

Report on the outcomes of a Virtual Mobility¹

Action number: CA21119

Grantee name: Dimitra Kouklaki

Virtual Mobility Details

Title: EarthCARE validation activities at Evia, Greece

Description of the work carried out during the VM

The virtual mobility was carried out between 13 April and 4 July 2026 in support of the EarthCARE Cal/Val activities within the RACE-ECV campaign. The work focused on ground-based solar radiation measurements during four EarthCARE overpasses over Psachna, Evia, Greece (lat =38.570°, lon=23.649°, elevation= ~40m a.s.l, overpass distance from site: ~11km), supporting the validation of EarthCARE radiative and aerosol products. The four overpasses occurred on:

1st overpass: 19/04/2026

2nd overpass: 14/05/2026

3rd overpass: 08/06/2024

4th overpass: 03/07/2026

Throughout the VM, I was responsible for the installation, configuration, alignment, operation and maintenance of the radiometric platform. The instrumentation consisted of two Kipp & Zonen CMP22 pyranometes, one for global and one measuring diffuse solar irradiance, and one Kipp & Zonen CHP1 pyrhelimeter for direct normal irradiance observations. The instruments were installed, tested and maintained to ensure reliable operation during the entire period of the campaign.

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.



Figure 1: Instrumentation installed at Psachna, Evia.

The ground-based observations were successfully performed between April and July 2026, with focus on the aforementioned scheduled overpasses. The instrumentation was continuously monitored through regular inspections, sensor cleaning, solar tracker alignment checks and real-time quality control to ensure uninterrupted operation and minimize systematic measurement uncertainties. Following each overpass, the collected data were organized into a consistent dataset and shared with all participants.

The measured solar radiation components are presented in the following figures. Fig. 2 illustrates the full campaign timeseries, while Fig. 3 shows the four (a-d) overpass days.

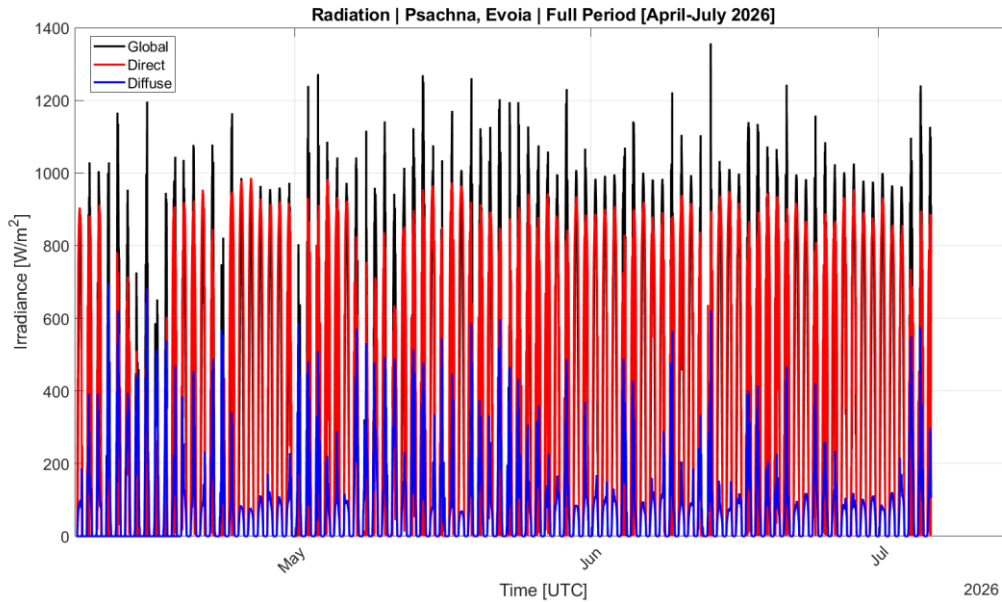


Figure 2: Timeseries of global (black), direct (red) and diffuse (blue) ground-based irradiance observations at Psachna, Evia, Greece for the entire RACE-ECV campaign period (April-July 2026).

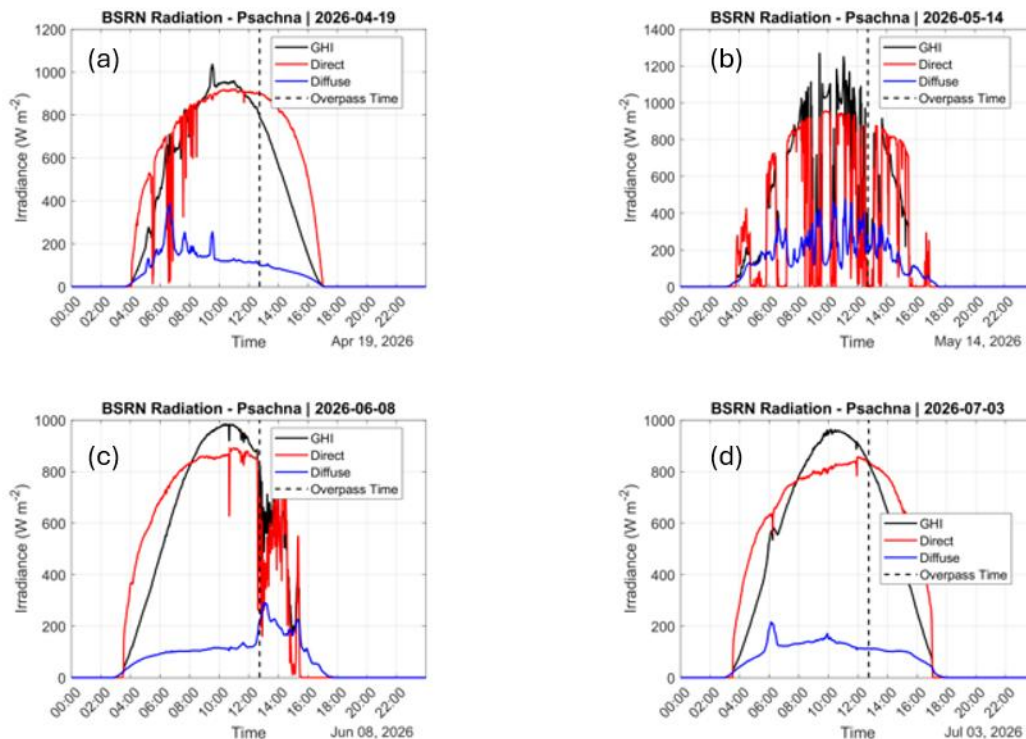


Figure 3: Timeseries of global (black), direct (red) and diffuse (blue) ground-based irradiance observations at Psachna, Evia, Greece during the four days of the EarthCARE overpasses, (a) 19/04, (b) 14/05, (c) 08/06 and (d) 03/07. The overpass time (12:44) is denoted with the back dashed line in each day. Time in all cases is in UTC.

The VM also included continuous virtual collaboration with the involved partners, exchanging information. This supported the harmonization of radiometric measurements and satellite validation, strengthening the consistency of the campaign across the participating institutions.

In addition to conducting the measurements at Psachna, I prepared the final dataset and the accompanying logbook-report, regarding all the updates, issues, comments and pictures throughout the campaign. The measurements collected during the campaign complement other ground-based observations within RACE-ECV campaign and will contribute to the evaluation of the EarthCARE-derived radiative products within the HARMONIA COST Action framework.

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

The VM successfully achieved its planned objectives, supporting the calibration/validation activities of EarthCARE mission through the acquisition of high-quality ground-based solar radiation observations during four overpasses over Psachna. The planned dataset of global, direct and diffuse solar irradiance was successfully collected, quality-controlled and documented, providing valuable input to the RACE-ECV campaign objectives.

The outcomes of the VM directly contribute to the objectives of the HARMONIA COST Action as well, by supporting activities related to calibration consistency, algorithm evaluation, uncertainty assessment and the integration of ground-based and satellite observations. The campaign also strengthened observational coverage over the Eastern Mediterranean, a region of particular importance for aerosol-radiation interaction studies and by supporting related studies, it aims to advance the understanding of aerosol radiative effects.

Close collaboration with partners involved in EarthCARE Cal/Val activities was facilitated in the frame of the VM, through regular exchanges on measurement protocols, processing methodologies and exchange of observational data. These interactions enhanced knowledge transfer and strengthened my expertise in radiometric measurements and satellite validation.

Next steps:

The collaboration established in the VM will continue through the joint analysis of the collected observations and their comparison with EarthCARE products and since the data will be compared with Radiative Transfer modelling approaches, it will strengthen the collaboration across observational and modelling communities.

The resulting dataset is aiming to contribute to future scientific publications, conference presentations and ongoing Cal/Val activities while strengthening future collaborations within the HARMONIA COST Action.