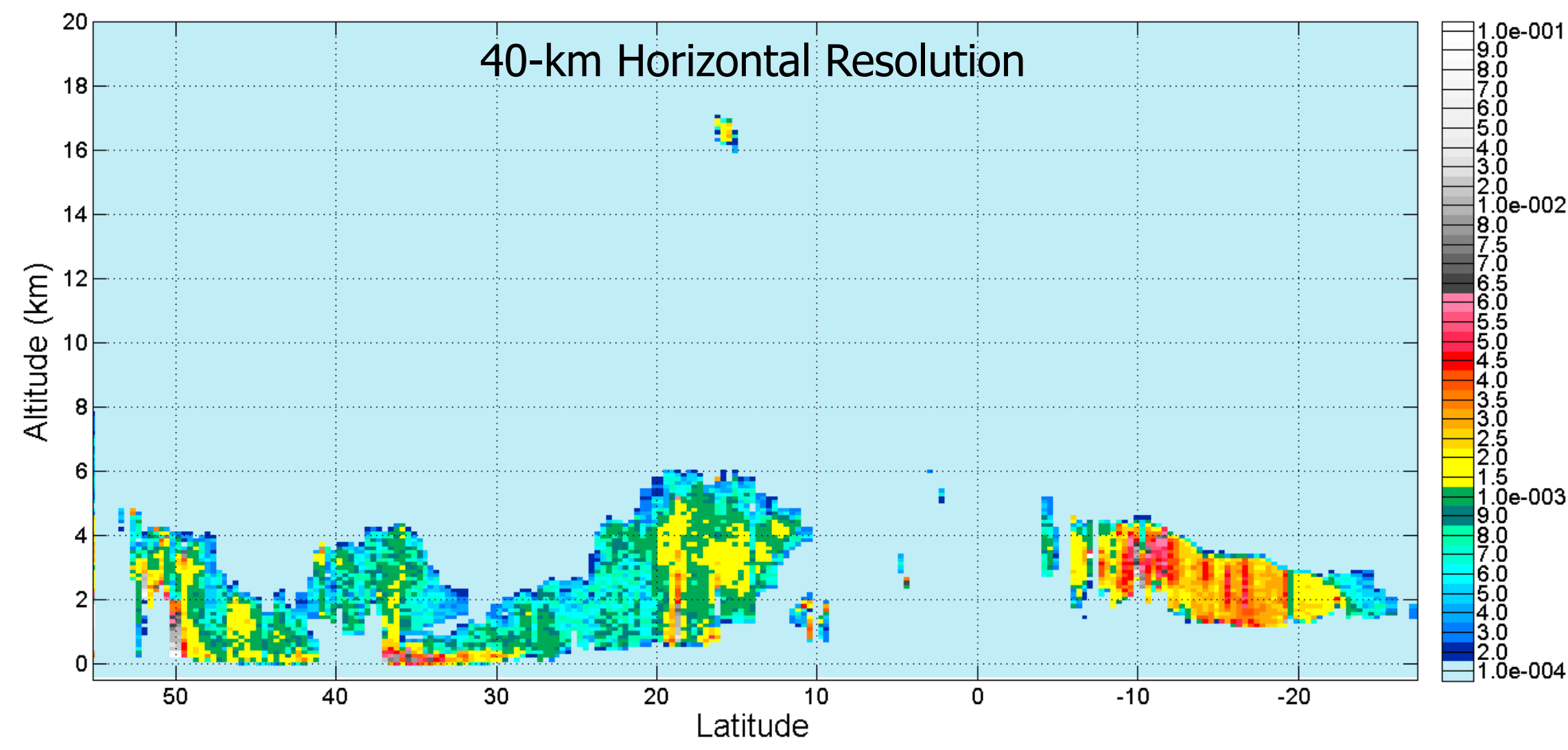


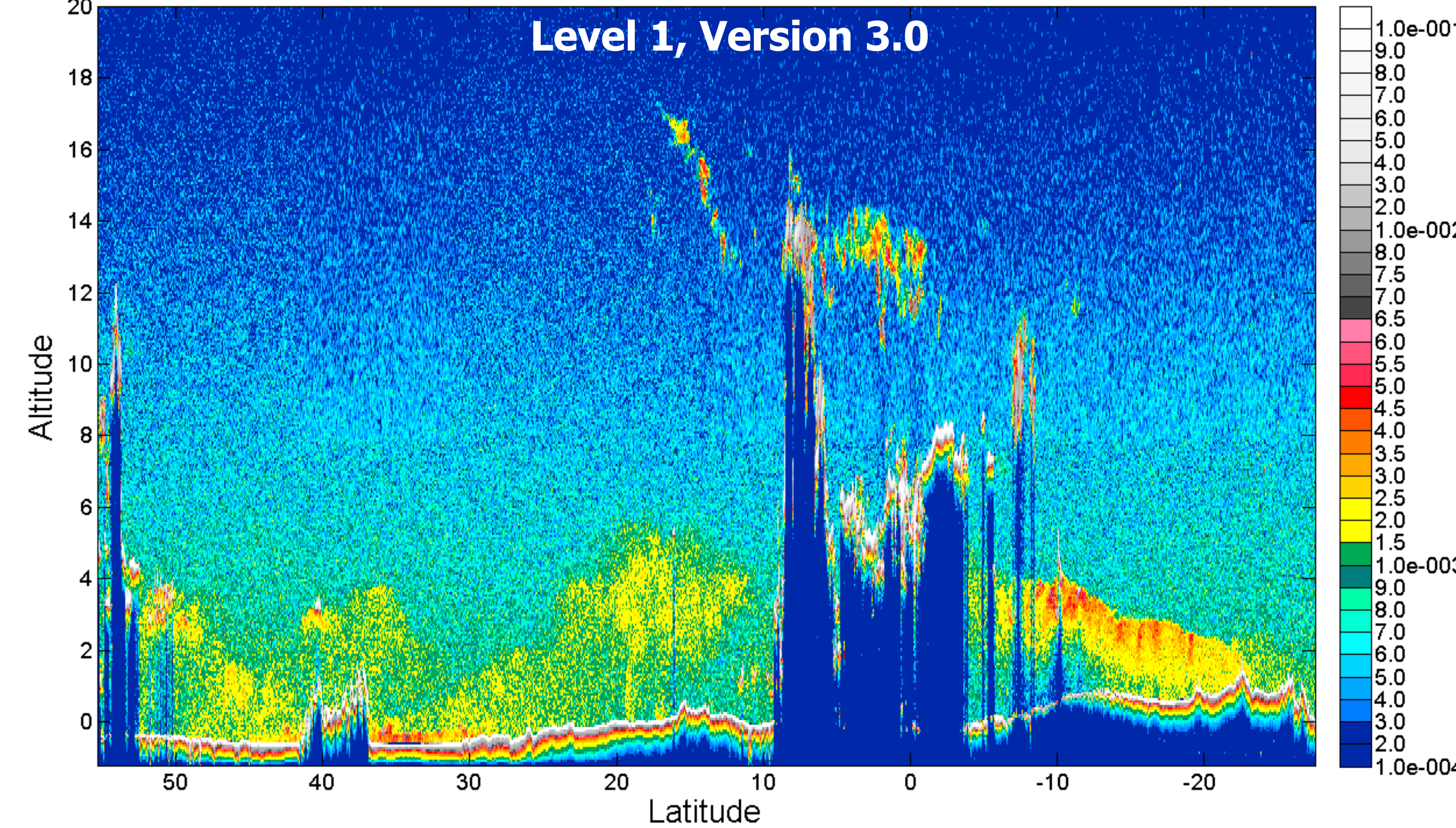
What's New: the CALIPSO Version 3 Profile Products

Mark Vaughan, Ralph Kuehn, Dave Winker, Jim Lambeth, and Joe Howell

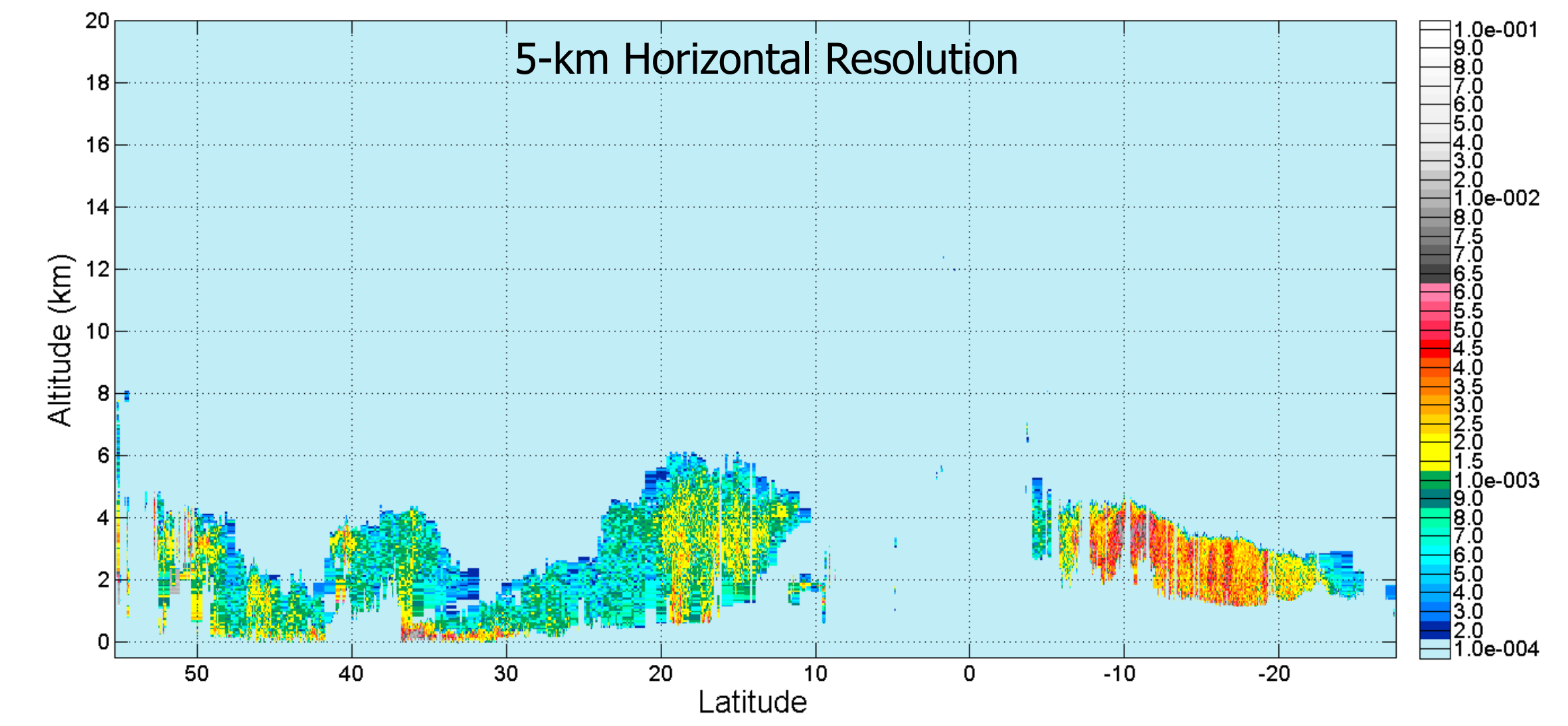
Level 2, Version 2.01 Aerosol Profile Product



CALIPSO 532 nm Total Attenuated Backscatter

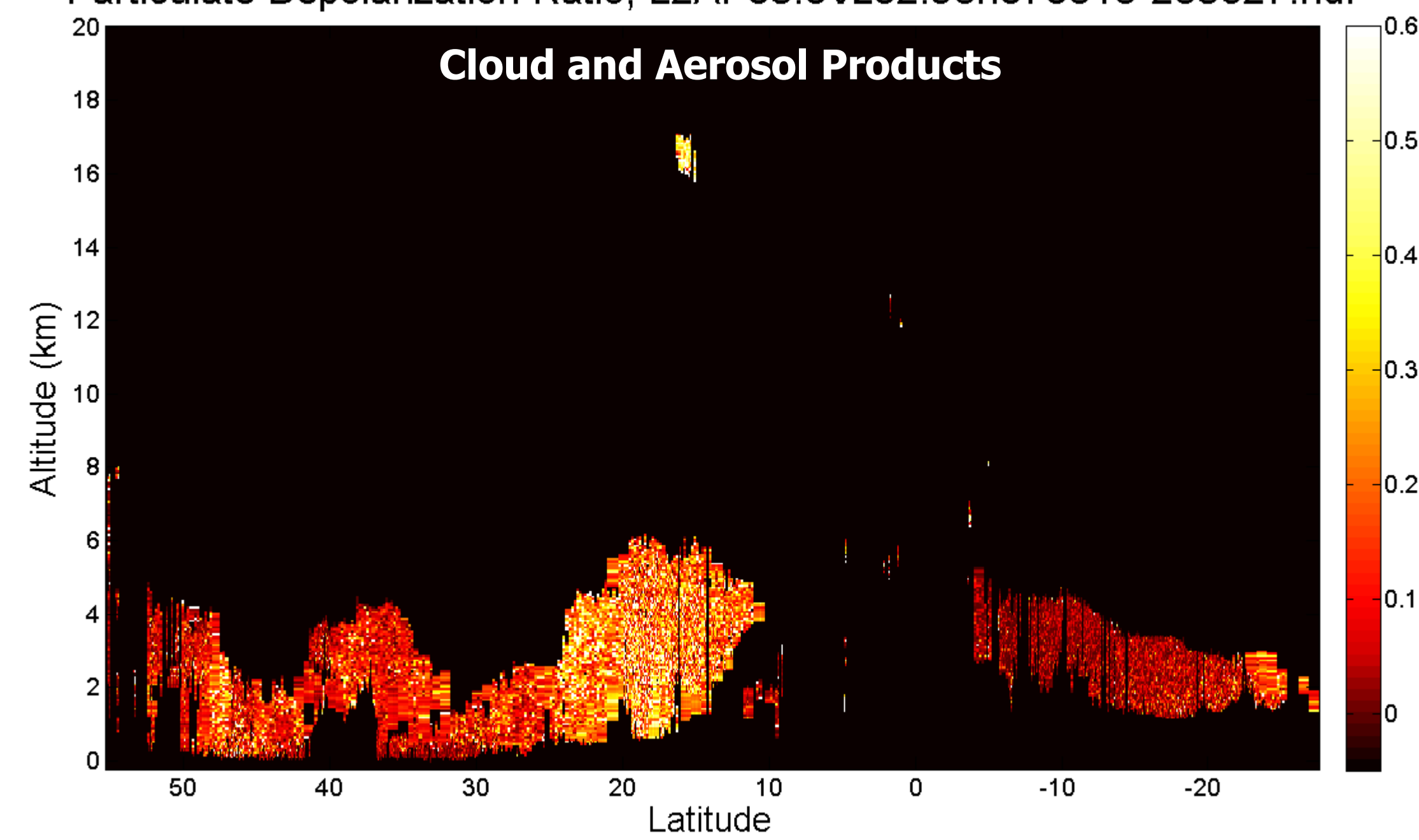


Level 2, Version 3 (alpha) Aerosol Profile Product



NEW DATA PRODUCTS

Particulate Depolarization Ratio, L2AP05.0Vz02.93n070818-235627.hdf



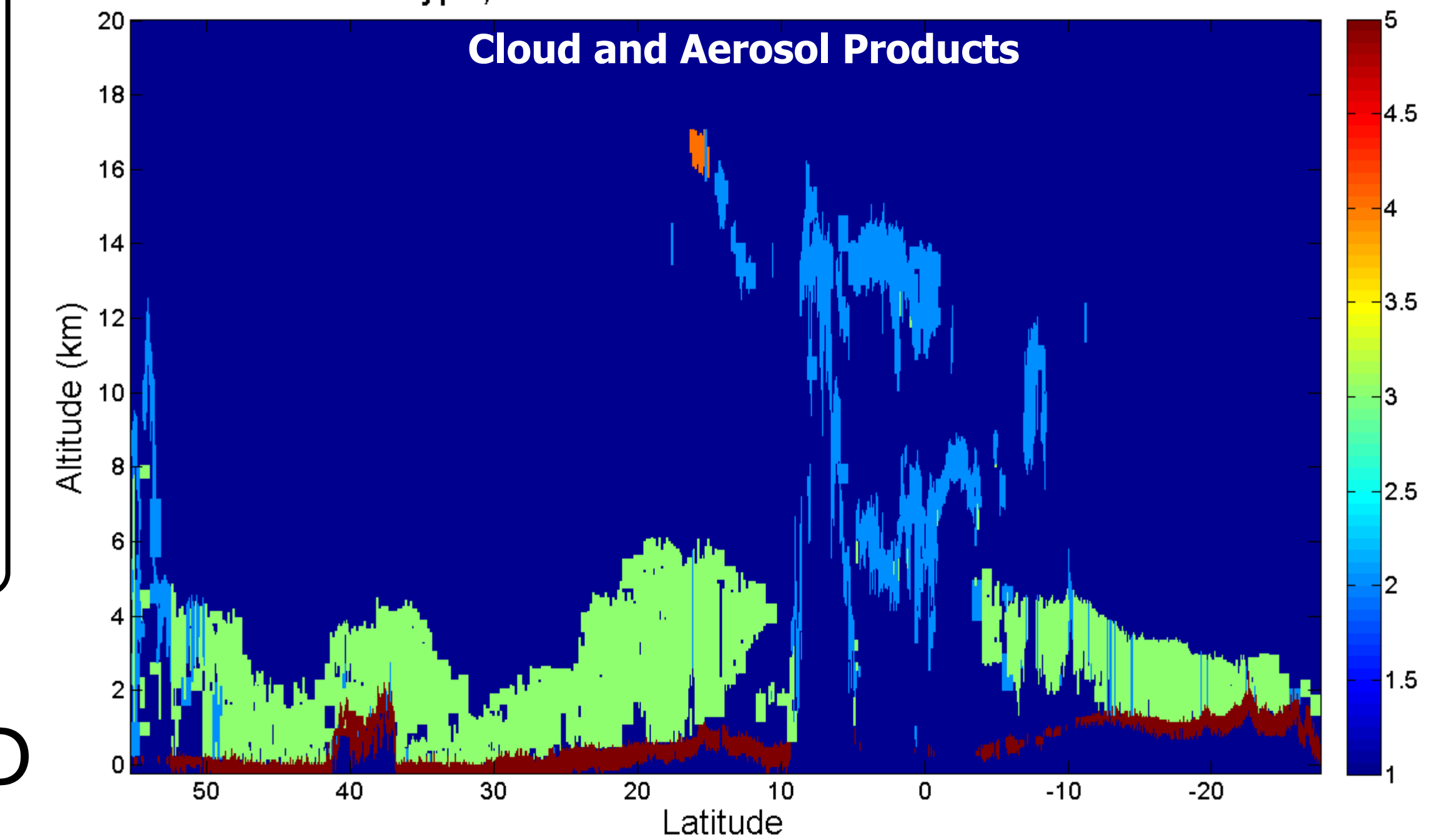
The version 2.01 aerosol profile product is reported at a horizontal resolution of 40-km, with a vertical resolution of 120-m below ~20.2-km, and 360-m above. **The version 3.x aerosol profile product will be reported at a horizontal resolutions of 5-km and vertical resolutions of 60-m from the surface to ~20.2 km, and 180-m from 20.2 km to ~30 km.** Adopting this approach eliminates the 40-km horizontal averaging step that was applied for the version 2.01 release, yielding the following benefits to data users:

- (a) aerosol profile products are reported at the same spatial resolution as the aerosol layer products, so that one-to-one matching of layers and profiles will now be possible
- (b) horizontal smearing/mixing of different aerosol types (e.g., dust, smoke, etc.) within individual profile altitude resolution element is eliminated
- (c) extinction coefficients from high quality retrievals will no longer be averaged with those from low quality retrievals (although there may be occasional exceptions to this rule at some vertical boundaries between different layers of aerosol types within the lower troposphere (0.5 km to ~8.3 km))

As can be seen from the table above, the aerosol profile products also contain numerous additional fields that should greatly improve the usability. These new parameters are also included in the version 3.x cloud profile products.

Complete scene description in each file DIAGNOSTIC INFORMATION

Feature Type, L2AP05.0Vz02.93n070818-235627.hdf

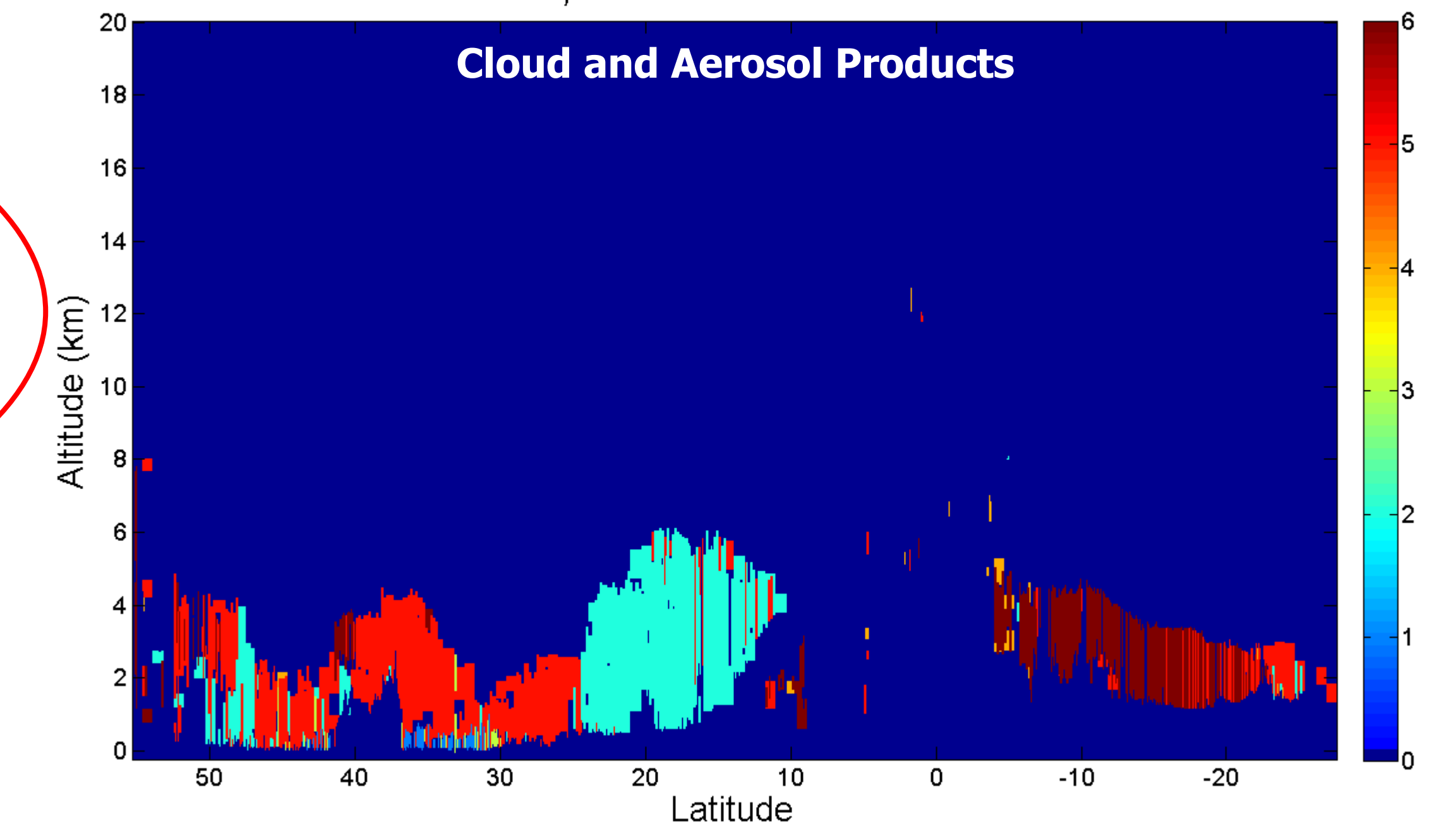


Layer type and subtype information, along with all other information found in the VFM feature classification flags, are included in the 'atmospheric volume description' now embedded in all profile products.

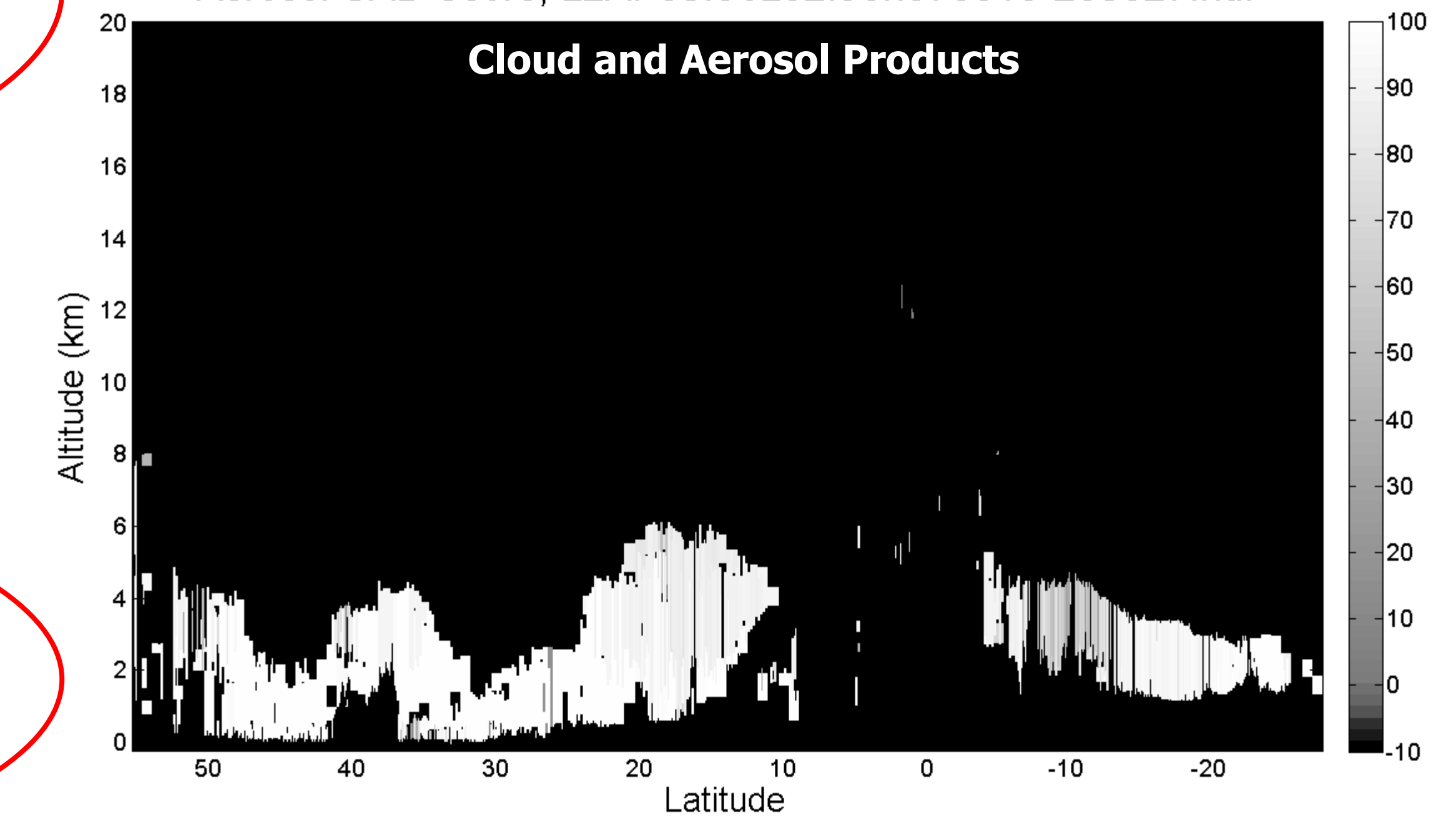
CALIPSO DATA PRODUCTS CATALOG
TABLE 37: LIDAR 5 KM AEROSOL PROFILE RECORD

Parameter	Units	Range	Count	Bytes
Latitude Start	deg	-90...90	1	4
Latitude Stop	deg	-90...90	1	4
Longitude Start	deg	-180...180	1	4
Longitude Stop	deg	-180...180	1	4
Profile Time Start (TAI)	sec	4.2 x10 ⁸ ...7.4x10 ⁸	1	8
Profile Time Stop (TAI)	sec	4.2 x10 ⁸ ...7.4x10 ⁸	1	8
Profile UTC Start	none	60426...160601	1	8
Profile UTC Stop	none	60426...160601	1	8
Column Optical Depth Cloud 532	none	0...10	1	4
Column Optical Depth Aerosols 532	none	0...10	1	4
Column Optical Depth Stratospheric 532	none	0...10	1	4
Column Optical Depth Aerosols 1064	none	0...10	1	4
Column Optical Depth Stratospheric 1064	none	0...10	1	4
Column Feature Fraction	none	0...1	1	4
Column Integrated Attenuated Backscatter 532	sr ⁻¹	0...2	1	4
Column IAB Cumulative Probability	none	0...1	1	4
Tropopause Height	km	4...22	1	4
Tropopause Temperature	°C	-120...-20	1	4
Temperature	°C	-120...60	399	1,596
Pressure	hPa	1...1086	399	1,596
Molecular Number Density	m ⁻³	8x10 ²² ...5x10 ²⁵	399	1,596
Relative Humidity	none	0...100	399	1,596
Surface Elevation Statistics	km	-1...9	4	16
Surface Winds	m s ⁻¹	0...125	2	8
Samples Averaged	none	TBD	399	399
Aerosol Layer Fraction	none	0...255	399	399
Cloud Layer Fraction	none	0...255	399	399
Atmospheric Volume Description	none	0...28,666	399 x 2	1,596
Extinction QC Flag 532	none	0...32,768	399 x 2	1,596
Extinction QC Flag 1064	none	0...32,768	399 x 2	1,596
CAD Score	none	-111...111	399 x 2	798
Total Backscatter Coefficient 532	sr ⁻¹ km ⁻¹	0...50	399	1,596
Perpendicular Backscatter Coefficient 532	sr ⁻¹ km ⁻¹	0...25	399	1,596
Particulate Depolarization Ratio Profile 532	none	0...1	399	1,596
Extinction Coefficient 532	km ⁻¹	0...100	399	1,596
Aerosol Multiple Scattering Profile 532	none	0.0...1	399	1,596
Backscatter Coefficient 1064	sr ⁻¹ km ⁻¹	0...50	399	1,596
Extinction Coefficient 1064	km ⁻¹	0...100	399	1,596
Aerosol Multiple Scattering Profile 1064	none	0...1	399	1,596
Total Backscatter Coefficient Uncertainty 532	sr ⁻¹ km ⁻¹	0...TBD	399	1,596
Perpendicular Backscatter Coefficient Uncertainty 532	sr ⁻¹ km ⁻¹	0...TBD	399	1,596
Particulate Depolarization Ratio Uncertainty 532	none	0...TBD	399	1,596
Extinction Coefficient Uncertainty 532	km ⁻¹	0...TBD	399	1,596
Backscatter Coefficient Uncertainty 1064	sr ⁻¹ km ⁻¹	0...TBD	399	1,596
Extinction Coefficient Uncertainty 1064	km ⁻¹	0...TBD	399	1,596
Record Size (bytes)				35,623

Aerosol Classification, L2AP05.0Vz02.93n070818-235627.hdf



Aerosol CAD Score, L2AP05.0Vz02.93n070818-235627.hdf



Long promised, finally delivered UNCERTAINTY PROFILES

