CAMS AERosol Advancement

D11.5 Mid-Term Dissemination and Exploitation Plan

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1 Executive Summary

The project's dissemination and exploitation activities is a crucial element in the success of the CAMAERA project, as they ensure that results are taken up by the wider community and are sustainable beyond the initial funding period, thus providing value for money.

This mid-term Dissemination and Exploitation Report (deliverable D11.5) provides an update of the dissemination and exploitation activities half way through the project, whilst a final Dissemination and Exploitation Report with detailed descriptions of dissemination activities, exploitable results and related activities will be produced towards the end of the project and WP12 (Month 36).

The Dissemination Plan identifies instruments and targets. These include activities organised by CAMAERA (including workshops, website, news items, etc.) as well as important events attended by CAMAERA members (i.e. workshops, conferences, seminars, etc.).

The present deliverable also provides the potential exploitation avenues in terms of outputs as well as respective exploitation activities during and after the end of the project, thus fulfilling the requirements of the DoA.

The Dissemination and Exploitation Plans are to be considered living documents as new avenues might become important to the project over its lifetime. Thus, both will be updated regularly as the need arises.

Table of Contents

2 Introduction

2.1 Background

2.1.1 CAMS-related projects

Monitoring the composition of the atmosphere is a key objective of the Copernicus programme. The Copernicus Atmosphere Monitoring Service (CAMS) combines satellite observations with numerical modelling by means of data assimilation and inversion techniques to turn the content of Earth-Observation data into information products that address some of today's major societal topics.

The CAMS EvOlution (CAMEO) project, led by ECMWF, contributes to the medium- to long-term evolution of the CAMS production systems and products, with emphasis on data-assimilation capabilities and uncertainty estimations of CAMS products. CAMEO tackles some challenges for enhancing the quality and service efficiency.

The HORIZON Europe-funded CAMS AERosol Advancement (CAMAERA) project aims at providing strong improvements of the aerosol modelling capabilities of the regional and global CAMS systems, on the assimilation of new sources of data, and on a better representation of secondary aerosols and their precursor gases.

The overall goal is to enhance the quality of key products of the CAMS service such as PM2.5, PM10 and therefore help CAMS to monitor air pollutants. To achieve this purpose, CAMAERA develops new prototype service elements of CAMS, beyond the current state-of-the-art, and complements research topics addressed in the CAMEO project.

CAMAERA will upgrade and improve the aerosol and precursor gases modelling capabilities of the global and regional CAMS systems, focusing on key topics such as dust emissions and secondary organic aerosols.

CAMAERA will test the assimilation of new streams of data, allowing for a better constraint of the simulated state of the composition of the atmosphere.

CAMAERA will contribute to the medium- to long-term evolution of the CAMS production systems and products.

The transfer of developments from CAMAERA into subsequent improvements of CAMS operational service elements is a main driver for the project and is the main pathway to impact for CAMAERA.

The CAMAERA consortium, led by HYGEOS, includes all of the partners operating the regional and global CAMS systems, as well as most of partners contributing to the development and upgrade of these systems. This allows CAMAERA developments to be carried out directly within the CAMS production systems and facilitates the transition of CAMAERA results to future upgrades of the CAMS service.

This will maximise the impact and outcomes of CAMAERA as it can make full use of the existing CAMS infrastructure for data sharing, data delivery and communication, thus supporting policymakers, business and citizens with enhanced atmospheric environmental information.

2.2 Scope of this deliverable

2.2.1 Objectives of this deliverables

This deliverable 11.5 provides the mid-term update of the Dissemination and Exploitation Plan.

The Exploitation Plan initiated in the earlier deliverable, D11.3 explains the exploitation work within the CAMAERA project by identifying initial exploitation routes and innovation ideas.

The objective of D11.5 is to report on the dissemination activities of the first 18 months and to provide an update, where appropriate, of the dissemination and exploitation plans.

2.2.2 Work performed in this deliverable

In this deliverable the work outlined in The Description of Action WP11 T11.4 was performed. The aim being to provide a mid-term update on the dissemination activities as well as re-check the potential for exploitation and their routes.

Feedback from the partners pertaining to both dissemination and exploitation will be garnered throughout the project and be presented in subsequent versions of this document

2.2.3 Deviations and counter measures

No deviations have been encountered.

2.2.4 Reference Documents

[1] Project: 101134927 — CAMAERA — HORIZON-CL4-2023-SPACE-01

[2] Deliverable 11.3 Dissemination and Exploitation Plan

[3] CAMAERA website https://www.camaera-project.eu/

2.2.5 CAMAERA Project Partners:

(Participant number order)

HYGEOS SARL (HYGEOS,

NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO (TNO),

RESEARCHCONCEPTS IO GMBH (RC.io),

METEOROLOGISK INSTITUTT (METNorway),

KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT-KNMI (KNMI),

ILMATIETEEN LAITOS (FMI),

BARCELONA SUPERCOMPUTING CENTER CENTRO NACIONAL DE SUPERCOMPUTACION (BSC CNS),

EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS (ECMWF),

METEO-FRANCE (METEO-FRANCE),

INSTYTUT OCHRONY SRODOWISKA - PANSTWOWY INSTYTUT BADAWCZY

(IOS-PIB),
FORSCHUNGSZENTRUM JULICH GMBH (FZJ),
AARHUS UNIVERSITET (AU),
SVERIGES METEOROLOGISKA OCH HYDROLOGISKA INSTITUT (SMHI),
AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE (ENEA),
INSTITUT NATIONAL DE L ENVIRONNEMENT INDUSTRIEL ET DES RISQUES - INERIS (INERIS),

3 Project Communication & Dissemination

3.1 Report on Dissemination Activities

As a project, we have taken an active role in conferences, workshops and seminars explaining the project aims and initial results. International liaison work also continues to be an important aspect to the project.

In this first 18 months, CAMAERA has been presented 8 times at conferences and workshops.

CAMAERA held an online General Assembly on 10th of December 2024 and its first in-person General Assembly at HYGEOS premises in Lille, France, on 4th and 5th June 2025. This was very well attended with over 50 project partners onsite and online.

The project is actively liaising with fellow Horizon Europe projects and in particular the CAMEO and CATRINE projects to ensure synergies are identified and developed.

The project is also liaising with the CAMS Copernicus Service and was represented at their annual General Assembly, June 2024.

The CAMAERA website has provided regular updates and news items, with 13 news items published since the website went live in June 2024.

A restricted web-based environment has been set up at HYGEOS that includes a document repository and acts as the project's collaborative platform. The CAAERA website acts as the main location to showcase all project information and outputs. The details of this are described in D11.3.

As a reminder and as per the DoA, CAMAERA dissemination activities are designed around providing/disseminating information to the scientific communities and relevant stakeholders in three areas:

1. Scientific and technical results through
    a. Scientific Publications
    b. Conference Talks
    c. Organised Workshops, providing updates on the project results
    d. Reports to and feedback from Committees and Boards
2. Products through dissemination of
    a. Datasets and accompanying material (e.g. descriptions, meta data)
    b. Algorithms / Specifications
    c. Graphics and animations
3. Progress information through provision of
    a. News items
    b. Public Deliverables
    c. Dissemination Materials (brochures, posters, flyers)
    d. Website and social media

3.1.1 Scientific and technical results

a) Scientific Publications – article in Journal

There are no publications yet.

b) and c) Conference and Organised Workshops Talks or Posters

Table 1: List of conferences where CAMAERA results have been presented since May 2024.

Name	Date	Location	Presenter	Presentation title
CAMS GA 2024	10.-13.06.2024	Brussels, Belgium	Rose-Cloé Meyer	Presentation of the CAMAERA project
ICAP 2024	28.10.2024	Online	Samuel Remy	Presentation of the results of the CAMAERA project
CAMEO AG	14-15.05.2024	Bonn, Germany	Samuel Remy	Presentation of the CAMAERA project
AEROCOM	14-18.10.2024	Lille, France	Nathan Capon	Presentation of the WP5 results – machine learning for whitecap fraction
GEO global forum	5-9.5.2025	Rome, Italy	Samuel Remy	Presentation of the CAMAERA project
LPS 2025	21-24.6.2025	Vienna, Austria	Samuel Remy	Presentation of the CAMAERA project
EGU 2025	28.4-2.5.2025	Vienna Austria	Nathan Capon	Harnessing machine learning for whitecap fraction prediction
EGU 2025	28.4-2.5.2025	Vienna Austria	Samuel Remy	Implementation of fungal spores in IFS-COMPO

3.1.2 Products through dissemination of

a. *Datasets and accompanying material (e.g. descriptions, meta data)*
b. *Algorithms / Specifications*
c. *Graphics and animations*

Figure 1 shows the dedicated page on the CAMAERA website (www.camaera-project.eu) for CAMAERA produced deliverable reports. A webpage for the datasets products will soon be added, for the dataset of offline dust emissions produced as part of WP1.

4 Exploitation Plan

The earlier deliverable, D11.3, outlined potential exploitation avenues, summarized in Table 2 below. Some of the results achieved in CAMAERA are already being considered for operational implementation in CAMS, such as the new dust emission scheme that has been developed as part of WP5, and the fungal spores developments that have been carried out in the EMEP and IFS-COMPO systems as part of WP7. The best estimate of dust emissions through offline inversion (WP1) is in the process of being used in WP5 to train machine learning algorithms, and will be soon released publicly through the CAMAERA website. Also, the dry deposition intercomparison that has been done in WP5 led to numerous exchanges between regional and global modellers, and results in a direct impact on the global CAMS system, as a new dry deposition scheme is being implemented following the conclusion of this model intercomparison exercise. These exploitation results in CAMS are quite aligned with the planned uptake of developments in CAMS outlined in deliverable D11.3 and shown here in Table 3. One deviation concerns the dust emissions offline scaling factors, which might still be used, but early tests in the global CAMS system didn't show a significant impact on the skill of dust related products.

Table 1: Summary of Exploitation Findings

Exploitable Results/ Products or Outputs	• Global system ready to assimilate ceilometer data • Global system ready to assimilate infrared reflectances • Best estimate of dust emissions from online and offline approach • Capacity of the global system to use a modal approach to represent aerosol species and processes, and links with precursor gases established. • Capacity of the global system to use pre-trained neural network algorithms • Prediction of sea-salt and desert dust aerosol emissions through neural networks, for use in the global system and selected regional systems • Better regional CAMS air quality products with direct benefit for users and European air quality reporting • Better knowledge of dry deposition thanks to intercomparison of regional and global models with observations • Better CAMS products thanks to improved emissions • Better representation of high latitude dust and road dust • First attempt at the representation of primary biogenic aerosol particles in selected regional models and the global system • Improvement in the representation of anthropogenic and biogenic secondary organic particles in regional and global systems • Better use of boundary conditions from the global system in regional systems
Exploitation Activities during the Project	Any dataset that has been identified as public will be made available to external scientists. Project reports with recommendations will support uptake/implementation activities in CAMS and potentially other frameworks, already during the project.
Exploitation Activities after the end of the Project	Any dataset that has been identified as public will be made available to external scientists. Project reports with recommendations will support uptake/implementation activities in CAMS and potentially other frameworks.
Consortium-wide/Joint Exploitation	Outputs will be shared publicly as much as possible through documentation and peer-reviewed literature. Presentations at external conferences eg EGU and AGU, once project results are available

(Any datasets and databases produced will follow the Data Management Plan)

Table 3: Yearly uptakes of CAMAERA results in the global CAMS system

2025	• New dust emission scheme (WP5) • Scaling factors for dust emission scheme (WP1)
2026	• Fungal spores (WP7) • SOA developments (WP7) • Assimilation of lidar/ceilometer data (WP1) • Dry deposition updates (WP5)
2027	• Operationalization of modal aerosol approach (WP3) • Online Ammonia emissions (WP5) • Dust emission scheme using neural networks (WP5) • Assimilation of IASI infrared reflectances (WP1)

5 Conclusion

This deliverable has provided a mid-term update of the dissemination and exploitation activities to the Dissemination and Exploitation Report.

For the dissemination we have achieved our aims to disseminate via a set of identified instruments namely a website, news items, numerous scientific conference and workshop involvements and scientific papers. This task will continue for the remaining 18 months.

Exploitation updates were solicited from all partners and represents the current state of exploitation activities.

The Exploitation Plan will be revisited regularly and is thus to be understood as a living document, as developments during the course of the project may open up new avenues for exploitation.

Document History

Version	Author(s)	Date	Changes
0.1	Silvia Jacob	16/05/2024	Initial version
1.0	Silvia Jacob, Samuel Rémy,	08/07/2024	Issued version
2.0	Samuel Remy, Silvia Jacob	18/12/2024	Added details about communication in social media, and more details on exploitation routes

Internal Review History

Internal Reviewers	Date	Comments
Vincent Huijnen	09/07/2024	Small textual revisions