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

3rd ClimEd Online Training on "Digital Tools and Datasets for Climate Change Education"

26 October – 12 November 2021

Hosts: University of Helsinki (UHEL, Helsinki, Finland) & Odessa State Environmental University (OSENU, Odessa, Ukraine)

ClimEd in Kyiv, UA time	LECTURING			HOME-WORK-ASSIGNMENTS (HWAs) / WORK IN GROUPS				FINALS
	Day 1	Day 2	Day 3	during 2 weeks				Final day
	Tuesday 26 October 2021	Wednesday 27 October 2021	Thursday 28 October 2021	from 28th October 2021	Tuesday 2 Nov 2021	Wednesday 9 Nov 2021	until 11th November 2021	Friday 12 November 2021
09:45 – 10:00	***Welcome words***							***Welcome words***
10:00 – 10:45	**L1.** Regional focus of IPCC Assessment Report in Ukraine Context (Svitlana Krakovska, UHMI)	**L5.** Remote sensing/Satellite observations: current state, perspectives, databases, and applicability of results (Larisa Sogacheva, FMI)	**L9.** Climate related datasets, Copernicus related data (Antti Mäkelä, FMI)	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	Presentations and Defences of HWAs by Groups C1, C2, C3
10:45 – 11:00	*Coffee/ Tea Br.*	*Coffee/ Tea Br.*	*Coffee/ Tea Br.*					*Coffee/ Tea Br.*
11:00 – 11:45	**L2.** UHMI activities in support climate related research: current status and perspectives (Svitlana Krakovska, UHMI)	**L6.** Global scale climate modelling: current state, perspectives, databases, and applicability of results (Putian Zhou, UHEL/FMI)	**L10.** Tools for visualization and analysis of climate related data (Antti Mäkelä, FMI)	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	Presentations and Defences of HWAs by Groups C4, C5, C6
11:45 – 12:00	*Coffee/ Tea Br.*	*Coffee/ Tea Br.*	*Coffee/ Tea Br.*					*Coffee/ Tea Br.*
12:00 – 12:45	**L3.** WMO integrated climate services: current status and perspectives (Wilfran Moufouma Okia, WMO)	**L7.** Regional scale climate modelling: current state, perspectives, data/databases, and applicability of results (Tomas Halenka, Univ Charles)	**L11.** Introductions to HWAs/ Group projects Alexander Mahura, UHEL-INAR; Svitlana Krakovska, UHMI; Putian Zhou, UHEL/FMI; Larisa Sogacheva, FMI; Inna Khomenko, OSENU	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	*2 weeks of work in Groups on HWAs*	Presentations and Defences of HWAs by Groups C7, C8, C9
12:45 – 13:00	*Coffee/ Tea Br.*	*Coffee/ Tea Br.*	*Coffee/ Tea Br.*					*Coffee/ Tea Br.*
13:00 – 13:45	**L4.** Observations for climatic variables: obs. system, specifics, challenges (Antti Mäkelä, FMI)	**L8.** Urban scale modelling for climate applications (Igor Esau, NERSC)	**L12.** Introductions to HWAs/ Group projects Alexander Mahura, UHEL-INAR; Svitlana Krakovska, UHMI; Putian Zhou, UHEL/FMI; Larisa Sogacheva, FMI; Inna Khomenko, OSENU	*2 weeks of work in Groups on HWAs*	***time TBD*** **Questions** to Teachers of Groups' Projects	***time TBD*** **Questions** to Teachers of Groups' Projects	*2 weeks of work in Groups on HWAs*	Presentations and Defences of HWAs by Groups C10, C11, C12
					Alexander Mahura, Svitlana Krakovska, Putian Zhou, Larisa Sogacheva, Inna Khomenko	Alexander Mahura, Svitlana Krakovska, Putian Zhou, Larisa Sogacheva, Inna Khomenko		**14:00-14:30 - Awarding Diplomas/ Certificates & Official closure of the Training**

ClimEd Main Themes for HWAs / Group Projects	HWAs as development and realization of the small-scale research project (SSRP) ➢ **Agriculture** (air temperature; maximum and minimum air temperature; soil temperature at different depths; precipitation; relative humidity; repeatability of rainless periods; severity criteria for atmospheric drought; number of days with maximum air temperature; number of days with deficient water vapor saturation; number of days with dry wind; depth of soil freezing; productive moisture reserves; state of crops at different stages of development) ➢ **Energy** (strong wind; average wind speed; heavy precipitation (rain, snow); extremely high and low temperatures; maximum and minimum river runoff; wind load; characteristics of solar radiation and illumination; extreme phenomena – hail, lightning, …) ➢ **Technical Design and Construction** (strong wind heavy rain; extremely high and low temperatures; maximum and average snow depth; maximum river flow; repeatable wind directions; annual precipitation; annual amount of liquid precipitation; wind load; seasonal depth of soil freezing; average air temperature for the heating season) ➢ **Urban Economy** (strong wind; heavy rain; extremely high and low temperatures; maximum snow depth; maximum river flow; annual precipitation; wind load; average air temperature for the heating season; characteristics of solar radiation and illumination; transition of average daily temperature through +8C; icing) ➢ **Water Management** (climate info: air temperature; precipitation; duration of rainless periods; hydro info: maximum river flow; water temperature; minimum river flow; forecast info: heavy rain; extreme high and low temperatures) ➢ **Health-care** (average daily variability of air temperature and number of hot days; intraday variability of atmospheric pressure; intraday temperature variability; duration of sunshine; physiological deficit of humidity; extremely high temperatures; icing; extremely low temperatures; snowfalls and blizzards; number of tropical days and nights; heavy rain causing floods; strong wind)
Final Day	➢ oral presentations & defences of HWAs by Groups C1-C12 ➢ e-evaluation of Groups' presentations by participants of the training ➢ e-evaluation of the training course (evaluation of lecturing, materials, etc.) ➢ e-evaluation of the learning outcomes (self-evaluation of participants' achievements) ➢ virtual meeting (for lecturers, teachers and Organizing Committee of the training event) with discussions and final decisions on certificates (Platinum, Gold, Ordinary) ➢ awarding ClimEd certificates (**3 ECTS credits**) ceremony for participants successfully presented and defended their Group Projects ➢ official closure of the 3rd ClimEd Training (by UHEL & OSENU) & Introduction-Welcome words about the 4th ClimEd training (Universitat Rovira i Virgili, Spain)
Datasets & Tools for HWAs	➢ https://climate.copernicus.eu --- register and get access / Toolbox (documentation, editor, API, application gallery) ➢ https://confluence.ecmwf.int/display/CKB/How+to+install+and+use+CDS+API+on+Windows ➢ Welcome to the Climate Data Store: https://cds.climate.copernicus.eu/#!/home ➢ APPLICATIONS: https://cds.climate.copernicus.eu/#!/search?text=&type=application ➢ ERA-5 EXPLORER: https://cds.climate.copernicus.eu/cdsapp#!/software/app-era5-explorer?tab=app ➢ DATASETS: https://cds.climate.copernicus.eu/#!/search?text=&type=dataset ➢ CMIP6 data portal: https://esgf-node.llnl.gov/search/cmip6 ➢ ANACONDA: https://docs.anaconda.com/anaconda/install (on different platforms) ➢ Visualization with Python: https://matplotlib.org & https://matplotlib.org/stable/gallery/index.html ➢ CDO (Climate Data Operators) - tool set for working on climate and NWP model data: https://code.mpimet.mpg.de/projects/cdo & downloads (https://code.mpimet.mpg.de/projects/cdo/files) & documentation (https://code.mpimet.mpg.de/projects/cdo/wiki/Cdo#Documentation) ➢ NCO (netCDF Operator) - toolkit manipulates and analyses data stored in netCDF-accessible formats: http://nco.sourceforge.net ➢ wgrib – manipulate, inventory and decode GRIB files: https://www.cpc.ncep.noaa.gov/products/wesley/wgrib.html ➢ wgrib2: https://www.cpc.ncep.noaa.gov/products/wesley/wgrib2/convert_wgrib2.html ➢ IDV (Integrated Data Viewer) - 3D geoscience visualization and analysis tool (on Win, Mac, Linux platforms): https://www.unidata.ucar.edu/software/idv ➢ Metview : https://confluence.ecmwf.int/display/METV ➢ …