

Report on the outcomes of a Virtual Mobility¹

Action number: CA21119

Grantee name: Angelos Karanikolas

Virtual Mobility Details

Title: Data processing and analysis for aerosol optical depth homogenisation and spectral AOD retrievals – writing and editing of deliverables.

Start and end date: 01/08/2026 to 30/09/2026

Description of the work carried out during the VM

Description of the virtual collaboration and activities carried out during the VM, with focus on the work carried out by the grantee. Any deviations from the initial working plan shall also be described in this section.

(max. 500 words)

During the VM there was leading contribution to the WG1 Deliverable D1.4. report and contribution to the preparation of deliverable D1.3. The grantee's contributed mainly to 4 parts:

Global Atmosphere Watch Precision Filter Radiometer (GAW-PFR) and Aerosol Robotic Network (AERONET) data selection, preparation and provision from common stations of the 2 networks (Davos in Switzerland, Izana and Valladolid in Spain and Hohenpeissenberg in Germany). This dataset was necessary for deliverable D1.3 and was prepared in way to be suitable for the demands of this particular work. The grantee participated in the planning and review of this deliverable.

Literature review and writing of the related parts in deliverable D1.4. This included an introduction to the subject of aerosol optical depth (AOD) retrievals of various instruments including spectroradiometers, the methodology and brief summaries of various studies using such instruments to retrieve AOD in different spectral regions (ultraviolet, visible and infrared radiation).

Communication with other contributors to deliverable D1.4, provision of constructive feedback and editing with the purpose to homogenise the document.

Addition of separate short study by the applicant in deliverable D1.4. This includes the summary of a related study where the grantee was lead author (Karanikolas et al., 2025; Karanikolas, 2026) and the extension of part of that work for the purpose of this deliverable. This included statistics and examples

¹ This report is submitted by the grantee to the Action MC for approval and for claiming payment of the awarded grant. The Grant Awarding Coordinator coordinates the evaluation of this report on behalf of the Action MC and instructs the Grant Holder Manager to verify the grant documents compliance and proceed with the payment.

under different conditions of AOD with high spectral resolution and long spectral range through irradiances measured by a double Bi-tech Sensor (BTS spectroradiometers).

References:

Karanikolas, A., Torres, B., Momoi, M., Herreras-Giralda, M., Kouremeti, N., Gröbner, J., Doppler, L., and Kazadzis, S.: Retrieval of Aerosol Properties from Direct Solar Irradiance Measurements with High Temporal Resolution and Spectral Range, *Atmos. Meas. Tech.*, 18, 7651–7677, <https://doi.org/10.5194/amt-18-7651-2025>, 2025.

Karanikolas, A.: Advancements in ground-based aerosol optical depth measurement and measurement-modelling synergies, ETH Zurich Research Collection, DISS. No. 32143, <https://doi.org/10.3929/ethz-c-000806830>, 2026.

Description of the VM main achievements and planned follow-up activities

Description and assessment of whether the VM achieved its planned goals and expected outcomes, including specific contribution to Action objective and deliverables, or publications resulting from the VM. Agreed plans for future follow-up collaborations shall also be described in this section.

(max. 500 words)

The VM achieved its planned goals. The outputs are a usable dataset for the purpose of deliverable D1.3 and a complete first draft of D1.4, while the process of corrections and improvements has already started in order to submit the final version before the upcoming conclusion of the corresponding COST action.

The VM outcome contributes to the deliverable D1.3 “Harmonised AOD retrievals & AOD comparisons” and includes the leading contribution to the deliverable D1.4 ‘Spectral AOD and AOD in the UV’ of WG1 of COST action Harmonia. The current version under correction is visible in the following link: https://docs.google.com/document/d/1czwJyb9iomR40SHjs_ab-r8II3_KMmKn0ozHX24rHZ0/edit?tab=t.0