

Towards Global Earth Observatory workshop

8 - 10 May 2023

organised by World Meteorological Organization (WMO) and Atmosphere and Climate Competence Center (ACCC) in collaboration with the local host Institute for Atmospheric and Earth System Research (INAR), University of Helsinki

Venue: the Stations Measuring Ecosystem and Atmosphere Relations (SMEAR) II station in Hyytiälä, Finland (<https://www.helsinki.fi/en/research-stations/hyytiäla-forestry-field-station>)

Registration: pls provide your travel information via the registration link for organizing joint bus transport to the Hyytiälä station. Local host will cover the accommodation in Hyytiälä, meals and joint bus transport on Monday from Helsinki city centre / Airport to Hyytiälä and back on Wednesday.

For registration : <https://elomake.helsinki.fi/lomakkeet/122447/lomake.html>

The remote participation is possible via zoom link during the plenary sessions but not during the working groups.

Aim

- preparation of the observation component to Berlin Summit (July 3-7, 2023) Germany (<https://eve4climate.org/>)
- to discuss how we can work together towards Global Earth Observatory research infrastructure (RI)

Scope

The Global Earth Observatory WS is bridging networks towards integrated climate and environment relevant observations. The aim of the meeting is to discuss, how to best integrate different in situ environmental data and how to best seamlessly bridge the in-situ data with the remote sensing data and models. This integrative approach includes methods, databases, in-situ stations co-location and co-data etc. aspects. Big data is needed to solve Global Grand Challenges (climate change, air pollution, food production) and to meet the UN SDGs. Big data is needed to carry out research such as analysis of Earth surface - atmosphere interactions and feedbacks and to provide services to the society. Integrated observation systems provide steps towards implementation of the future research infrastructures (RIs) and generating big open data.

- Where are we after 20 years? Do we have comprehensive hierarchy of stations/ observations (comprehensive flagships, flux stations, sensors utilizing 5G-7G networks), open, big data; data mining and analysis; data sharing; knowledge transfer, impacts; how to proceed.
- What are the main bottle-necks? There are several good examples/developments/pilots, however to meet global grand challenges more comprehensive open data is needed, how to get it? Particularly global coverage. What is needed: is it a challenge in technology, governance, coordination? What is the biggest challenge, or combination of various factors?
- Preparation for Berlin summit: What is needed in observations point of view? How to prepare for seamless in-situ – remote sensing observations to meet present model needs like validations

but also to give new processes, interactions and feedbacks to models.

<https://audioboom.com/posts/8176030-climate-monitoring-using-satellite-data-with-julia-slingo>

Agenda outline

Monday 8 May 2023

- bus pick up from the Helsinki city centre at 14.00 and airport 15.00 pm, ca 2.5 h by joint bus transport organized by the local host
- arrival to Hyytiälä station (accommodation) ca 17.45

18:00 Dinner

18:30 Guided tour meeting SMEAR II station including the discussion of aims of the meeting

20:30 Supper

Tuesday 9 May 2023

07:30 Breakfast at the cafeteria

08:30 Content and expectations for the Berlin meeting, EVE by Björn Stevens

- Discussion

09:30 Towards Global Earth Observatory/Aims and scope of the meeting
Markku Kulmala and Jürg Luterbacher

10:00 Continental in situ observations; 8-10 minutes presentations by infrastructures present in Hyytiälä

10:45 Marine in situ observations; 8-10 minutes presentations by infrastructures present in Hyytiälä

11:30 Lunch

12:30 Remote sensing / satellites; 8-10 minutes presentations by infrastructures present in Hyytiälä

13:15 On global coverage; 8-10 minutes by infrastructures present in Hyytiälä

14:00 coffee break

14:30 WMO / GCOS / GAW insights

15:00 Data availability & observational gaps (geopolitical situation)

15:30 **Discussions in groups;** in all groups group chair and rapporteurs stay in the group and other participants move from group to group

- Group-1 Where are we after 20 years? Do we have a comprehensive hierarchy of stations/ observations (comprehensive flagships, flux stations, sensors utilizing 5G-7G networks), open, NRT access, big data; data mining and analysis; data sharing; knowledge transfer, impacts; how to proceed. White Paper

Future climate service concept, early warning, integrated systems and services

- (Chair: Mirtl Michael / Evangelos Gerasopolous; Rapporteur: Ranjeet Sokhi
- Group-2 What are the main bottle-necks? There are several good examples/developments/pilots, however to meet global grand challenges more comprehensive open data is needed, how to get it? Particularly global coverage. What is needed: is it a challenge in technology, governance, coordination? what is the biggest challenge, or combination of various factors? White paper
- (Chair: Carmichael Greg / NN, Rapporteur: Silja Häme
- Group-3 Preparation for Berlin summit: what is needed in observations point of view? How to prepare for seamless in-situ – remote sensing observations to meet present model needs like validations but also to give new processes, interactions and feedbacks to models. White paper
- (Chair: Markku Kulmala / Jürg Luterbacher; Rapporteur: Jaana Bäck

18:00 Dinner, Sauna, Supper

Wednesday 10 May.2023

07:30 - Breakfast at the cafeteria

08:30 Summing up from 9 May, preparing a joint vision and statements
Markku Kulmala and Jürg Luterbacher

- Reports from groups (3 Rapporteurs, 15 min each)
 - Discussion (overall sum up from the groups and previous day)
 - Where are we after 20 years?
 - How to address bottle necks?
 - Preparation for Berlin summit
 - Next steps
 - White paper(s)

11:15 Lunch

12:00 Departure after lunch to the Helsinki airport and city centre

FUTHER INFORMATION

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