L2A+ ECMWF TROPOS Leibniz-Institut für Troposphärenforschung

# Enhanced Aeolus L2A for depolarizing targets and impact on aerosol research and NWP

## L2A+ Kick Off Meeting – Minutes of Meeting
## [08/11/2022]
## [16:00-17:30 CEST]

| | Name | Function | Date |
|---|---|---|---|
| Prepared by: | E. Proestakis | Post-doc researcher | 11/2022 |
| | E Drakaki | PhD candidate | 11/2022 |
| | A. Kampouri | PhD candidate | 11/2022 |
| Approved by: | V. Amiridis | PI | 11/2022 |

## Meeting Attendance List

The participants who attended the L2A+ Kick Off (KO) meeting from ESA, NOA, TROPOS, and ECMWF, encompassed by participants from KNMI and the University of Hamburg, are listed below, in "Table 1".

Table 1: List of Participants in L2A+ KO meeting.

| Nr. | Participant | Affiliation | Email |
|---|---|---|---|
| 1 | Vassilis Amiridis | NOA | vamoir@noa.gr |
| 2 | Emmanouil Proestakis | NOA | proestakis@noa.gr |
| 3 | Antonis Gkikas | NOA | agkikas@noa.gr |
| 4 | Eleni Marinou | NOA | elmarinou@noa.gr |
| 5 | Athanasios Georgiou | NOA | ageorgiou@noa.gr |
| 6 | Kostas Rizos | NOA | k.rizos@noa.gr |
| 7 | Anna Kampouri | NOA | akampouri@noa.gr |
| 8 | Eleni Drakaki | NOA | eldrakaki@noa.gr |
| 9 | Holger Baars | TROPOS | baars@tropos.de |
| 10 | Athena Floutsi | TROPOS | |
| 11 | Angela Benedetti | ECMWF | Angela.Benedetti@ecmwf.int |
| 12 | Karen Henry | ECMWF | |
| 13 | Will McLean | ECMWF | Will.McLean@ecmwf.int |
| 14 | Athanasios Tsikerdekis | KNMI | thanos.tsikerdekis@knmi.nl |
| 15 | David Donovan | KNMI | daviddonovannl@gmail.com |
| 16 | Christian Retscher | ESA | Christian.Retscher@esa.int |
| 17 | Daniele Gasbarra | ESA | Daniele.Gasbarra@esa.int |
| 18 | Elody Fluck | ESA | Elody.Fluck@esa.int |
| 19 | Nedjeljka Zagar | Nedjeljka Zagar | nedjeljka.zagar@uni-hamburg.de |

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## Brief Description

On November 8, 2022, between 16:00 and 17:30 CEST, via videoconference a meeting between the European Space Agency (ESA) and the scientific groups of the "Enhanced Aeolus L2A for depolarizing targets and impact on aerosol research and NWP" (L2A+) was held, with the objective to initiate the L2A+ ESA-activity. During the meeting, the agenda included an introduction by Christian Retscher (ESA) and Vassilis Amiridis (NOA), an overview, recap of the science goals, methods and datasets to be used in L2A+, by Emmanouil Proestakis. In addition, the KO meeting included (1) an overview of WP2000 – "ASKOS ground-based datasets in support of L2A+" by Holger Baars (TROPOS), of WP3000 – "Development of the L2A+ aerosol product" by Antonis Gkikas, of WP4000 – "Assimilation of L2A/L2A+ and application of WRF-L experiments" by Eleni Drakaki (NOA) and Athanasios Georgiou (NOA), of WP5000 – "Scientific Analysis and Impact Assessment" by Anna Kampouri (NOA) and Emmanouil Proestakis (NOA), and of WP6000 by Angela Benedetti (ECMWF). Finally, the meeting included presentation of the AEL-PRO and AEL-FM algorithms developed by David Donovan (KNMI).

## Discussion and Outcomes

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|---|---|
| *WP1000 and "L2A+ Overview".*<br><br>*Presenter:*<br>*E. Proestakis* | E. Proestakis provided an extensive overview of L2A+ activities to be performed in the framework of the project. The presentation provided introduction of the (1) background, scientific and technical overarching project objectives and considerations, (2) on the challenges behind the L2A product to be tackled in the 2-year period of the project, (3) presentation of L2A+ Gantt Chart, Work Logic, Working Groups, and (4) finally an overview of the Work Packages. The presentation of the general overview was concluded by presentation of WP1000 – "Management, reporting and promotion" and the status of the Deliverable Items (DIs). |
| *WP2000 "ASKOS ground-based datasets in support of L2A+".*<br><br>*Presenter:*<br>*H. Baars* | H. Baars provided an extensive overview of the activities to be performed within L2A+ WP2000 – "ASKOS ground-based datasets in support of L2A+", with the objective to review the datasets acquired during ASKOS as part of the Joint Tropical Atlantic campaign (JATAC) and ASKOS Campaign, and of the datasets that have been collected, but the analysis and exploitation has not yet been intensified or completed. The presentation provided an overview of the ACTRIS Aerosol and Cloud Remote Sensing facilities operating in the September 2021 campaign phase, while a preliminary analysis on the ASKOS atmospheric conditions over Mindelo-Cabo Verde based on PollyXT, Cimel, and Wind Lidar observations was also discussed. |
| *WP3000 "Derivation of the L2A+ extinction and aerosol mass concentration product".*<br><br>*Presenters:*<br>*A. Gkikas* | A. Gkikas provided an extensive overview of the activities to be performed within L2A+ WP3000 – "Derivation of the L2A+ extinction and aerosol mass concentration product". A. Gkikas provided the overview of WP3000, the Inputs required, the Tasks included, and the Outputs/DIs expected. The presentation provided information (1) on the foreseen Work Flow of L2A+ dust aerosol product, (2) the foreseen and challenges related to L2A+ Region of Interest (RoI), (3) the L2A SCA-ray and SCA-midbin products, and (4) the foreseen removal of cloud contaminated profiles via the synergy with MSG cloud imagery and the removal of cloud contaminated profiles via the synergy |

with AEL-FM, while the Aerosol typing on Aeolus profiles relying on CAMS outputs and/or CALIOP-CALIPSO feature mask was also presented. Finally, A. Gkikas provided information on the foreseen L2A+ extinction coefficient to mass concentration conversion and derivations.

*WP4000 "Assimilation of L2A/L2A+ and application of WRF-L experiments".*

*Presenters: Eleni Drakaki and Athanasios Georgiou.*

E. Drakaki and A. Georgiou provided an extensive overview of the activities to be performed within L2A+ WP4000 – "Assimilation of L2A/L2A+ and application of WRF-L experiments". More specifically, E. Drakaki provided the overview of WP4000, the Inputs required, the Tasks included, and the Outputs/DIs expected. The presentation included information on the process towards the overall assimilation of L2A/L2A+ and application of WRF-L experiments, the development of data assimilation routines (DART), evaluation of assimilation methodology, and the performance of short term dust and NWP forecasts with WRF model.

*WP5000: "Scientific Analysis and Impact Assessment."*

*Presenters: A. Kampouri and E. Proestakis*

A. Kampouri and E. Proestakis provided an extensive overview of the activities to be performed within L2A+ WP5000 – "Scientific Analysis and Impact Assessment.". More specifically, A. Kampouri provided the overview of WP5000, the Inputs required, the Tasks included, and the Outputs/DIs expected. A. Kampouri and E. Proestakis provided an overview of (1) the assessment of L2A+ assimilation impact on NWP, (2) the L2A+ products and quantification of dust deposition variability across the N. Atlantic Ocean, and (3) the assessment of the contribution of Aeolus L2A and L2A+ optical properties profile products to the ESA-LIVAS atmospheric aerosol database.

## Main Concluding Points and Action Items

- The ESA-L2A+ project has been initiated properly on November 8, 2022 (by C. Retscher).
- Join efforts between the L2A+ and the project led by Nedjeljka Zagar is encouraged, as the outcomes of the interaction would be beneficial for both consortiums and activities (by C. Retscher).
- Consideration of the ADD-CROSS EUMETSAT project outcomes is encouraged, towards concluding on how much L2A affects NWP to access the impact of a cross-polar component (by V. Amiridis).
- Definition of the Cloud Mask is considered of high significance. Observational datasets have to be prioritized (by A. Benedetti).
- AEL-FM and AEL-Pro datasets can be provided, following the official procedures, by January 2023. Preliminary datasets, not for the entire RoI and for 09/2021, can be available sooner, for certain periods have already been processed (by D. Donovan).
- Possible two assimilation experiments should be considered, one based on MSG Cloud Mask and one based on AEL-FM and AEL-Pro (by A. Benedetti).
- Aeolus orbits over Mindelo-Cabo Verde and January 2021 should be prioritized (by H. Baars).
- First Progress Meeting (PM01) is agreed on February 7th, 2023, at 11:00 CEST.