



SPATIAL DATA INFRASTRUCTURES AND EARTH OBSERVATION EDUCATION AND TRAINING FOR NORTH AFRICA



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Dear colleagues,

We are pleased to come back and present the 8th issue of the SEED4NA project newsletter. Our main objective is still the communication of the results and outcomes of the project activities so far and the dissemination of the national and international events closely related to the project.

In this issue we report and announce many activities and events: the 3rd in-person SEED4NA project meeting (September 12-15, 2022, IZU, Agadir, Morocco), the IAV team participation in a smart city event (September 13, 2022, Agadir Morocco), the TeanGeo 2022 conference (October 18-20, 2022, Tunis, Tunisia), the SEED4NA project partners participation in TeanGeo, the SEED4NA Algeria National Training (October 23–26, 2022, USTHB, Algiers, Algeria), and finally an overview of the SEED4NA Project one-day events.

Furthermore, we take the opportunity to announce the 4th in-person SEED4NA project meeting to be held from January 30, 2023 to February 2, 2023, at AU, Alexandria, Egypt, and the IEEE International Conference on Earth Observation and Geo-spatial information ICEOGI 2023 to be held from 22 to 24 May, 2023 at USTHB, Algiers, Algeria.

In the next issue of our newsletter, we will continue to focus on the undergoing and upcoming activities closely related to the SEED4NA project.

Editorial board

**4th In-person SEED4NA
project meeting
30/01/2023—02/02/2023
Alexandria, Egypt**

The University of Alexandria, Egypt will be hosting the 4th (in-person) SEED4NA project meeting which will take place from Monday January 30th, 2023 to Thursday February 2nd, 2023, Alexandria, Egypt.

See you in Alexandria !

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Project meeting & national stakeholders event in Agadir

September 12-15, 2022, Agadir, Morocco (1/2)

From Monday 12 to Thursday 15 September 2022 a SEED4NA project meeting was held in Agadir (Morocco), hosted by Ibn Zohr University. During the meeting, which was held at the Cité de l'Innovation Souss Massa in Agadir, the SEED4NA project partners discussed the status and progress of the project, and especially prepared the implementation of the revised and new courses related to the SEED4NA project curriculum, which takes place in the academic year 2022-2023.

On Monday 12 September, the SEED4NA project partners were welcomed by several key representatives of Ibn Zohr University, who provided interesting presentations on the university and its involvement in international projects.

Dr. Latifa Daadaou, national coordinator of the National Erasmus+ Office Morocco, shared some important insights on the Erasmus+ programme and the SEED4NA project. In the second session of the first day, the status of the tasks related to the development of the SDI and



EO courses was discussed. Among these tasks are the development of the project curriculum, the development of VET courses, the purchase and installation of SDI/EO equipment and the training of teachers.

The afternoon session focused on the preparation of the revised and new courses at the partner country institutions. Several North African partners presented the revised and/or new courses

they prepared under the SEED4NA project, all covering particular parts of the project curriculum. Also during the second day of the meeting, there was a dedicated session on the status of the course preparations, in which the North African partners provided an introduction to these courses, with information on the learning objectives, teaching methods and teaching activities.

The remaining part of this second day focused on the project tasks related to the implementation of the SDI and EO courses, including the localization of the courses at the partner universities, the actual implementation and execution of the courses and the evaluation of these courses.

Project meeting & national stakeholders event in Agadir

September 12-15, 2022, Agadir, Morocco (2/2)

During the third day of the meeting, a field trip was made to a local citrus farm, in which the irrigation system of the farm was presented and a demonstration was given on how drones could be used to support the monitoring of citrus trees.



Also during the fourth day of the meeting, a strong connection was made with local stakeholders and their needs and interested related to the use of GI, SDI and EO. During a national stakeholders event, representatives from the Hydraulic Agency, the Argan and Oasis Agency and the private sector company Agridata explained how they are taking advantage of geospatial data and information in their day-to-day operations, and how GI/SDI/EO-skills are crucial for their organization. After the event with the local stakeholders, the project meeting was ended with a session on quality management and project management.



Participation of the IAV team in a Smart City Event: September 13, 2022, Agadir Morocco

On September 13, 2022, the IAV team (Pr. Hicham Hajji, Pr. Imane Sebari, and Pr. Kenza Ait El Kadi) was invited to Agadir to participate as panelists in an interesting regional event organized by one of the SEED4NA Moroccan stakeholders: TRATOP Engineering. TRATOP Engineering⁽¹⁾ is one of the most important Moroccan companies working in the field of topography and digital cartography. It is one of the few companies to introduce recent technologies in digital mapping and surveying like mobile mapping system, laser scanner technologies and drones.



The objective of the event was to discuss the importance of spatial data infrastructure in the context of the smart city, which uses a variety of software, user interfaces and communication networks alongside the Internet objects (IoT) to provide connected solutions to the public

The SEED4NA team panelists started by recalling the importance of Spatial Data Infrastructure and Earth Observation to the audience, and emphasizing how decision makers can leverage such opportunities to achieve smart cities objectives very efficiently.



In addition, many of the questions from the audience (composed of public and private companies⁽²⁾ representatives with different backgrounds in engineering and most of them are using spatial data in a daily basis) raised the interest of using SDI in their daily works.

The IAV team expressed their will to give more dissemination activities about SDI and EO to the audience as many have asked their interest to be trained in such promising technologies.



(1) www.Tratop.ma

(2) Center of Regional Investment, Urban Agency, Agadir Municipality, Water and Electricity Utilities, Ibn Zohr University, Agadir, Morocco.

Third International Conference on Advanced Geospatial Science & Technology (TeaGeo 2022), October 18-20, 2022, Tunis, Tunisia

The third international conference on Advanced Geospatial Science & Technology (TeaGeo 2022) organized by the Regional Center for Remote Sensing of North Africa States (CRTEAN), Tunis, Tunisia under the supervision of the Ministry of Higher Education and Scientific Research, took place on October 18-20, 2022, at the Laico Tunis Hotel.

The opening ceremony took place in the presence of H.E Mr. Moncef Boukthir, Minister of Higher Education and Scientific Research. The participants were welcomed by the local organizers and several key experts in the domain, including Dr. Hadi Gashut, the General Director of CRTEAN, Dr. Tidiane Ouattara, Space Science Expert in the African Union Commission in charge of developing and implementing the African Outer Space Program and coordinator of the global program GMES & AFRICA, Mr.



Anis Frikha, Dean of the National Center for Remote Sensing, Mr. Abdelmajid Ben Amara, Secretary General of the Union of Arab Scientific Research Councils, and Ms. Ndaya Fatou Mar Representative of the Sahara and Coast Observatory.



The conference was attended by many heads of diplomatic missions and their representatives in the Tunisian state, heads of sensor centers, geographic information systems, international organizations from various Arab and African countries and European universities, as well as a large number of participants from Africa, Asia and Europe.

The conference was accompanied by an exhibition that served as an opportunity for companies, research centers and government organizations to showcase their products and activities in the field of space, remote sensing and GIS.

The SEED4NA project actively supported the conference, and several partners participated in the event.



Participation of the SEED4NA project partners in TeanGeo 2022: October 18-20, 2022, Tunis, Tunisia (1/2)

The TeanGeo 2022 conference program offered parallel paper presentation sessions and keynote sessions to share ideas, explore on-going research and future developments including state-of-the-art applications, and to network with the professionals from academia, industry, and government who are interested in Geospatial Science & Technology.

During three days, the SEED4NA project partners (KU Leuven, UNIZG, USTHB, UOran1, UJ, CRTEAN) presented two keynote presentations and many other presentations related to the core topics of the SEED4NA project.

Prof. Joep Crompvoets (KU Leuven, Belgium) and Prof. Željko Bačić (UNIZG, Croatia) animated interesting plenary sessions respectively entitled “Introduction to Geospatial Technology Hype Cycle”, and “Remote sensing technologies, GIS & open data for emergency management”.



Prof. Mejd Kaddour (UORAN1, Algeria) moderated a session about “Land degradation and restoration assessment using space technologies”. Dr. Glenn Vancauwenberghe (KU Leuven, Belgium) moderated a panel session dedicated to the SEED4NA project.



Researcher members from the SEED4NA project consortium (KU Leuven, UNIZG, USTHB, UOran1, UJ, CRTEAN) gave oral presentations about challenges of using drones and software solutions for smart cities, impact of the 2018 flash flood on the cap bon region, and change detection using machine learning, Earth observation use in land/groundwater management and Prediction, estimation of coastal bathymetry by satellite imagery, image classification using deep learning, satellite imagery in creation of hazard maps, mapping and understanding the GI/EO ecosystem in Algeria, and assessing and addressing GI/EO skills gaps in North Africa.



Participation of the SEED4NA project partners in TeamGeo 2022: October 18-20, 2022, Tunis, Tunisia (2/2)

A panel session dedicated to the SEED4NA project closed the scientific activities of the TeamGeo 2022 conference.

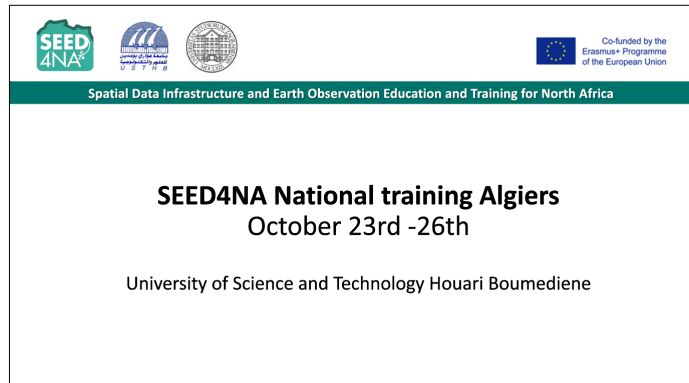
The session moderated by the SEED4NA project coordinator, Glenn Vancauwenberghe (KU Leuven, Belgium) and led by the present local coordinators from Europe (UNIZG, ITC) and North Africa (UJ, USTHB, UORAN1) started by a brief presentation of each partner. After that, the participants were asked to reflect upon the following topics:

- Impact of the SEED4NA project on their home institution
- Challenges of EU-NA collaborations for capacity building
- Future collaboration: foreseen ways, lessons learned, recommendations.



SEED4NA Algeria National Training: October 23–26, 2022, USTHB, Algiers, Algeria (1/2)

As a part of the SEED4NA project activities, the University of Sciences and Technology Houari Boumediene (USTHB), Algiers, Algeria, one of the two Algerian partners involved in the project, invited the SEED4NA project partner team of the Faculty of Geodesy, University of Zagreb (UNIZG), Croatia to deliver series of courses on Space Geodesy & Cartographic Synthesis, GIS & Data Analysis, and Remote Sensing. These in-person courses with the aim to reinforce the capacity building in the field of Earth observation and Geospatial information were provided as a national training held at the Faculty of Electrical engineering (FGE) of USTHB from 23 to 26 October, 2022.



The training attended by about 50 participants coming from the USTHB (teachers and PhD students) as well as from two other SEED4NA partners (UROAN1 and Fayoum University), consisted of 10 physical sessions and 02 online sessions. The main purpose of these sessions was to support Algerian partner universities in the adoption of new/modernized courses to develop internal capacities to use purchased equipment and teach the courses.



The training started with a warm welcome by the Dean of the FGE Faculty followed by the Vice-Rector of pedagogy and the USTHB local coordinator of the SEED4NA project.

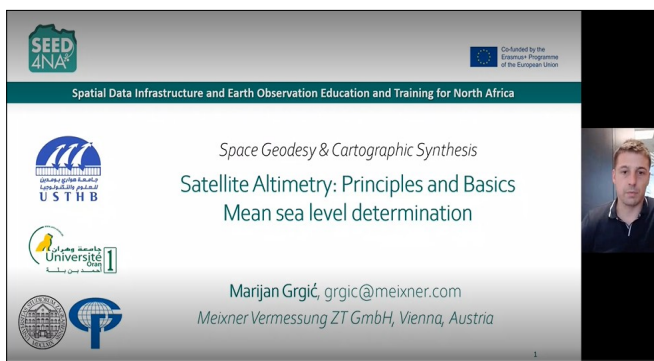
The first morning session on 23rd October 2022 was on the general topic NO1 « Space Geodesy & Cartographic Synthesis ». Prof. Željko Bačić introduced first the SEED4NA project aims, the Algiers

training objectives and its program, and provided an overview of the University of Zagreb (Croatia), the Faculty of Geodesy, its activities and the members involved in the SEED4NA project. Afterwards, the course focused on 1) classification of satellites and orbits, 2) GNSS Principles and Basics. The course was very interesting as the equipment acquired by USTHB as part of the SEED4NA project also includes a TOPCON GNSS.



SEED4NA Algeria National Training: October 23–26, 2022, USTHB, Algiers, Algeria (2/3)

Prof. Vesna Poslončec-Petrić presented the second session on the general topic No2 « GIS & Data Analysis ». The course about Augmented Reality (AR)– Theory & Application introduced first the visualization of AR and its devices, then provided the AR applications (education, tourism, indoor navigation, etc.). As a conclusion, the speaker pointed out the big impact of AR in on everyday life, the possibility of content personalization based on user preferences and adaptation to the user context., and finally the system must have a big database available and strong processor to offer the best experience for the users.



The afternoon sessions related to topic No1 and presented by Prof. Marijan Grgić were dedicated to 1) Satellite Altimetry: Principles and Basics Mean sea level determination , and 2) Satellite Gravimetry: Principles and Basics, Space gravity missions (CHAMP, GRACE and GOCE), Gravity field recovery approaches.

During the second training day on October 24th, 2022, Prof. Željko Bačić finished with topic No1 and provided interesting sessions on the topics 1) Measurement errors, measurement combination, mathematical models, and 2) Sensor integration - INS/GNSS device.

Prof. Vesna Poslončec-Petrić closed the topic No2 and provided two sessions (S6 & S7) related to 1) Noise mapping & visualization – theory & exercise , and



2) Noise mapping & visualization – exercise & processing. The participants had the opportunity to realize a practical work in order to generate a voluntary noise map of the USTHB University.

SEED4NA Algeria National Training: October 23–26, 2022, USTHB, Algiers, Algeria (3/3)

The third and fourth training days on October 25th-26th, 2022, were dedicated to theoretical and practical sessions on remote sensing imagery presented by Prof. Andrija Krtalić. The theory sessions were about 1) spectroscopy, 2) digital images, 3) spectral indices, and 4) spatial interpretation. Each session was followed by a practical ses-



sion. Through these interactive sessions participants actively intervened with questions, comments and suggestions.

SEED4NA Algeria National Training was a successful and fruitful event. The feedback collected afterwards through the evaluation questionnaire showed that most of the participants enjoyed the various sessions, which were considered to be highly relevant for their own practice. Also recommendations for further improvements were made, such as the suggestion to cover aspects such as atmospheric and marine pollution, forest fires, desertification and its impact on agricultural land, Salinity and its impact on the preservation of groundwater, etc.

Invited keynote speakers and all participants have received a certificate of participation. The complete programme of the SEED4NA Algeria National Training and all the presentations are available at the SEED4NA project website www.seed4na.eu.



SEED4NA Project Flash Events

Erasmus+ impact study

On June 28 2022 the IAV team participated in a restitution seminar for the impact study of the Erasmus+ projects on capacity building for higher education, organized by the National Centre for Scientific Research (CNRST) in Rabat Morocco.

Erasmus+ Day Celebration

At USTHB (Algiers, Algeria)



To celebrate Erasmus+ days, the Faculty of Electrical Engineering, USTHB, organized on Thursday October 13, 2022 a training day on GNSS (Global Navigation Satellite Systems) equipment acquired thanks to the SEED4NA project.

At UORAN₁ (Oran, Algeria)

On the occasion of Erasmus Days celebrated on October 13 at the University of Oran 1, Pr. Mejdi Kaddour, local coordinator of the

SEED4NA project, gave a speech entitled “SEED4NA: Designing and Delivering Modernized Courses in EO and Geomatics for Academia and Professionals”.



At IZU (Agadir, Morocco)

In term of celebration of the Erasmus Days, the Ibn Zohr University (IZU) partner has participated to this event October 17th and 18th to celebrate the Erasmus scientific days to share the outlines of the SEED4NA project and to connect and network with more than 165 participants from all over the world.

ICEOGI 2023 IEEE International Conference on Earth Observation and Geo-spatial Information



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**IMPRESSUM**

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