



# Introducing the Horizon Europe CAMS AERosol Advancement (CAMAERA) Project

CAMAERA  
EuroGEO

Samuel Remy (HYGEOS) on behalf of the project consortium

## What is the CAMAERA project?

**CAMS AERosol Advancement (CAMAERA)** is a Horizon Europe Project to support the development of the Copernicus Atmosphere Monitoring Service (CAMS). CAMS provides consistent and quality-controlled information about atmospheric composition relevant for air pollution, solar energy, greenhouse gases monitoring and climate forcing.

CAMAERA is one of a family of Horizon Europe projects dedicated to improving CAMS products:

- **CAMEO** (started 1/1/2023, led by ECMWF), which focuses on uncertainties and data assimilation
- **CATRINE** (started 1/1/2024, led by ECMWF), which focuses on transport applied to greenhouse gases

Scope of CAMAERA:

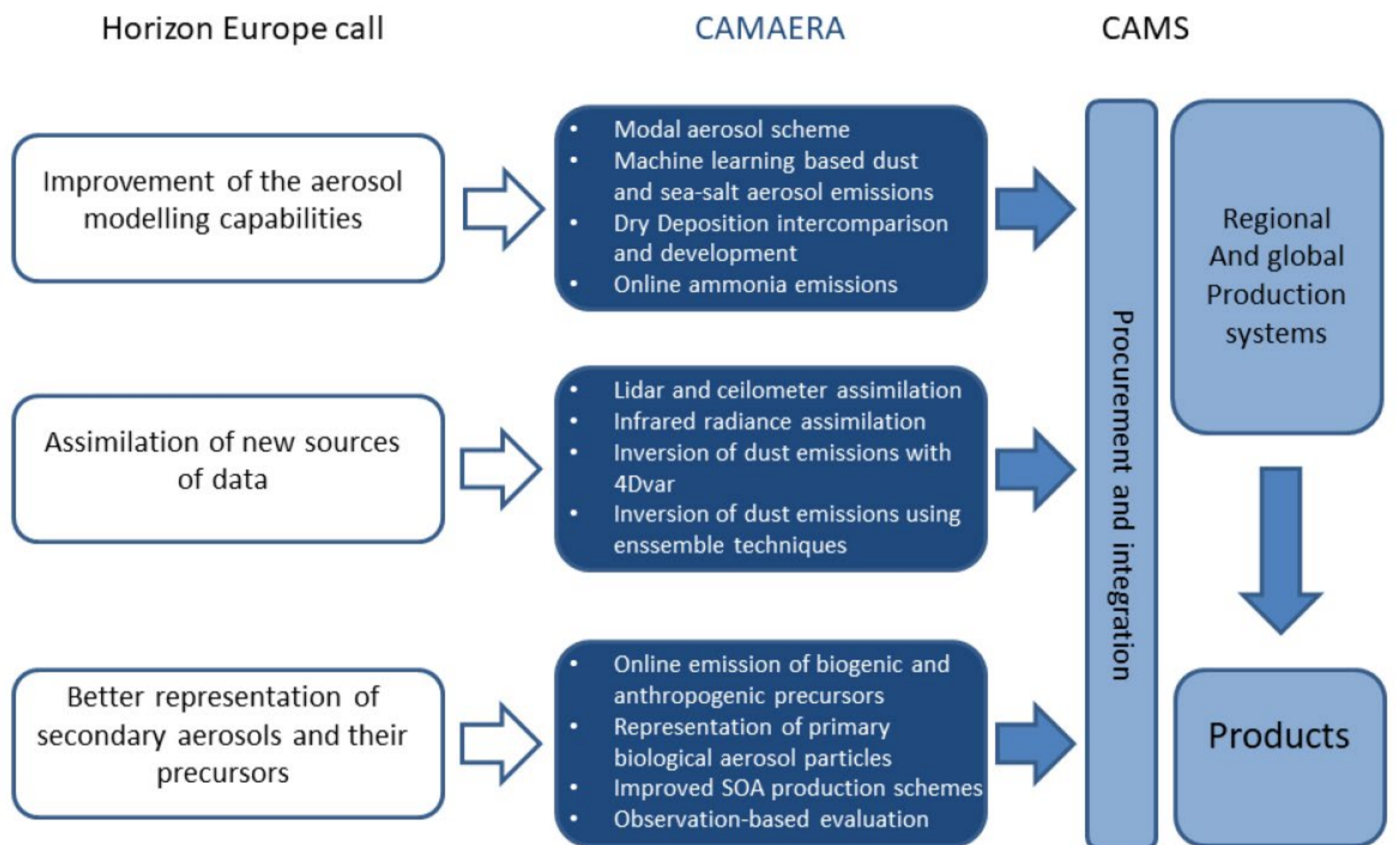
- Focus on aerosols and precursor gases
- Improve aerosol modeling capacities of regional and global systems
- Development of new data assimilation methods
- Foster exchanges between regional and global components of CAMS

## CAMAERA's pathway to impact

CAMAERA's impact is mainly expected on the improvement of CAMS global and regional products

New techniques such as the use of machine learning approaches to represent atmospheric composition processes, are pioneered in CAMAERA.

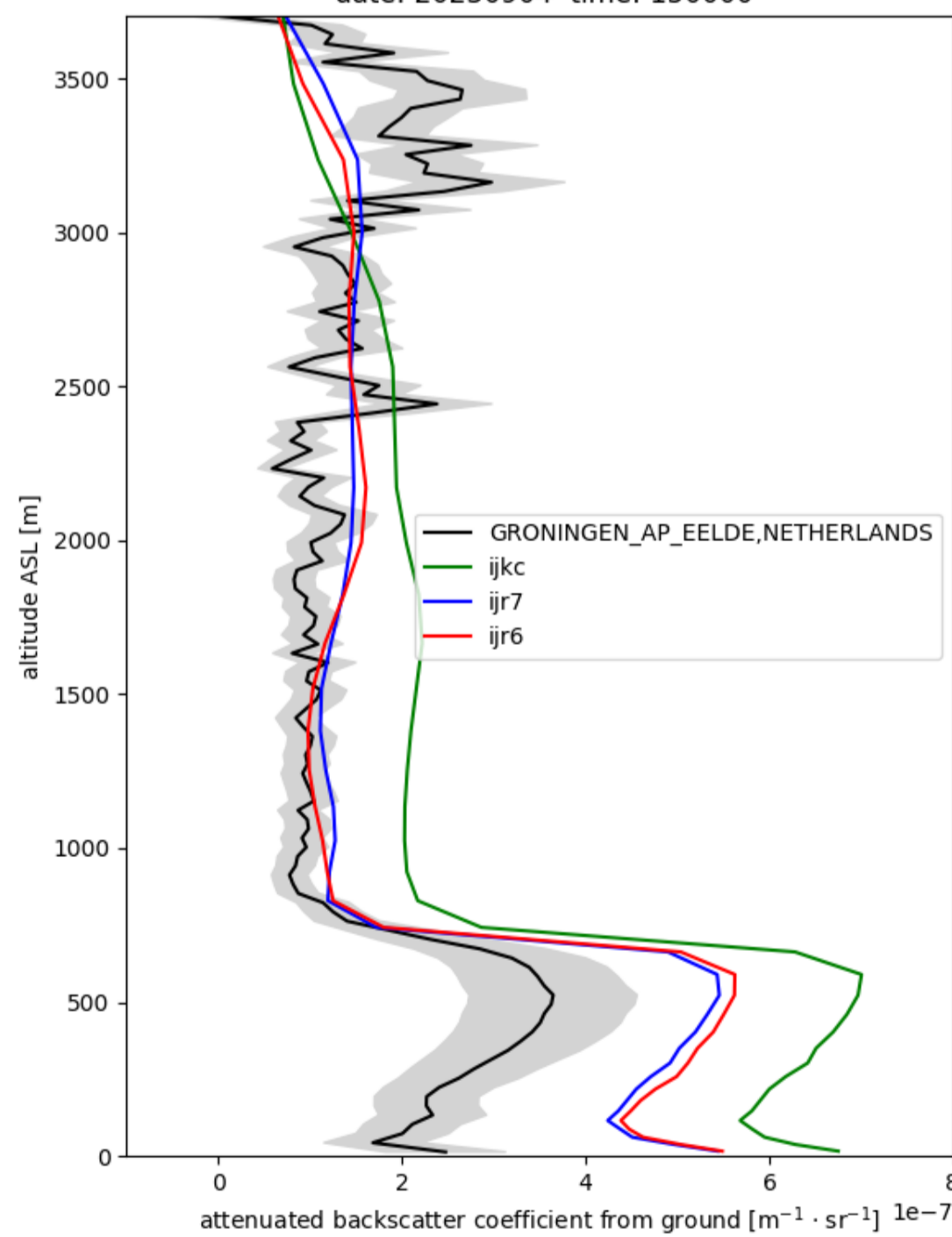
CAMAERA will also produce and make available several datasets, including best estimates of dust emissions from inversion techniques.



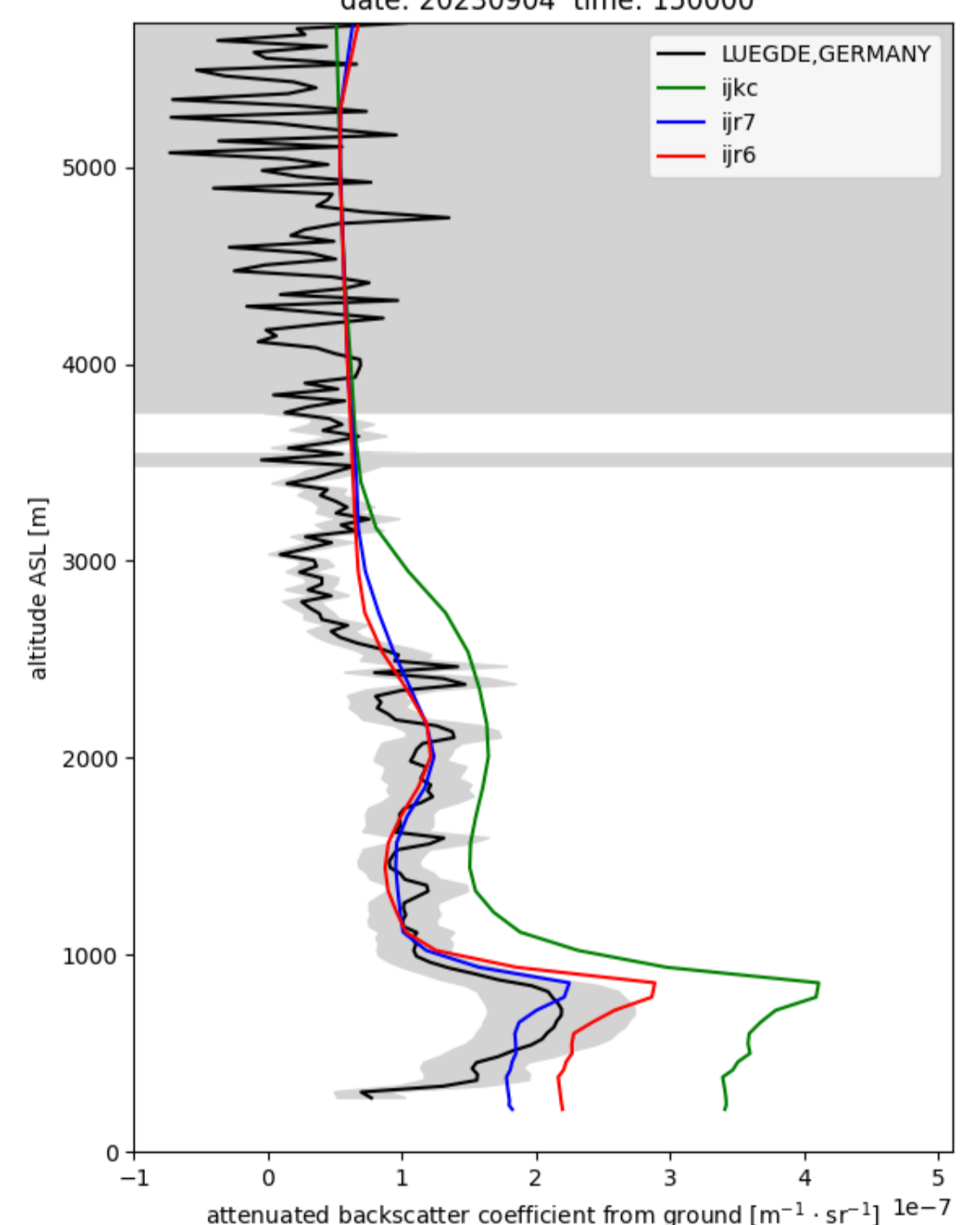
## Some first results from CAMAERA

- The assimilation of vertically resolved observations such as those provided by lidar or ceilometer could improve on the difficulties of correctly assigning observation increments in the vertical
- CAMAERA implemented the test data assimilation of vertically resolved observations from the Europe E-profile network.
- E-profile provide backscatter profiles from ground-based lidars and ceilometers at different wavelengths (532, 910 and 1064nm) with a good density over Europe.
- The data assimilation improves on the analyzed and simulated vertical profile of aerosol backscatter

StationID: 0-20000-0-06280 Instrument: CHM15k  $\lambda = 1064.0$  nm  
date: 20230904 time: 150000



StationID: 0-20000-0-10433 Instrument: CHM15k  $\lambda = 1064.0$  nm  
date: 20230904 time: 150000



Analyzed aerosol backscatter coefficient at 1064nm over the vertical compared to data from E-profile observations (not assimilated), on 4/9/2023. Reference run (green), assimilation E-profile data (red and blue), with different assumptions about the particle shape.

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