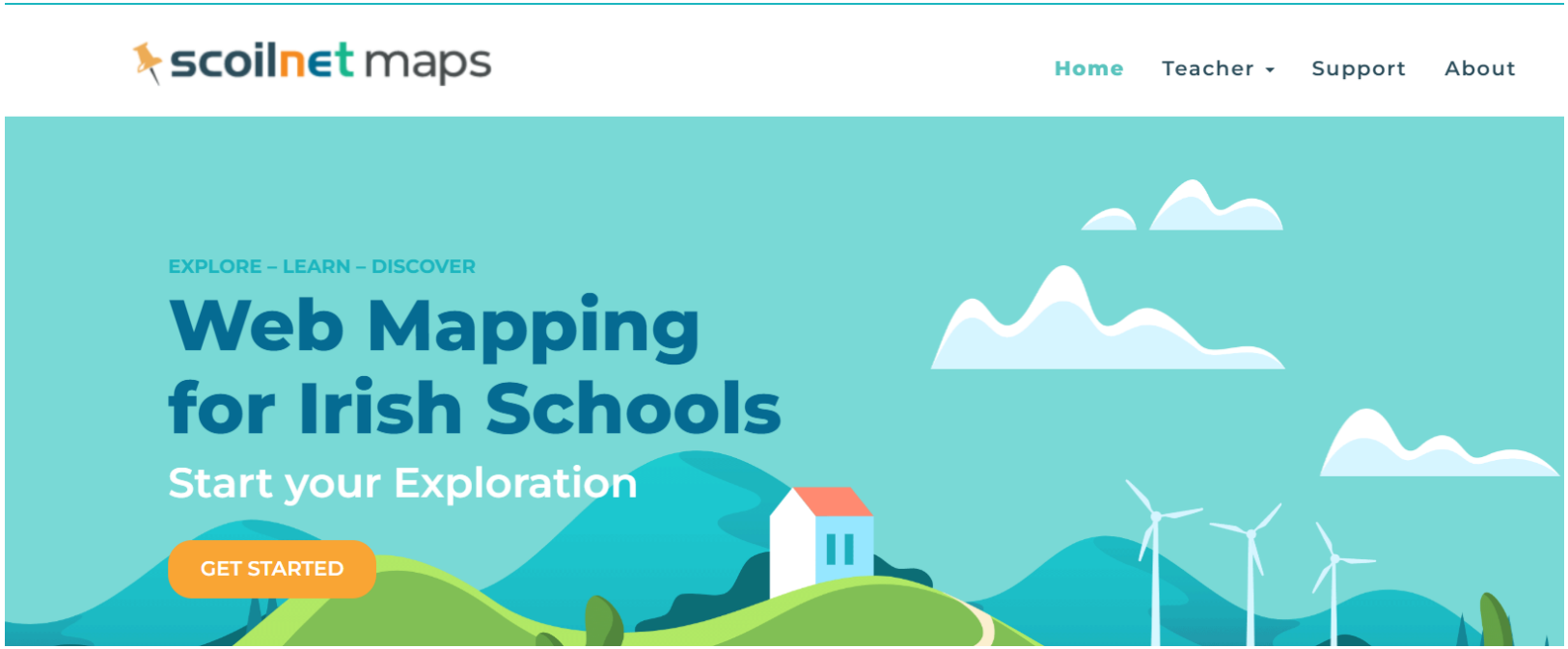


Department of Lands and Surveys Cyprus https://portal.dls.moi.gov.cy

Data portfolios for education on 1st, 2nd and 3rd level

Respondents:
Ordnance Survey GB, Ordnance Survey Ireland, IGN France, IGN Spain, Swisstopo, Lantmäteriet, Warsaw University of Technology

https://maps.scoilnet.ie/



https://www.swisstopo.admin.ch/en/services/offer-for-schools.html

Services

Services for schools

Level 1 (primary level) ›
Level 2 (primary level) ›
Level 3 (secondary stage I) ›
Secondary stage II ›
Tertiary education (university)

Reading maps

The secret of rocks

Treasure hunt

Time travelling

LUBIS viewer

sCHoolmaps.ch

swisstopo historic

"For schools"

swisstopo teaching materials and services for schools

Free teaching materials and worksheets on map reading, treasure hunts, time travelling, geology and more for all educational levels.

Our range of educational material includes:

- Fun materials such as treasure hunts.
- Map reading manuals.
- "A journey through time": Switzerland in its entirety since 1864, so you can show the development of a city or a landscape, for example.
- LUBIS: swisstopo aerial photos and image strips from 1920 to the present.

GEOCUBX at School :

A low power consumption microcontroler that harvests all the data from all the sensor AND switch ON/OFF
a Linux processor to process data (if you add the sismometer layer for example) and manage 4G / Wifi communications

Update over the air through 4G/wifi

Additional layer sensor :
- Battery layer + solar panel
- Seismometer layer
- Air monitoring for volcano areas
- Geiger Counter layer

Color of light sensor /light sensor
UV sensor
Pressure sensor
GNSS module (NTRIP RTK corrections caster)

Wind gauge/direction

Temperature sensor
Humidity sensor
Particles sensor PM1 | 2,5 |10

Air quality sensor NO2 / O3

Sonometer + rain gauge (drop counter)

Power monitor

Geocube IGN France **Geobs.fr website open to everyone**

Realtime and free data to downloads and use as you want

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Professional training support

GEOligne
Formation en ligne en Géomatique

Bibliothèque de ressources pédagogiques de l'ENSG
École Nationale des Sciences Géographiques

http://cours-fad-public.ensg.eu/

Cursos en línea 2022

https://cursos.ign.es/

Curso	Ficha	Temario	Prácticas	Fechas	Inscripción: Desde el 14 de marzo
El programa Copernicus aplicado a la producción y gestión de la información geoespacial			SNAP 8.0 • QGIS 3.10	*25 abril 3 junio*	
Sistemas de Información Geográfica (Básico)			ArcGIS Pro o QGIS	*25 abril 3 junio*	
Sistemas de Información Geográfica (Avanzado)			ArcGIS Pro o QGIS	*25 abril 3 junio*	
Infraestructuras de Datos Espaciales y Datos Abiertos			GeoServer y QGIS	*No disponible*	
Cartografía Temática			ArcGIS 10.6	*No disponible*	

Project/theme/research-oriented dataset for the general public

The BlueFish Project: The Ireland Wales Territorial Co-operation project for the Irish and Celtic Sea, focus on climate change, cross border collaboration and community engagement.

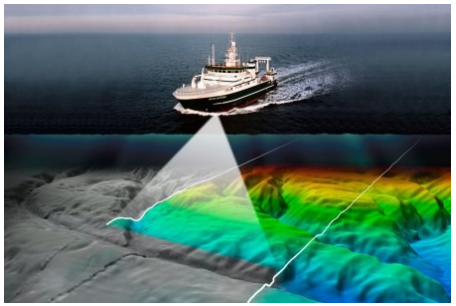
Irish Marine Institute

https://www.marine.ie/Home/site-area/data-services/interactive-maps/interactive-maps

Ireland's Marine Atlas

Shellfish Safety Data

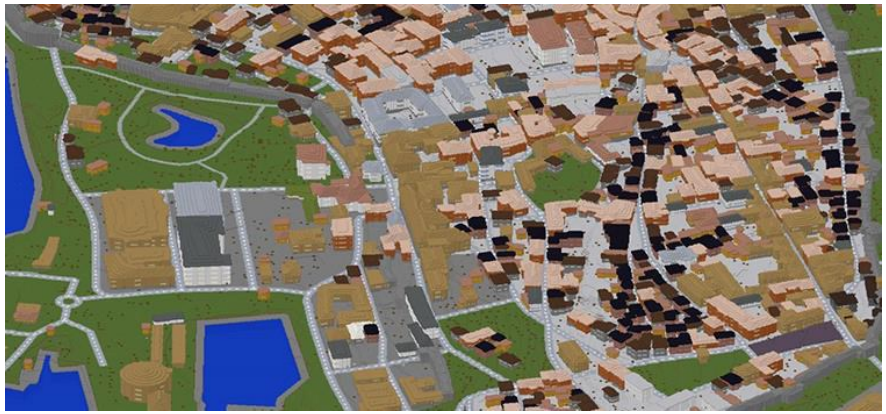
Seabed Viewer



Fisheries Resource Maps

Data support for gaming

- National topographic data as an input for Minecraft
  - Ordnance Survey Ireland
  - Lantmäteriet Sweden
  - IGN France



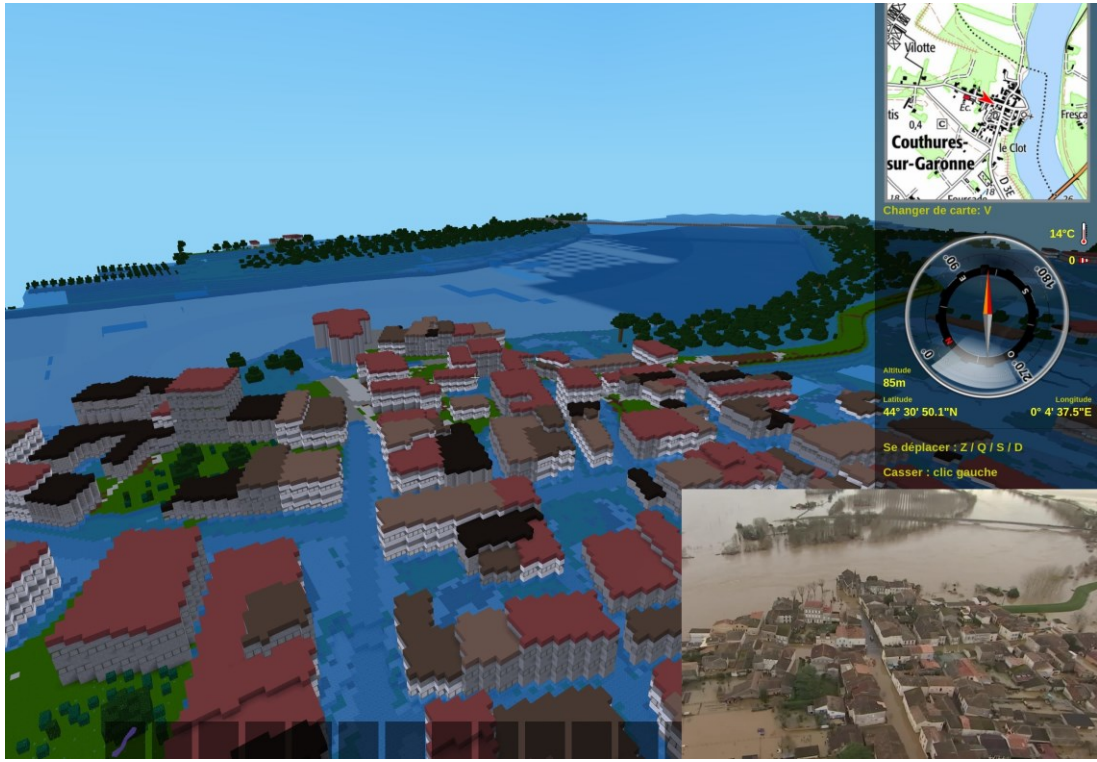
https://www.lantmateriet.se/sv/kartor/vara-karttjanster/bygg-ditt-sverige-i-minecraft/

https://osi.ie/creating-ireland-in-minecraft/

Minetest (IGN-F)

- Free version of Minecraft
- Data based on the IGN-F topographic database
- Possibility to run simulation scenarios (e.g., flood)

- The module has been integrated in the Edugeo



Partnerships

A diverse range of partnerships has been established between NMCAs and other orgaisations:

- Ministries of Education
- Universities
- Schools
- Industry (e.g., ESRI, Hexagon)
- NMCAs partners e.g., government bodies/departments
- National Geological Surveys
- European Space Agency

Levels of adoption

Only a few initiatives referred to the level of adoption. If mentioned, then usually quoted as very good.

Interesting are numbers provided by

OSGB:

Approximate institution subscriptions (individual user numbers):
Schools – 2,710
Colleges – 190
Universities – 120 (annual peak of c. 70,000 active users)

Minecraft@ on Demand:

Available for 3 years, 51 000 maps delivered (50 maps each day)

eLearning IGN Spain

over 600 students per year

Lantmäteriet Sweden, Minecraft

28 000 downloads since the start in 2015

(status by the end of 2020)

Level of maturity/maintenance

Most of the activities are either regularly updated or are new projects under development.

Only about 10% activities do not have any funding for maintenance or are time limited

Conclusions

- 10 different groups of activities supporting education and research were recognised
- Target groups cover a wide range from pupils at the age of 5 years to university students and professionals as well as general public
- Aims: to teach and improve the geo-literacy, to follow the research and development in geosciences but also to promote the field towards the public
- Tools updated to online services and applications offering tools from maps download to different levels of data processing and map making
- Provided learning materials usually locally oriented regarding the geographical location as well as the language but some steps towards international audience have been made

Conclusions

- Datasets for school and university education are either open or free of charge under a specific licence agreement
- A diverse range of partnerships has been established in order to provide the data and tools for research and education purposes
- Only a few initiatives referred to the level of adoption. If mentioned, then usually quoted as very good.
- The initiatives are generally well maintained (most of the activities are either regularly updated or new projects under development)

Perspectives

- Sharing specific tools used or developed within the mentioned initiatives and enhancing the inter-comparison of the developed tools and their reusage.
- Identifying new resources that could be achieved through a collaboration between European NMCAs on that topic, e.g.
  - Eduserv: to provide an Eduserv course on all the educational resources, on how to access and apply them, to understand data characteristics and to know where to get information about data characteristics (metadata),
  - To promote and accompany the usage of 3D or historical data,
  - Linked Data: to establish links between national data set portals, to support data discovery and reusage,
  - VGI: to support pupils editing data or contributing to scientific data.

EuroSDR

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http://www.eurosdr.net/sites/default/files/uploaded_files/eurosdr_resources_for_education_and_research.pdf