CAMS-84, phase 2
Minutes of the
PM-4 progress meeting

Budapest, during CAMS General Assembly 2019

Minutes compiled by
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KNMI

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Agenda

PM-4 meeting of CAMS-84,

8:30-12:00, Friday 20 September 2019, Budapest

Agenda

1. Welcome,
2. Project management (Jacques)
   2019 Q2/Q3 deliverables, reporting, contract, payments, news from CAMS SLBs
3. Progress, latest achievements, activities in the coming months (Henk)
4. WP 1: status MAM-2019 and JJA-2019 reports (Henk)
5. WP 2: status & progress, preparations for the December release (Jacques, Sander)
6. WP 4: status regional MAM-2019 and JJA-2019 reports (John)
7. WP 6: Observations description document (Henk)
8. WP 6: Scoring document (Michael)

Coffee break

9. Presentations by all groups (5 minutes), including innovations and surprising results; reanalysis paper status
10. AOB

Participants

Bavo Langerock, BIRA-IASB
Werner Thomas, DWD
Sara Basart, BSC
Dimitris Akritidis, AUTH
Annette Wagner, MPG
John Kapsomenakis, AA
John Douros (KNMI)
Henk Eskes, KNMI
Antje Inness, ECMWF
Yves Christophe, BIRA-IASB
Kaj Mantzius Hansen, AU
Anne-Marlene Blechschmidt, IUP
Yasmine Bennouna, CNRS-LA
Sander Niemeijer, S&T
Natalia Sudarchikova, MPG
Simon Chabrillat, BIRA-IASB
Jacques Claas (KNMI)

Excused: Michel Ramonet, Eleni Katragkou (AUTH represented by Dimitris Akritidis)

Action items and deadlines

See Redmine for overview of the planning related to the deliverables.

- John D, Henk: Explore CAMS-regional Interim Reanalysis data availability.
- Jacques: Information on the "data use policy", e.g. a document describing networks + policies, linked to the validation server (question Thorsten)
- Henk: Investigate Canada surface observations and US embassy data availability
- John K: Investigate ozone during European heatwave as case study (for JJA report)
- Henk: coordinate UV contribution in next e-suite report.
- Michael: Organise a telecon for the next steps to develop scores.

Action items from last meeting

The grey action items can be closed:

- Henk: Further discuss with CAMS-50 on synchronising the use of PM data for Europe (include Sara)
- Jacques: Think about the "data use policy", e.g. a document describing networks + policies, linked to the validation server (question Thorsten)
- Yasmine: Compare with scripts of Luke for in-flight IAGOS validation (not only take-off and landing).
- Jacques, Henk: Schedule for implementation of new template in WP2 partner webpages
- Henk, 9 May: Schedule for e-suite
- Annette: send email to authors of the reanalysis validation paper for suggestions on scope

Announcements by the Service Manager (Jacques, Henk)

Phase 1 close-out:

- All deliverables are delivered and accepted.
- All subcontractor invoices have been paid by KNMI.
- Project has successfully been audited by external auditor BDO. Recommendations (2) will be taken into account.
- Project is closed.

Phase 2:

Status Subcontracts:

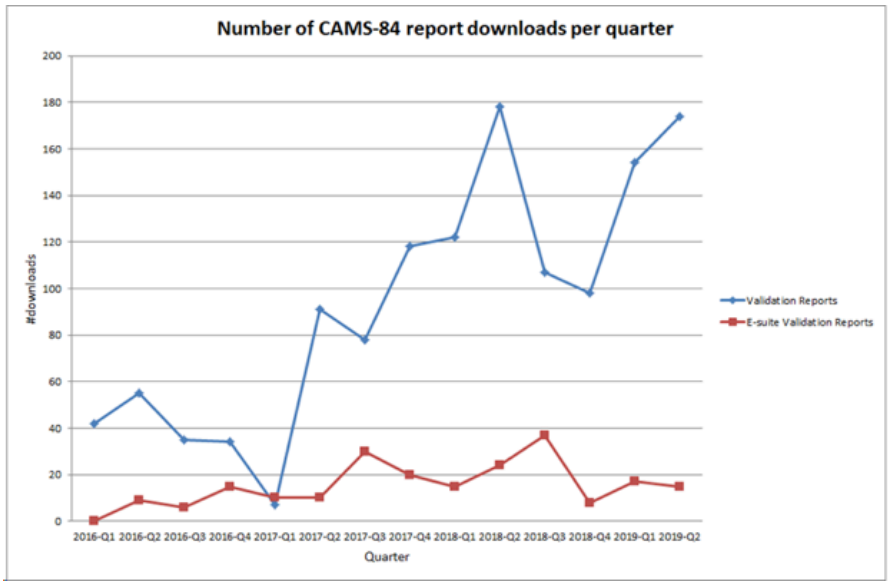
- 12 out of 13 subcontracts have been signed.
  KNMI is waiting for the countersignature of CNRS-LA.

Finance:

- Payment T0 (advance payment at contract signature): invoicing is ongoing.
- Payment T1 (30-6-2019): invoicing will start after ECMWF approval of two remaining deliverables (WP2 related).

Key Performance Indicators (KPI):

- KPI 84.1.1 "Uptime Verification Websites": on average very good, uptime, 99.5%.,
  Please keep the content of your websites up-to-date till at least the period covered by the latest validation report!
- KPI 84.2.1 "Number of validation reports downloaded": on a longer timescale there seems to be a slight increase in the number of downloads (see figure next slide).



Upcoming activities:

- Release of Quarterly Report 2019/Q3, due 20-10-2019

2019 deliverables:

Status of the deliverables and milestones on 19/9: (yellow: delivered; green: approved; orange: delayed)

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Deliverables and milestones list

WP number	Deliverable / Milestone number	Responsible	Nature	Title	Due	Planned payment
4	M4.1.2-DJF2019	KNMI	Milestone	Availability of DJF 2019 summary for the ensemble, five weeks before publishing the full report, for inclusion in the CAMS-50 reports	26-04-19	2
2	D2.1.2-2019Q1	KNMI and partners	Website, graphics	Up-to-date websites with EQA graphics, incorporating the developments from WP2 and WP6 - Q1 2019	30-04-19	2
4	M4.1.2-DJF2019	KNMI	Report	Availability of D4.1.1-DJF2019 two weeks before publishing	15-05-19	2
1	D1.1.1-DJF2019	KNMI	Report	EQA report of the CAMS Real-Time Atmospheric Composition Service D2018-JF2019	31-05-19	2
4	D4.1.1-DJF2019	KNMI	Report	EQA report regional services D2018-JF2019	31-05-19	2
1	M1.1.1-DJF2019	KNMI	Milestone	Availability of D1.1.1-DJF2019 draft validation report two weeks before publishing	31-05-19	2
0	D0.1.7-2018	KNMI	Other	Copy of prime contractor's general financial statements and audit report 2018	30-06-19	2
0	D0.2.1-2019Q2	KNMI	Report	Minutes of internal progress meeting with CAMS-84 partners	30-06-19	2
2	D2.2.3	S&T and partners	Report	Update of documentation of the software running on the demo servers	30-06-19	2
2	D2.2.6-2019Q2	KNMI and partners	Software, website, report, data provision	Delivery of developments agreed for 2018Q4 and first half 2019 and development plans for second half 2019, including delivery of a full copy of up-to-date measurement data (all NDAC data)	30-06-19	2
3	D3.2.1-201907	KNMI	Report	Upgrade Verification Note on e-suite, according to D3.1.1 plan	30-06-19	All
0	M0.2.3-2019Q2	KNMI	Milestone	Progress Review Meeting / Payment Milestone 1 - Minutes of meeting	30-06-19	2
2	M2.2.1-2019Q2	S&T and partners	Software, website	First release of operational validation server, including Central Server and operational data streams for observation data	30-06-19	2
0	D0.1.1-2019Q2	KNMI	Report	Quarterly Report Q2 2019	20-07-19	3
4	M4.1.2-MAM2019	KNMI	Milestone	Availability of MAM 2019 summary for the ensemble, five weeks before publishing the full report, for inclusion in the CAMS-50 reports	26-07-19	3
2	D2.1.2-2019Q2	KNMI and partners	Website, graphics	Up-to-date websites with EQA graphics, incorporating the developments from WP2 and WP6 - Q2 2019	31-07-19	3
4	M4.1.2-MAM2019	KNMI	Report	Availability of D4.1.1-MAM2019 two weeks before publishing	15-08-19	3
1	D1.1.1-MAM2019	KNMI	Report	EQA report of the CAMS Real-Time Atmospheric Composition Service MAM 2019	31-08-19	3
4	D4.1.1-MAM2019	KNMI	Report	EQA report regional services MAM 2019	31-08-19	3
5	D5.1.1-2019-initial	KNMI	Note	Initial assessment of the global reanalysis, year 2019, CHEM+AER	31-08-19	3
5	D5.1.2-2018-initial	KNMI	Note	Initial assessment of the global reanalysis, year 2011-2018, GHG	31-08-19	3
1	M1.1.1-MAM2019	KNMI	Milestone	Availability of D1.1.1-MAM2019 draft validation report two weeks before publishing	31-08-19	3
2	D2.2.1	KNMI and partners	Report	Operational Validation Requirements document	31-12-18	2

Deliverables | PaymentCalc | +

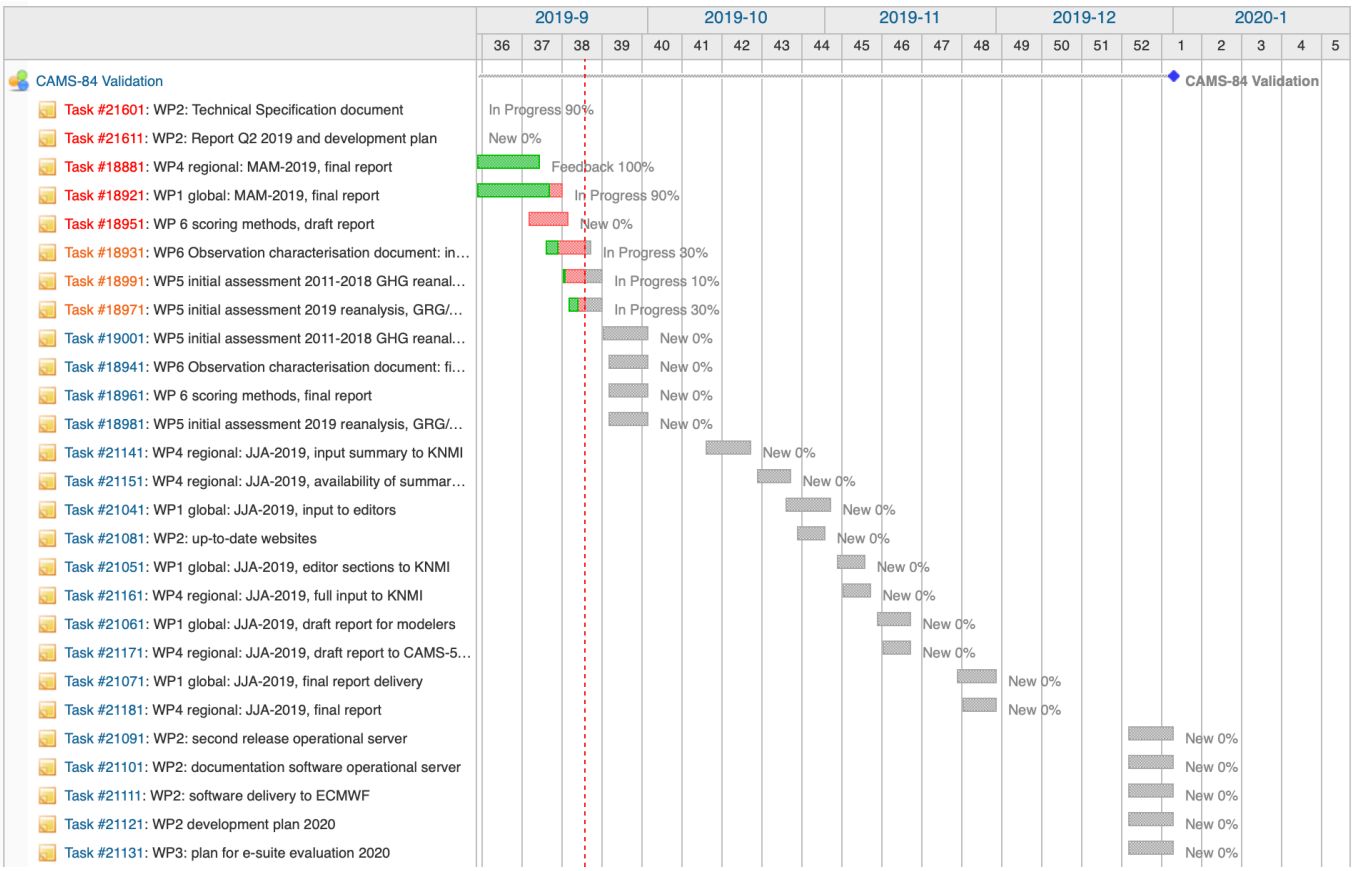
To conclude:

- CAMS-84 has submitted most deliverables and milestones for Q2-2019.
- WP-2 deliverables needed to close Q2-2019 and payment milestone 2.
- WP-1 NRT report MAM-2019 will be delivered next week.
- The reanalysis initial assessments are shifted to the end of September (agreed by ECMWF).

Validation reports, Q2/Q3-2019:

- DJF-2019 report for the global CAMS forecasts (WP1)- delivered
- DJF-2019 report for CAMS-regional - delivered
- MAM-2019 report for the global CAMS forecasts (WP1): Final version to be submitted next week.
- MAM-2019 report for CAMS-regional: Final version submitted 18 September.
- E-suite report (July upgrade CAMS-global)

Upcoming activities:



The project validation report deliverables are on track, but WP-2 is somewhat delayed.

Next on the list:

- WP2 deliverables
- Scoring document
- Observations document
- Initial assessments of GRG/AER and GHG extensions of the GRG/AER and GHG reports

CAMS-84: New observations

The CAMS-84 activity is expanding considerably in 2019. The following new datasets are included/considered:

- TROPOMI data (NO2, HCHO, Anne Blechschmidt / John Douros)
- Regional AQ networks (PM, O3): Europe (EEA), US, Canada (Michael, Sara, John K)
- Aerosol speciation (measurement climatology) (Michael)
- Extension of NDACC stations / real-time observations (Bavo)
- IASI ozone (troposphere; Natalia)
- Campaign data (ATOM) for reanalysis (Natalia)
- IAGOS flight level; water vapour (Yasmine)
- CO2 aircraft (Michel)
- Aircore (Michel)
- SAGE III on ISS (Yves)

One more item on the wish list:

- Surface observations from Canada (this is not picked up yet, action item)

CAMS Assembly: items relevant for CAMS-84

- The regional interim reanalyses 2019 is being produced, with about a 20 day delay compared to real time. This reanalysis contains 3D fields. Note that the ensemble is generated only after the full year is complete.
- Augustin Collette mentioned that it may be more interesting to report on the interim reanalysis than on the daily analysis, because of substantial changes to the surface measurements in the 2 weeks after real time. It will be useful for the CAMS-50 teams if we can report on the interim RA in the quarterly reports. (Action item John&Henk)
- The consolidated regional reanalysis 2017 will become available in the first months of 2020. This will not include 3D fields yet.
- Two more models will become part of the ensemble (moving from 7 to 9) in October: DEHM and GEM-AQ.
- I see two important shifts of focus in CAMS: (1) Extreme events (fires, dust storms, ozone hole) is receiving more and more attention; (2) The CAMS (CAMS-global) forecasts are more and more used for AQ forecasting dissemination worldwide, e.g. CNN, Windy, EuroNews. These developments imply that (1) the development of headline scores for extremes (other exceedance scores and validation case studies) becomes more relevant; (2) The evaluation of CAMS-global with surface in-situ regional networks becomes a priority.
- Mark Parrington will get a new role. He will analyse the forecasts on a daily basis and extreme events will be routinely recorded. It will be good to interact more with Mark in the future. Could CAMS-84 do more with case studies and evaluation of performance of CAMS for large-scale pollution/dust events? It will be good for CAMS-84 to be informed on the cases flagged.
- The ACTRIS, GAW/EMEP and IAGOS contracts will come soon. CAMS-84 should make use of the related datasets and be aware of the work plans.

- There was a talk by Ernest Koffi of JRC on the evaluation of CH4, including the IFS-based reanalyses (JRC activity). Will be good to contact him and compare with the results in his report. Ernest Koffi attended the CAMS-84 Friday meeting.
- Miha mentioned that ADS is planned to be released mid November. Hopefully this will make the download of model results more easy/fast.
- There is an ECCC activity to compare CAMS with Canada+US forecast systems. Good to be aware of this activity (and reports) and stay in contact. Henk spoke with Mike Moran of ECCC at the MAC-MAQ conference in Davis, September 2019.
- Vincent-Henri discussed Copernicus-2: He mentioned that the contracts will be similar to the current CAMS contracts. In order to ensure continuity, the first ITTs will have to be issued in Q4-2020, one year from now.
- There were contacts with Richard Engelen, Antti Arola and Marion Schroedter-Homscheidt. For the next e-suite report the idea is to include a contribution on UV in the report.

Conferences:
Henk gave a presentation on CAMS-84 activities at the MAC-MAQ conference in Davis, CA, 12 Sep 2019.

Michael: Would be good to discuss how downloads of model data can be combined/streamlined. (In part this functionality should be offered by the validation server)

Remarks and announcements by Antje:

- Need for validation of NRT surface AQ data. Apart from EU, US, Canada, also the US ambassy data.
- 47R1 is planned to be implemented in April 2020. Mid November ECMWF plans to provide first datasets to CAMS-84. Run for 2017, plus an ozone hole case 2019. Quicklook + e-suite.
- CAMS reanalysis. GRG-AER is close to NRT, but be aware that sometimes parts are re-run when issues are found. I will inform you when data is ready for download. Until end of August is OK!
- GAMS reanalysis of GHG: Now arrived at the end of 2015.

Status of the WP1 report

The MAM-2019 report draft was circulated 2 September.
The final report will become available next week.

WP2 – websites and verification server

Status Operational Validation Server:

URL: https://global-evaluation.atmosphere.copernicus.eu

Server characteristics:

- Hosted by BIRA, developed and implemented by S&T.
- Automated upload to server of observational datasets in HARP format via ftps upload mechanism (partner responsibility).
- Automated comparison between collocated CAMS model data and observational data.
- Presenting comparisons results (plots and statistics).
- Download possibility for data and comparisons results.
- Two server accounts (one for ECMWF, one for all partners)
- Accessible via webbrowser (Firefox, Safari etc.) and ftps.

First release of server: June 30, 2019

- NDACC datasets plus comparison results are available on server.

Next release of server

December 31, 2019

Dataset	Species	Partner
ESRL	Surface O3	AA
WMO-GAW	Surface CO	MPG
WMO-GAW	Surface O3	MPG
IASOA	Surface O3	AU
AERONET	AOD	BSC
Ozone sonde	O3 profiles	BIRA
TCCON	CO column	BIRA
TCCON	CO2 column	BIRA
TCCON	CH4 column	BIRA
IAGOS (? to be decided)	various profile data	CNRS-LA

Necessary steps by partners for the December 2019 server release:
(Partners involved: AA, AU, BIRA, BSC, MPG, S&T)

- Step 1: Provide example HARP file plus filename.
  Start discussion about details file content and file name with S&T / Sander.
  Due date: today
- Step 2: Iterate towards final agreement on HARP file content and file name.
  Due date: end of next week.

- Step 3: Setup data stream to server and upload limited set of HARP files to server.
  Due date: beginning of October
- Step 4: Once HARP files can be ingested, setup operational data stream.
  Due date: mid-end October

Relevant server documentation:

Technical Specification Document (TSD, D84.2.2.1):

Partly based on input from partners:
Details of HARP files (content, name).
Details of how to perform the comparison.
Describes the plots and statistics showing the comparison results.
Specifies a minimum baseline for the comparison plus comparison results (which type of plots and tables with statistics).
Missing input from partners CEA-LSCE (ICOS data) and DWD (ceilometer data).
Next release of TSD expected soon (likely next week).

Architectural Design Document (ADD, D84.2.2.2):

Defines setup of server.
Specifies a.o. the external interfaces.
Describes all the software components.

These documents are available on Redmine (dev.knmi.nl).

Presentation Sander Niemeijer (S&T)

Sander presented the status of the server, open detailed questions and discussed the procedure to add datasets. A few items discussed:

- When to stop the NORS server, when to link the new server to the CAMS site?
- Sander proposes to use RedMine much more intensively to raise tickets for all detailed steps to be made. A separate section on the validation server is already available on the CAMS-84 RedMine, dev.knmi.nl.

See the slides in the combined presentations document for all the points discussed by Sander.

WP 3 - evaluation of new experiments

The e-suite report was delivered on 4 July 2019, before the upgrade date.

Planning for next (47R1) e-suite quicklook and report will be provided in November.
First data is expected mid-November (see remark Antje above).

WP 4 – Evaluation of CAMS-regional above the surface

Status of the WP4 report, MAM-2019: (John Douros)

The final version of the MAM-2019 report was delivered on 19 September 2019.

Recent additions/improvements

- Table with assimilated species/observations in regional models
- Time series and diurnal plots in Ch. 3 now with all models
- Certain ozonesonde plots now also include CAMS-global for reference
- Thanks to the present CAMS50 coordiation issues identified in the report are picked up more promptly and effectively.

Other points

- NO2 in chapter 3 (e.g. time series)?
- Further needs as regards profiles (o-suite @137 levels?) (Request Annette and Anne, action)

CAMS 50 regional service produces two reanalysis streams per year:

- VRA: Validated reanalysis for year Y-2 relying on assimilation of validated observations delivered by European member states (AQ e-R).
- IRA: Interim reanalysis for year Y relying on assimilation of available observations delivered by European member states (AQ e-R) at 20 days after a given date.

7 (9 in 2020) models:

- CHIMERE, EMEP, EURAD, LOTOS-EUROS, MATCH, MOCAGE, SILAM
- O3, NO2, CO, SO2, NO, NH3, NMVOC, PANs, PM2.5, PM10
- Hourly concentrations
- Surface and upper levels (50, 250, 500, 1000, 2000, 3000, 5000m)

Currently the IRA ENSEMBLE is calculated after the end of production (i.e. in late January of each year, if not later).

WP 5 - evaluation of the CAMS-global reanalyses

The quick look reports for the 2 reanalysis production streams are due on 1 October. This involves:

- GRG-AER: First half of 2019
- GHG: 2011 - 2014

Several contributions were received already.

WP 6: Status of the scoring document

There was no time to discuss this item during the meeting. But Michael Schulz has made a set of slides to summarise the status. These slides have been included in the combined presentations document.

Michael will organize a telecon to discuss the slides and the way forward.

WP 6: Status of the observations description document

Please send your updated section to KNMI as soon as possible, but at the latest Wednesday 25 September. A few contributions are available.

Status of the reanalysis validation paper

Annette mentioned that she has received new contributions to the paper from several co-authors, to make the paper more complementary to the paper of Antje. In the coming months the paper will be re-written and can hopefully be submitted soon afterwards.

Presentations by all partners

On RedMine the slides presented at the meeting are available (merged to 1 pdf).
There were presentations by the persons listed below.
- New developments in analysis approach, measurements used, other new aspects
- Major (unexpected) results for the MAM 2019 reports,
- New developments
- Other results, e.g. case studies

There are slides included from:

Eleni/Dimitris (AUTH): Global-regional comparisons, WP4.
Annette (MPG): Describing the status of the reanalysis paper.
Kaj (AU): Arctic.
Anne (IUP): NO2, HCHO, satellite and MAX-DOAS; NRT, WP4.
Yasmine (CNRS-LA): IAGOS.
John & Christos (AA): ESRL, EMEP, Airbase; NRT, WP5, Mediterranean.
Yves & Simon (BIRA): Stratosphere;
Bavo (BIRA): NDACC
Michel (LSCE): ICOS CO2, methane.
Michael (MET-NO): Aerosols; reanalysis, NRT, e-suite, WP4.
Sara (BSC): Dust; NRT, Mediterranean.
Harald & Werner (DWD): Ceilometer.
Natalia (MPG): MOPITT/IASI CO, IASI O3, ATOM aircraft

AOB

No AOB