

# Ground based Alpha-lidar capabilities of EarthCARE data products evaluation

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### Instrument

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Table 1. Emission wavelength and detection channels for each telescope part of the Alpha-lidar instrument.

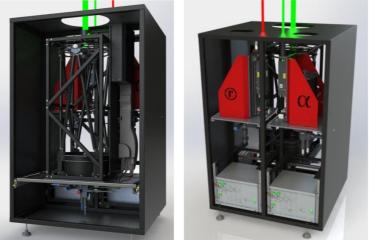
Telescope1:	355nm	355nmRR	408nm	387nm	532nm	532nmRR	60 <b>7</b> nm	1064nm	1064nmRR
Telescope2:	355nmP	355nmS	532nmP	532nmS					
Telescope3:	1064 <b>nmP</b>	1064nmS							
Telescope4:	532nm HSRL total		532nm HSRL molecular						

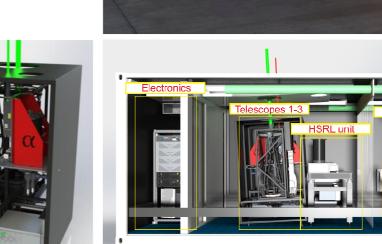
### **Products:**

Three backscatter, two daytime extinction, one HSRL, two nighttime extinction and three depolarization products, 1 water vapor.

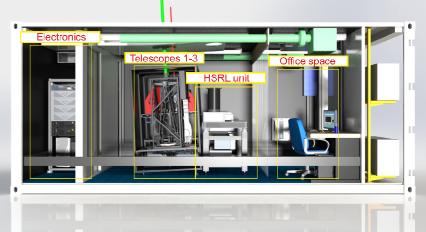


Inter-comparison with reference lidar



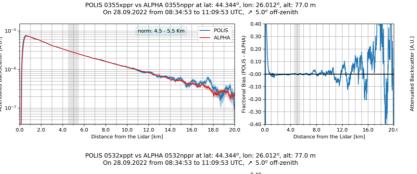






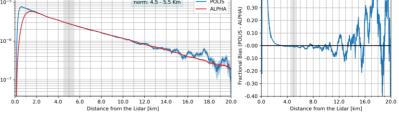


**POLIS** reference lidar - from Ludwig Maximillian University



orm: 4.5 - 5.5 Km

POLIS 0355xppr vs ALPHA 0355ftpx at lat: 44.344°, On 28.09.2022 from 08:34:53 to 11:09:53 UTC : 26.012°, alt: 77.0 m



POLIS 0532xppt vs ALPHA 0532ftpx at lat: 44.344°, lon: 26.012°, alt: 77.0 m On 28.09.2022 from 08:34:53 to 11:09:53 UTC, ≯ 5.0° off-zenith

0.20

norm: 4.5 - 5.5 Km



2.0

6.0

8.0

10.0

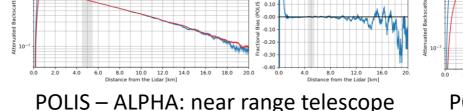
Range above the lidar [km]

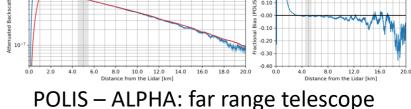
12.0

14.0

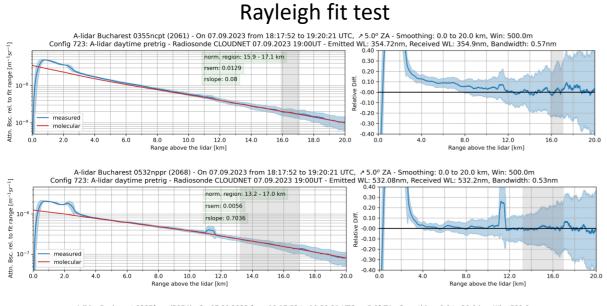
16.0

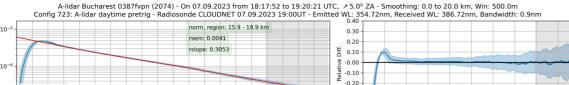
ALPHA reference lidar - from INOE



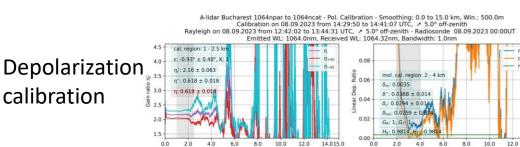


## QA in the framework of Actris





18.0



1.8 -. 1.6

-0.30 -

20.0

-0.40 +

8.0

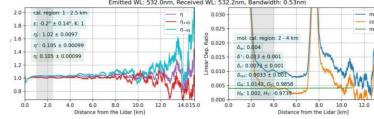
12.0

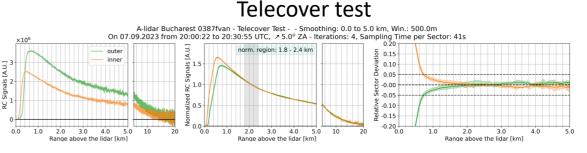
Range above the lidar [km]

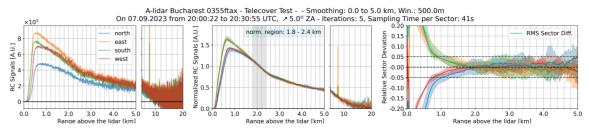
16.0

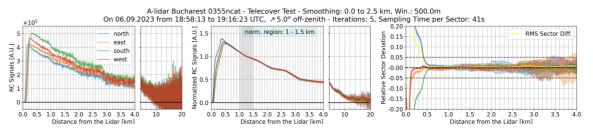
8.0 10.0 m the Lidar [km] 12.0 6.0 14.015.0

A-lidar Bucharest 0532nppr to 0532ncpt - Pol. Calibration - Smoothing: 0.0 to 15.0 km, Win.: 500.0m Calibration on 08.09.2023 from 14:29:50 to 14:41:07 UTC, > 5.0° off-zenith Rayleigh on 08.09.2023 from 12:42:02 to 13:44:31 UTC, > 5.0° off-zenith - Radiosonde 08.09.2023 00:00 Emitted WL: 532.2 nm, Received WL: 532.2.nm, Bandwidth: 0.53nm 08 09 2023 00:000



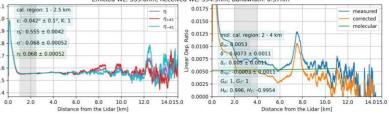






14.015.0

A-lidar Bucharest 0355nppt to 0355ncpt - Pol. Calibration - Smoothing: 0.0 to 15.0 km, Win.: 500.0m Calibration on 08.09.2023 from 14:29:50 to 14:41:07 UTC, ≯ 5.0° off-zenith Rayleigh on 08.09.2023 from 12:42:02 II 3:44:31 UTC, ≯ 5.0° off-zenith - Radiosonde 08.09.2023 00:00 Emitted WL: 355.0nm, Received WL: 354.9nm, Bandwidth: 0.57nm de 08.09.2023 00:00UT



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