

Parameter	Source	Remarks
Radiance and irradiance	GOME-2A/GOME-2B	3 min granules
SNR measured spectrum	GOME-2A/GOME-2B operational level-1b product	3 min granules
Solar and satellite geometry	GOME-2A/GOME-2B level 1-b data	3 min granules
Surface albedo A_s	Tilstra et al. (2017) GOME-2A LER at $0.25^\circ \times 0.25^\circ$ grid at 758 and 772 nm	
Temperature–pressure profile	ERA-Interim	nearest-neighbour interpolated state vector element, a priori = 0.8
Aerosol optical thickness τ		state vector element, a priori = 800 hPa
Aerosol layer height h_{mid} (km)		fixed at 0.95
Aerosol single-scattering albedo ω		Henyey–Greenstein model with anisotropy factor g of 0.7
Aerosol phase function $P(\theta)$		none
Cloud mask		5 km \times 5 km total attenuated backscatter at 1064 nm
Validation (Russian wildfires in 2010)	CALIOP lidar profiles	ground-based ceilometer network
Validation (Portugal fires in 2017)	Alexander et al. (2016)	