

CAMS-84, phase 2 Minutes of the PM-1 / kick-off meeting at Lisbon

Minutes compiled by
Henk Eskes, Jacques Claas
KNMI

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Agenda

PM-1 (Kick-off) meeting,

14:00-18:30, Monday 15 October 2018, during CAMS assembly Lissabon

Agenda

1. Welcome,
2. CAMS-84 phase 1 wrap up (Jacques)
3. Review of final deliverables phase 1 (Henk)
4. CAMS-84 phase 2 contract status (Jacques)
5. Phase 2: various aspects and planning for the first months (Henk, Jacques)
6. Presentations by all groups: (5 minutes each, 2 slides)
Please focus on new aspects and plans for phase 2,
including extensions of the work for phase 2 compared to phase 1.
Latest results from ongoing work. Status of scientific papers.
7. AOB, discussion

Participants

Yves Christophe, BIRA-IASB
Bavo Langerock, BIRA-IASB
Augustin Mortier, MET-NO
Sara Basart, BSC
Eleni Katragkou, AUTH
Valérie Thouret, CNRS-LA
Guy Brasseur, MPG
Annette Wagner, MPG
John Kapsomenakis, AA
Sander Niemeijer, S&T
Anna Agusti Panareda, ECMWF
Antje Inness, ECMWF
Jacques Claas, KNMI

Simon Chabrillat, BIRA-IASB
Anne-Marlene Blechschmidt, IUP
Kaj Mantzius Hansen, AU
Michel Ramonet, CEA-LSCE
Anna Benedictow, MET_NO
Yasmine Bennouna, CNRS-LA
Natalia Sudarchikova, MPG
Thorsten Warnecke, UBC
Christos Zerefos, AA
Werner Thomas, DWD
Richard Engelen, ECMWF

Henk Eskes, KNMI

Excused: John Douros (KNMI), Michael Schulz (MET-NO)

Action items and deadlines

See Redmine for overview of actions to finish CAMS-84 phase 1.

- Henk, Jacques: Put phase 2 actions for first 3 months on RedMine, initiate phase-2 on RedMine
- Henk: CAMS-84 phase 2 - Invite Board members
- Henk: Check email list

Action items from last meeting

- (No action items. This is the first meeting of CAMS-84, phase 2)

CAMS-84 phase 1 wrap up (Jacques)

Deliverables/milestones:

All documents are delivered with the exception of:

- WP0: Final Report, due 30 November 2018
- WP0: Audit Report (Jan-Sept. 2018), due 30 November 2018
- WP7: Case Studies Report, after consulting ECMWF now due 1 November 2018, not really time critical

All milestones are reached.

Finance:

- Invoice process with subcontractors is up to data with the exception of CNRS-LA (last invoice received is 2017/Q1!!!).
- Last round of invoicing for payment milestone SC3-3 (2018/May-Sept) will start after receiving the Notice of Acceptance from ECMWF for all deliverables.
- Please send your invoices asap after you receive an invoice request from KNMI.

Key Performance Indicators (KPI):

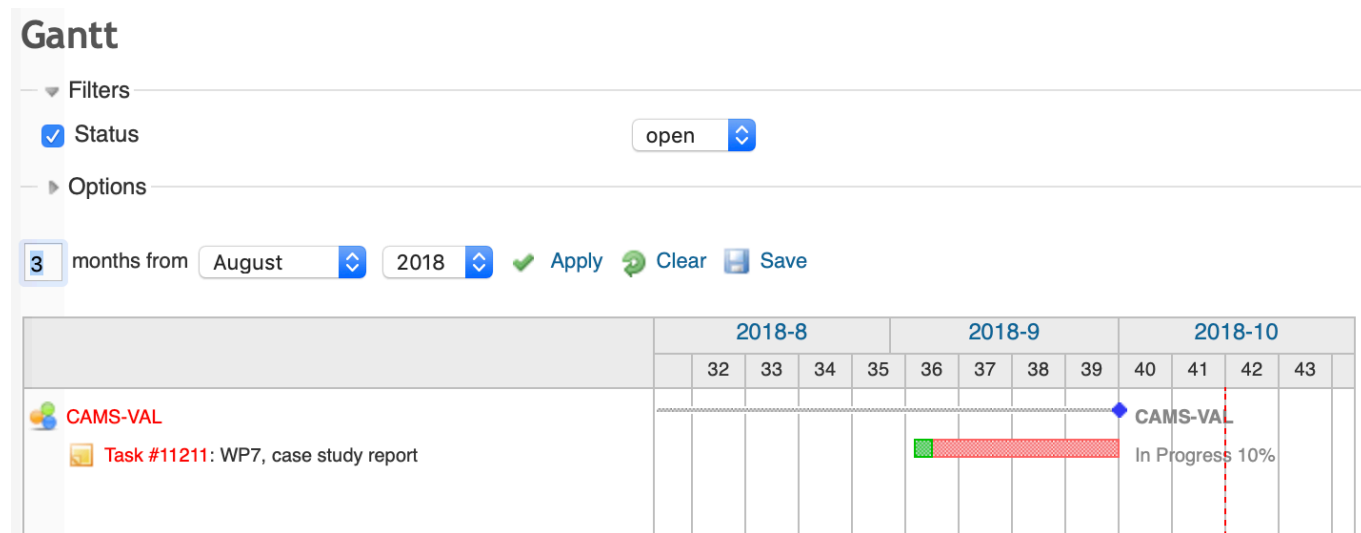
- KPI 2 "User Uptake": based on download statistics.
There seems to be an increasing interest in the validation reports.
- KPI 4 "Uptime Verification Website": on average, uptime $\geq 99.5\%$.
This is as expected and very good.

Upcoming activity:

- Signing of Framework Agreement CAMS-84 Phase 2
- Signing of all subcontracts CAMS-84 Phase 2

Note: Travel to the GA 2018, October, can still be (should be) covered by the CAMS-84 phase 1 budget.

CAMS-84 phase 1: Status, activities of the past 5 weeks



One deliverable to go: the "case studies report". Henk is working on this. Natalia is involved as well.

There was a long list of phase-1 deliverables which was completed since the PM12 meeting on 4 September 2018. It has been a busy month! Delivered since the first week of September:

- WP1: MAM-2018 NRT report (delay about 2 weeks)
- WP2: Websites with up-to-date content
- WP2: S&T software & documentation & report delivery
 - S&T has implemented the missing functionalities as identified and agreed in February/March 2018: - world map selection plots - ozone sonde comparison - AERONET AOD.
 - Other identified functionalities will be implemented as part of CAMS-84 Phase 2:
 - Software: - S&T performed big code cleanup of source code and installation process - S&T documented installation process (deployment is based on Nix/NixOS)
 - Documentation: - D84.2.2.8 "Development document" has been delivered - D84.2.2.9 "Architectural Design Document" has been delivered
- WP 5/6: Full validation report regional services, MAM-2018 (John Douros lead)
- WP 5/6: Evaluation of the two new candidate regional models (John Douros lead)
- WP 7: Reanalysis report GRG-AER, 2003-2016
- WP 7: Reanalysis report GHG, 2003-2005
- WP 8: Observations characterisation doc

- WP 8: Scoring document (Michael Schulz lead)
- WP 8: Data mining
- WP 8: Publications
Deliverable consists of a short, 1 page doc listing status of submitted publications and plans

Publications in review:

Blechtschmidt, A.-M., Arteta, J., Coman, A., Curier, L., Eskes, H., Foret, G., Gielen, C., Hendrick, F., Marécal, V., Meleux, F., Parmentier, J., Peters, E., Pinardi, G., Pithers, A. J. M., Plu, M., Richter, A., Sofiev, M., Valdebenito, Á. M., Van Roozendaal, M., Vira, J., Vlemmix, T., and Burrows, J. P.: Comparison of tropospheric NO₂ columns from MAX-DOAS retrievals and regional air quality model simulations, Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2016-1003>, in review, 2017.

Akritidis, D., Katragkou, E., Zanis, P., Pytharoulis, I., Melas, D., Flemming, J., Inness, A., Clark, H., Plu, M., and Eskes, H.: A deep stratosphere-to-troposphere ozone transport event over Europe simulated in CAMS global and regional forecast systems: Analysis and evaluation, Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-488>, accepted, 2018.

Publications in preparation:

Annette C. Wagner, Y. Bennouna, S. Basart, A. Benedictow, A.-M. Blechtschmidt, S. Chabrillat, Y. Christophe, H. Clark, E. Cuevas, H. Eskes, J. Flemming, K. M. Hansen, A. Inness, J. Kapsomenakis, B. Langerock, K. Petersen, A. Richter, M. Schulz, N. Sudarchikova, V. Thouret, Y. Wang, C. Zerefos, Validation of the CAMS reanalyses, in preparation.

Publication plans:

Apart from these, there are plans for additional publications based on the results produced during the CAMS-84 project, period 2015-2018:

- Evaluation of the CAMS reanalysis 2003-2016 with aircraft campaign observations, Y. Wang et al.
- Scoring methods developed for the CAMS project, M. Schulz et al. (in preparation)
- Paper John & Christos, health/mortality effects, using CAMS model data
- Evaluation of the CAMS regional models above the surface, H. Eskes et al. (2019?)

Looking back at CAMS-84 phase 1:

We can claim that we have been:

- Productive: about 32 reports, 3200 pp validation results.
- Flexible: adjusting schedule/activities according to needs: e-suite reports, reanalysis, evaluation of extra experiments
- Disciplined: Almost all deliverables were available on time, (short) delays mainly in less time critical reports (despite the team involvement: most reports written by 10 or more partners).

With a positive and efficient interaction with ECMWF.

CAMS-84 phase-2 proposal, status of preparations

Timeline 2018:

- March 19: ITT published
- May 3: first version of proposal issued, including Pricing Tables
- June 29: first response (with Action List) from ECMWF on proposal
- July/August: continuous low level of effort, collecting info from partners
- Aug/Sept/Oct: many iterations of Action List, closing TECH/IMP/FIN/LEG actions from ECMWF

Current status Action List:

- All TECH actions closed
- A few remaining FIN and LEG actions are about to be closed
- Mid October: final release of proposal plus related documents (e.g. Pricing Tables, Deliverable List, SC1)

Framework Agreement:

- To be signed early/mid November
- Contractual starting date CAMS-84 Phase-2 remains October 1st.

Subcontracts:

- To be signed end of November (please provide comments on draft version asap!!!)

CAMS-84 phase-2 board members

We plan to invite one person from the management (not the person working on the project) of each institute to become board member, like we did for CAMS-84 phase 1.

The list of board members for phase 1 was reviewed. For the persons indicated with an arrow we will consider a possible replacement:

AA: Christos Zerefos

BIRA: Simon Chabrillat -> ?

AUTH: Eleni Katragkou -> ?

CNRS-LA: Valerie Thouret

METNO: Michael Schulz -> ?

IUP-Bremen: Andreas Richter

AU: Brandt Jorgen

DWD: Werner Thomas

MPG: Guy Brasseur

S&T: Sander Niemeijer -> ?

BSC/AEMET: Sara Basart -> ?

CEA/LSCE: Leonard Rivier

UBC: Justus Notholt

ECMWF: Richard Engelen, Antje Inness

ECMWF: Stijn Vermoote, Florence Rive

KNMI: Jacques Claas -> ?

Major differences compared to CAMS-84 Phase 1

WP 8420: responsibilities operational validation server development

More responsibility for partners (see extensive list in proposal):

- KNMI (together with partners, incl. S&T) is responsible for the definition of the specification. This includes coming to a precise definition of the comparisons (algorithm definition) + report contents (which plots/tables).
- BIRA-IASB will host the Server.
- S&T is responsible for developing the Central Server and the Operational Validation Server.
- S&T will be responsible for the day-to-day operations of the operational system (monitoring automated processing of incoming data and report generation, investigating issues, performing system upgrades, performing backups of the comparison configuration).
- Partners (excl. S&T) will be responsible for implementing automated data streams to the operational server for observation data, including pre-screening and conversion to common data format (HARP). This also includes fixing issues that are raised.
- Partners (excl. S&T) will be responsible for monitoring their automated data streams (investigating/resolving issues).

WP 8420: Two releases of operational validation server in 2019

First release, June 30:

The following datasets will become available: NDACC MAXDOAS, NDACC ZSL-DOAS, NDACC MWR, NDACC FTIR, NDACC LIDAR.

Second release, December 31:

The following datasets will become available: ESRL, WMO-GAW, IASOA surface, AERONET, ozone sonde.

Also the identified missing functionality will be implemented:

- Different plots for different altitude ranges
- Information on the inter-comparisons
- Functionality to generate multiple plots for a group of surface stations simultaneously
- Fixed aspect ratio of plots
- Plot colors
- Point matchup

The existing demo server at S&T remains available for testing new functionalities before roll-out on operational server.

Other changes with respect to CAMS-84 phase 1:

Starting point is continuity:

- Same key activities: 3-monthly evaluation of
 - the global service,
 - regional service,
 - e-suite,
 - reanalysis
- Same team as in first phase: 14 partners
 - Strong links to observations community / involvement in networks
- Same budget

Extension of activities (Phase 1 -> Phase 2):

- Aerosol chemical speciation.
- Sulphur dioxide measurements from space.
- For stratospheric ozone a new satellite dataset will be added: SAGE-III-ISS
- The evaluation of global (tropospheric) ozone data based on IASI/Metop-B satellite data.
- Use field campaigns such as ATom: Atmospheric Tomography Mission for evaluation of O₃, CO, NO, NO₂, OH, HO₂, HCHO; StratoClim: Stratospheric and upper tropospheric processes for better climate predictions and other field campaigns as the data become available.
- The contract between CAMS and NDACC (CAMS-27) will greatly increase the number of observations available through NDACC.
- As soon as details of the other "in-situ" CAMS contracts become available (ICOS, ACTRIS, GAW, EMEP, and IAGOS) the consortium will evaluate the observational datasets involved. New/improved measurements will be used soon after they become available.
- IAGOS extension of observations: CO₂, CH₄, NO/NO₂, H₂O, UT/LS
- Extra satellite observations: OMI, S5P (alternative retrievals, products not assimilated)
- The development of an operational validation server (hosting to be negotiated) where use is made of the heritage of the demonstration servers (functionality, software) developed as part of CAMS phase1.
- Hosting of the operational server (BIRA).
- Furthermore, this software must also be installed on ECMWF hardware for internal non-operational use (e.g. testing by ECMWF of new developments in the Global Production System in the lead-up to the experimental production suites).
- Delivery of observations to ECMWF
- Extra global model configurations will become available and will be evaluated: IFS-MOZART, IFS-MOCAGE, IFS-TM5-BASCOE, IFS-GLOMAP
- Additional focus on Europe as a whole.
- Focus on USA and Asia.
- Regional reanalyses.
- Two extra regional models.
- Assist ECMWF with the evaluation of new CAMS-global system configurations (not e-suite)

Reduction of activities/effort (Phase 1 -> Phase 2):

- The reanalysis evaluation will take less effort: one report less, increments of one year (but extra quick looks)
- There will be less e-suite (upgrades) in coming years
- Work packages have been joined, which improves the management burden somewhat
- Routine activities will take somewhat less time ...
- Development work for automated verification server done in phase 1 (but not complete).
- The automated production of verification plots should reduce the workload for the partners.
- Hopefully the CAMS data store will make it easier to extract relevant model information: e.g. time series ?

CAMS-84 email list

Henk will send an email to update the email lists.

Presentations from the partners

On RedMine the slides presented at the meeting are available (merged to 1 pdf).

There were presentations from:

Michel Ramonet (LSCE): ICOS CO₂, methane

ICOS-ERIC network (Europe + Reunion), phase 2 also CO (and Rn) ;
spike removal (local sources);

Outside Europe: RAMCES-ICOS (LSCE); OBSPACK (US, NOAA) now
providing 3mo updates; Aircore vertical profiles

Summer drought 2018 study, with comparison to CAMS models

Thorsten (UBC), Bavo (BIRA): CO₂, CH₄ and CO; NRT.

TCCON (European institutions): 2 stations (Bialystok, Ascencion)

Bavo (BIRA): NDACC

CAMS-27 contract (new are T profile and HNO₃), now 39 instruments
contribution to scoring document

Yves (BIRA): Stratosphere; NRT evaluation.

Satellite data used, headline scores

Phase-2: Better filtering OMPS-LP, SAGE-III ISS (3mo delay)

Michael (MET-NO) represented by Augustin: Aerosols; reanalysis, NRT, e-suite, WP5.

Scoring document - METNO working on draft scoring paper

Evaluation of vertical profiles with EARLINET lidars (paper planned)

Sara (BSC): Dust; NRT, Mediterranean.

Phase II: Aeronet fine/coarse fractions - for NRT reports; vertical profiles based on
ceilometers; MISR satellite dust filtered; CALIOP-LIVAS profiles, possibly also China

Werner, Harald (DWD): Ceilometers, backscatter vs models

Forward operators (issues) may be resolved with E-PROFILE

Kaj (AU): Arctic; reanalysis, e-suite; case study.

More focus on transport; new data

Eleni (AUTH): Global-regional comparisons, WP6, case study.

Storage has been an issue; to discuss within CAMS-84 how this can be
implemented in the future. Richard: in future CDS will have both datasets.

Maybe download no longer necessary

Annette (MPG):

New: NO₂, SO₂

Reanalysis paper: 3rd version (internal) end of October; submit end Nov

Also MACC reanalysis included in GAW station evaluation

Anne (IUP): NO₂, HCHO, satellite and MAX-DOAS; NRT, WP5.

Contribution to Antje's reanalysis paper and Annette's reanalysis paper.
Phase 2: extensions to GOME2-B, OMI, S5P (in development);
Results from the paper: Rush hour peak models not confirmed by MAX-DOAS (Bremen)
Antje: diurnal cycle test for reanalysis (assimilation)

Valérie (CNRS-LA): IAGOS.

Plans for phase 2, O3, CO, H2O, CO2, CH4;
data provision and process-oriented publications
(Ex: Sauvage 2017 source-receptor; Petetin 2018, representativity, PBL profiles;
Clark in prep)

Natalia (MPG): Extension: IASI ozone, IASI SO2 (ESPRI, Lieven Clarisse)

ATOM campaign, StratoClim (AWI); extension of wildfire case studies
July there were fires over Europe, but not so clear in satellite. Alaska fire study
(note Antje: maybe this was period where MODIS GFAS data were not arriving in time
Guy: Would be very interesting to perform analysis with ATOM vs CAMS:
who could pick this up?)

John & Christos (AA): ESRL, EMEP, Airbase; NRT, WP5, Mediterranean.

Main extension: surface ozone, CO vs airbase
Morality vs Temperature and ozone in France, correlations with MACC and CAMS RA

For the details we refer to the slides which are provided on RedMine.

AOB, discussion

Natalia: Please provide schedule for deliverables of CAMS-84 for first 3 months.

Henk: this has been added as action.