

The Table describing the AMALi products which are obtained dependingly on the measurement strategy and the configuration mode.

Lidar configuration	AMALi ground based			AMALi airborne			
	horizontal	at an angle	vertical	nadir-aiming		zenith-aiming	
Observation	stand alone	stand alone	stand alone	stand alone	Combined with ground based zenith-aiming KARL	stand alone	Combined with spaceborne nadir-aiming CALIPSO
Evaluation method	slope	multiangle	Standard backward KFS	Backward KFS with Newton-Raphson iterative	Two-stream	Standard backward KFS	Two-stream
Assumptions	homogeneous atmosphere	stable stratification	known $\beta_{ref}$ in aerosol free layer far from lidar known LR (h)	T=1 within overlap range stable known C known LR (h)	known $\beta_{ref}$ at any height or C of one lidar	known $\beta_{ref}$ in aerosol free layer far from lidar known LR (h)	known $\beta_{ref}$ at any height or C of one lidar
Retrieval	$\alpha$ $\beta$ C	$\alpha$ (h) $\beta$ (h)	$\beta$ (h) [ $\alpha$ (h)] BSR (h) DR(h) C	$\beta$ (h) [ $\alpha$ (h)] BSR (h) DR(h)	$\alpha$ (h) $\beta$ (h) $C_{AMALi} / C_{KARL}$ LR (h)	$\beta$ (h) [ $\alpha$ (h)] BSR (h) DR(h) C	$\alpha$ (h) $\beta$ (h) LR (h)
Required SNR	> 10	> 5	> 10	> 10	> 15	> 10	Not determined
Integration time	30s	5 s	1 mn	1 mn	8 mn	1 mn	Not determined
Retrieval range	< 4 km	< 3 km	tropopause	< 3 km	from 650 m to 3 km	tropopause	Not determined
References	Klett, 1981 Kunz and Leeuw, 1993 Porter et al., 2000	Gutkowitz-Krusin, 1993 Sicard et al., 2002 Phalov et al., 2004	Klett, 1981, 1985 Fernald, 1984 Sassano, 1985	Stachlewska et al. 2006 Gayet et al. 2007 Dörnbrack et al. 2009	Kunz, 1987 Hughes and Paulson, 1988 Stachlewska et al., 2005 Ritter et al. 2006 Stachlewska and Ritter, 2009	Klett, 1985 Fernald, 1984 Sassano, 1985	Cuesta and Flamant, 2004 Wang et al., 2007
Symbols	$\alpha$ - extinction coefficient $\beta$ - backscatter coefficient LR - lidar ratio C - lidar instrumental constant T - atmospheric transmittance BSR - backscatter ratio DR - depolarization ratio		Acronyms	SNR - signal-to-noise ratio KFS - Klett-Fernald-Sassano KARL - Koldewey Aerosol Raman Lidar CALIPSO - Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation			