

# New trends in the EO\*GI job market and the EO4GEO approach to Training Offers

**EO4GEO:** development of training materials and offers based on actual needs

## **New trends**





## New trends in the EO\*GI job market and the **EO4GEO** approach to Training Offers

**EO4GEO:** development of training materials and offers based on actual needs

How to get there?

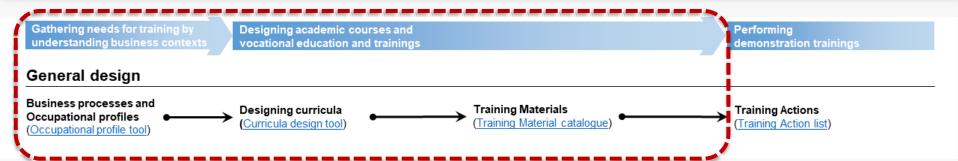




## **EO4GEO training approach**









## **EO4GEO** training approach





Gathering needs for training by understanding business contexts

Designing academic courses and vocational education and trainings

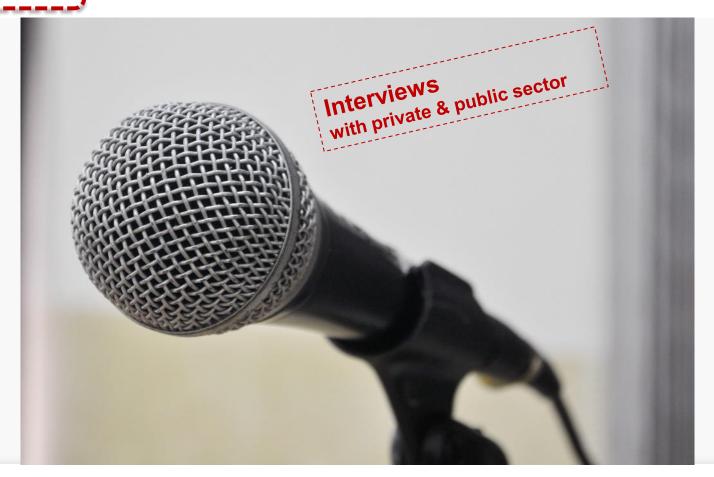
Performing demonstration trainings

### General design

Business processes and Occupational profiles (Occupational profile tool)

 Designing curricula (Curricula design tool) Training Materials
(Training Material catalogue)

Training Actions
(Training Action list)



## New trends in the job market





### Lack of specialised skills:

Selling skills for EO products and services

Experts in EO/GI with a background in cloud computing, machine learning and programming

#### **PRIVATE:**

skills in data analytics and machine learning; commercial and technical skills

#### **PUBLIC:**

experts in EO\*GI techniques; lack of know-how on the use of products/services and relevant training

### Skills administration would need:

Hard skills: GIS and data processing; computing; knowledge of deep learning techniques.

Combination of soft & technical skills

Soft skills: commercial/selling skills

Intensive up-to-date training

#### **PRIVATE:**

leadership skills, dialogue with the end user, customer awareness. Public update on the latest technological developments; effective use of EO data.

## **EO4GEO** training approach





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### General design

Business processes and Occupational profiles (Occupational profile tool)

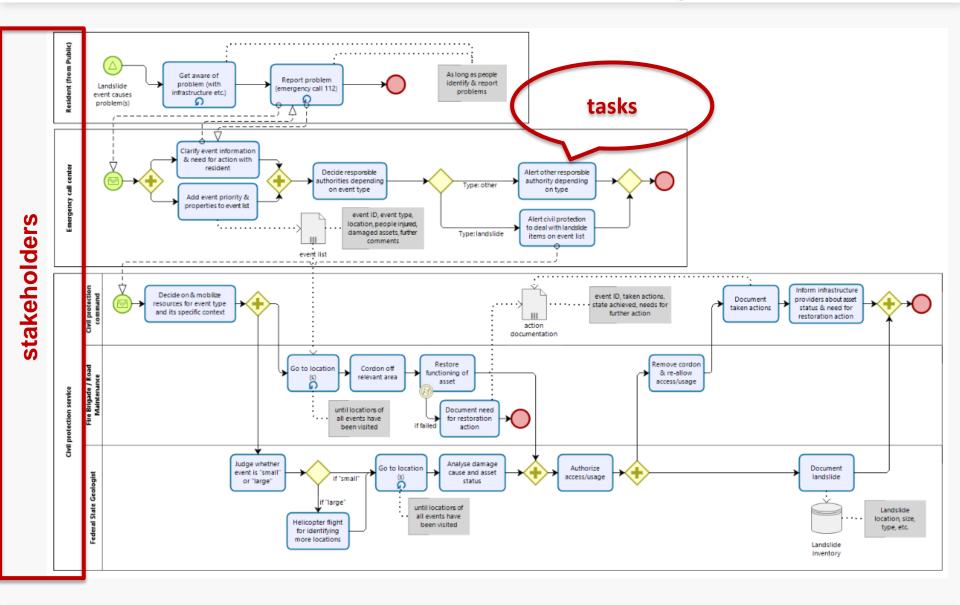
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(Training Material catalogue)

Training Actions (Training Action list)



## **Business Processes**





## Business Processes / Occupational profiles eo40









#### **Operational Profiles:**

- Service Provider
- EO\*GI Expert / Analyst
  - comprehensive scope of topics or
  - thematic focus on specific area

#### Technical Profiles:

GIS Software Developer

#### Fields of Works

- EO\*GI-Business
- University
- Space Agency
- RS/GIS-Section of Institutions (eq. for Environmental Solutions)

#### PARTIALLY



#### Operational Profiles:

- · EO\*GI Quality Control and Validation
- Geologist / Geomorphologist
- · Ecologist / Habitat Mapping Expert
- · EO'GI Service Operations Manager
- Project Manager
- · Purchase Officer
- · Sales and Pre-Sales Employee

#### **Technical Profiles:**

- Data Scientist
- EO\*GI Data Manager
- (Geo-)Database Expert/Architect

#### Fields of Work:

- · Geological Agency
- · Environmental Institutions
- Nature Conservation Authority
- Water and Seweage Administration
- Precision Farming
- Municipalities

#### REMOTELY



#### Complementary



#### **Operational Profiles:**

- HR Officer / HR Administrator
- · Contracting Responsible
- Tender and Funding Responsibles

#### Technical Profiles:

· Administration Officer

Municipal Employee

· City / Municipality Planner · Landscape Architect

Contract Lawyer

System Architect / Engineer

Operational / Admin. Profiles:

IT-Administrator

#### Fields of Work:

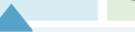
- Electricity Company
- · Regions, Municipality
- · Road Administraion
- Railway company
- Danube River Administration
- National Park
- Forest Office

#### Technical Profiles:

Software Developer

#### Fields of Work:

- profiles can appear in many different areas of work
- EO\*GI proficiency may vary
- significantly





#### Profiles mentioned in BPMNs:

Geological Agency of the Federal State Customer Contact EO\*GI Data Manager EO\*GI Analyst Geomorphologist/Geologist EO\*GI Innovator HR Officer/HR Administrator EO\*GI Service Operations Manager Geodatabases & IT Administrator EO\*GI Quality Control and Validation Regional/National Nature Conservation Authority Service Provider Ecologist/Habitat Mapping Expert MM SpA (engineering company) Service Provider Customer Pre-Sales Project Manager EO\*GI Analyst IT-Administrator Service Provider - Tender Purchase Officer HR Officer/HR Administrator Service Provider Customer Pre-Sales Project Manager EO\*GI Analyst IT-administrator EO\*GI Quality Control and Validation Administration Officer GIS Analyst Business Analyst Water Management Expert System Architect Database Architect Data Scientist System Engineer Geo-Information Expert Database Expert Software Developer GIS Software Developer Danube River Administration Service Provider Stakeholder Service Provider Baltic Environmental Forum ERM Coordinator RS-Section - Institute for Environmental Solution Regional Stakeholder involved in Agriculture Monitoring GIS Expert EO Expert Model Expert Petaccieto Municipality Geological Survey Baia Archaeological park/Municipality of Pozzuoli Geological Survey Sicily Region, Etna National Park Geological Survey Municipality of Como Geological Survey of Italy Service Provider External Stakeholder for Air Quality Planning, Abatement Strategy and Decision Making External Stakeholder: General Secretariat of Civil Protection at Regional or Country Local Forest Office Solar (PV/CSP) farm Operators, Managers of Electricity EO Analyst Service Public de Wallonie (SPW) Coordinator SPW Technician ISSEP Technician ISSEP Coordinator Service Provider - Product of Sale Stakeholder Service Provider - Project Fundings Stakeholder - Fundings City Planners (municipality) Service Provider Road Administration (municipality) Municipalities Elderly Care Service Provider Regional Health Authorities Road Administration (Municipality) Service Provider Road Administration, Stockholm Water Service Provider Service Provider Landscape Architects City Planners Service Provider Ecologists Municipality Planners Researchers KI Region Stockholm Service Provider Project Manager State Road and Railway companies Administration Officer Stakeholder Purchase Officer GIS-Section - Institute for Environmental GIS-Expert - Local Forest Office Building Permit Officer Service Provider IT Systems Architect Contract Lawyers HR Officer/HR Administrator EO\*GI Analyst (biotop mapping service) EO\*GI Quality Control and Validation Tomaresca Windery



**Mainly EO\*GI** related profiles



Partially EO\*GI related profiles



remotely EO\*GI related profiles



complementary profiles

### **Business Processes**





Gathering needs for training by understanding business contexts

Designing academic courses and vocational education and trainings

Performing demonstration trainings

#### General design





Training Materials (Training Material catalogue)



Training Actions
(Training Action list)

## eo4geotools | curriculum Design

## **Example of a Curriculum**

- skills gap related
- BoK-annotated

General introduction...





### Course: Management view on Spatial Data Infrastructures

This module gives an overview of the non-technical aspects related to Spatial Data Infrastructures (SDI). In an SDI several technical and non-technical components work together. This module focuses on the non-technical components and is targeting process owners and managers.

#### Study areas (11)

#### What is a Study area?

- Community development (Architecture and construction)
- Town and country planning (Architecture and construction)
- Urban planning (Architecture and construction)
- Administration (Business and administration)
- Information processing/data entry (Business and administration)
- Local public administration (Business and administration)
- Management skills (Business and administration)
- Public and institution management (Business and administration)
- Quality management (Business and administration)
- Conservation and land management (Environment)
- Law (Law)

SDI performance and assessment

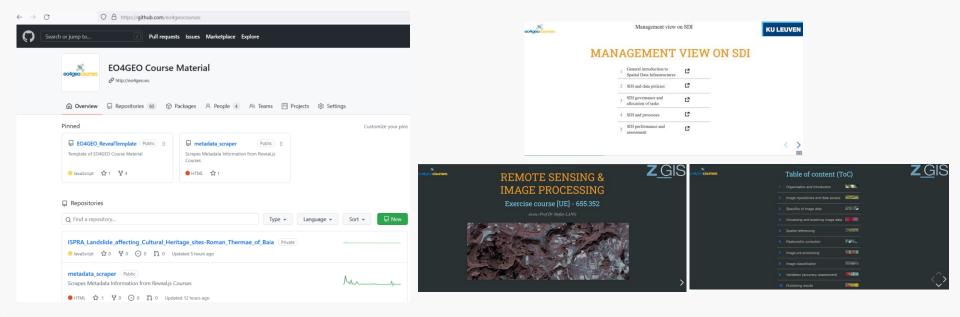
### **Business Processes**







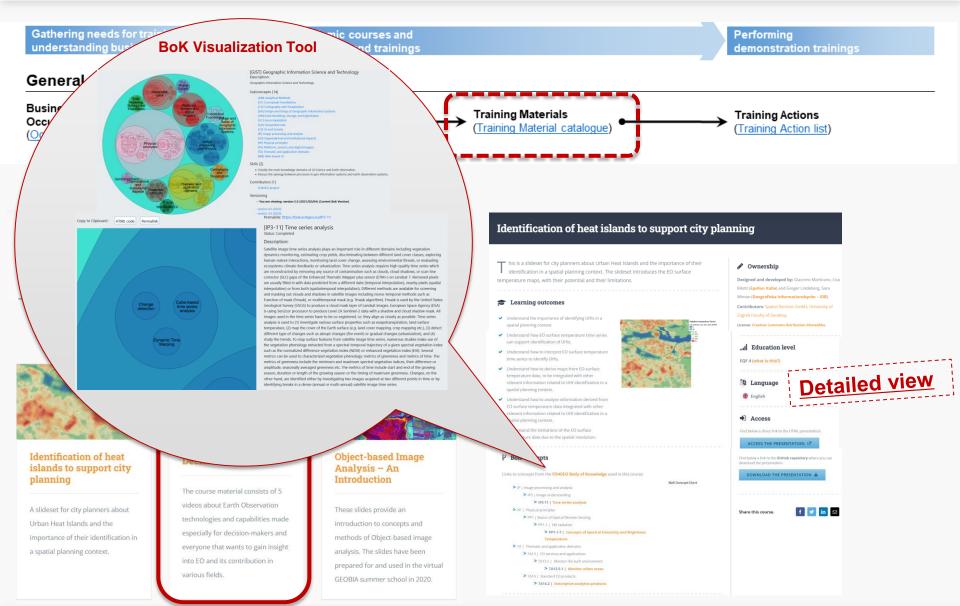
- Materials were created in Reveal JS: open source HTML presentation framework
- Material collection on GitHub



## **Training Materials**







## **Training Actions**





Gathering needs for training by understanding business contexts

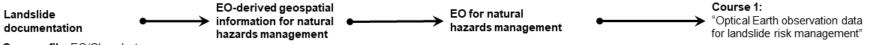
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### General design



#### Individual scenario

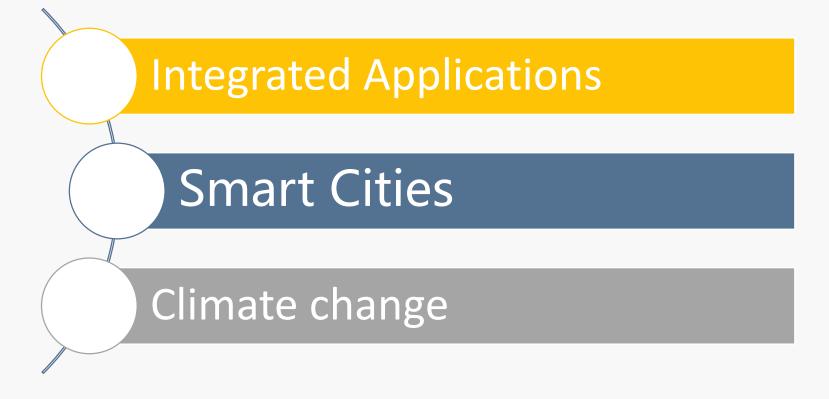


Core profile: EO/GI analyst Peripheral profile: Domain expert

## **Subsectors**











### Rationale for the selection of scenarios

The task lead and the contributors proposed scenarios **based on previous or on-going activities**, so that they feel confident to access the relevant data and to involve known stakeholders.



The **optimal spread of involved actors** offered by the selected scenarios were considered to enable the use of relevant training measures based on scientific as well as VET curricula.



The relation of the scenarios to higher political objectives was considered, since problem-based learning requires understanding the context of planned actions or development interventions.

## **Training Actions**





		ı	Learning path (please	ı	l I			
			suggest possible other TA			Date of the training action (if		
	Scenario	ID	that would fit to yours)	Partner (lead)	Type of training action	known otherwise planed)		
	Scenario	10	that would lit to you.s,	raither fieud,	Type or training action	Miowii otilei wise pianea,		
	Landslide affecting Cultural Heritage sites - Roman Thermae of Baia	IA1	IA4 / IA8	ISPRA	MOOC	from October 18, 2021		
	Observing from space agriculture and environment	IA2	2nd: IA7 / 3rd: IA9	UJI	Workshop	18 nov 2020		
	Change detection using EO data	IA3		ROSA	Academic course	1st: 31 March / 2nd: ???		
	ending detection daing est esta				Account Court			
Integrated Applications	Optical Earth observation data for landslide risk management	IA4	IA1 / IA8	PLUS	Workshop	15 April 2021		
	The rise of Artificial Intelligence for Earth Observation	IA5		Planetek	Webinar	2 mar 2021		
	Development of a citizen science project within the MijnTuinlab (MyGardenLab) environment	IA6		KU-Leuven	Project work	Autumn 2021 for project work		
1	WP7: A new Common Agricultural Policy (CAP) based on Copernicus program and EO4GEO tools	IA7	1st: IA2 / 3rd: IA9	CNR-IREA	Webinar	28. April 2021		
İ	Fast disaster response – satellite technologies for surface displacement monitoring	IA8	IA1 / IA4	GEOF	Webinar	12-14 July		
	Partner TA: "Usability of EO+IoT+GIS data in agriculture"	IA9	1st: IA2 / 2nd: IA7	IGEA	Webinar	End of 2021		
	Identification of local heat islands to support city planning	SC1	CC1 / CC2 / CC3	GIB	Webinar	3 feb 2021		
	Evaluation and planning of urban green structures	SC2	SC4 / SC5 / CC6	GIB	Webinar	8 june 2021, kl 10-11:30		
Smart Cities	Evaluation and planning of urban green structures	SC2	SC4 / SC5 / CC6	GIB	Webinar	8 september 2021 10-11:30		
Smart Cities	Improving sustainability of cities to storm and water	SC3		GIB (FSU-EO)	Project work	Autumn 2021		
	Smart cities, UHI and urban green (preparing for workshop), Swedish	SC4	SC1 / SC2/ CC6	GIB	Webinar	5th oct 2021 10-12		
	Smart cities, UHI and urban green (WS with a technical focus and more hands on work), Swedish	SC5	SC1 / SC2/ SC4 / CC6	GIB	Workshop	8th oct 2021 9:00-12:00		
	Training Actions: 15 out of 25 People reached so far: ~1.000 Courses: Webinars / Workshops / Summer Schools / Academic courses /							
	MOOC / OOC / Project wo	rk						
Climate Change	Air quality monitoring and management (e-shape)	CC2	SC1 / CC1 / CC3	UPAT	Workshop	November 2021		
	Solar potential maps at municipal level (Hybrid event)	CC3	SC1 / CC1 / CC2	UPAT	Webinar	9 November 2021		
i	CO2 budgets for municipalities	CC4		NOVOGIT	OOC (without "M")	October 2021		
1	Early warning for disease epidemics at regional level	CC5		UPAT	Webinar	11. June 2021		
	EO for urban greenery management	CC6	SC2 / SC4 / SC5	UNEP-GRID	Webinar	26. April 2021		
	Spark! - Earth Observation and Geographic Information: a crucial tool to monitor and tackle climat	CC7	SC1/SC2/CC1/CC6/CC3	Climate-KIC	Workshop	26. October 2021		
1	Partner TA: Active fire detection with Sentinel-3	CC8	002,112,112,111,111	Serco	Webinar	28. October 2021		
	Talance In. neuro in caescala Intil Senting S			55.22	***************************************	20. 01001. 1111		
Summer	Introduction to Satellite Remote Sensing (on the Website after the TA)	SS1		UNIBAS / UNEP GRID	Summer School	15 18. June 2021		
	Intelligent Earth Observation	SS2		PLUS / UNEP-GRID	Summer School	8. June - 7. July 2021		
	intelligent but in observation			1200 / 0.12.		5.75		

## **Training Actions**





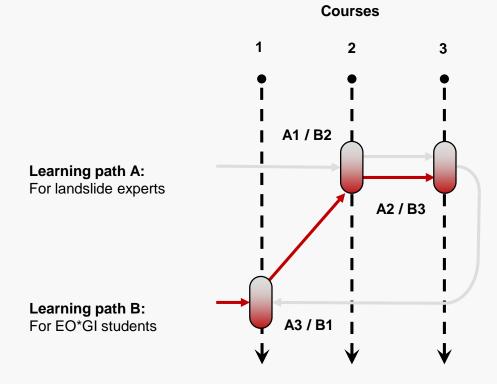
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### General design





#### Course 1

- Non-technical intro to EO\*GI methods
- Discuss product quality in application

### Course 2

- Technical intro to EO\*GI methods
- Apply methods and produce a map for an application

#### Course 3

- Accuracy and quality assessment methods
- Produce a map for an application, assess accuracy and analyze the quality

## **Learning Path**





	Landslide affecting Cultural Heritage sites - Roman Thermae of Baia	IA1	IA4 / IA8	ISPRA	MOOC		
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Integrated Applications	Change detection using EO data	IA3		ROSA	Academic course		
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	Identification of local heat islands to support city planning	SC1	CC1 / CC2 / CC3	GIB	Webinar		
	Evaluation and planning of urban green structures	SC2	SC4 / SC5 / CC6	GIB	Webinar		
Connect Cities	Evaluation and planning of urban green structures	SC2	SC4 / SC5 / CC6	GIB	Webinar		
Smart Cities	Improving sustainability of cities to storm and water	SC3		GIB (FSU-EO)	Project work		
	Smart cities, UHI and urban green (preparing for workshop), Swedish	SC4	SC1 / SC2/ CC6	GIB	Webinar		
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	Spark! - Earth Observation and Geographic Information: a crucial tool to monitor and tackle climat	CC7	SC1/SC2/CC1/CC6/CC3	Climate-KIC	Workshop		
	Partner TA: Active fire detection with Sentinel-3	CC8	<b>\</b>	Serco	Webinar		
Summer Schools	Introduction to Satellite Remote Sensing (on the Website after the TA)	SS1		UNIBAS / UNEP GRID	Summer School		
	Intelligent Earth Observation	SS2		PLUS / UNEP-GRID	Summer School		

## Moodle





### **Training material**

(e.g. Introduction to GIS)

## Training Action material

(e.g. Solar potential maps)

- material of EO4GEO training actions that is worth saving
- · well structured units / repositories
- publicly accessible and editable



Material to provide Training Actions outside of EO4GEO

- · ready to use for implementation
- embedded in environment with additional features like general information, past recordings, presentations aso.

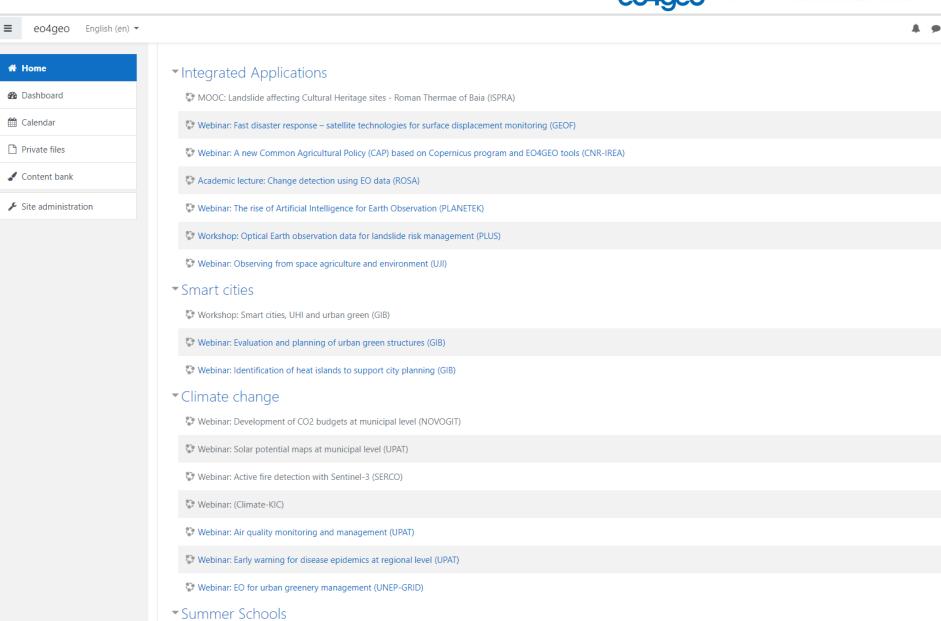


Training Actions provided within EO4GEO

## **Moodle courses**







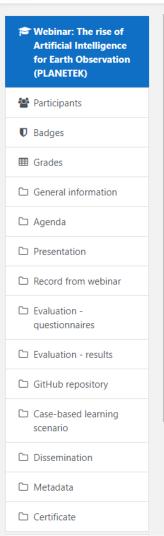
## **Moodle course**







eo4geo



Webinar: The rise of Artificial Intelligence for Earth Observation (PLANETEK)

Home / Courses / Integrated Applications / Webinar: The rise of Artificial Intelligence for Earth Observation (PLANETEK)

#### General information 🎤

An EO4GEO Webinar | 2 March 2021 at 10:00 AM

Organizers: Planetek Italia



Language: English



### 🛧 Agenda 🎤

- · Presentation of the webinar content
- · Presentation of the EO4GEO project
- · Al Background and concepts
- Applications to EO
- · Al to map shadowed coffee plantations using multi-temporal and multi-sensor EO images
- Pol
- · Presentation of the AI4EO challenge
- QA
- Conclusion

### **Courses Overview**





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### **EO4GEO Training Actions**

Find here a list of current and past innovative and case-based training actions organized by EO4GEO

### Featured training actions

**EO4GEO Webinar + Workshop:** Heat islands and green infrastructure in urban areas

**EO4GEO** and Geografiska Informationsbyrån **GiB** invites you this October 5th and 8th to an **introductory webinar** adressing the issue of urban heat and urban heat islands, and more specifically how to use EO-derived surface temperature maps to identify areas prone to heat stress in the urban environment.

The webinar will be followeb by a **workshop** aiming at getting a hands-on experience with the data that is used to assess green infrastructure and heat islands in the urban environment.

MORE INFORMATION



## Upcoming and current events



Heat islands and green infrastructure in urban areas

October 5th and 8th 2021

Landslide affecting Cultural Heritage sites – Roman Thermae of Baia

October/December 2021

Earth Observation and Geographic Information: a crucial tool to monitor and tackle climate change

26 October 2021

## **Courses Information**





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### Evaluation and planning of urban green structures

An EO4GEO Webinar | June 8th. 2021 at 10:00 AM

This webinar is focused on the use of EO and GIS data for management and analysis of urban green structures.

The urban green infrastructure provides a number of important ecosystem services to city habitants. The webinar consists of a theoretical background on green infrastructure and ecosystem services, but also real-world cases exemplified by an extensive urban development planned north of Stockholm metropolitan area.

Participants will learn more about the use of EO and GIS tools, urban green infrastructure and ecosystem services.

The webinar is mainly non-technical and targets planners on different levels in cities or municipalities but also Climate adaption coordinators, GIS technicians, researchers and ecologists.



#### Date



June 8th. 2021 at 10:00 AM CET. Duration: 1.5 h.

### Registration

Please register by using the link below.



**REGISTER NOW** 

### Agenda

- > Presentation of the webinar content
- > Presentation of the EO4GEO project.
- > Poll #1.

## **Recordings and presentation**





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### The rise of Artificial Intelligence for Earth Observation

An EO4GEO Webinar | 2 March 2021 at 10:00 AM

his webinar addresses the use of AI algorithms in EO applications. Participants will become familiar with AI concepts, from machine to deep learning, from unsupervised to supervised methods. Furthermore, applications in object detection, semantic segmentation, classification, clustering, and data augmentation will be showed.

This webinar is developed within the "Integrated Aplications task in the EO4GEO project.

The basic idea of Al algorithms (random forest, Multi-Layer Perceptron, Convolutional Neural Networks, and Generative Adversarial Networks) and how they are useful in the EO applications will be presented.

During the webinar, the AI4EO Project Team would like to introduce the AI4EO initiative and announce the launch of its first official Challenge. AI4EO is an initiative of the European Space Agency's  $\Phi$ -lab that aims to bring the worlds of Artificial Intelligence (AI) and Earth Observation (EO) closer together, stimulating and

### Webinar recording



### Agenda

Presentation of the webinar content



# New trends in the EO\*GI job market and the EO4GEO approach to Training Offers

Are there any questions or remarks?