



GAW CH / GCOS CH

Minutes – 2nd ad-interim SSC meeting

Date, Time:	5 September 2022, 10:30 – 15:00
Location:	Impact Hub, Bern
Participants:	
<i>Steering Committee</i>	T. Stocker (University of Bern, Chair <i>until agenda item 7</i>), B. Buchmann (Empa, <i>present until agenda item 7</i>), J. Klausen (MeteoSwiss), C. Schär (ETH Zurich, <i>from agenda item 6 on, virtual participation</i>), R. Stöckli (MeteoSwiss, <i>substitute Chair from agenda item 7</i>)
<i>MeteoSwiss Management Board</i>	B. Calpini
<i>Swiss GAW/GCOS Office</i>	M. Stalder, I. Werner, D. Pappert (Minutes)
<i>Virtual Invitees</i>	M. Steinbacher, C. Zellweger, Lukas Emmenegger (agenda items 7a and 7b, all Empa)

1 Welcome and adoption of Agenda

The Chair welcomes the ad-interim Swiss GAW/GCOS Scientific Steering Committee (SSC) to its 2nd meeting. Starting from 1 January 2023, two new SSC members will complete the SSC: Julia Schmale (EPFL) and Jan Seibert (UZH).

The agenda is adopted.

2 Minutes of last ad-interim SSC Meeting

The SSC informs the Office of a minor typo in the record of decisions, paragraph 8. The Swiss GAW/GCOS Office will revise the record of decisions accordingly.

The minutes and revised record of decisions of the 1st ad-interim SSC meeting are adopted.

3 Overview of ongoing GAW-CH and GCOS-CH agreements, including status reports

The SSC takes note of the status reports. I. Werner informs that the Covid restrictions still impact some project partners. Project delays related to Covid will be handled in a uniform matter for all project partners, applying no-cost extensions, if deemed necessary.

The SSC points out an erroneous date in the document aiSSC2/Doc 1 for the central facility WCC-Empa. The Swiss GAW/GCOS Office will revise the document in the future accordingly.

4 GCOS-CH Monitoring and Central Facilities. Proposals:

a) PERMOS proposal 2023-2026

No conflict of interest is declared.

The SSC approves the Swiss Permafrost Monitoring Network (PERMOS) proposal 2023-2026 of a total of 530 kCHF (132'500 CHF/year), provided that the Federal Office for the Environment provides the same amount (530



kCHF) and the Swiss Academy of Sciences (SCNAT) provides 120 kCHF. The new proposal requests a total increase of 90kCHF with respect to the previous agreement period mainly due to increased personnel costs.

The SSC tasks the Swiss GAW/GCOS Office to inform PERMOS of its decision and to finalise the agreement for the next contractual period 2023-2026.

The Chair asks the Swiss GAW/GCOS Office to schedule an agenda item in a future SSC meeting to discuss how to handle increasing personnel costs in general.

b) GEBA proposal 2023-2026

No conflict of interest is declared.

The committee approves the Global Energy Balance Archive (GEBA) proposal 2023-2026 of a total of 248 kCHF (62 kCHF/year). The new proposal requests a total increase of 65 kCHF with respect to the previous agreement period due to a five per cent employment rate increase of the database manager and increased personnel costs. The SSC tasks the Swiss GAW/GCOS Office to inform GEBA of its decision and to finalise the agreement for the next contractual period 2023-2026.

5 GCOS-CH Monitoring and Central Facilities. Evaluations:

a) GLAMOS evaluation: adoption of ToRs

The SSC adopts the Terms of References for the evaluation of the Glacier Monitoring in Switzerland (GLAMOS) subject to the following alteration:

Due to the proximity of Michael Zemp from the World Glacier Monitoring Service (WGMS) as a close user of GLAMOS and a partner in the framework of GCOS-CH, the SSC suggests to invite Charles Fierz from the WSL Institute for Snow and Avalanche Research as an external expert instead.

The SSC tasks the Swiss GAW/GCOS Office to initiate the evaluation process and to invite one representative of GLAMOS to the first regular SSC meeting in spring 2023.

b) WGMS evaluation: adoption of ToRs

The SSC adopts the Terms of References for the evaluation of the WGMS.

The SSC tasks the Swiss GAW/GCOS Office to initiate the evaluation process and to invite one representative of WGMS to the second regular SSC Meeting in autumn 2023.

c) Euro-Climhist evaluation: adoption of ToRs

The SSC adopts the Terms of References for the evaluation of Euro-Climhist.

The SSC tasks the Swiss GAW/GCOS Office to initiate the evaluation process and to invite one representative of Euro-Climhist to the first regular SSC meeting in spring 2023.

6 Projects: Joint Call for proposals 03/2022. Evaluation of proposals and award of contract

For the ensuing evaluation of proposals following the joint GAW/GCOS call for proposals, the SSC decides to base its discussion on a normalised ranking of the proposals as proposed by C. Schär. The normalised scores take into account the different rating styles of SSC members and eliminate this bias.

A planned total of 3.3 mCHF are available for this joint call, pooled from the resources of GAW-CH and GCOS-CH. MeteoSwiss informs that additional 200kCHF are available from the GCOS-CH reserves for 2023, bringing the total amount of available funds to 3.5 mCHF.



MeteoSwiss received sixteen proposals. The total amount of funds requested of 12.3 mCHF exceed the amount available. The members of the SSC declare their conflicts of interest concerning the proposals submitted. The following decisions are taken:

Feedbacks between vegetation, carbon, energy, and water cycles in the urban environment (UrbaNature)

The SSC decides to support the proposal submitted by the University of Basel (Dr. Stavros Stagakis) and requests MeteoSwiss to enter in a contractual agreement with the University of Basel. Due entirely to budgetary constraints, the committee reduces the proposed budget by 3.2% to a new total of 1'100'750 CHF. The University of Basel is tasked to hand in a proposal addendum with a revised budget.

In particular, the SSC commends the strong interdisciplinarity of the project and looks forward to strong results with applicability beyond the urban complexes available in Switzerland.

Tapping the potential of one decade of annual repeat altimetry to study glacial and periglacial processes (TapRep)

The SSC decides to support the proposal submitted by ETH Zurich (Prof. Dr. Matthias Huss) and requests MeteoSwiss to enter in a contractual agreement with ETH Zurich.

In particular, the SSC recognises the key importance of having high-resolution aerial pictures of glacier development of the last ten years on an annual basis. To maximise the impact of the project, the SSC notes that the way in which the information on sediment cores on different time scale and resolution can be usefully connected to the visual information from the aerial pictures could be further explained. The SSC therefore requests that the legal representative addresses this aspect in the project and that he includes it in the future annual project reporting.

The Swiss H2O Hub: High-quality water vapor measurements from ground to space

The SSC decides to support the proposal submitted by the University of Bern (Dr. Gunter Stober) and requests MeteoSwiss to enter in a contractual agreement with the University of Bern. Due entirely to budgetary constraints, the committee reduces the proposed budget by 3.2% to a new total of 1'059'070 CHF. The University of Bern is tasked to hand in a proposal addendum with a revised budget.

The SSC commends the strong scientific case made in the proposal and particularly appreciates the integration of different observational methods from the Earth's surface to the mesosphere. To maximise the benefit of the project, the SSC notes that the project would profit from including H₂O constraints from space. Based on Figure 1 in the submitted proposal, it was in particular noted that many other upper troposphere and lower stratosphere measurements from passive microwave and even Global Navigation Satellite System H₂O measurements would qualify to be included. This would guarantee that a bottom-up and a top-down approach are brought together, for instance, by profile measurements from balloon soundings. The SSC requests that the legal representative addresses at least an intercomparison of his methods with four to five of the key players in space-based remote sensing. If time allows, the SSC also strongly invites the legal representative to address spatial scalability questions by comparing ground- and space-based estimates.

Furthermore, although the submitted proposal mentions that MIAWARA will be made available through the NDACC network, it is not clear whether the analysed datasets will be distributed further. The SSC thus requests the legal representative to make sure the data is distributed according to the Findability, Accessibility, Interoperability, and Reuse (FAIR) principle of digital datasets.

SwissPhenocam: country-scale automated phenology tracking from imagery

The SSC decides to support the proposal submitted by the University of Zurich (Prof. Dr. Jan Dirk Wegner) and requests MeteoSwiss to enter in a contractual agreement with the University of Zurich. Due entirely to budgetary constraints, the committee reduces the proposed budget by 3.2% to a new total of 1'060'190 CHF. The University of Zurich is tasked to hand in a proposal addendum with a revised budget.

The SSC particularly commends the solid scientific case made in the proposal. To ensure full alignment with activities at MeteoSwiss, such as the synchronisation of the requirements from the ongoing phenology manual-to-camera transitions, the SSC asks the legal representative to include at least one collaborator of MeteoSwiss. Please note that MeteoSwiss must not receive any project funds. Additionally, the SSC notes that the project would strongly benefit from linking manual phenological observations (vegetation timing) to camera- or satellite-based phenological time series (vegetation state). To accomplish this, the SSC strongly recommends positioning and evaluating some cameras in parallel with current long-term manual observations at key observation sites of MeteoSwiss. If time



allows, possible empirical or model-based transfer functions shall be evaluated to link timing of manual observations to states of automated observations. This would allow for an evaluation of potential homogeneity issues when switching from manual to automated phenology observations.

Improving forecast services with Jungfrauoch aerosol observations (IMPROVE)

The SSC decides not to support the proposal submitted by the Paul Scherer Institute PSI (Dr. David Bell) due to the following consideration:

- While recognising the high significance of research on aerosols at Jungfrauoch, the SSC notes that the Swiss GAW and GCOS programmes would have benefited more if the consortium also included existing Swiss expertise in atmospheric modelling.

The proposed project is therefore not rated with highest priority.

Mechanistic modelling combining in-situ, laboratory experiments and remote sensing data to constrain soil CO₂ efflux over Switzerland

The SSC decides not to support the proposal submitted by the ETH Zurich (Dr. Peter Molnar) due to the following considerations:

- The SSC points out that the proposal indeed addresses a topic of high relevance, combining in-situ, laboratory experiments and remote sensing data. However, the SSC argues that the project would have benefited from further exploring the way in which these three activities interact.
- The committee also notes that the proposal could have profited from a stronger national and international embedding as well as a long-term strategy for the use of the database.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Profiles of SI-traceable Radiation Balance over Switzerland measured with an SI traceable radiometer on a high-altitude balloon platform - Towards a new GAW Data Product

The SSC decides not to support the proposal submitted by the PMOD/WRC (Dr. Wolfgang Finsterle) due to the following considerations:

- While supporting the objectives of the proposal and recognising the importance of confining the radiative balance, the SSC feels that the proposal could have further addressed cross-disciplinarity and the application of the results.
- Moreover, the committee notes that the proposal could have been improved by touching upon a risk management strategy w.r.t the feasibility in flying the intended payload in Switzerland, in consideration of regulatory aspects.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Making in situ and remote sensing measurements of atmospheric halocarbons SI-traceable

The SSC decides not to support the proposal submitted by METAS (Dr. Hanspeter Andres) due to the following consideration:

- While the SSC welcomes the proposed consortium, it also feels that other submitted proposals will be of greater benefit to the Swiss GAW and GCOS programmes.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Despite the decision not to support this proposal, the SSC recognises the need to establish a central calibration laboratory for halogenated compounds at METAS and kindly invites the legal representative to submit a formal request for support in the framework of the GAW-CH programme in this regard.

SNOWTIME - innovative snow ECV time series and monitoring service to support hydrological and glaciological applications in the Swiss Alps

The SSC decides not to support the proposal submitted by ExoLabs GmbH (Dr. Hendrik Wulf) due to the following considerations:

- To support the analysis of imagery-based datasets, the SSC argues that the proposal could have benefited from integrating a model-support of physical snow processes.
- The SSC also notes that finding synergies with other research groups in Switzerland focused on snow-water equivalent measurements would have enabled a strengthened holistic research approach.
- The SSC feels that other proposals will be of greater benefit to the Swiss GAW and GCOS programmes.



The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Augmented Reality for Observing and Communicating Mountain Changes (AROC)

The SSC decides not to support the proposal submitted by MountainNow (Dr. Alexia Massacand) due to the following considerations:

- While the SSC appreciates the proposed work with the 12'000 historical glacier images, as well as the prospect of generating a large number of new images, the SSC feels that other submitted proposals will be of greater benefit to the Swiss GAW and GCOS programmes.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Beyond the state of the art in carbonaceous aerosol monitoring: new system for real-time automatic measurement with deconvolution into sources

The SSC decides not to support the proposal submitted by the University of Applied Sciences and Arts Northwestern Switzerland FHNW (Dr. Alejandro Keller) due to the following considerations:

- While the SSC appreciates the previous efforts that went into the development of the FATCAT instrument and supports the objective to further improve its capabilities and form factor, the SSC feels that other proposals will be of greater benefit to the Swiss GAW and GCOS programmes.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

WATHMAP – WAter Temperature Heterogeneity MAPPING

The SSC decides not to support the proposal submitted by the University of Applied Sciences and Arts of southern Switzerland SUPSI (Dr. Rodolfo Perego) due to the following considerations:

- The SSC argues that the proposal could have profited from an explicit outline of how the analysed datasets would be distributed according to the Findability, Accessibility, Interoperability, and Reuse (FAIR) principles of digital datasets.
- The SSC also feels that the project could have greatly benefited from a stronger institutional embedding.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Spectral Solar Irradiance Measurements using CompAct spectrometers to retrieve ECVs (SIMCA)

The SSC decides not to support the proposal submitted by the PMOD/WRC (Dr. Julian Gröbner) due to the following considerations:

- While recognising the high relevance of deriving the atmospheric ECVs spectral aerosol optical depth, total column ozone, total precipitable water vapour and total CO₂ column, the SSC argues that a stronger embedding in ongoing work of other groups and institutions would have been beneficial.
- The SSC also notes that the proposal could have benefited from further exploring the potential of using CompAct spectrometers in comparison to already existing products.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Continuous modelling of snow in the Wägital catchment for improved trend analyses (SnoWäTrA)

The SSC decides not to support the proposal submitted by Meteodat GmbH (Dr. Mario Rohrer) due to the following considerations:

- The SSC argues that the proposal could have benefited from a stronger description of both the modelling and remote sensing aspects of the project and from an explicit outline of how the analysed datasets would be distributed according to the Findability, Accessibility, Interoperability, and Reuse (FAIR) principles of digital datasets.
- The SSC also notes that finding synergies with other research groups in Switzerland focused on snow-water equivalent measurements would have enabled a strengthened holistic research approach.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Boosting the quantification of spatio-temporal observations of solid precipitation and snow water equivalent in high mountain areas (BOSTOPS-mountain)

The SSC decides not to support the proposal submitted by the WSL Institute for Snow and Avalanche Research SLF (Dr. Nadine Salzmann) due to the following considerations:



Swiss Confederation

- While the SSC points out that the proposal indeed addresses a number of relevant scientific questions, it also notes that the proposal would have benefited from a stronger involvement by the host institution, especially w.r.t. the procurement of infrastructure.
- The SSC also notes that finding synergies with other research groups in Switzerland focused on snow-water equivalent measurements would have enabled a strengthened holistic research approach. The SSC feels that other proposals will be of greater benefit to the Swiss GAW and GCOS programmes.
- Considering the large scope of the proposal, the SSC encourages the legal representative to consider a submission in the framework of SNF or Synergia.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

Understanding and predicting the impacts of climate change on the boundless carbon cycle of the world's water towers (BOUNDLESS_C)

The SSC decides not to support the proposal submitted by the École polytechnique fédérale de Lausanne EPFL (Prof. Dr. Tom Battin) due to the following considerations:

- While the SSC points out that the proposal addresses a number of relevant scientific question, it also feels that other proposals will be of greater benefit to the Swiss GAW and GCOS programmes.
- Considering the large scope of the proposal, the SSC encourages the legal representative to consider a submission in the framework of SNF or Synergia.

The proposed project is therefore rated with a lower priority in comparison to the other proposals.

The SSC tasks the Swiss GAW/GCOS Office to inform all applicants of its decisions and to finalise agreements with the awarded project partners.

7 GAW-CH Central Facilities. Proposals:

a) Empa QA/SAC-CH 2023-2026

M. Steinbacher presents past and planned activities of the Empa Quality Assurance/Scientific Activity Centre Switzerland (QA/SAC-CH), which has been financially supported by MeteoSwiss in the framework of GAW-CH since 2010.

B. Buchmann declares a conflict of interest.

In the absence of B. Buchmann, the committee approves the Empa QA/SAC-CH proposal 2023-2026 of a total of 6'14'908 CHF. This also includes the support for the newly proposed extension of the QA/SAC activities.

The SSC tasks the Swiss GAW/GCOS Office to inform Empa of its decision and to finalise the agreement for the next contractual period 2023-2026.

b) WCC-Empa 2023-2026

C. Zellweger presents past and planned activities of the World Calibration Center (WCC-Empa), which has been financially supported by MeteoSwiss in the framework of GAW-CH since 1996.

B. Buchmann declares a conflict of interest.

In the absence of B. Buchmann, the committee approves the WCC-Empa proposal 2023-2026 of a total of 1'170'675 CHF.

The SSC tasks the Swiss GAW/GCOS Office to inform Empa of its decision and to finalise the agreement for the next contractual period 2023-2026.

The SSC discusses the synergies between the two activities and the potential of merging both proposals in one single proposal. While the two central facilities work closely together, these are two distinct acronyms, and they have separate mandates and functions. The decision is postponed to 2025.



8 Varia

R. Stöckli takes over as Chair of the meeting.

a) GAW and GCOS@WMO

M. Stalder presents the following information to the SSC:

- the future governance of GCOS will be an important point of discussion at the upcoming WMO INFCOM meeting in October 2022;
- an internal reorganization at WMO has led to a change in personnel in the GAW secretariat. At the moment, the post as GAW secretariat director is vacant. MeteoSwiss will follow the situation closely.

The Swiss GAW/GCOS Office will inform the SSC in due course of any further news.

b) UNFCCC activities

I. Werner presents the following information to the SSC:

- The next UN climate change conference (COP27) will take place in Sharm el-Sheikh, Egypt in November 2022. Switzerland request the IPCC to do a special report on climate tipping points. In this regard, Switzerland will negotiate strong language at COP27 under the lead of the Federal Office for the Environment.

c) International meetings

M. Stalder presents the following information to the SSC:

- The Germany-Austria-Switzerland (D-A-CH) collaboration in the framework of the GAW programme is to be strengthened. A workshop is planned for January 2023 and there is currently a survey going around to see who might be interested.
- Based on the feedback of the Swiss GAW and GCOS communities, the Swiss GAW/GCOS Office plans a GCOS-CH-oriented national event in spring 2023 and a GAW-CH-oriented national event in autumn 2023.

The Swiss GAW/GCOS Office will inform the SSC in due course of any further news.

d) Dates of next meetings

The first regular SSC meeting will take place on the following date:

- Spring meeting 2023: Wed, 5 April 2023, 13.00-18.00, tbd

The second SSC meeting will take place on the following date:

- Autumn meeting 2023: Thur, 14 September 2023, 13:00-18.00, tbd