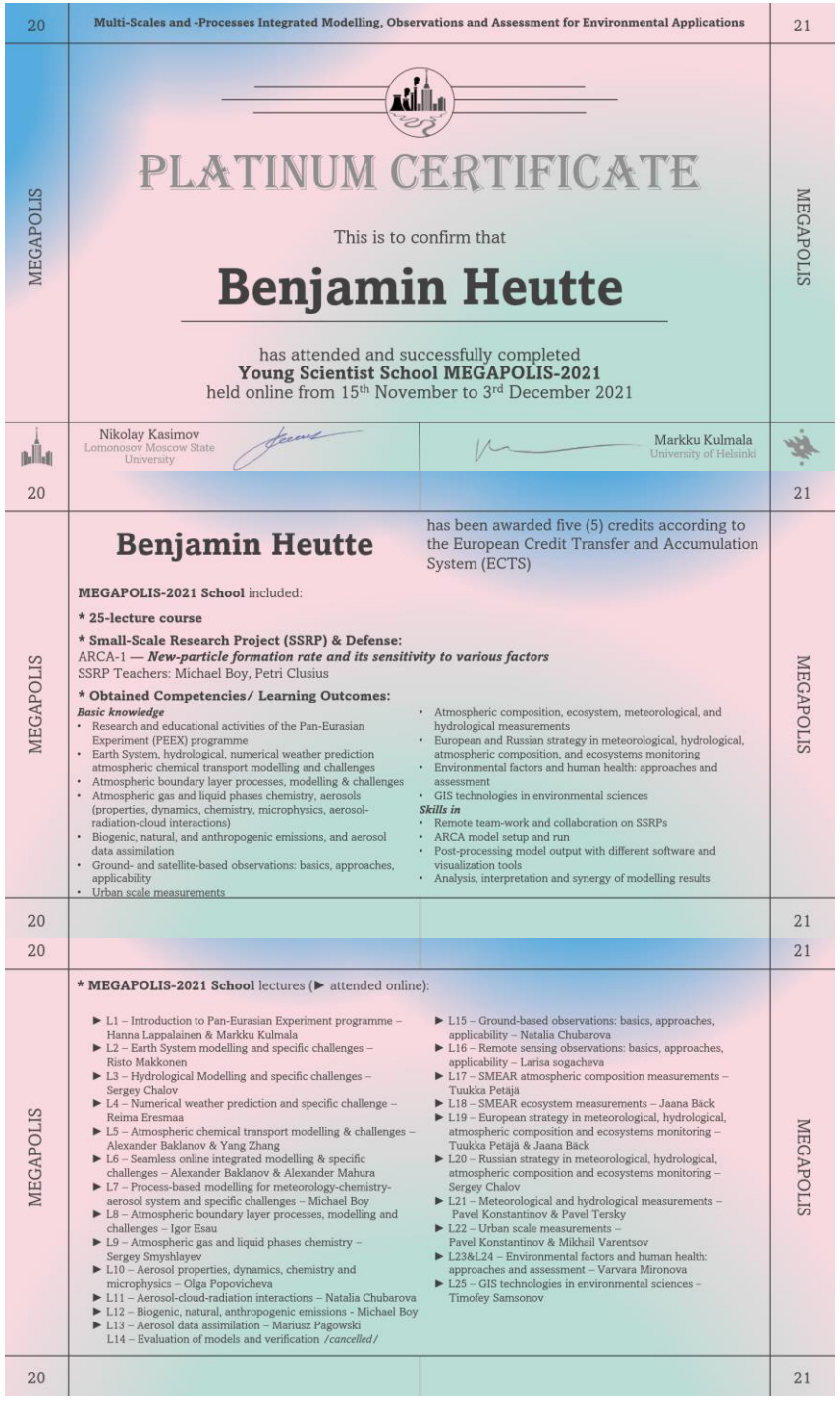
Online Young Scientist School MEGAPOLIS-2021

Young Scientist School



Multi-Scales and -Processes Integrated Modelling, Observations and Assessment for Environmental Applications

MEGAPOLIS

PLATINUM CERTIFICATE

This is to confirm that

Benjamin Heutte

has attended and successfully completed
Young Scientist School MEGAPOLIS-2021
held online from 15th November to 3rd December 2021

Nikolay Kasimov
Lomonosov Moscow State University

Markku Kulmala
University of Helsinki

Benjamin Heutte

has been awarded five (5) credits according to the European Credit Transfer and Accumulation System (ECTS)

MEGAPOLIS-2021 School included:

*** 25-lecture course**

*** Small-Scale Research Project (SSRP) & Defense:**
ARCA-1 — ***New-particle formation rate and its sensitivity to various factors***
SSRP Teachers: Michael Boy, Petri Clusius

*** Obtained Competencies/ Learning Outcomes:**

Basic knowledge
- Research and educational activities of the Pan-Eurasian Experiment (PEEX) programme
- Earth System, hydrological, numerical weather prediction atmospheric chemical transport modelling and challenges
- Atmospheric boundary layer processes, modelling & challenges
- Atmospheric gas and liquid phases chemistry, aerosols (properties, dynamics, chemistry, microphysics, aerosol-radiation-cloud interactions)
- Biogenic, natural, and anthropogenic emissions, and aerosol data assimilation
- Ground- and satellite-based observations: basics, approaches, applicability
- Urban scale measurements
- Atmospheric composition, ecosystem, meteorological, and hydrological measurements
- European and Russian strategy in meteorological, hydrological, atmospheric composition, and ecosystems monitoring
- Environmental factors and human health: approaches and assessment
- GIS technologies in environmental sciences

Skills in
- Remote team-work and collaboration on SSRPs
- ARCA model setup and run
- Post-processing model output with different software and visualization tools
- Analysis, interpretation and synergy of modelling results

*** MEGAPOLIS-2021 School** lectures (► attended online):

► L1 – Introduction to Pan-Eurasian Experiment programme – Hanna Lappalainen & Markku Kulmala
► L2 – Earth System modelling and specific challenges – Risto Makkonen
► L3 – Hydrological Modelling and specific challenges – Sergey Chalov
► L4 – Numerical weather prediction and specific challenge – Reima Eresmaa
► L5 – Atmospheric chemical transport modelling & challenges – Alexander Baklanov & Yang Zhang
► L6 – Seamless online integrated modelling & specific challenges – Alexander Baklanov & Alexander Mahura
► L7 – Process-based modelling for meteorology-chemistry-aerosol system and specific challenges – Michael Boy
► L8 – Atmospheric boundary layer processes, modelling and challenges – Igor Esau
► L9 – Atmospheric gas and liquid phases chemistry – Sergey Smyshlayev
► L10 – Aerosol properties, dynamics, chemistry and microphysics – Olga Popovicheva
► L11 – Aerosol-cloud-radiation interactions – Natalia Chubarova
► L12 – Biogenic, natural, anthropogenic emissions - Michael Boy
► L13 – Aerosol data assimilation – Mariusz Pagowski
L14 – Evaluation of models and verification */cancelled/*
► L15 – Ground-based observations: basics, approaches, applicability – Natalia Chubarova
► L16 – Remote sensing observations: basics, approaches, applicability – Larisa sogacheva
► L17 – SMEAR atmospheric composition measurements – Tuukka Petäjä
► L18 – SMEAR ecosystem measurements – Jaana Bäck
► L19 – European strategy in meteorological, hydrological, atmospheric composition and ecosystems monitoring – Tuukka Petäjä & Jaana Bäck
► L20 – Russian strategy in meteorological, hydrological, atmospheric composition and ecosystems monitoring – Sergey Chalov
► L21 – Meteorological and hydrological measurements – Pavel Konstantinov & Pavel Tersky
► L22 – Urban scale measurements – Pavel Konstantinov & Mikhail Varentsov
► L23&L24 – Environmental factors and human health: approaches and assessment – Varvara Mironova
► L25 – GIS technologies in environmental sciences – Timofey Samsonov

Small-Scale Research Projects (SSRPs)
Evaluation Results/ SSRPs Defences on 3rd December 2021

PLATINUM	ARCA-1
ORDINARY	Enviro-HIRLAM-2
PLATINUM	EC-Earth-2
PLATINUM	ARCA-2
PLATINUM	Enviro-HIRLAM-3
GOLD	ARCA-3
GOLD	Enviro-HIRLAM-4

Challenges –

- Personal commitment / motivation to participate in the YSSchool
- Arranging horizontal communication in groups/teams & difference in time zones
- Remote work in group on SSRProjects
- Too short-time (2 week is not enough)
- Internet speed/ downloading data for analysis (up to 20+ Gb)
- Language / English
- Different backgrounds (education & fields of research interests)
- Virtual teaching/ consulting
- New software/tools installation for data visualization/ analysis