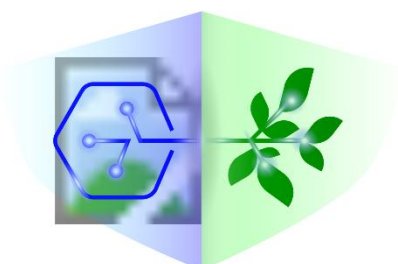


## „PNRR: Fonduri pentru România modernă și reformată!”



# DTEclimate

Digital Twin Earth Intelligence for Climate Changes  
DTEClimate, ctr. nr. 760008/30.12.2022

### Seminar report

Prepared By	<u>Alina Răduțu</u>	<u>17/12/2025</u>
Reviewed By	<u>Florian Bodescu</u>	<u>17/12/2025</u>
Approved By	<u>Simona Mărculescu</u>	<u>17/12/2025</u>

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## Document Change Record

Issue	Date	Chapter	Change
0.1	2024-12-31	all	First version
0.2	2025-12-17	1, 3, 4	Actualisation of introduction, New chapter added (chapter 3), actualisation of conclusions (chapter 4)

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## 1. Introduction

The purpose of this document is to present the dissemination activities performed in the frame of the EO4Nature project until this stage of the project, highlighting the seminars organized in 2024 and in 2025. The dissemination plan includes national and international presentations, seminars and project presentation workshops. Considering the high synergies with the other specific project and the main purpose of the DTEClimate, the dissemination activity for EO4Nature is correlated with the activities of the other projects. In this context, besides the biodiversity issues, the dissemination activity that is presented in this document makes also reference to the applications for other specific projects, mainly the public health issues, when correlated with the use of satellite imagery and ecosystems' particularities.

The EO4Nature project was presented through the following events:

- IGARSS 2023 Pasadena Conference, where two publications related to project concepts and scientific goals together with selected approach and methods were submitted:
  - o M. Datcu, D. Faur, E. Mamut, I. Nedelcu, C. Ionescu and L. Miron, "Digital Twin Earth for Climate Change Adaptation: An AI based Federated System," IGARSS 2023 - 2023 IEEE International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA, 2023, doi: 10.1109/IGARSS52108.2023.10281684
  - o Marian Neagul, Ion Nedelcu, Alexandru Munteanu. Building a National Spatio-Temporal Data Cube. IGARSS 2023 - 2023 IEEE International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA, 2023
- Online seminar "Current Challenges on Public Health and Possible Solutions Supported by Earth Observation and Data Analytics", organized by ROSA together with UPB and USV Iasi, on the 21st of June 2024
- Workshop Competence Center for Climate Change Digital Twin for Earth forecasts and societal redressment DTEClimate, Universitatea Națională de Știință și Tehnologie POLITEHNICA din București, 15-16 IULIE 2024
- The Annual Geography Symposium „DIMITRIE CANTEMIR”, in Iasi, on the 10th Oct 2024.
- The "Life sciences today for tomorrow" Congress organized by USV Iasi, in Iasi, on the 24th and 25th of October. In the frame of the congress, a DTEClimate workshop was organized and a short presentation of PS3 was presented
- 2nd DTEClimate Symposium, on the 25-26 Nov 2024
- EGU 2025, 27 aprilie – 2 mai 2025, Bodescu, F., Marculescu, S., Radu, I., Dediu, F., Bodescu, I. T., and Radutu, A.: Digital twin technology used for assessment of ecosystems state in a climate change conditions in Romania, EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-3495, <https://doi.org/10.5194/egusphere-egu25-3495>, 2025.
- FPCUP Copernicus transfer of knowledge and expertise activities on natural disasters (Floods and Fires) in Romania, 12 sept 2025

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- Workshop „Serviciile climatice – instrument strategic pentru consolidarea rezilienței și adaptării la provocările climatice în zonele metropolitane din România” organised by University of Bucharest, 23.10.2025- Multidimension SRL partner was present in the panel
- EO4NATURE Conference – “Challenges and Opportunities for Biodiversity Assessment”- organised by ROSA and Multidimension on the 24<sup>th</sup> of November 2025
- EO4NATURE Seminar- organised in the frame of the EO4NATURE Conference – “Challenges and Opportunities for Biodiversity Assessment”, 24<sup>th</sup> of November 2025

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## 2. Online seminar "Current Challenges on Public Health and Possible Solutions Supported by Earth Observation and Data Analytics"

On the 21st of June 2024, the online seminar "Current Challenges on Public Health and Possible Solutions Supported by Earth Observation and Data Analytics" was organized by ROSA, together with UPB and USV Iasi.

### 2.1 Objectives of the seminar

With the advent of Earth Observation systems and data analytics there is a strong commitment towards making use of these valuable resources in more and more socio-economic domains. One of these is public health and many organizations around the world are making efforts to identify the current main challenges related to Global Health and Earth Observation at large with a clear aim to increase awareness among institutional and private sector representatives, about the EO applications program and knowledge gaps in the health domain.

The same time, it is worth discussing with scientists, policy makers and industry the most pressing needs and information requirements and there is a global effort to initiate a dialogue between stakeholders on EO applied research for health, identifying the most pressing challenges and potential synergies among current and future activities.

Last but not least, Providing users and stakeholders with Earth Observation data, resources and capabilities becomes an immediate goal and there are actions to strengthen international collaboration in the resilience domain, by addressing various health related environmental monitoring aspects with: Big Data Analytics, Artificial Intelligence, the effects of Climate Change and Pollution on Human Health, Vector Borne Diseases, Waterborne Infectious Diseases.

Unless the main focus of the seminar was on public health, the connection with ecosystems and ecosystemic services and is evident. Thus, vector-borne diseases can be analysed considering the environment and the ecosystems, as vectors are developing in ecosystems, considering the environmental conditions. As an example, the decrease of a lake's level, can lead to the transformation of an area of the lake into a marshy area. In certain humidity, temperature, sun light, considering the climate change, some plants can develop that weren't specific for that area, and also some vector-borne can appear. We may add here the pollution factors from the atmosphere. That's why it is so important to study the connection between public health, ecosystems' evolution and the use of Earth Observation for analyzing these connections.

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## 2.2 Seminar agenda on the 21st of June 2024

### Presentations (09:30 – 11:00)

- *The national, European and international context of Public health resilience supported by Earth observation and data analytics.* Ion Nedelcu, ROSA (5')
- *Competence Center for Climate Change Digital Twin Earth for forecasts and societal redressement: DTEClimate.* Mihai DATCU, UNSTPB (10')
- *The objective and transparent evaluation of the evidence base regarding vector-borne diseases in Romania.* Liviu MIRON, USV Iasi (30')
- *National relevant activities: ROADAPT – a national platform supporting adaptation to climate change.* Vasile CRACIUNESCU, Meteo Romania (15')
- *Continuous satellite monitoring of regional atmospheric pollutants.* Monica CARA, UMF Craiova (15')
- *Geospatial data, services and data analytics supporting resilience in the public health domain.* Andi LAZAR, ROSA (15')

### Wrap-up (11:00 – 11:30)

What are the main challenges? How can awareness be increased? What synergies can be identified in relation with other activities? What are the most relevant datasets and technologies supporting resilience in the Public Health domain.

Besides the members of the consortium, two external presentations held by a representative of the National Meteorological Administration of Romania and of The University of Medicine and Pharmacy of Craiova.

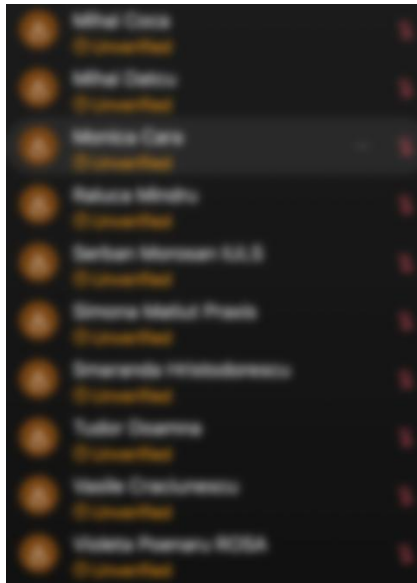
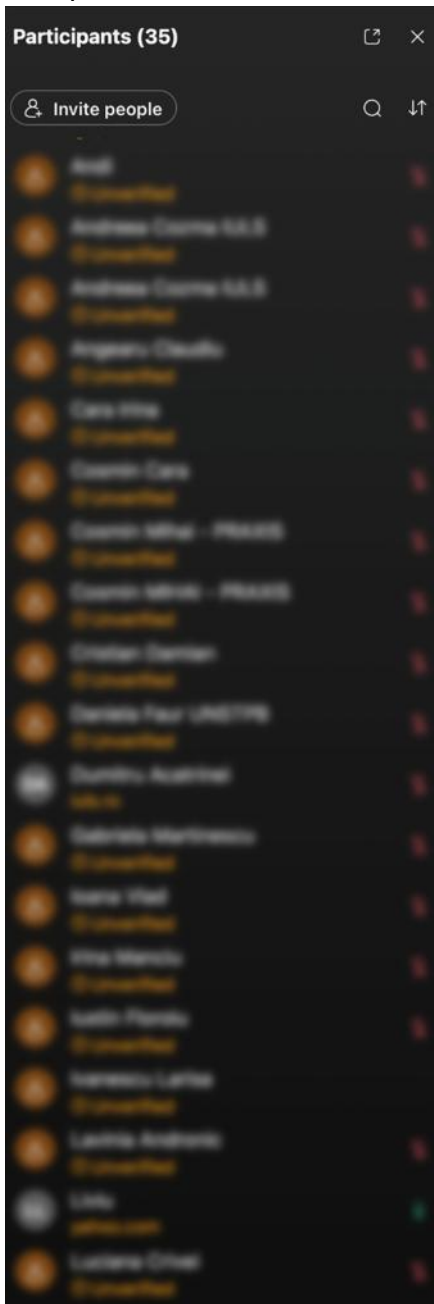
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## 2.3 Participants and general discussions considering the presentations

On this seminar, 35 participants were present, including representatives of ROSA, USV Iasi, Politehnica of Bucharest, The University of Medicine and Pharmacy of Craiova, National Meteorological Administration of Romania, PRAXIS Iasi, CS Romania. The screen shots with participants are listed below:



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The presentations included aspects related to

- the context of the seminar,
- the DTEClimate competence center,
- evaluation of the evidence base regarding vector-borne diseases in Romania,
- the ROADAPT Platform and how the data from this platform is used. The benefits of Ministry of Environment of using these data was highlighted, as this ministry is one of the main beneficiaries.
- Continuous satellite monitoring of regional atmospheric pollutants- the effects of the air quality on human health, considering the satellite monitoring for reaching air pollutants values (NO<sub>2</sub>, SO<sub>2</sub>) from Copernicus 5P satellite
- EO4 public health- it included the presentation of Sentinel-5P, Sentinel-3, Sentinel-2, and the launch of future missions. Examples on turbidity monitoring (groundwater quality, monitoring heat waves, NO<sub>2</sub> monitoring were presented, as well as the Copernicus Atmosphere Monitoring Service (CAMS) and Copernicus Emergency Management Service. This presentation show the tight bond between the satellite monitoring, public health and ecosystem services.

The representatives of the institutions activating in the public health domain were impressed to see how the satellite resources can be used for this domain. It was generally agreed that more often special events for coordination between these domains should take place.

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### 3. EO4NATURE Seminar- in the frame of the EO4NATURE Conference – “Challenges and Opportunities for Biodiversity Assessment”

On the 24th of November 2025, in the frame of the EO4NATURE Conference “Challenges and Opportunities for Biodiversity Assessment”, an online seminar was organized by ROSA, together with MULTIDIMENSION SRL.

#### 3.1 Objectives of the seminar

The seminar was organised in the second part of the conference, after the first session of presentation dedicated to the environmental policies, climate change and biodiversity.

The purpose of the seminar was to present the state of the art of the projects dedicated to climate change and biodiversity in Romania and to raise awareness on the necessary connection between the environmental policies and the achievements of the projects from this domain.

#### 3.2 Seminar agenda on the 24th of November 2025

##### Presentations (11:10 – 12:25)

- *Climatic changes and biodiversity – projects in implementation*. Cristian Ioja – University of Bucharest (15')
- *Ecological reconstruction and biodiversity management*. Sorin Ștefănuț – Biology Institute of Bucharest (15')
- *Awareness and opportunities*. Florina Neagu – WWF România (15')
- *Solutions and recommendations – EO4NATURE*. Florian Bodescu- Multidimension SRL (15')
- *Synergies AI4DTE – EO4NATURE*. Corina Văduva - UPB (15')

##### Discussions and conclusions (12:25 – 13:00)

During the presentations related to projects from biodiversity and climate change domain, a questionnaire was sent to the participants of the conference and seminar, for preparing the discussions and conclusions session. The following questions were addressed by the organisers:

- How do we manage to promote scientific results for policies and strategies?
- Is the biodiversity status assessment a necessity? Are we able to sustain a continuous evaluation process? What limitations do we have in this regard?
- Does the management of protected areas have a support mechanism for adapting to climate change? Does this mechanism achieve its purpose?

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- The public access to the tools developed from the projects dealing with the relationship between climate change and biodiversity leads to their operational use by both institutions and the general public?
- Is there availability from the organizations you represent to be represented in the DTE competence center for climate change?

The answers to the questions came both from the spreadsheet that was send to the participants and also from the participants that took the floor in the discussion's session

### 3.3 Participants and general discussions considering the presentations and the questionnaire

On this seminar, more than 40 participants were present, including representatives of ROSA, Multidimension SRL, Politehnica of Bucharest, University of Bucharest, Biology Institute of Bucharest, WWF România. Besides the representatives of the attendants giving a presentation in the frame of theEO4NATURE conference and seminar, the event was attended by representatives of

-Research institutes from Romania:

- Danube Delta National Institute for Research and Development (DDNI),
- The National Institute for Marine Research and Development “Grigore Antipa” Constanta (RMRI),
- The National Research and Development Institute for Industrial Ecology (ECOIND),
- The National Institute for Research and Development in Forestry (INCDS) “Marin Drăcea”,
- The National Research - Development Institute for Earth Physics,
- The National Research and Development Institute for Food Bioresources – IBA Bucharest,
- The National Institute of Hydrology and Water Management

- Administrations:

- Administration of the Danube Delta Biosphere Reserve

- Industrial actors:

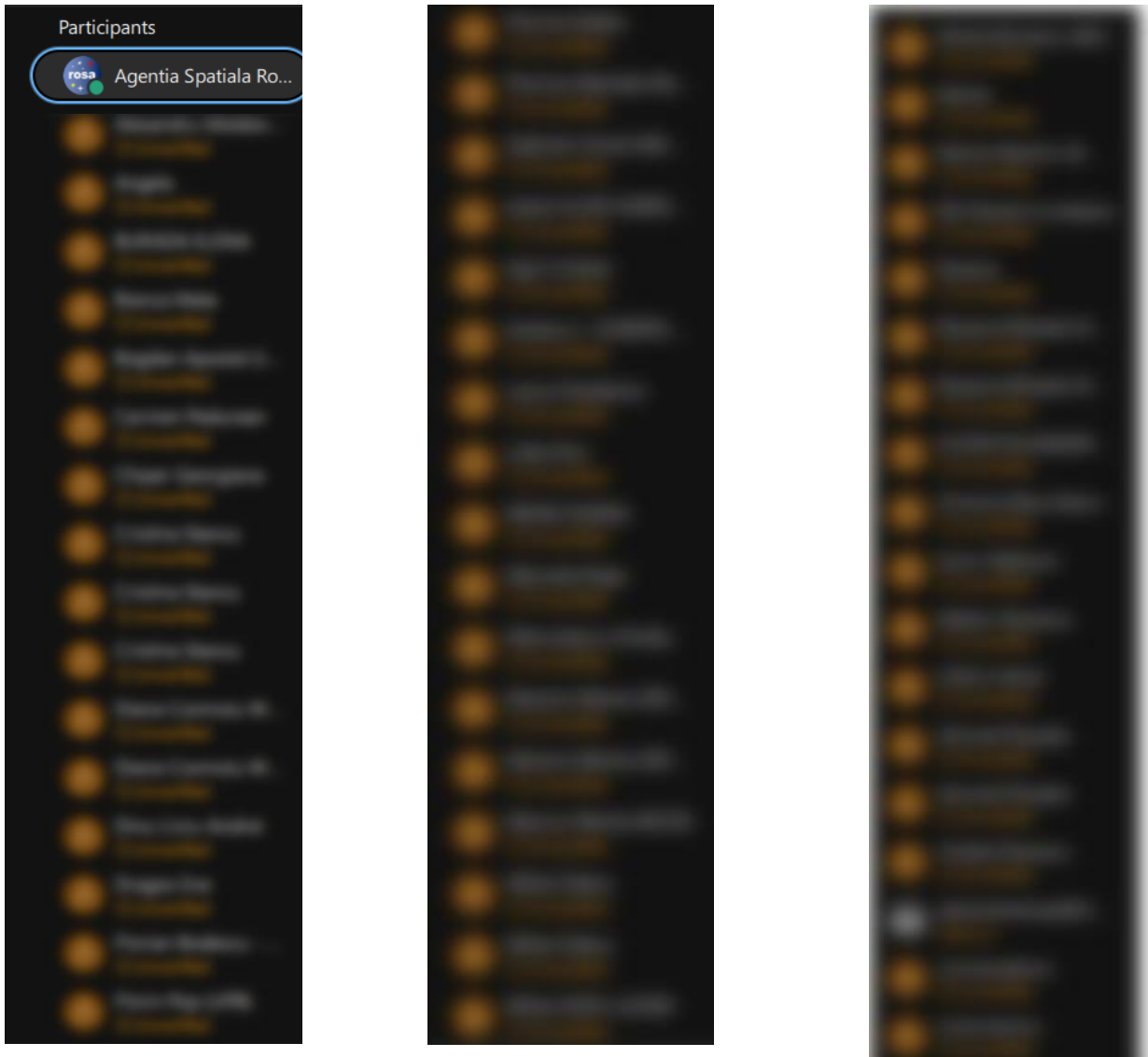
- EUROPLASTIC SRL.

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The screen shots with participants are listed below:



The presentations included aspects related to

- the context of the seminar,
- the synergies between the projects found in the frame of the DTEClimate competence center,
- the climatic changes and biodiversity,
- Ecological reconstruction and biodiversity management.
- Awareness and opportunities for biodiversity, in the context of climatic changes

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Answers to the questionnaire came from representatives of the Administration of the Danube Delta Biosphere Reserve, ECOIND, DDNI, WWF, RMRI, ROSA. For each question a summary is presented below:

### **1. How do we manage to promote scientific results for policies and strategies?**

#### **Answers:**

- clear communication to decision-makers, collaboration between researchers and authorities and their integration into national policies and strategies
- transforming the results into clear indicators and predictions generated by AI that can be integrated into easy-to-understand platforms for decision-makers, so that complex data becomes practical and usable in environmental planning and management
- through publications (scientific articles, popularization articles, specific books, etc.), through social media (Facebook, LinkedIn, etc.), through audio and video media (radio, TV, YouTube, etc.)
- Through multi-sector collaborations at the institutional level, the involvement of civil society members and a communication targeting the general public
- Using scientific communication strategies addressed for each targeted group, for example simplified scientific language, according to the meaning and interest of each stakeholder. For example, approaches from the "ocean literacy and citizen science" strategies
- Through conferences and participation in information actions for the general public (festivals, researcher's night, etc.)

### **2. Is the biodiversity status assessment a necessity? Are we able to sustain a continuous evaluation process? What limitations do we have in this regard?**

#### **Answers:**

The assessment of biodiversity is essential for efficient environmental policies, for the protection of the ecosystems, for sustaining a "baseline" and detecting the changing forms. The continuous evaluation is a difficult process due to the limited resources, lack of specialists, lack of complete data, institutional fragmentation, the costs of advanced technologies, lack of understanding the importance of biodiversity in the decision-making process, lack of transparency, non-unitary data collections. It was highlighted also the need of data transfer between projects, and the need to use all available technologies, such as remote sensing.

### **3. Does the management of protected areas have a support mechanism for adapting to climate change? Does this mechanism achieve its purpose?**

#### **Answers:**

It was highlighted that the protected areas have mainly such a mechanism, but their efficiency is widely limited by resources and the rapid rhythm of climate changes. The interest of the decisional factors make it more or less efficient. For the management of marine protected areas, the answer was that no support mechanics is available for adapting to climate change.

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**4. The public access to the tools developed from the projects dealing with the relationship between climate change and biodiversity leads to their operational use by both institutions and the general public?**

**Answers:**

It was emphasized that the development instruments are operationally used by institutions, but there is a strong limitations when considering the general public. Some of the answers considered that no operational use is available.

**5. Is there availability from the organizations you represent to be represented in the DTE competence center for climate change?**

**Answers:**

More entities have shown their interest in being part of DTEClimate.

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## 4. Conclusions

The online seminar “Current Challenges on Public Health and Possible Solutions Supported by Earth Observation and Data Analytics” opened the discussions on the synergies between the different thematic of the DTEClimate competence center. The importance of satellite monitoring on air quality, groundwater quality, heat waves and other domains related to ecosystem services was highlighted. There are still aspects that should be clarified on how satellite monitoring should be used for the public health domain, and not only, as many factors should be considered for a good and realistic interpretation of the data. The future missions could have also a relevant role into this monitoring and interpretation of data, as new elements can be added into the general interpretation. The discussions between different domain experts are also important, as specific aspects could be more difficult to understand by specialists from other fields.

Some of these points were clarified during the DTEClimate workshop organized in the frame of the “Life sciences today for tomorrow” Congress organized by USV Iasi, in Iasi, on the 24th and 25th of October 2024.

As for the EO4NATURE seminar, the event highlighted some of the gaps related to the biodiversity monitoring when climate changes are considered. More solutions were highlighted for a better connection between the decisional factors and the scientific community, and also the need for a better dissemination to the general public for a better understanding of the benefits and challenges that raise from the exploitation of this domain.

The work will be continued in the frame of the DTECLIMATE Competence Center, as many important actors are involved by agreements in DTEClimate.

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