

GeoForAll

Monthly Newsletter



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Be part of "Geo for All"

1. Activities of the Network

- [Ottawa, Ontario, OSGeo Meetup Group](#) meets on the third Thursday of each month. If you are located in the area, go to the link to sign up to the group and get updates about future events.

2. Lab of the Month

Direccion Nacional de Topografia - MTOP, Montevideo, Uruguay



Suchith Anand,
Nottingham Geospatial
Institute, University of
Nottingham, UK

Dear Geo4All Colleagues,

It is my great pleasure to introduce our colleagues at the National Bureau of Surveying (Dirección Nacional de Topografía – MTOP), Montevideo, Uruguay, as the Geo4All lab of the month for June 2016.

The amazing work that Sergio Acosta Y Lara and colleagues in Uruguay have done through gvSIG Batovi initiative has been an inspiration for all of us.

Through their focus on Open Principles in Education, they have now provided high quality spatial technologies education to students in all schools across Uruguay. Thanks to the Plan Ceibal they also have free laptops for all Primary and Secondary students in the country, so they truly have the opportunity to reach every student, no matter if they are rich or poor, with high quality teaching and learning tools.

<https://www.youtube.com/watch?v=orwN9K07XPo> (Video with English translation)

gvSIG Batoví is a GIS (Geographic Information System) software tool applied to educational environments driven by the National Bureau of Surveying (Dirección Nacional de Topografía – MTOP) for the Plan Ceibal (OLPC initiative for Uruguay), through which Primary and Secondary students can acquire knowledge of geography using laptops through informative and interactive information.



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Editorial Board

Please refer to the appropriate person according to the following table:

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Production Designer 	<p>Nikos Voudrillis, Principal of the 1st Primary School of Asvestochori, Thessaloniki, Greece, MSc, PhD candidate in geography education. nvoudris@gmail.com</p>	Design and final formation of the newsletter



GeoForAll Regional Chairs and Contact Information

North America Region

Chairs: Helena Mitasova (USA), Charles Schweik (USA), Phillip Davis (USA) Subscribe at mail list <http://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-northamerica>

Email: na.gfa.chair@osgeo.org

South America Region

Chairs: Sergio Acosta y Lara (Uruguay) and Silvana Camboim (Brazil) Subscribe at mail list <http://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-southamerica>

Email: sa.gfa.chair@osgeo.org

Africa Region

Chairs: Rania Elsayed Ibrahim (Egypt), Serena Coetzee (South Africa) and Bridget Fleming (South Africa) Subscribe at mail list <http://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-africa>

Email: africa.gfa.chair@osgeo.org

Asia Region (including Australia)

Chairs: Tuong Thuy Vu (Malaysia/Vietnam) and Venkatesh Raghavan (Japan/India) Subscribe at maillist <http://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-asiaaustralia>

Email: asia.gfa.chair@osgeo.org

Europe Region

Chairs: Maria Brovelli (Italy) and Peter Mooney (Ireland) Subscribe at mail list <http://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-europe>

Email: eu.gfa.chair@osgeo.org

GeoForAll Themes

▪ OpenCity Smart

➤ Chairs: Chris Pettit (Australia), Patrick Hogan (USA)

➤ Mail list: <http://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-urbanscience>

➤ Website: <http://wiki.osgeo.org/wiki/OpenCitySmart>

▪ Teacher Training & School Education

➤ Chairs: Elżbieta Wołoszyńska-Wiśniewska (Poland), Nikos Lambrinos (Greece)

➤ Mail list: geoforall-teachertraining@lists.osgeo.org

➤ Website: http://wiki.osgeo.org/wiki/GeoForAll_TeacherTraining_SchoolEducation

▪ GeoForAll (GeoParaTodos) Themes in Spanish

➤ Chairs: Sergio Acosta y Lara (Uruguay), Antoni Pérez Navarro (Spain)

➤ Mail list: Spanish : geoforall-spanish@lists.osgeo.org

➤ Website: http://wiki.osgeo.org/wiki/GeoForAll_Spanish

▪ CitizenScience

➤ Chairs: Peter Mooney (Ireland) and Maria Brovelli (Italy)

➤ Mail list: <https://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-geocrowd>

➤ Website: http://wiki.osgeo.org/wiki/Geocrowdsourcing_CitizenScience_FOSS4G

▪ AgriGIS

➤ Chairs: Didier Leibovici (U.K.) and Nobusuke Iwasaki (Japan)

➤ Mail list: <https://lists.osgeo.org/cgi-bin/mailman/listinfo/geoforall-agrigis>

➤ Website: <http://wiki.osgeo.org/wiki/AgriGIS>



GeoForAll



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Figure 1 – Shows examples of gvSIG Batovi in action

The tool, after its launch, became the first Uruguayan distribution that gives rise to gvSIG Educa (Fig 2), which aims to be a tool for educators to provide students a better analysis and understanding of the region, as well as collaborate with the assimilation of spatial concepts using visual tools.



Fig 2 – Example of gvSIG Educa used for teaching GIS for primary and secondary education

It also provides the possibility to both teachers and students to develop their own thematic maps from different layers of spatial information available, turning the learning process into a much more attractive, motivating, and interactive one (Fig 3).

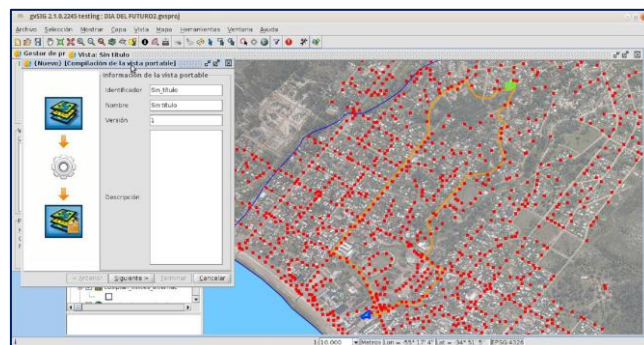
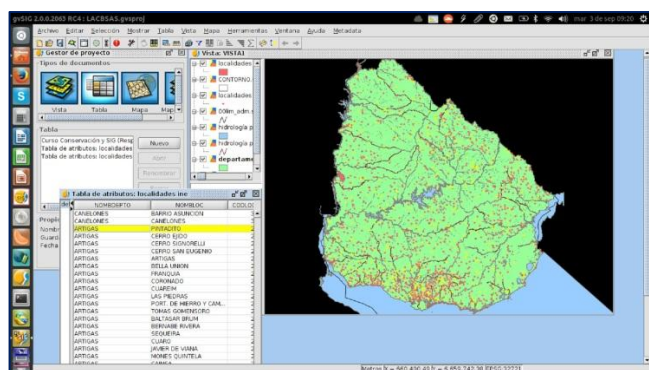


Fig 3 - Examples of thematic maps used for teaching spatial concepts

Based on Free/Libre Open Source GIS software, the initiative was the result of collective work that included the coordinated participation of four institutions: the National Bureau of Surveying, the gvSIG Association (Spain), the Geospatial Information Technologies Working Group (GTIG) of the College of Engineering (UDELAR), and the Ceibal Center (Centro Ceibal).

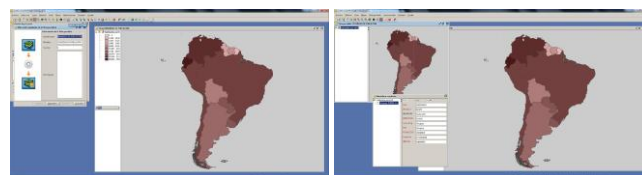


Fig 4 - Examples of thematic maps used for teaching spatial concepts

Since its launch it has been spread intensely through various presentations in congresses, workshops, courses, and webinars. Workshops and Train the Trainer programs for Geography teachers and students are organised to build the future leaders in geography education (see Fig 5, 6, 7, 8).



Fig 5 -Workshop for teachers in Geography



Fig 6 - Presentation for students and outreach



Fig 7 - Course for students to be teachers in Geography



Fig 8 -Workshop for Secondary students

Scalability is key for cost/sustainability issues, especially if we are thinking of national and global scales of expansion for providing high quality education opportunities for all. The cost of hardware is getting lower (and will keep decreasing), internet access is increasing (even in developing countries, it will keep increasing), so if we can also provide free

and open technologies, open data, open educational resources, etc., it will be a big enabler for bridging the digital divide. gvSIG Batovi is an excellent example of a successful initiative in Open Principles in Education and helps us to understand why scalability and costs for scaling is fundamental. This is a good example of scalability of education opportunities with very few resources using Open Principles. Imagine if all these hundreds of schools and thousands of students had to depend on buying software and data for their teaching and learning. This simple idea can be scaled to millions of schools globally. This empowerment of educators and students is the true essence and gift of Open Principles.

We also have amazing academic colleagues in Geo4All globally who are contributing their knowledge for Open Education efforts. We can get a flavor from last year's GeoForAll – Global Educator of the Year Award 2015. Details are at <http://www.geoforall.org/news/?action=story&id=20>

We are now working with MapStory Foundation <http://mapstory.org/> to expand our spatial literacy in school level program globally. For example, “mapping the neighbourhood” exercises to help teach spatial literacy in schools globally. I think having MapStory examples of deforestation in different places might also be a good example to help teach students on effects of climate change as well as the need for protecting the environment. Teaching Spatial literacy in schools is key for also helping to build good global citizens.

Through our new initiative of Geo4All Schools we aim to use geotechnologies as a use case to advance STEM interest in Schools through Open Principles so that students develop creative minds and develop to be future thought leaders and creative thinkers to help solve global challenges (not just to be users). The bigger aim is also to advance STEM education across the world and bring together schools, teachers, and students across the world in joint projects and help in building international understanding and global peace.

Best wishes,

Suchith Anand



3. Events

1. CODATA-RDA School of Research Data Science.

Venue: Abdus Salam International Centre of Theoretical Physics, Trieste, Italy.

Date: 1-12 August 2016. Details [here](#).

2. FOSS4GNA 2016

The beginning of May saw the FOSS4G NA Conference in Raleigh, North Carolina, USA. Session slides from the conference can be viewed and downloaded [here](#).

The YouTube channel for the FOSS4G NA presentations can be seen [here](#). (<https://www.youtube.com/channel/UCEqor3hXvGSoFDWzQez3tbg>).

Links to videos showcasing what Helena Mitasova and her students are working on are below. These are mostly applications of projecting forecast models on physical 3D models or sand

- Interactive Solar Radiation Modeling, <https://youtu.be/Q7ZyzqYJq-E>
- Interactive 3D Fire Modeling, <https://youtu.be/1LR2n9p9TPg>
- Interactive Watershed Modeling/Interactive Termite Habitat Eradication Game, https://youtu.be/HpZC_ybBTRg
- NCSU OSGEO Lab's Immersion Virtual Reality tool, <https://youtu.be/Blojgs40Aic>
- Termite Game, <https://youtu.be/TM7Xlu0j5V0>

4. Conferences

Asia

July 2016

1. 25-27 July, 2016. International Conference on Surveying, Mapping and GeoInformation (ICSMG 2016). Suzhou, China. More details at <http://www.engii.org/ws2016/Home.aspx?id=754>

Africa

October 2016

2. 24-28: 11th International Conference of the African Association of Remote Sensing of the Environment

Hotel Africana Plot 2-4 Wampewo Avenue, P.O. Box 10218, Kampala, Uganda

For more information: [View Summary](#) (<http://goo.gl/VYR8cd>)

Europe

June 2016

3. 21-24 June 2016: International conference and a series of workshops entitled: "GeoMLA: Geostatistics and Machine Learning Applications in Climate and Environmental Sciences", at the University of Belgrade - Faculty of Civil Engineering Belgrade, Serbia. More details in <http://geomla.org>

The Conference will take place on June 23-24, the workshops on June 21-22.

July 2016

4. 5-8 July: GI-Forum: [open: spatial: interfaces](#)

Symposium and Exhibit - Geographic Information Science

University of Salzburg, Salzburg, Austria.

5. 12-19 July 2016: ISPRS XXIII Congress, in Prague. More details at <http://www.isprs2016-prague.com/>. There are two sessions of particular interest by our community:

a) Special Session: SpS10 - FOSS4G: FOSS4G Session (chairs: Maria A. Brovelli, Helena Mitasova, Krishnan Sundara Rajan)

Keywords: Free and Open Source Software for Geoinformatics (FOSS4G), geospatial research platform and systems for developing new applications crossing the new frontiers towards the Internet of Places, Big Geospatial Data processing and analytics, and complex simulations essential for understanding and managing the earth systems, human societies, and their interaction

b) Theme session: THS16: Recent Developments in Open Data

(chairs: Maria A. Brovelli, Hae-Kyong Kang, Hiroichi Kawashima)

Keywords: Open data, Linked open data, e-Government, Geospatial, Web

For those who need more information may contact



Maria Brovelli (maria.brovelli@polimi.it)

c) Session THS17: Smart cities

(Chairs: Chris Pettit & Arzu Coltekin)

keywords: Geodesign, urban planning, visualisation and spatial analysis of urban phenomena, energy use, walkability, pollution, health, infrastructure, population, aging.

August 2016

6. 24-26 August: FOSS4G Conference, Bonn, Germany. Registration started.

September 2016

7. 12-14 September: [Earth Observation Open Science 2016 Conference](#) Frascati, Italy.

Deadline for Abstracts: May 15.

8. 26-30: NSPIRE Conference 2016: http://inspire.ec.europa.eu/events/conferences/inspire_2016/

The INSPIRE Conference 2016 aims to show how the implementation of INSPIRE contributes to the European Interoperability Framework and the EU's digital economy in general.

The INSPIRE Conference 2016 will take place in Barcelona, 26-30 September 2016

VII Jornadas Ibéricas de Infraestructuras de Datos Espaciales: <http://www.jiide.org/jiide2016/inicio>

Del 27 al 30 de septiembre tendrá lugar en Barcelona las "VII Jornadas Ibéricas de Infraestructuras de Datos Espaciales". En esta ocasión, además coinciden con la conferencia Inspire.

9. 29-30: EUROGEO 2016 "[Geographic information for a better world](#)", Malaga, Spain.

One proposed session is "Open Source GIS applications in Geospatial Analysis, Policy and Planning" and there are others on Green Infrastructures, Future Urban Planning and Education.

October 2016

10. 12-16 October: [Open Source Geospatial Research and Education Symposium 2016](#)

Venue: Palazzo Cesaroni - Piazza Italia, Perugia, Italy.

Registration opens: March 15, 2016

Deadline for short papers (1000 to 1500 words): June 15, 2016.

North and Central America and the Caribbean

June 2016

11. 14-15 June: Dynamic Mapping of Secondary Cities Symposium

Harvard University Center for Geographic Analysis
Tsai Auditorium, 1730 Cambridge St., Cambridge, MA 02138.

12. 15-17 June: [Cities and Regions: Managing Growth and Change](#)

Georgia Institute of Technology, Historic Academy of Medicine Building, Atlanta, Georgia, USA.

Abstract submission has expired.

July 2016

13. 26-28 July: [Third International Conference on CyberGIS and Geospatial Data Science](#)

Urbana, Illinois, USA

September 2016

14. 5-8 September: [URISA Caribbean GIS Conference](#)
Barbados

15. 11-17 September: [International Data Week \(IDW\)](#)
Venue: Denver, Colorado, USA

The theme of this landmark event is "From Big Data to Open Data: Mobilizing the Data Revolution".

16. 11-16 September: [Research Data Alliance Plenary 8](#)
Denver, Colorado, USA (within International Data Week).

17. 14-16 September: [AutoCarto 2016](#)
Albuquerque, New Mexico, USA.

Call for lightning talks for an ICA Commission workshop of open source geospatial technologies, "Advancing GIScience with Open Source Technologies."

Please provide a proposed talk title (and, if you would like, an expanding sentence or two) and your contact information to: Michael P. Finn, U. S. Geological Survey, Vice-Chair, ICA Commission on Open Source Geospatial Technologies, at mfinn@usgs.gov

Important Dates:

- Proposed Talk Title Submission: 20 June 2016



- Acceptance Decision Notification to Submitters: 15 July 2016
- Early Registration Deadline: 01 August 2016
- Registration: <http://tinyurl.com/zl8dadg>
Note: Attendees must be registered for AutoCarto 2016. There is no separate or additional fee for the workshop

Lightning Talks: 14 September 2016

18. 2-5 October: [69th Canadian Geotechnical Conference](#)

Vancouver, British Columbia, Canada.

South America

June 2016

19. 23-24: [XI IDERA Conference](#). The XI IDERA (Spatial Data Infrastructure of Argentina) Conference will be held in the city of Neuquen, Province of Neuquen.

Los días 23 y 24 de junio de 2016 se realizarán las XI Jornadas de IDERA en la ciudad de Neuquén, Provincia del Neuquén.

6. Courses

- [Triangle Area GIS](#) is a "collaboration site for multidisciplinary GIS users in the Triangle" area of North Carolina. They offer free webinars throughout the year in many GIS and mapping areas, as well as paid training and group meeting planning space.

7. Training programs

- GeoForAll educational inventory system, a place to search and share educational materials: http://www.osgeo.org/educational_content
- Registration for online gvSIG: Training courses are now open. They are part of the courses offered by the Certification Program of the gvSIG Association. Unlike previous editions, the registration mode is open for most of the courses, so students can enroll and start the course at any time they want. The courses currently available are:
General gvSIG courses (1)

Applied gvSIG courses (5)

Geoprocessing and Spatial Analysis courses in Spanish and Portuguese (5 in Spanish, 5 in Portuguese)

gvSIG extensions/addons (6)

Geospatial DataBases (1)

Free i3Geo course (1)

By participating in any of these courses you get credits for the gvSIG Certification Program that allows you to qualify for "gvSIG User" and "Expert gvSIG User" certification.

Ya están abiertas las inscripciones para los cursos a distancia de gvSIG-Training, que forman parte de la oferta del Programa de Certificación de la Asociación gvSIG. A diferencia de las convocatorias anteriores, la modalidad de inscripción pasa a ser de matrícula abierta para la mayoría de los cursos, por lo que el alumno podrá matricularse y comenzar el curso cuando lo desee. Los cursos disponibles actualmente son:

Cursos gvSIG general (1)

Cursos gvSIG aplicado (5)

Cursos Geoprosesamiento y Análisis Espacial, en español y portugués (5 en español 5 en portugués)

Extensiones gvSIG (6)

Bases de Datos Geoespaciales (1)

Curso i3Geo gratuito (1)

Al participar en cualquiera de estos cursos obtienes créditos del programa de certificación gvSIG que te permite optar a la certificación "gvSIG Usuario" y "gvSIG Usuario Experto". [Aquí](#)

- June 14th : [LINKing and analyzing Volunteered Geographic Information \(VGI\) across different platforms](#)

Workshop at 19th AGILE International Conference on Geographic Information Science 2016. Helsinki, Finland.

- June 21-22, 2016: "GeoMLA: Geostatistics and Machine Learning Applications in Climate and Environmental Sciences".

University of Belgrade - Faculty of Civil Engineering Belgrade, Serbia.

Three parallel workshops (21-22 June 2016):

Mikhail Kanevski: "Machine learning of geospatial data: achievements and new trends"



Tomislav Hengl: "Automated mapping in 2D, 3D, and 2D+T using machine learning"

Milan Kilibarda: "Spatial and spatio-temporal prediction and visualization of climate elements in R"

For registration go to <http://geomla.grf.bg.ac.rs/>

- July 25-26, 2016. NSF Workshop on Geospatial Data Science in the Era of Big Data and CyberGIS

Venue: Urbana, Illinois, USA.

The primary goal of this workshop is to bring together thought leaders and cutting-edge researchers from pertinent multidisciplinary communities to explore the frontiers of geospatial data science. Specifically, the two-day workshop aims to:

- Introduce geospatial big data capabilities (e.g., LiDAR, remote sensing, and location-based social media) for novel applications (e.g., urban sustainability and interdisciplinary studies);
- Demonstrate cutting-edge cloud computing and cyberGIS tools for scalable spatial data synthesis and enhancing knowledge discovery power based on geospatial big data;
- Identify spatial data synthesis requirements from representative science drivers;
- Formulate a core set of questions and problems of geospatial data science; and
- Discuss foundations and principles of geospatial data science.

10. New free and open software, open data, etc.

1. New free GIS book in Spanish from Victor Olaya. Go to <http://volaya.github.io/libro-sig/> to download your free book.

pycsw 1.10.4

The pycsw community announces the release of pycsw 1.10.4. This is a maintenance release, addressing the following fixes:

- fix repository filters against Django backends

- add temporal extent support to WMS harvesting
- handle malformed OpenSearch requests gracefully
- add OpenSearch startIndex and count parameter bindings
- fix GetRecords DistributedSearch outputSchema handling
- fix SQLAlchemy warnings

The full list of enhancements and bug fixes is available [here](#)

pycsw is an OGC CSW server implementation written in Python.

pycsw fully implements the OpenGIS Catalogue Service Implementation Specification (Catalogue Service for the Web).

Initial development started in 2010 (more formally announced in 2011).

The project is certified OGC Compliant, and is an OGC Reference Implementation.

Since 2015, pycsw is a graduated OSGeo Project.

pycsw allows for the publishing and discovery of geospatial metadata.

Existing repositories of geospatial metadata can also be exposed via OGC:CSW 2.0.2, providing a standards-based metadata and catalogue component of spatial data infrastructures.

pycsw is Open Source, released under an MIT license, and runs on all major platforms (Windows, Linux, Mac OS X). Source and binary downloads are available.

2. Data generated by IGN of Spain is now Open Data: <http://blog-idee.blogspot.com.uy/2015/12/los-datos-del-ign-ya-son-datos-abiertos.html>

The screenshot shows the 'blog IDEE' website. The header includes the title 'blog IDEE' and the subtitle 'El blog de la comunidad de la Infraestructura de Datos Espaciales de España'. The main content area features a post dated '28 dic. 2015' with the title 'Los datos del IGN ya son datos abiertos'. Below the title is a photograph of a large, classical-style building with the text 'DATOS ABIERTOS' overlaid. The sidebar on the left contains navigation links such as 'Quiénes somos', 'Páginas', and 'Opciones'. At the bottom, there is a search bar and a small text block providing information about the BOE's decision on open data.



On Saturday December 26, it was published in the BOE (Official Newsletter of Spain) Ministerial Order FOM/2807/2015 an announcement that the new Policy of Public Dissemination of the information generated by the National Geographic Institute (IGN) of Spain is approved.

El pasado sábado día 26 de diciembre se publicó en el BOE la Orden Ministerial FOM/2807/2015, de 18 de diciembre, por la que se aprueba la nueva política de difusión pública de la información generada por el Instituto Geográfico Nacional de España.

12. Articles

Abbreviations

by **Nikos Lambrinos**, Chief Editor

Department of Primary Education, Aristotle University of Thessaloniki, Greece

For those who would like to support this effort, please send any abbreviations to the Chief Editor (labrinos@eled.auth.gr).

AAG: Association of American Geographers

AGS: American Geographical Society

AM/FM: Automated Mapping/Facilities Management

ASPRS: American Society for Photogrammetry and Remote Sensing

AURIN: Australian Urban Research Infrastructure Network

CAD: Computer Aided Design

CEOS: Committee on Earth Observation Satellites

CLGE: The Council of European Geodetic Surveyors

COGO: Coordinate geometry

CRS: Coordinate Reference System

CSA: Canadian Space Agency

DAAC: Distributed Active Archive Center (of NASA)

DEM: Digital Elevation Model

DWG: Design file format

DXF: Drawing Interchange File

ECMWF: European Center for Medium range Weather Forecasting

EOS: Earth Observation Science

EOSDIS: Earth Observing System and Data Information System

EPSG: European Petrol Survey Group (used in projection IDs)

ESA: European Space Agency

EUROGI: European Umbrella Organisation for Geographic Information

FOSS: Free and Open Source Software

FOSS4G: Free and Open Source Software For Geospatial

GCP: Ground Control Point

GloFAS: Global Flood Awareness System

GNSS: Global Navigational Satellite System

GPS: Global Positioning System

GPX: GPS Exchange Format

HOT: Humanitarian OpenStreetMap Team

ICA: International Cartographic Association

ICSU-WDS: International Council for Science – World Data System

INSPIRE: Infrastructure for Spatial Information in Europe

ISPRS: International Society for Photogrammetry and Remote Sensing

JAXA: Japan Aerospace Exploration Agency

KML: Keyhole Markup Language

LiDARL: Light Detection and Ranging

LOC: Local Organizing Committee

LOD: Level Of Detail

MoU: Memorandum of Understanding

NAD: North American Datum

NGA: National Geospatial Intelligence Agency

OER: Open Educational Resources

OGC: Open Geospatial Consortium

OSGeo: Open Source Geospatial Foundation

OSM: OpenStreetMap

RCMRD: Regional Centre for Mapping of Resources for Development



ROSHYDROMET: Russian Federal Service for Hydrometeorology and Environmental Monitoring

SDI: Spatial Data Infrastructure

SQL: Structured Query Language

STSM: Short Term Scientific Missions

TIN: Triangulated Irregular Network

UAV: Unmanned Aerial Vehicle

USGIF: United States Geospatial Intelligence Foundation

WCS: Web Coverage Service

WFS: Web Feature Service

WGCapD: Working Group on Capacity Building and Data Democracy

WGS: World Geodetic System

WMO: World Meteorological Organization

WMS: Web Map Service

WMTS: Web Map Tiles Services

WPS: Web Processing Service

ENERGIC OD will deploy a set of Virtual Hubs (VH) by integrating an existing broker framework with other selected technologies to provide users with a single point of access to geospatial datasets provided by new or existing platforms and infrastructures, including INSPIRE-compliant systems and GMES/Copernicus services.

This innovative approach will greatly facilitate the development of new and multidisciplinary applications based on the full exploitation of (open) GI, hence stimulating innovation and business activities.

The new applications, together with the newly developed VHs, will optimize the exploitation of (open) GI and the development of new marketable services.”

Project website: <http://www.energic-od.eu/>

We hope to have more information in a future issue.

17. Ideas / Information

1. There is a new YouTube channel where we will be posting the Geo4All webinar recordings and other related videos. Subscribe to it (click on red button on right hand side). Check it out:

YouTube Channel

<https://www.youtube.com/channel/UCL1E2akvCNWPnCOp5CpB8g>



2. ENERGIC OD project by [Paweł Kwiatkowski](#) Institute of Geodesy and Cartography 27 Modzelewskiego St.. 02-679 Warsaw, POLAND

