



**PanAfGeo**

*Geoscientific Knowledge & Skills  
in African Geological Surveys*



## Call for Applications for a PanAfGeo Training

### « WP7 – Geoscientific information Management »

#### **WP7-B Spatial data infrastructure - Data modelling - Interoperability standards - Data dissemination**

9-20 April 2018 – Yaoundé, Cameroon  
in French

### 1. MAIN CONTEXT OF PANAFGEO

“PanAfGeo” for “Pan-African Support to the EuroGeoSurveys-Organisation of African Geological Surveys (EGS-OAGS) Partnership” is a project which supports the training of geoscientific staff from African Geological Surveys through the development of an innovative training programme that includes the acquisition and development of important professional skills that complement their qualifications and technical skills. The training programme is carried out by world-class geoscientific experts coming from African and European Geological Surveys.

PanAfGeo is co-funded by the European Commission (Directorate-General of Development and International Cooperation) and by a Consortium of twelve European Geological Surveys coordinated by the French Geological Survey (BRGM).

This programme allows trainees to acquire a state-of-the-art tool kit that contains methods and/or field work from eight geoscientific domains:

- WP1 – Geoscientific Mapping
- WP2 – Mineral Resources Assessment
- WP3 – Artisanal and Small-Scale Mining
- WP4 – Environmental Management of Mines
- WP5 – Geohazards
- WP6 – Geoheritage
- WP7 – Geoscientific Information Management
- WP8 – Communication and Promotion

The “PanAfGeo Charter for Trainees” provides the general quality framework for selection of trainees who will attend the training sessions carried out in the frame of the PanAfGeo Project. This Charter is awarded for the full duration of the PanAfGeo Project. Implementation of the Charter will be monitored and violation of any of its principles and commitments may lead to its withdrawal by the PanAfGeo Project Coordination.

The overall objective and impact of PanAfGeo is to improve the governance and sustainable use of African mineral resources and related infrastructures. The specific objective and outcome is to strengthen the knowledge and skills in Africa’s mining sector and specifically of African Geological Surveys, to make them able to contribute – in their respective countries – with their expertise and data to informed decision-making and good governance as well as sustainable use of mineral resources and reinforcing the capacity of the Organisation of African Geological Surveys (OAGS).



Co-funded by the  
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THE AFRICA-EU PARTNERSHIP  
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## 2. CONTENT & METHODOLOGY OF THE “WP7 – GEOSCIENTIFIC INFORMATION MANAGEMENT” TRAINING

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Geological data, including maps and mineral resources inventories are the essential basis for assessing the potential for mineral projects and granting exploration and mining licenses. Thus, comprehensive geological and mineral databases provide governments with informed decision-making options and the capacity to negotiate sustainable mineral development contracts with local and foreign investors. The information technology (IT) equipment and staff support the spatial data infrastructure which enables each Geological Survey Organisations to fulfil its missions regarding the geoscientific information. These include (i) collect, (ii) store and manage, (iii) valorise, and (iv) ensure the availability of reliable georeferenced data to several target groups i.e. other government organisations, national and regional communities, planners, private sector, education and citizens.

As part of the PanAfGeo Project, “WP7 – Geoscientific Information Management” aims to improve and/or strengthen capabilities among the staff employed by the African Geological Survey Organisations (existing and recruited) in the field of geoscience information management and related information technologies at operational level, with adaptation to the local context and the sustainability potential.

“WP7 – Geoscientific Information Management” is coordinated by the Geological Survey of France (BRGM) in collaboration with the Geological Survey of Burkina (BUMIGEB). Along with a close technical and scientific assistance, the training support is provided by BRGM, the Geological Survey of Denmark and Greenland (GEUS) and the Geological Survey of Slovenia (GeoZS).

- Number of attendants: max 20
- Duration: 10 days
- Trainers: 2 European trainers + 2 African co-trainers

The WP7 programme proposes three (3) independent modules:

- WP7-A: Database management, handling of spatial data and GIS interface;
- **WP7-B: Spatial data infrastructure - Data modelling - Interoperability standards - Data dissemination;**
- WP7-C: Multilayer 3D geological modelling using dedicated geoscience software.

***IMPORTANT NOTE:*** *The field of “Geoscientific information management” being rather wide, WP7 training scheme proposes three different and modules instead of one general overview in order to offer an in-depth coverage of each of the three themes. Each module aims at strengthening the operational skills of dedicated professionals, e.g. database managers, SDI architects, database developers, geoscientists, GIS specialists, 3D modelling geologists. Then, these three independent modules are not meant to be applied for by the same trainee profiles.*

### **WP7-B: Spatial data infrastructure - Data modelling - Interoperability standards - Data dissemination:**

#### ***a) Approach and training method***

The course will present and describe in details the methods, approaches, tools, procedures and requirements for interoperability standards, data modelling, data management and data publishing.

The course is aimed at staff from the Geological Survey organisations including the department of Geology, Hydrogeology, Georesources, Environment and Natural Hazards.

The course will apply an interactive mode of learning through lectures and practical exercises on computer using Enterprise Architect viewer, GeoServer, GeoKettle, GeoNetwork, etc.

**b) Course content**

<b>Topic 1</b>	<b>Introduction</b>
<b>Topic 1.1: Introduction</b>	<ul style="list-style-type: none"> <li>• Introduction to Module WP 7B</li> <li>• Overview of content of Module WP 7B</li> </ul>
<b>Topic 1.2: Data</b>	<ul style="list-style-type: none"> <li>• The different types of geological data</li> <li>• How they can be used in data modelling</li> <li>• Managing data in GIS software</li> </ul>
<b>Topic 1.3: Software</b>	<ul style="list-style-type: none"> <li>• Overview of software to be used in the course (Enterprise Architect viewer, GeoServer, GeoKettle, GeoNetwork, etc.)</li> </ul>
<b>Topic 2</b>	<b>Spatial data infrastructure</b>
<b>Topic 2.1: Overview</b>	<ul style="list-style-type: none"> <li>• What is SDI</li> <li>• An overview of global SDIs</li> <li>• Status and trends in the field of SDIs</li> </ul>
<b>Topic 2.2: African geological surveys and SDI*</b>	<ul style="list-style-type: none"> <li>• Relevance to the African geological surveys</li> <li>• Application to the network of African geological survey information systems</li> </ul> <p>* supervised by African national/regional experts/trainers</p>
<b>Topic 3</b>	<b>Interoperability concepts, standards and methodologies</b>
<b>Topic 3.1: Interoperability standards</b>	<ul style="list-style-type: none"> <li>• Introduction to different types of interoperability concepts, standards and methodologies                             <ul style="list-style-type: none"> <li>◦ OGC</li> <li>◦ ISO</li> <li>◦ INSPIRE (European case study)</li> </ul> </li> <li>• Use of standards in the field of geoscience (mineral resources, hydrogeology, natural risk, etc.)</li> </ul>
<b>Topic 4</b>	<b>Data modelling: main concepts and practice</b>
<b>Topic 4.1: Data</b>	<ul style="list-style-type: none"> <li>• Data standards (rules, types, formats, collection, integration)</li> <li>• Data modelling (from concept to database)</li> </ul>
<b>Topic 4.2: Standards</b>	<ul style="list-style-type: none"> <li>• Standard for interchanging data (GML, XML, UML, etc.)</li> <li>• Standards applied to geoscientific data context</li> </ul> <p>These topics will be illustrated through exercises using Enterprise Architect software.</p>
<b>Topic 4.3: Mapping</b>	<ul style="list-style-type: none"> <li>• Mapping of file-based and database-based data into common models using thematic dedicated GML models (GeoSciML, EarthResourceML, etc.)</li> </ul> <p>These topics will be illustrated through exercises using GeoKettle, PostgreSQL, GeoServer and other software.</p>
<b>Topic 5</b>	<b>Web services</b>
<b>Topic 5.1: Web services</b>	<ul style="list-style-type: none"> <li>• Introduction to web services (WMS, WFS, WCS)</li> <li>• Generating web services (publishing)</li> </ul> <p>These topics will be illustrated through exercises using GeoServer and QGIS software.</p>
<b>Topic 5.2: GIS applications and map viewers</b>	<ul style="list-style-type: none"> <li>• Integration of web services in GIS applications</li> </ul> <p>These topics will be illustrated through exercises using OpenLayers and QGIS software.</p>
<b>Topic 6</b>	<b>Metadata</b>
<b>Topic 6.1: Overview</b>	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Standards used (ISO, INSPIRE, etc.)</li> </ul>
<b>Topic 6.2: Editing/Publishing</b>	<ul style="list-style-type: none"> <li>• Editing metadata and catalogues using standard methodologies and tools</li> <li>• Publishing metadata and catalogues using standard methodologies and tools</li> </ul> <p>These topics will be illustrated through exercises using</p>

	GeoNetwork software.
<b>Topic 7</b>	<b>Summary and practice</b>
<b>Topic 7.1: Summary</b>	Summary and recap of all concepts, according to participants needs
<b>Topic 7.2: Practice</b>	Two days of practice on datasets provided by the trainers and, if possible, using case studies in African context**. Participants will work independently to practice and apply most of the concepts shared over the previous days. ** supervised by African national/regional experts/trainers

### **c) Exercises**

Each topic will be followed by hands-on exercises. The European trainers will propose prepared data sets to illustrate the concepts of building SDI. Should it be possible, several contents may also be prepared in collaboration with the African co-trainers using case studies in the African context (e.g. Topic 2.2., Topic 7.2.).

### **d) Computer equipment**

The training room will be equipped with adapted computer hardware (Windows 10) and selected software. Only Open Source software is proposed to be used to implement the hands-on training sessions of WP7-B:

- LibreOffice
- PostgreSQL
- PostGIS
- GeoKettle
- QGIS
- PDF reader
- Enterprise Architect viewer
- Notepad ++
- Web browser
- GeoNetwork
- GeoServer
- OpenLayers

### **d) Languages, locations and dates**

WP7 includes three independent modules. Each module will be delivered three times: two in English and one in French. Depending on the number of Portuguese speaking applicants, module WP7-A may be taught in Portuguese in 2019.

The second session of each module is planned as follows:

- WP7-B: mid-April, 2018 – Yaoundé, Cameroon (*in French*)
- WP7-A: mid-June, 2018 – Ouagadougou, Burkina Faso (*in French*)
- WP7-C: mid-October 2018 – Location to be confirmed (*in English*)

Thereafter, it is proposed to hold the three (3) remaining sessions in 2019 in Nigeria, Kenya, Ethiopia, Zambia, Namibia, Botswana and Mozambique. These, however, have not been confirmed to date.

It is recommended that the applicants consider their language/country preferences when choosing to which of the training sessions they apply for.

### 3. MAIN EXPECTED LEARNING OUTCOMES OF THE COURSE

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The overall objective is to train the participants through theory and practice on spatial data infrastructure, data modelling, and interoperability standards and data dissemination.

By the end of the course, the participants will have the knowledge of:

- Understanding basic principles of spatial data infrastructure;
- Different types of interoperability concepts, standards and methodologies and their use in the field of geology;
- Data modelling: main concepts and practice in data standards, data modelling, standards for interchanging data (GML, XML, UML, etc.);
- Generating and publishing web services;
- Metadata;
- Visualisation of data in GIS applications.

### 4. TIME SCHEDULE

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<b>Date of training session</b>	From 9 April 2018 to 20 April 2018
<b>Location</b>	Yaoundé, Cameroon
<b>Application deadline</b>	16 February 2018

### 5. WHO CAN APPLY?

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The PanAfGeo “WP7 – Geoscientific Information Management” training session is open to all persons who are eligible according to the conditions of the “**PanAfGeo Charter for Trainee**”.

Moreover, in order to be able to follow the proposed training in “WP7-B Spatial data infrastructure - Data modelling - Interoperability standards - Data dissemination” and fully benefit from the new knowledge and skills delivered over the ten day-course, the applicants **must justify of the required education and experience level** as follows:

- Knowledge of, and skills in, working with GIS (ArcGIS, QGIS or other), databases (SQL or other) and web (HTML).
- Good practice of computer using Windows;
- Good practice of Excel software will be appreciated;
- Basic knowledge on geology (recommended).

### 6. FUNDING OF THE TRAINING

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The PanAfGeo “WP7 – Geoscientific Information Management” training session is supported through funds of the European Commission.

The following expenses will be covered for each trainee:

- Travel costs: flight and ground travel in Africa, according to the programme of the training;
- Accommodation, breakfast, catering and joint meals during the training session;
- A daily training allowance of 30 EUR.

## 7. APPLICATION AND SELECTION PROCEDURE

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In order to be considered, applicants for the PanAfGeo Training Session entitled “WP7 – Geoscientific information Management” must complete the documents listed hereafter:

- 1 - Applicant Form for a PanAfGeo Training;
- 2 - Letter of Commitment signed by your employer;
- 3 - Letter of Motivation.

Please complete these documents and send them to WP7 Leader Marc URVOIS (BRGM) [m.urvois@brgm.fr](mailto:m.urvois@brgm.fr), WP7 Co-Leader Abdoulaye OUEDRAOGO (BUMIGEB) [abdouloued@gmail.com](mailto:abdouloued@gmail.com) and WP7-B Training Module Leader François TERTRE (French Geological Survey, BRGM) [f.tertre@brgm.fr](mailto:f.tertre@brgm.fr)

before the **Application Deadline: 16 February 2018.**

The selection process will take into account regional-national representation and a gender balance following the aim of strengthening skills of African Geological Surveys geoscientific staff.

All applicants will be informed about the result of the selection process approximatively on 5<sup>th</sup> March 2018. The Invitation Letter will be sent out immediately in order to allow time for visa processing and delivery.

Information about the PanAfGeo Programme can be found via the internet address:

<http://panafgeo.eurogeosurveys.org>

Questions regarding PanAfGeo should be forwarded to EuroGeoSurveys via the email address:

[info@eurogeosurveys.org](mailto:info@eurogeosurveys.org)

Or to the Organisation of African Geological Surveys (OAGS) via the email address:

[oags@geoscience.org.za](mailto:oags@geoscience.org.za)

Questions regarding practical issues on the course should be forwarded to the training coordinators via email as follows: [m.urvois@brgm.fr](mailto:m.urvois@brgm.fr), [abdouloued@gmail.com](mailto:abdouloued@gmail.com), [f.tertre@brgm.fr](mailto:f.tertre@brgm.fr).

### **DR MARC URVOIS**

WP7 – Geoscientific Information Management Leader  
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### **MR ABDOULAYE OUEDRAOGO**

WP7 – Geoscientific Information Management Co-Leader  
Director of Geological and Mining Research  
Geological Survey of Burkina (BUMIGEB)

### **MR FRANÇOIS TERTRE**

WP7-B Training Module Leader  
Geoscientific Information Systems Specialist  
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