

Deliverable 5.4.

ClimEd Training №4: Developing learning courses in climate services considering needs of different users

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Reviewer(s)	Svyatoslav Tyuryakov (UHEL)
Abstract	Summary of the 4 th ClimEd Training on “Developing learning courses in climate services considering needs of different users” (6-10 May 2024). All materials of the training are available at: http://climed.network/events/climed-trainings/climed-training-4

	Name	Date
Verification by WP leader	Alexander Mahura	20.5.2024
Check by coordinator	Hanna K. Lappalainen	25.5.2024

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1. INTRODUCTION

The ClimEd project “**Multilevel Local, Nation- and Regionwide Education and Training in Climate Services, Climate Change Adaptation and Mitigation**” (2021-2026; <http://climed.network>) is developing the competency-based curricula for continuous comprehensive training of specialists in the field of climate services in Ukraine, as well as initiating and developing the additional education in climate change for decision-makers, experts in climate-dependent economic sectors and wider public, which are to contribute to stabilization of the national economy in the face of the climate change and its adaptation to the upcoming climate change.

The ClimEd Trainings (<http://climed.network/events/climed-trainings>) are focused on training the faculty/ teaching/ research staff and postgraduates at the ClimEd partner institutions and collaborating organizations in advanced educational and information-and-communication technologies for building a flexible multi-level integrated practice-based education system in the field of Climate Services, Climate Change Adaptation and Mitigation.

In total, 7 trainings (Tr) are planned during lifetime of the ClimEd project, and these are the following:

- Tr1: Competency-Based Approach to Curriculum Development for Climate Education
- Tr2: Adaptation of the Competency Framework for Climate Services to conditions of Ukraine
- Tr3: Digital tools and datasets for climate change education
- Tr4: Learning courses’ development in climate services considering needs of different users
- Tr5: Applying different technologies of blended/on-line learning in education
- Tr6: Mastering technologies of massive open on-line courses development for general public
- Tr7: Skills to use climatic information and services for climate-dependent branches of economy.

2. THE 4TH CLIMED TRAINING: DEVELOPING LEARNING COURSES IN CLIMATE SERVICES CONSIDERING NEEDS OF DIFFERENT USERS

The ClimEd 4th Training on “Learning courses’ development in climate services considering needs of different users” took place in a hybrid mode during 6-10 May 2024. The ClimEd project trainings are focused on training the faculty/ teaching/ research staff and postgraduates at the ClimEd partner institutions and collaborating organizations in advanced educational and information-and-communication technologies for building a flexible multi-level integrated practice-based education system in the field of Climate Services, Climate Change Adaptation and Mitigation.

In total, 50 persons (including 36 female and 14 male; and 10 young teachers/researchers) were accepted to participate in this onsite/online (hybrid) training. These were from the Ukrainian ClimEd partners and other institutions such as the Odessa State Environmental University, Kyiv National University of Construction and Architecture, O. Beketov National University of Urban Economy, Lviv Polytechnic National University, Bila Tserkva National Agrarian University, Odessa National Medical University, Institute of Marine Biology of the NAS of Ukraine (Odessa, Ukraine), National University Odessa Maritime Academy.

The training included a series of lectures delivered during 6-10 May 2024. The presented lectures covered the following topics/ blocks: Block I. Climate Datasets (Related to C1 and C2. Create and Manage Datasets and Derive Products from Climate Data); Block II. Gather information in Climate Dependent Sectors (Related to C2 and C3); Block III. Climate Products (Related to C5); Block IV, Climate services in Climate Dependent sectors; Block V. Group Reporting on Projects and awarding ceremony, and finally, the Introductions to Home-Work-Assignments (HWAs).

The lectures were delivered by Dr. Enric Aguilar; Dr. Jon Olano; Dra. Anna Boqué; Dr. Juan Antonio Duro; Dr. Òscar Saladié; Dr. Jose Manuel Giménez and Caterina Cimolai (Universitat Rovira i Virgili, Spain); Dr. Kalev Sepp; Dr. Anton Shkaruba; Volha Kasakevich and Lagle Lõhmus (Estonian University of Life Sciences, Estonia); Dr. Sergio Vicente and Dra. Inna Semenova (Instituto Pirenaico de Ecología, Centro Superior de Investigaciones Científicas, Spain); Dr. Federico Foria and Marianna Brichesse (ETS); Dr. Oleg Skrynyk (Ukrainian Hydrometeorological Institute, Ukraine).

During followed days (for participants onsite) or weeks (for participants online) the Groups of participants realized remotely HWAs as the Groups' small-scale research projects. Each mixed group included 3-4 persons – from different Universities, genders, and age. In total, 12 Groups (D1-D12) focused on the themes of defining, variables, indicators, and indices for creating the climate service in water management, agriculture and energy sectors, urban economy, health care, others. The Groups established horizontal communication within/between groups and worked on own related Group Projects.

On 10 May 2024, during the last day of the training, 6 Groups of onsite participants presented own completed projects: D1 “Relationship between climate and agriculture (cultivation of winter wheat)”; D2 “Green infrastructure in Odesa, Ukraine”; D3 “Water resources management on urban areas”; D4 “AgriCrops growing in Ukraine (Central Part)”; D5 “Urban planning. Green rooftops in the “km zero concept” on the example of Odesa city, Ukraine”; D6 “The Impact Of Climate Change On The Energy Efficiency Of Buildings (Object - Kyiv City)”; another 6 Groups (online participants) presented own projects at 24 May 2024: D7 “Climate services for buildings development on marine coasts”; D8 “Urban Forestry Vulnerability, Challenges and Adaptation Potential under Climate Change in the Region of Southern Bessarabia, Ukraine”; D9 “Urban greenery under the impact of climate change, on the example of the city of Odesa, Ukraine”; D10 “The impact of climate change on the tourism and recreation potential of Odesa region”; D11 “Climate services during extreme weather conditions and natural disasters”; and D12 “Climate services for cardiology”. All presentations were constructively criticized and commented as well as overall evaluated on a scale (1-10). As a result of the evaluation, the ClimEd training certificates (corresponding to 3 ECTS) were awarded as recognition of participants' achieved learning outcomes.

All Groups got high scores, and, respectively, have been awarded the certificates and invited participants for the ClimEd 5th Training (expected in Autumn 2024 as onsite/online (hybrid) training in Estonia). It was stressed that participants of the training have obtained new basic knowledge and new and improved competencies in creating and managing climate datasets; deriving products from climate data; communicating climate information to users; creating and interpreting climate forecasts, climate projections, and model output; and skills identify different climate databases (ECAD, Copernicus, etc...) and retrieve data for geographical selection; calculating climate indices through Climact or other tools for selected geographical feature; computation of co-created indices for the dependent sector and skills in group's (as the team) developing and realizing research plan, and presenting research project results.

The e-evaluation of the ClimEd 4th Training was done using two questionnaires distributed among participants. Following the 1st questionnaire – (Evaluation of the Training) – about 94% of the participants estimated overall rating for this course as “very good” and “good”; training materials were of excellent quality (97 %) and information about the training was sufficient (95%), and participants will recommend such training to colleagues (100%). Following the 2nd questionnaire – (Self-Evaluation of the Obtained Competencies and Skills) – about 95% of participants “fully agreed” and “mostly agreed” that they have obtained/ improved their competencies and got skills working as groups.

Special thanks to all the lecturers and teachers of the training for their professionalism, enthusiasm, and commitment to the training and the URV team members - Dr. Enric Aguilar; Dr. Jon Olano; Dr. Anna Boqué and Caterina Cimolai - for the excellent organization and warm atmosphere during the training; and to the OSENU team members – Drs. Oleg Shabliy; Valeriya Ovcharuk and Inna Khomenko, young researchers Kateryna Husieva – for continuous technical support (e-evaluations, training web-page continuous updates with training materials, for support with ClimEd relevant training preparation, etc.) during the entire period of the training.

All materials of the training (slides and videos of lectures, presentations of exercises, and homework-assignments as group projects, etc.) are available at <http://climed.network/events/climed-trainings/climed-training-4> The training outcomes were also disseminated through the PEEEX (Pan-Eurasian Experiment; <https://www.atm.helsinki.fi/peex>) network through quarterly PEEEX NewsLetters & PEEEX blog: <https://peexhq.home.blog/2024/05/24/climed-training-on-developing-learning-courses-in-climate-services-2> and DiariDigital Universitat Rovira i Virgili: <https://diaridigital.urv.cat/en/the-urv-trains-ukrainian-researchers-to-develop-academic-programmes-in-climate-services-in-their-country>

2.1. Lecturing Materials

During the 4th ClimEd Training, in total 18 lectures were delivered.

Lecture 1 – Climate Datasets, an overview. Dr. Enric Aguilar, URV ([slidesPart1](#), [slidesPart2](#), [video](#))

Lecture 2 – Quality Control Climate Data. Dr. Enric Aguilar, URV ([slides](#), [video](#))

Lecture 3 – Climate data Homogenization. Concepts and examples. Dr. Enric Aguilar, URV ([slides](#), [video](#))

Lecture 4 – Climate Change Indices. Past experiences and new developments. Dr. Enric Aguilar, URV ([slides](#), [video](#))

Lecture 5 – Introduction to work in groups. Dr. Jon Olano, URV ([slides](#), [video](#))

Lecture 6 – Scenarios (including Climate Change) for Agricultural Landscapes' Biodiversity and Ecosystem Services. Dr. Kalev Sepp, Volha Kaskevich, Lagle Lõhmus; EMU (slides, video)

Lecture 7 - Co-Created Climate Services for Climate Dependent Sectors: Insights from Posadas, Argentina. Caterina Cimolai. ([slides](#), video)

Lecture 8 – Co-creation and user engagement methodology. Dr. Jon Olano & Dra. Anna Boqué, URV ([slides](#), video)

Lecture 9 – An example of co-creation of Climate Service: C2Risk. Dr. Federico Foria & Marianna Brichesse, ETS (slides, video)

Lecture 10 – Sensitivity of heat wave metrics calculation to input climate data (based on a case of Ukraine). Dr. Oleg Skrynyk (online), URV ([slides](#), video)

Lecture 11 – Possible application of meteorological and atmospheric dispersion/trajectories models in analysis of climate/weather extreme events. Dr. Oleg Skrynyk (online), URV ([slides](#), video)

Lecture 12 – Deriving climate products. Dr. Sergio Vicente, CSIC-IPE ([slides](#), video)

Lecture 13 – Drought in Ukraine. Dra. Inna Semenova, CSIC-IPE (slides, video)

Lecture 14 – Climate Services in Climate-Dependent Sectors: Calendar Crops. Dr. Enric Aguilar, URV (slides, video)

Lecture 15– Climate Change Economics. Dr. Jose Manuel Giménez, URV ([slides](#), video)

Lecture 16 – Climate Policies. Dr. Juan Antonio Duro, URV (slides, video)

Lecture 17 - Potential uses of climate services in tourism: surf, beach and snow tourism. Dra. Anna Boqué, URV ([slides](#), video)

Lecture 18 – Climate Services for Intangible Heritage: Catalan Human Towers. Dr. Òscar Saladié, URV ([slides](#), video)

2.2. Group Work / Group Projects

The introduction to Group Work as Small-Scale Research Projects (SSRPs) to be realized as group projects was given to participants on 6 May 2024. On 10 May 2024 (onsite) and 24 May (online), a series of short oral presentations about Group Project plans was delivered by each Group (named D1-D12). Work in Groups on projects was realized by each group as its own projects. The main focuses for SSRPs were developing examples of practical exercises for identification and retrieval of Climate Data from different sources for point/city/region in Ukraine to develop further tasks for creating climate services for experts in water management, energy sectors, agriculture, construction and architecture, health-care experts, etc.

2.3. Group Work, Projects Defenses & Certificates

Welcome – Dr. Jon Olano & Svyatoslav Tyuryakov

On the last training day, each Group presented (in English) Group Work as its own realized SSRPs with a specific focus. The presentations – Group D01 ([slides](#)), Group D02 ([slides](#)), Group D03 ([slides](#)), Group D04 ([slides](#)), Group D05 ([slides](#)), Group CD6 ([slides](#)), Group D07 ([slides](#)), Group D08 ([slides](#)), Group D09 ([slides](#)), Group D10 ([slides](#)), Group D11 ([slides](#)), Group D12 ([slides](#)) and with Sumup of the 4th Training - were constructively criticized and commented as well as overall evaluated on a scale (1-10). As a result of the evaluation, all Groups got the ClimEd training certificates (see example in Annex 4.3) corresponding to 3 ECTS as recognition of their achieved learning outcomes.

The following Small-Scale Research Projects (SSRPs) were presented and defended by 12 Groups:

- D1 “Relationship between climate and agriculture (cultivation of winter wheat)”;
- D2 “Green infrastructure in Odesa, Ukraine”;
- D3 “Water resources management on urban areas”;
- D4 “AgriCrops growing in Ukraine (Central Part)”;
- D5 “Urban planning. Green rooftops in the “km zero concept” on the example of Odesa city, Ukraine”;
- D6 “The Impact of Climate Change On The Energy Efficiency Of Buildings (Object - Kyiv City)”;
- D7 “Climate services for buildings development on marine coasts”;
- D8 “Urban Forestry Vulnerability, Challenges and Adaptation Potential under Climate Change in the Region of Southern Bessarabia, Ukraine”;
- D9 “Urban greenery under the impact of climate change, on the example of the city of Odesa, Ukraine”;
- D10 “The impact of climate change on the tourism and recreation potential of Odesa region”;
- D11 “Climate services during extreme weather conditions and natural disasters”;
- D12 “Climate services for cardiology”.

The Obtained Competencies and Learning Outcomes of 4th ClimEd training included the following:

- Assess location and characteristics of observation sites vs requirements for climate observation reference network;
- Apply quality control processes to climate data and resulting time-series;
- Identify and retrieve climate data from different sources to generate climate products;

- Compute basic climate products, normals and averages, or anomalies defined in relation to a reference period;
- Compute climate indices for the monitoring of climate change, climate variability and climate extremes;
- Compute sector-specific climate indices and other sector-oriented climate products;
- Create value-added products, such as graphics, maps and reports to explain climate characteristics and evolution, according to the needs of specific sectors such as health, agriculture, water, energy and disaster management;
- Prioritize the communication of climatological information according to social, political and economic relevance;
- Develop and deliver, in partnership with users, specific applications to facilitate understanding and use of climate products and services.

All Groups were approved as participants for the ClimEd 5th Training event in Estonia.

2.4. Evaluation of the Training

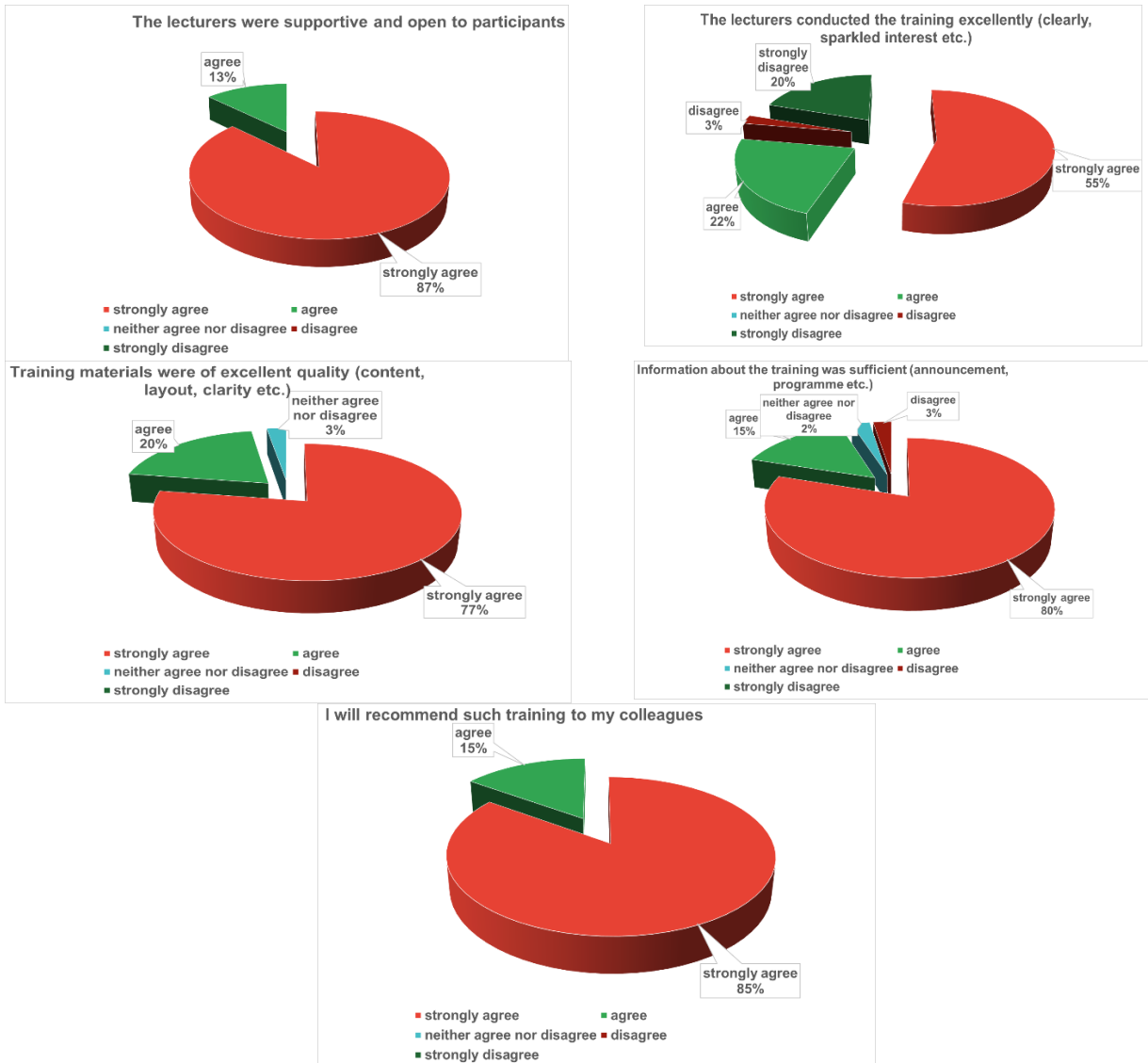
The evaluation of the training was performed through the questionnaires (“Evaluation of the Course” & “Evaluation of the Learning Outcomes”) distributed among participants. For the questionnaires, in total 50 and 40 responses from the participants were obtained for the 1st and 2nd questionnaires, and these are summarized below. Following the 1st questionnaire – (Evaluation of the Training) – about 94 % of the participants estimated overall rating for this course as” strongly agree” and “agree”; training materials were of excellent quality (97 %) and information about the training was sufficient (95%), and participants will recommend such training to colleagues (100%). Following the 2nd questionnaire – (Self-Evaluation of the Obtained Competencies and Skills) – about 95% of participants “fully agree” and “mostly agree” that they have obtained/ improved their competencies and got skills working as groups.

Questionnaire N1: Evaluation of the Course

Scale: strongly agree | agree | neither agree nor disagree | disagree | strongly disagree

1. The lecturers were supportive and open to participants
2. The lecturers conducted the training excellently (clearly, sparked interest etc.)
3. Training materials were of excellent quality (content, layout, clarity etc.)
4. Information about the training was sufficient (announcement, programme etc.)
5. I will recommend such training to my colleagues

Question	1	2	3	4	5	AVG, %
<i>strongly agree</i>	87	55	77	80	85	77
<i>agree</i>	13	22	20	15	15	17
<i>neither agree nor disagree</i>	-	-	3	2	-	2,5
<i>disagree</i>	-	3	-	3	-	3
<i>strongly disagree</i>	-	20	-	-	-	20



Questionnaire N2: Evaluation of the Learning Outcomes

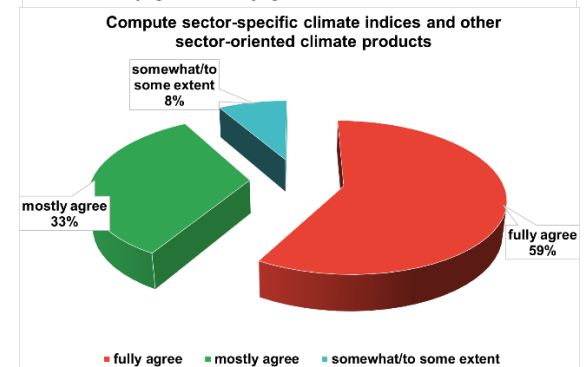
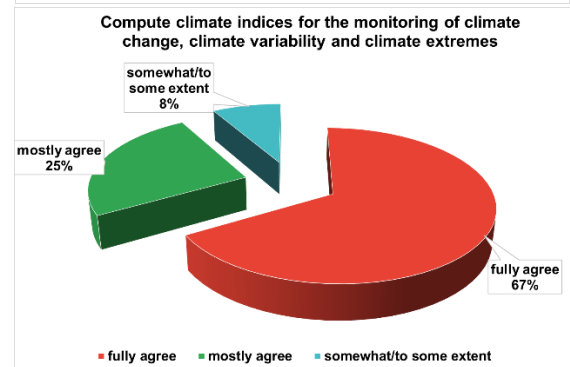
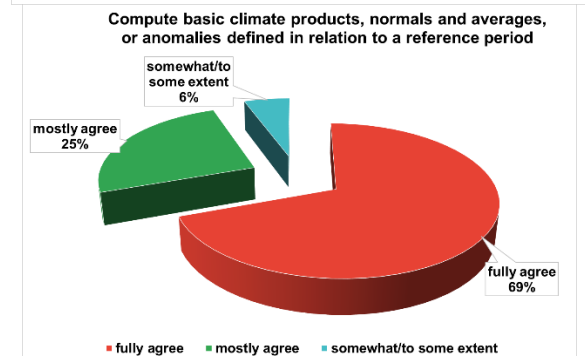
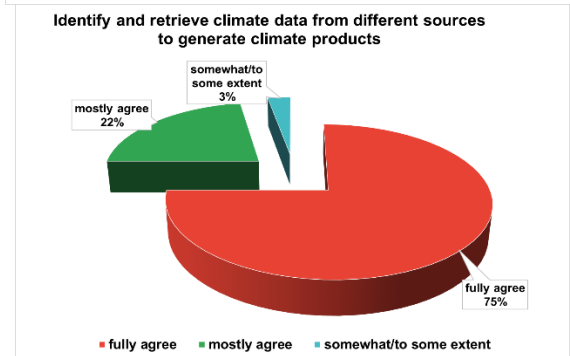
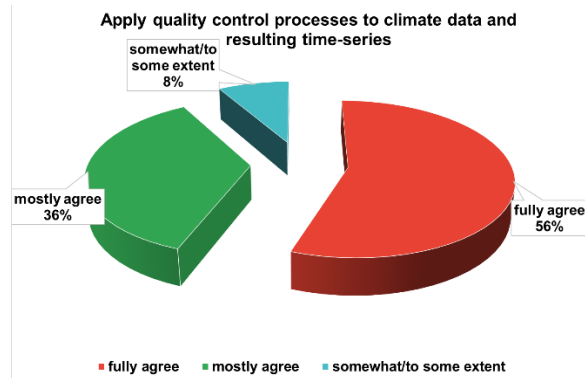
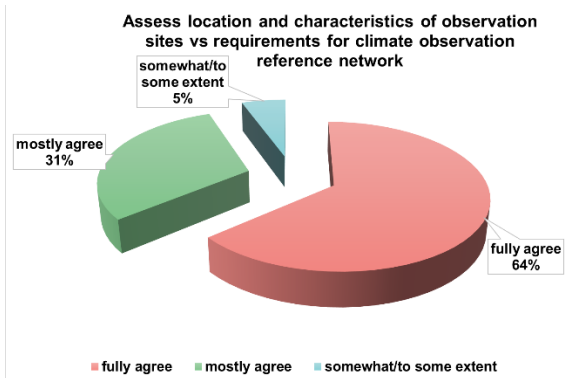
To which extent do you think that you developed the learning outcomes (competences/ abilities to) of the 4th ClimEd training?

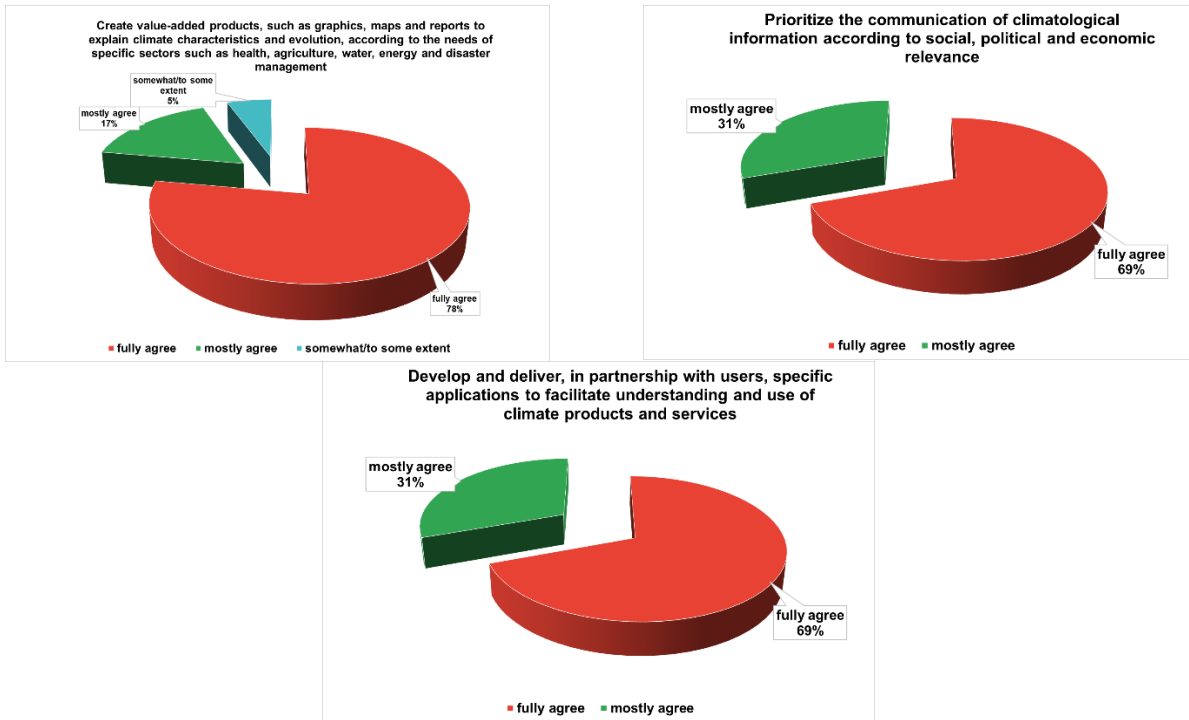
Scale: not at all | slightly | somewhat/to some extent | mostly agree | fully agree

1. Assess the location and characteristics of observation sites vs requirements for climate observation reference network
2. Apply quality control processes to climate data and resulting time-series
3. Identify and retrieve climate data from different sources to generate climate products
4. Compute basic climate products, normals, and averages, or anomalies defined in relation to a reference period
5. Compute climate indices for the monitoring of climate change, climate variability and climate extremes
6. Compute sector-specific climate indices and other sector-oriented climate products
7. Create value-added products, such as graphics, maps and reports to explain climate characteristics and evolution, according to the needs of specific sectors such as health, agriculture, water, energy and disaster management

8. Prioritize the communication of climatological information according to social, political and economic relevance
9. Develop and deliver, in partnership with users, specific applications to facilitate understanding and use of climate products and services

Learning Outcomes	1	2	3	4	5	6
<i>fully agreed</i>	64	56	75	69	67	58
<i>mostly agreed</i>	31	36	22	25	25	33
<i>to some extent</i>	6	8	3	6	8	8
<i>slightly</i>	0	0	0	0	0	0
<i>not at all</i>	0	0	0	0	0	0
Learning Outcomes	7	8	9	AVG		
<i>fully agreed</i>	78	69	69	67		
<i>mostly agreed</i>	17	31	31	28		
<i>to some extent</i>	6	0	0	5		
<i>slightly</i>	0	0	0	0		
<i>not at all</i>	0	0	0	0		





3. ACKNOWLEDGEMENTS

Special thanks to all lecturers of the training – Dr. Enric Aguilar; Dr. Jon Olano; Dra. Anna Boqué; Dr. Juan Antonio Duro; Dr. Òscar Saladié; Dr. Jose Manuel Giménez and Caterina Cimolai (from Universitat Rovira i Virgili from Spain); Dr. Kalev Sepp; Dr. Anton Shkaruba; Volha Kaskevich and Lagle Lõhmus (from Estonian University of Life Sciences, Estonia); Dr. Sergio Vicente and Dra. Inna Semenova (from Instituto Pirenaico de Ecología, Centro Superior de Investigaciones Científicas, Spain); Dr. Federico Foria and Marianna Brichesse (ETS); Dr. Oleg Skrynyk (from Ukrainian Hydrometeorological Institute, Ukraine) – for their professionalism, enthusiasm, and commitment to the training; and URV team – Dr. Enric Aguilar; Dr. Jon Olano; Dra. Anna Boqué and Caterina Cimolai - for excellent organization and warm atmosphere during the training. Thanks to the OSENU team members (Dr. Oleg Shabliy, Dr. Valeriya Ovcharuk, Dr. Inna Khomenko, and PhD Kateryna Husieva) for support with ClimEd relevant modules development; e-evaluations; continuous web-update of the training materials.

All materials of the training (slides and videos of lectures, presentations of exercises and homework assignments as group projects, etc.) are available at <http://climed.network/events/climed-trainings/climed-training-4>.

Results of the ClimEd Trainings were also presented at:

- International Research-To-Practice Conference “Climate Services: Science and Education” (22-24 September 2021, Odessa, Ukraine) oral presentation “Online Approaches for Climate-Oriented Education” in section “Education in Climate Services” https://odeku.edu.ua/wp-content/uploads/2021-a-conference_proceedings-21-09-isbn.pdf;
- Eastern Mediterranean & Middle East – Climate Atmosphere Research Center Workshop (11-12 October 2021, Cyprus); oral presentation “Climate-related education: on-line approach in COVID times” in section “Education and Training Opportunities”; https://climatechange2021.org/wp-content/uploads/Book-of-Abstracts_Virtual_Workshop_AC0710-js1.pdf;

- SYMET-14 “Education and Training in a Period of Rapid Change” (22-25 November 2021, Switzerland); poster presentation “Online trainings in climate-oriented education”; <https://symet-14.virtualpostersession.org>.
- European Geosciences Union (EGU) General Assembly 2022 (May 2022); oral presentation “Climate-Oriented Trainings in the Field of Climate Services, Climate Change Adaptation and Mitigation”; <https://meetingorganizer.copernicus.org/EGU22/EGU22-4895.html>; Ovcharuk, V., Mahura, A., Kryvomaz, T., Aguilar, E., Olano, J., Khomenko, I., Shabliy, O., Sogacheva, L., Zhou, P., Mäkelä, A., Krakovska, S., Lappalainen, H., Stepanenko, S., Lauri, K., Riuttanen, L., Tyuryakov, S., and Bashmakova, I.: *CLIMATE-ORIENTED TRAININGS in the field of Climate Services, Climate Change Adaptation and Mitigation, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-4895, <https://doi.org/10.5194/egusphere-egu22-4895>, 2022.*
- The International Conference on Regional Climate-CORDEX 2023 (ICRC-CORDEX 2023) was held 25-29 of September 2023 in Trieste, Italy; pico-presentation “Development of Multilevel Local, Nation- and Regionwide Education and Training in Climate Services in Ukraine” <https://icrc-cordex2023.cordex.org/>

4. ANNEXES

4.1. Announcement of the 4th ClimEd Training

Developing Learning Courses in Climate Services Considering Needs of Different Users

ClimEd 4th Training (onsite/ hybrid)

6 -10 May 2024

Vila-Seca, Tarragona, Spain



ANNOUNCEMENT

Erasmus+ ClimEd Project

“Multilevel Local, Nation- and Regionwide Education and Training in Climate Services,

Climate Change Adaptation and Mitigation”

(619285-EPP-1-2020-1-FI-EPPKA2-CBHE-JP)

<http://climed.network>



Co-funded by the
Erasmus+ Programme
of the European Union



Aim

The ClimEd Trainings are focused on training the faculty staff at the ClimEd partner institutions in advanced educational and information-and-communication technologies for building a flexible multi-level integrated practice-based education system in the field of Climate Services, Climate Change Adaptation and Mitigation.

Training Programme

- **Lecturing (Blocks - B1, B2, B3, B4)**

B1 (Mon) – Climate datasets, Create and manage datasets and derive products from climate data

B2 (Tue) – Co-creation, communicate climatological information to users

B3 (Wed) – Climate Products

B4 (Thu) – Climate dependent sectors

- **Groups’/ teams’ work (Mon-Thu)**

- **Groups’/ teams’ reporting (Fri)**

- Groups’ presentations and discussions

- Evaluations of group, training course, and learning outcomes of the training

- Awarding e-certificates

Organizing Committee

Jon Xavier Olano, Enric Aguilar, Anna Boqué

Rovira i Virgili University, Vila-Seca (Tarragona), Spain

Hanna Lappalainen, Svyatoslav Tyuryakov, Alexander Mahura

University of Helsinki, Finland

Sergiy Stepanenko, Oleg Shabliy, Inna Khomenko, Valeriya Ovcharuk

Odessa State Environmental University, Ukraine

Olena Drozd – *O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine*

Tetyana Kryvomaz – *Kyiv National University of Construction and Architecture, Ukraine*

Lecturers

Enric Aguilar, Jon Olano, Anna Boqué, Oleg Skrynyk - *Centre for Climate Change, Research Institute for Sustainability, Climate Change and Energy Transition-URV, Vila-Seca, Spain*
Oscar Saladié - *Research Group in Territorial Analysis and Tourism Studies, Research Institute for Sustainability, Climate Change and Energy Transition-URV, Vila-Seca, Spain*
Sergio Vicente, Inna Semenova - *Instituto Pirenaico de Ecología, Centro Superior de Investigaciones Científicas (CSIC-IPE)*
TBC lecturers in economics

Organizers

International Erasmus+ ClimEd project (<http://climed.network>)
Centre for Climate Change (C3), Rovira i Virgili University, Tarragona, Spain
O.M. Beketov National University of Urban Economy, Kharkiv, Ukraine
Odessa State Environmental University, Odessa, Ukraine

Target audience

Teaching/ Research staff and postgraduates in educational and research disciplines

Selection criteria

Based on motivation letter (incl. why you need this training; how you use climatic information in your profession; how you plan to use such information in future; your commitment to training) & CV (max 2pages)

Registration deadline 25 March 2024

Language English

Costs no fee

Please, apply (*including motivation letter and CV*) from the web-page:
<http://climed.network/events/climed-trainings/climed-training-4/online-application-form/>

4.2. List of Participants of the 4th ClimEd Training



Co-funded by the
Erasmus+ Programme
of the European Union




ClimEd Training 4 (onsite/ hybrid)
Developing Learning Courses
in Climate Services
Considering Needs of Different Users
6 -10 May 2024
Vila-Seca, Tarragona, Spain
List of Participants

N	Participant: Surname Name	University	Group
1.	Olena Barsukova	OSENU	D1
2.	Halyna Borovska	OSENU	D2
3.	Maryna Hoptsii	OSENU	D3
4.	Kateryna Husieva	OSENU	D2
5.	Larysa Nedostrelova	OSENU	D4
6.	Inna Khomenko	OSENU	D5
7.	Valeriya Ovcharuk	OSENU	D3
8.	Oksana Volvach	OSENU	D1
9.	Sergiy Stepanenko	OSENU	D6
10.	Olena Voloshkina	KNUCA	D6
11.	Antonina Savchenko	KNUCA	D3
12.	Yuliia Bereznytska	KNUCA	D5
13.	Olena Verenysh	KNUCA	D5
14.	Alona Perebynos	KNUCA	D5
15.	Anastasia Kovalova	KNUCA	D6
16.	Olga Khandogina	BekNU	D3
17.	Tetyana Dyman	BTNAU	D1
18.	Nataliia Vovkotrub	BTNAU	D1
19.	Viktorii Ignatenko	BTNAU	D4
20.	Lesya Karpuk	BTNAU	D4
21.	Myroslav Malovanyy	LPNU	D6
22.	Ivan Tymchuk	LPNU	D2
23.	Andriy Sereda	LPNU	D2
24.	Volodymyr Zhuk	LPNU	D4
	On-line		
25.	Maksym Martyniuk	OSENU/IMB	D7
26.	Oleksii Hustenko	OSENU	D8
27.	Alina Semerhei Chumachenko	OSENU	D12
28.	Nadiia Prykhodko	OSENU	D8
29.	Liliia Kushchenko	OSENU	D10
30.	Viktorii Kuryshyna	OSENU	D9
31.	Natalia Danilova	OSENU	D9
32.	Oleg Prokofiev	OSENU	D10
33.	Oleh Shablii	OSENU	D11
34.	Tetiana Kryvomaz	KNUCA	D7
35.	Diadin Dmytro	BekNU	D7
36.	Yuriy Vergeles	BekNU	D8
37.	Olena Drozd	BekNU	D8
38.	Inna Rybalka	BekNU	D9
39.	Yurii Kovalenko	BekNU	D10


40.	Kseniia Prybolovets	ONMU	D11
41.	Hanna Kriukova	ONMU	D11
42.	Mykhailo Pervak	ONMU	D11
43.	Leonid Kholopov	ONMU	D11
44.	Tetyana Yermolenko	ONMU	D12
45.	Svitlana Kotiuzhynska	ONMU	D12
46.	Tetiana Shablii	ONMU	D12
47.	Viktoriia Buheruk	ONMU	D12
48.	Halyna Katerusha	OSENU	D9
49.	Natalia Mishchenko	OSENU	D10
50.	Viktoriya Shepel	NUOMA	D7

OSENU	- Odessa State Environmental University (Odessa, Ukraine)
URV	- Universitat Rovira i Virgili (Tarragona, Spain)
CSIC-IPE	- Instituto Pirenaico de Ecología, Centro Superior de Investigaciones Científicas, (Zaragosa, Spain)
UHMI	- Ukrainian Hydrometeorological Institute, (Kyiv, Ukraine)
KNUCA	- Kyiv National University of Construction and Architecture (Kyiv, Ukraine)
BNUUEK	- O. Beketov National University of Urban Economy (Kharkiv, Ukraine)
LPNU	- Lviv Polytechnic National University (Lviv, Ukraine)
BTNAU	- Bila Tserkva National Agrarian University (Bila Tserkva, Ukraine)
ONMU	- Odessa National Medical University (Odessa, Ukraine)
IMB	- Institute of Marine Biology of the NAS of Ukraine (Odessa, Ukraine)
NUOMA	- National University Odessa Maritime Academy (Odessa, Ukraine)

4.3. 4th ClimEd Training Certificates



Co-funded by the
Erasmus+ Programme
of the European Union



CERTIFICATE

This is to confirm that

OKSANA VOLVACH

has attended and successfully completed
the Erasmus+ ClimEd Training
*on Developing Learning Courses in Climate Services
Considering Needs of Different Users*

6-10 May 2024



Erasmus+ ClimEd Project
"Multilevel Local, Nation- and Regionwide Education and Training in Climate Services,
Climate Change Adaptation and Mitigation"
(619285-EPP-1-2020-1-FI-EPPKA2-CBHE-IP) <http://climEd.network>



Hanna K. Lappalainen
University of Helsinki



Enric Aguilár
University Rovira i Virgili

OKSANA VOLVACH

has been awarded three (3) credits according to the European Credit Transfer and Accumulation System (ECTS)

ClimEd Training included:

Lectures:
 Lecture I. Climate Datasets, an overview- Enric Aguilár
 Lecture II. Quality Control Climate Data - Enric Aguilár
 Lecture III. Climate data Homogenization. Concepts and examples. - Enric Aguilár
 Lecture IV. Climate Change Indices. Past experiences and new developments – Enric Aguilár
 Lecture V. Scenarios (including Climate Change) for Agricultural Landscapes' Biodiversity and Ecosystem Services. Kalev Sepp, Volha Kaskevich, Lagja Lõhmus.
 Lecture VI. Co-Created Climate Services for Climate Dependent Sectors: Insights from Posadas, Argentina. Caterina Cimolai.
 Lecture VII. Co-creation and user engagement methodology. Jon Olano
 Lecture VIII. Sensitivity of heat wave metrics calculation to input climate data (based on a case of Ukraine), Oleg Skrynyk
 Lecture IX. Possible application of meteorological and atmospheric dispersion/trajectories models in analysis of climate/weather extreme events. Oleg Skrynyk
 Lecture X. Deriving climate products. Sergio Vicente
 Lecture XI. Drought in Ukraine. Inna Semanova
 Lecture XII. Climate Policies. Juan Antonio Duro.
 Lecture XIII. Climate Change Economics. Jose Manuel Giménez
 Lecture XIV. Climate Services in Climate-Dependent Sectors: Calendar Crops. Anna Boqué
 Lecture XV. Climate services in infrastructures: C3riak. Jon Olano
 Lecture XVI. Potential uses of climate services in tourism: surf, beach and snow tourism. Anna Boqué.
 Lecture XVII. Climate Services for Intangible Heritage: Catalan Human Towers. Óscar Saladié

Obtained Competencies/ Training Learning Outcomes:

Assess the location and characteristics of the observation sites Apply quality control processes to climate data and resulting time series.
Identify and retrieve climate data from different sources to generate climate products
Compute basic climate products, normals and averages, or anomalies.
Compute climate indices for the monitoring of climate change, climate extremes variability and Compute sector-specific climate indices and other sector-oriented climate products; Prioritize the communication of climatological information according to social, political and economic relevance Develop and deliver, in partnership with users, specific applications to facilitate the understanding of climate information.
Compute sector-specific climate indices and other sector-oriented climate products; Create value-added products, such as graphics, maps and reports to explain climate characteristics and evolution, according to the needs of specific sectors such as health, agriculture, water, energy and disaster management.
Prioritize the communication of climatological information according to social, political and economic relevance. Develop and deliver, in partnership with users, specific applications to facilitate understanding and use of climate products and services.