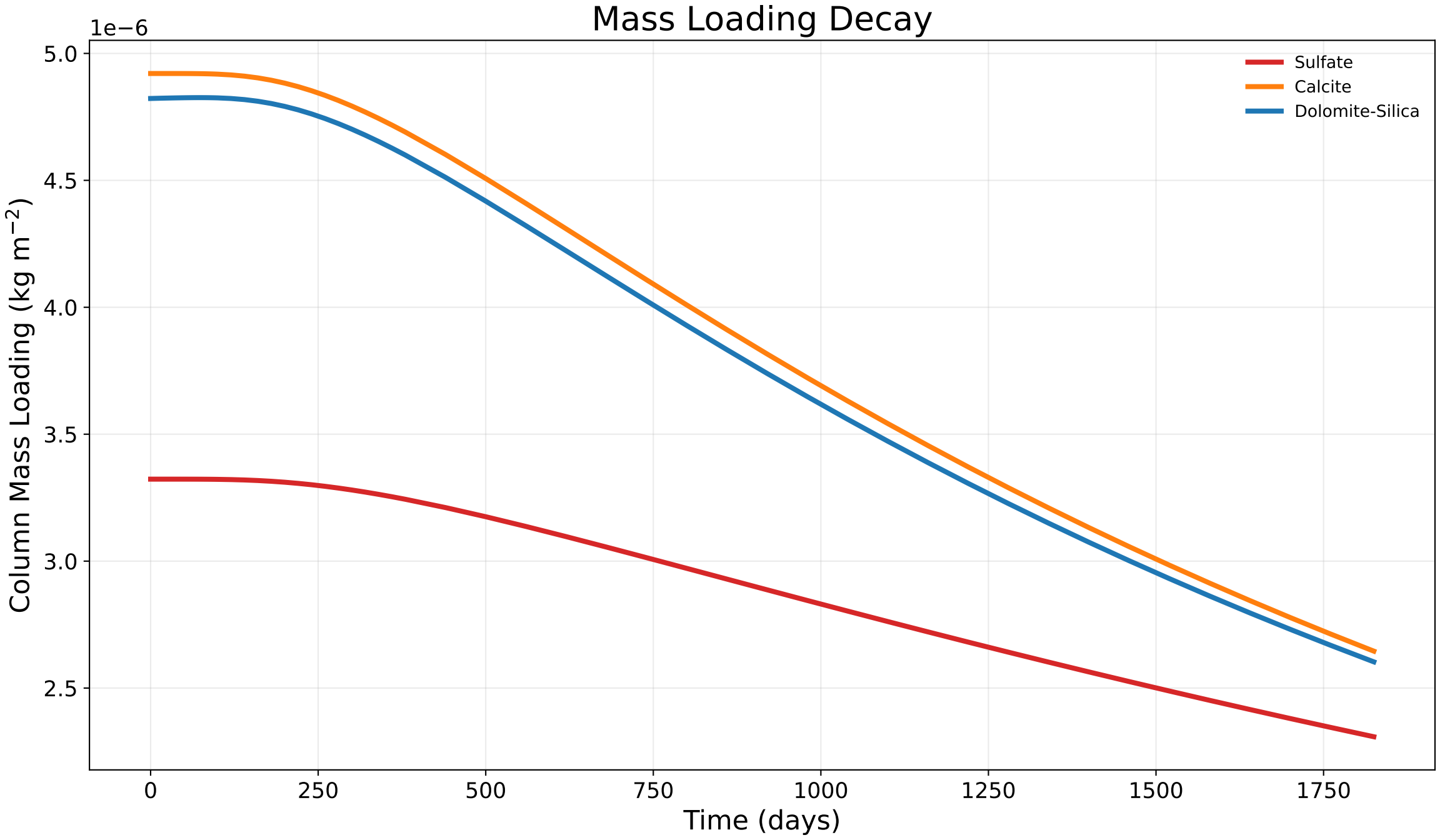
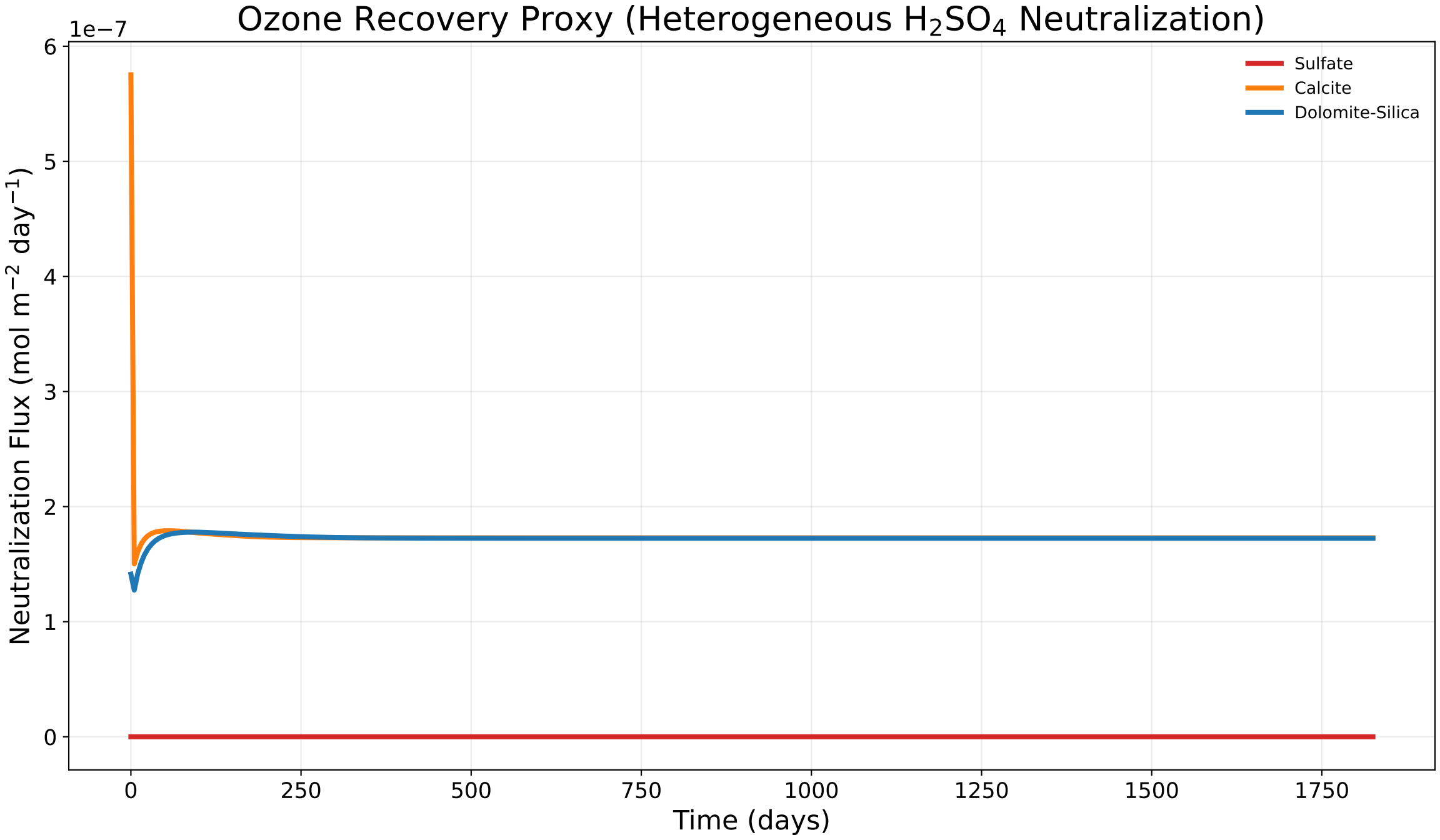
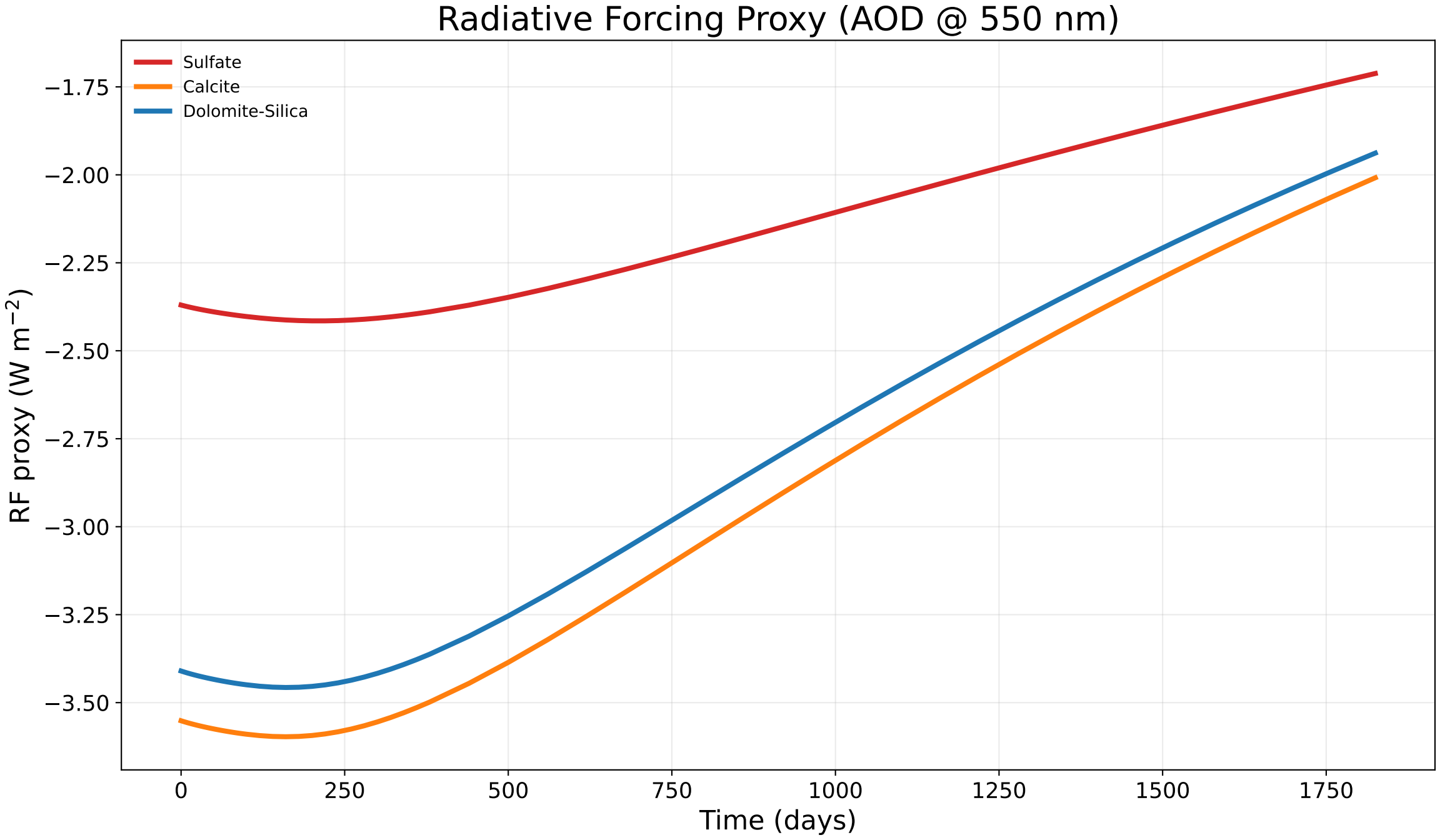
SAI Microphysics Figure Pack

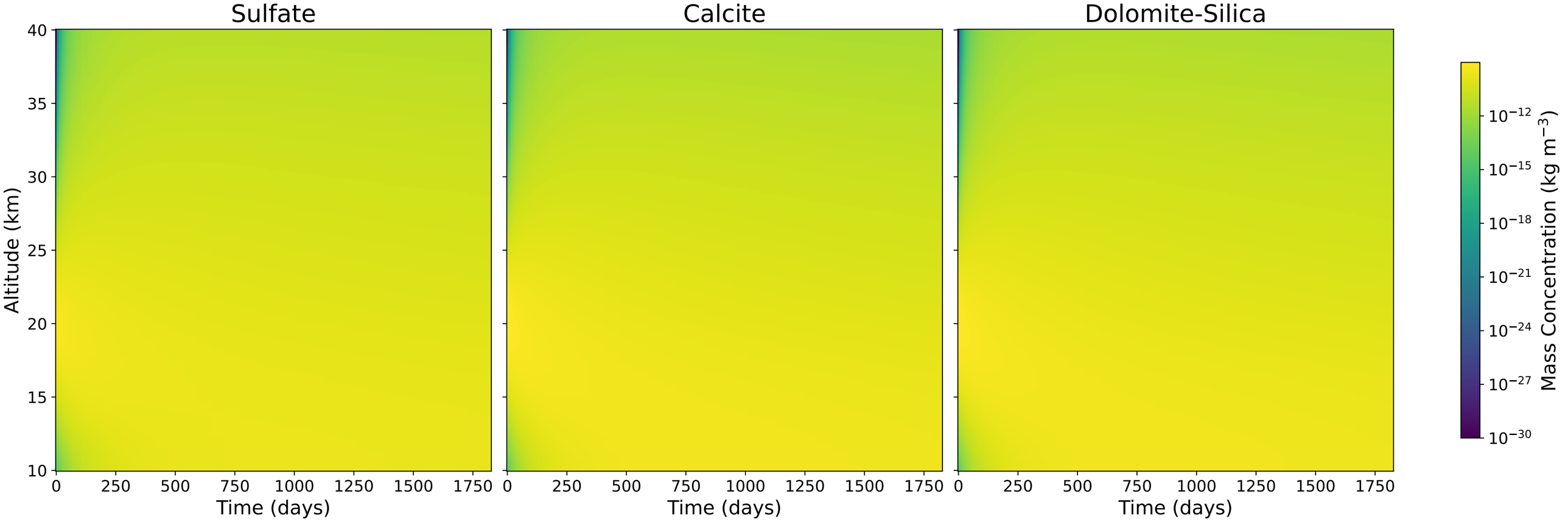
Input: D:\MY RESEARCH\Suitable Material for Stratosphere\Aerosol modal 2\OUTPUT\Final_Cleaned_Data(2) | Output: D:\MY RESEARCH\Suitable Material for Stratosphere\

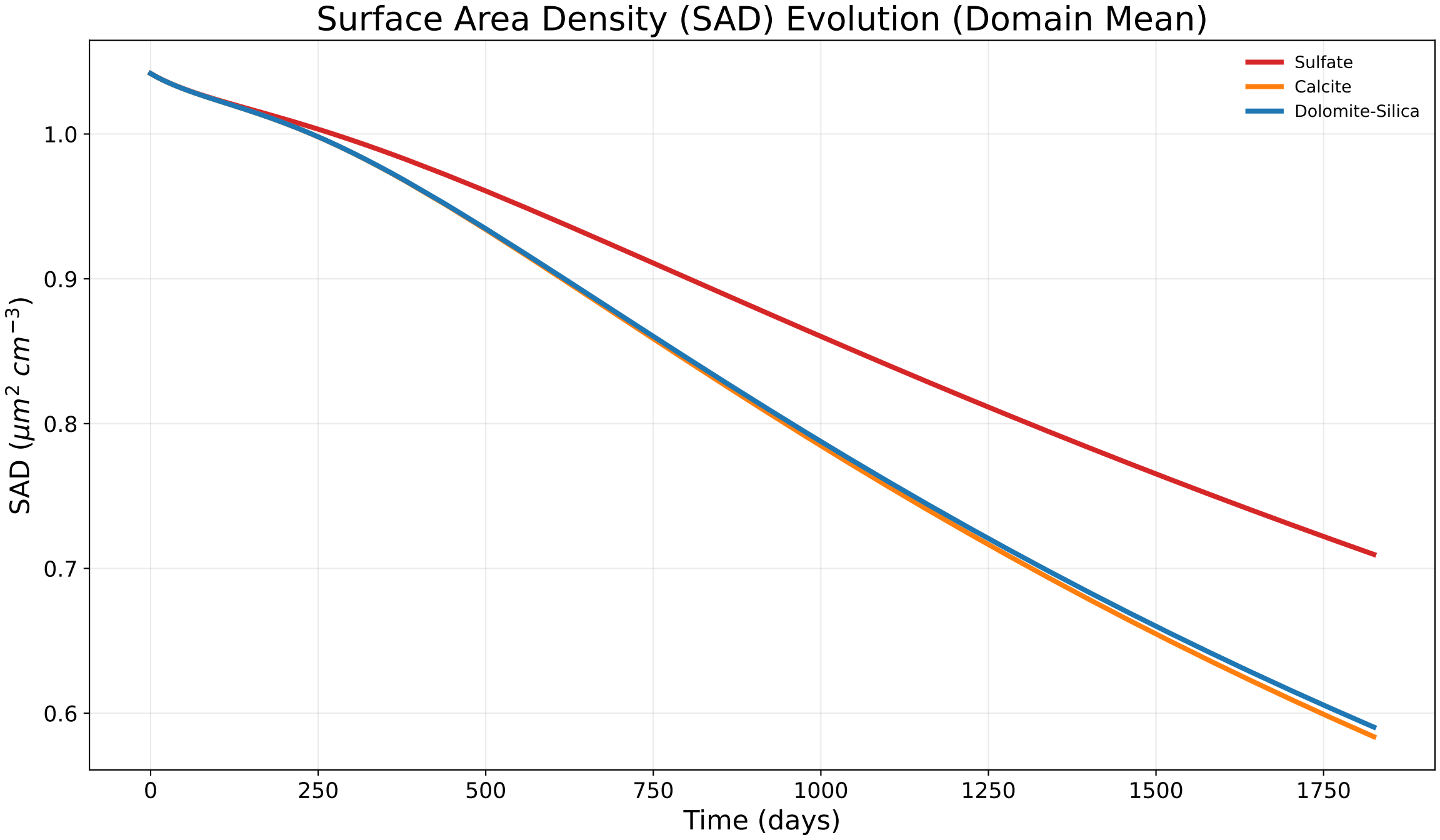
Index (page numbers refer to this PDF):
Page 1 is this index.

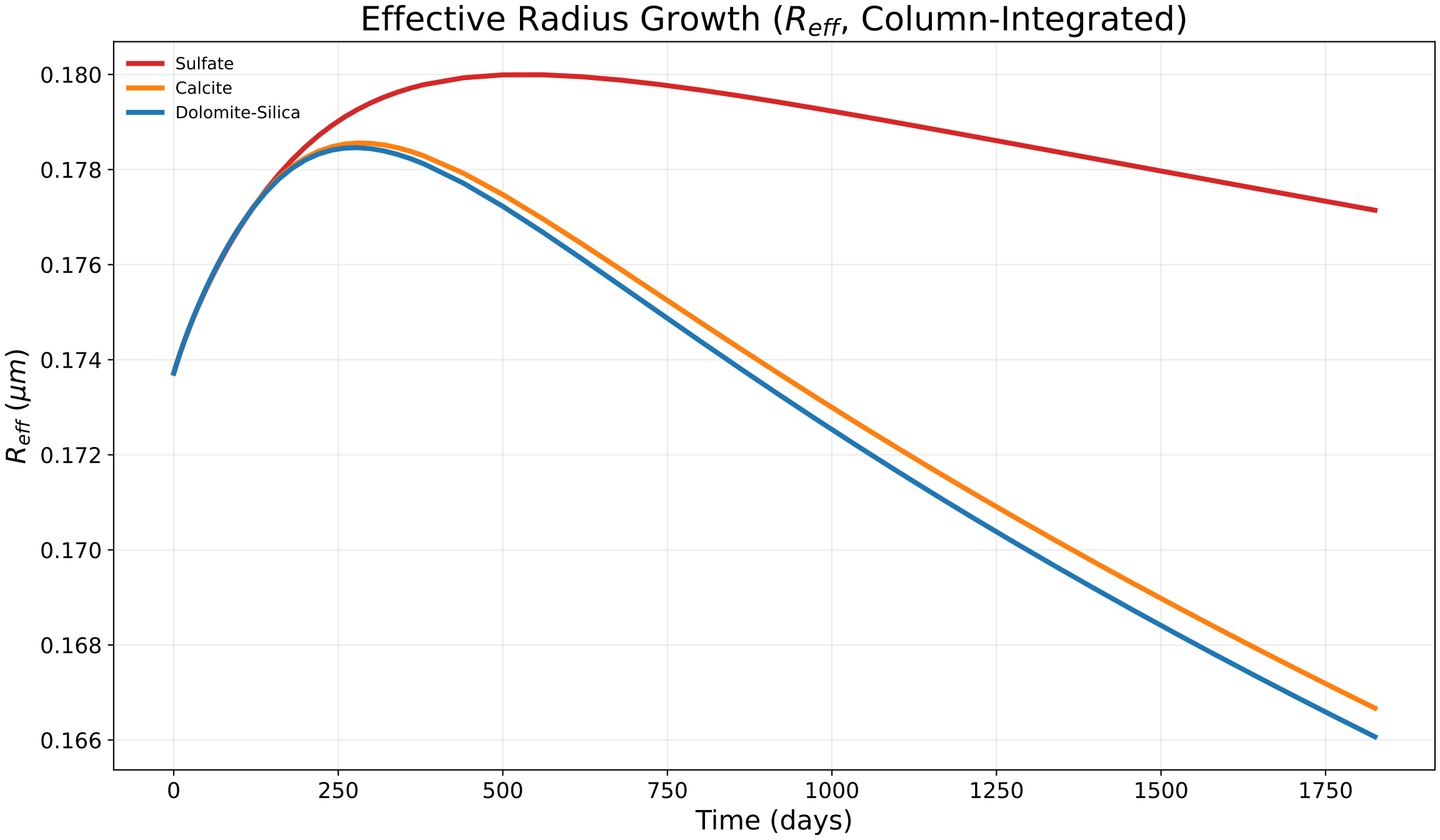

Mass Loading Decay
1e−6
5.0
4.5
4.0
3.5
3.0
2.5
Column Mass Loading (kg m^{-2})
0
250
500
750
1000
1250
1500
1750
Time (days)
Sulfate
Calcite
Dolomite-Silica

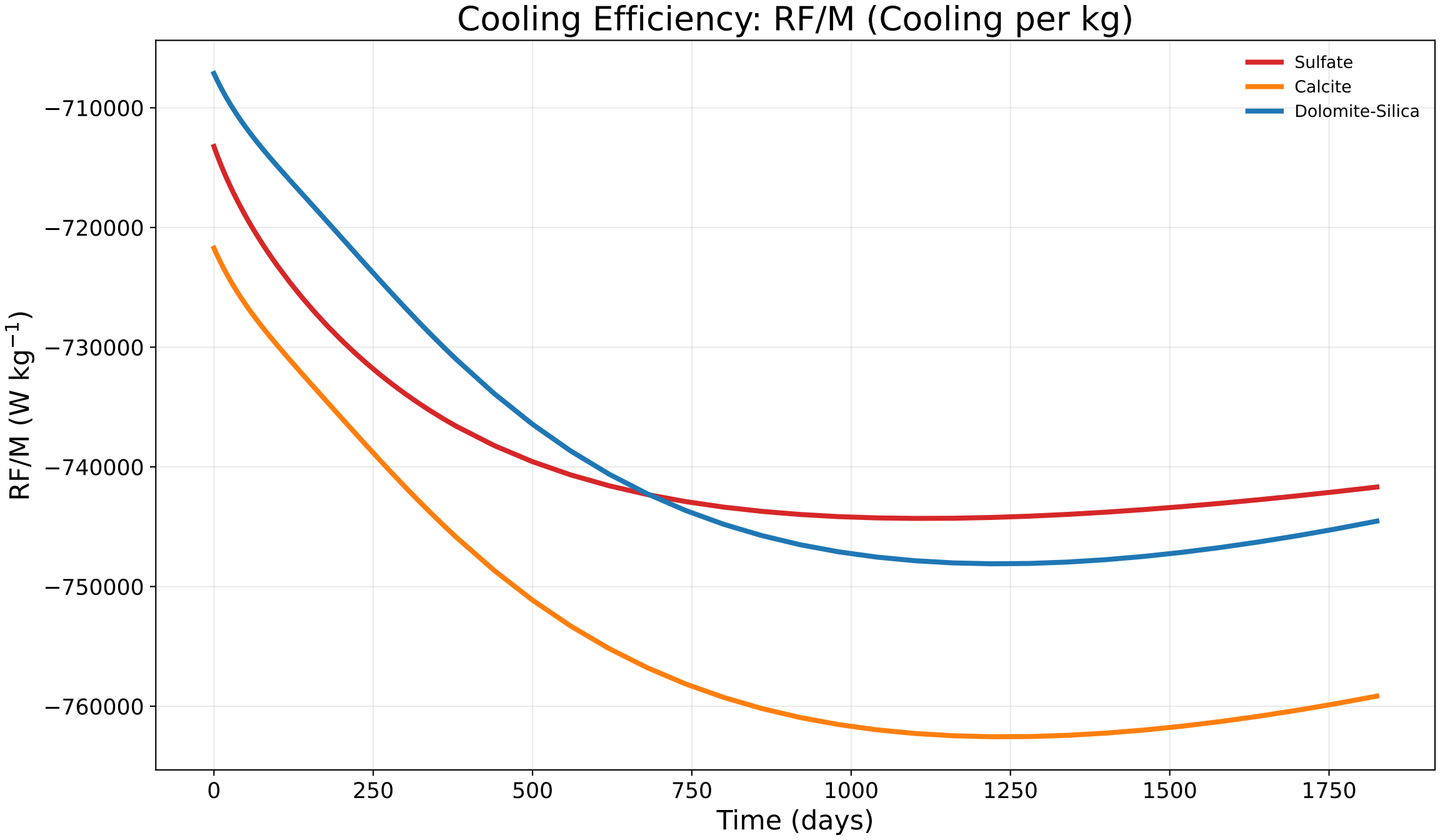

Ozone Recovery Proxy (Heterogeneous H_2SO_4 Neutralization)
1e−7
6
5
4
3
2
1
0
Neutralization Flux (mol m^{-2} day^{-1})
0
250
500
750
1000
1250
1500
1750
Time (days)
Sulfate
Calcite
Dolomite-Silica

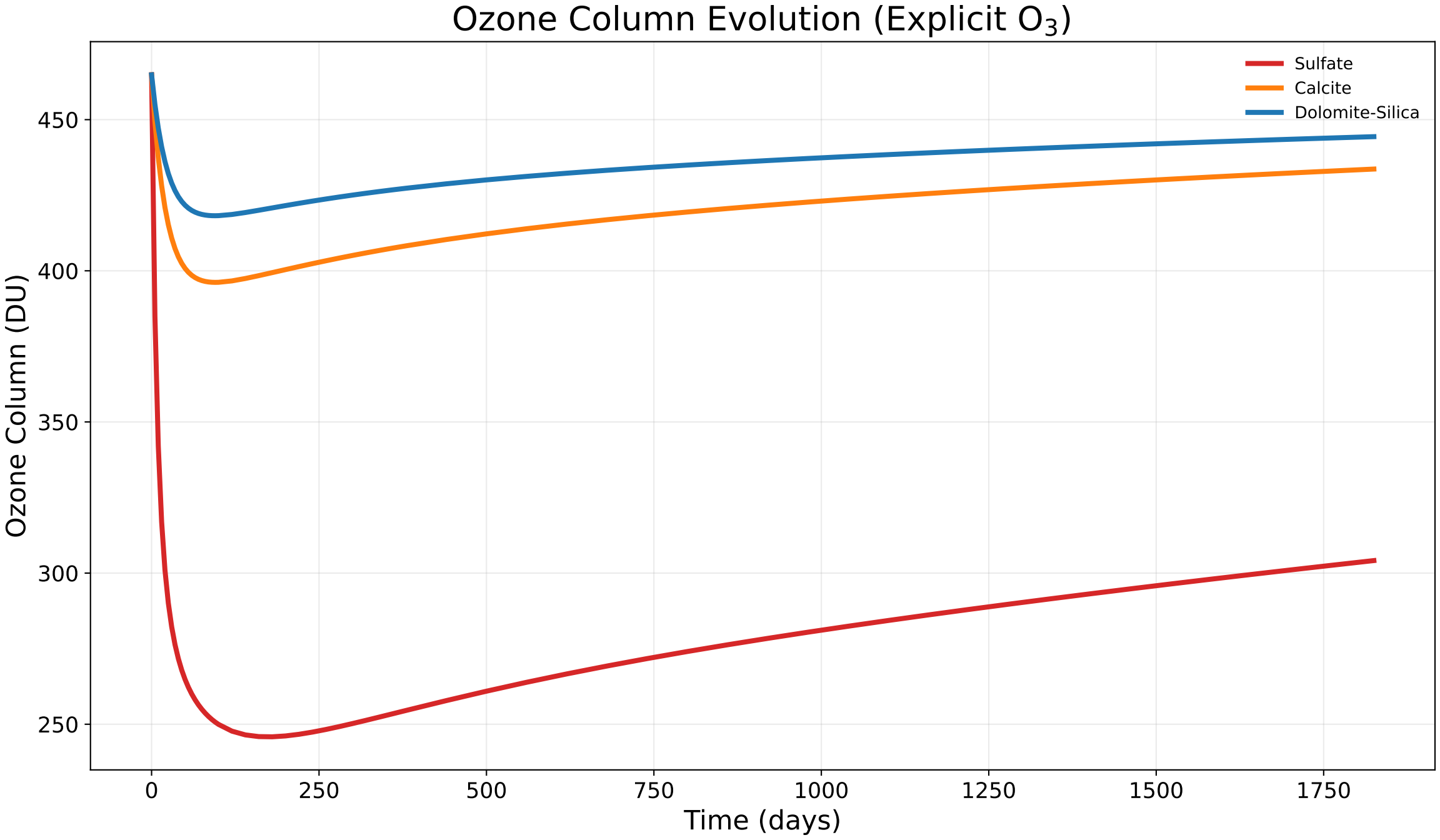

Radiative Forcing Proxy (AOD @ 550 nm)
Sulfate
Calcite
Dolomite-Silica
−1.75
−2.00
−2.25
−2.50
−2.75
−3.00
−3.25
−3.50
RF proxy (W m^{-2})
0
250
500
750
1000
1250
1500
1750
Time (days)

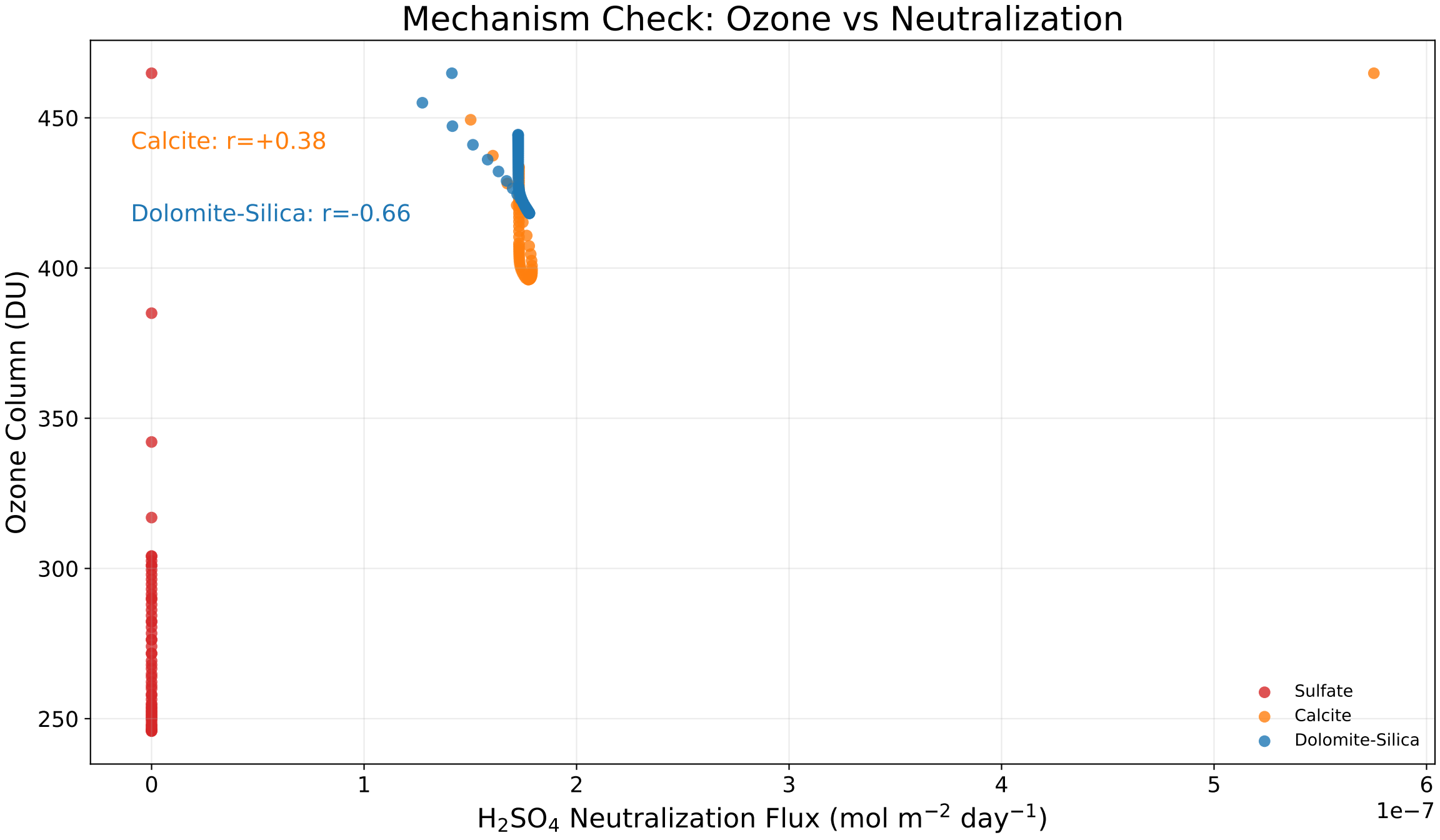

Sulfate
Calcite
Dolomite-Silica
Altitude (km)
40
35
30
25
20
15
10
0
250
500
750
1000
1250
1500
1750
Time (days)
Mass Concentration (kg m^{-3})
10^{-12}
10^{-15}
10^{-18}
10^{-21}
10^{-24}
10^{-27}
10^{-30}

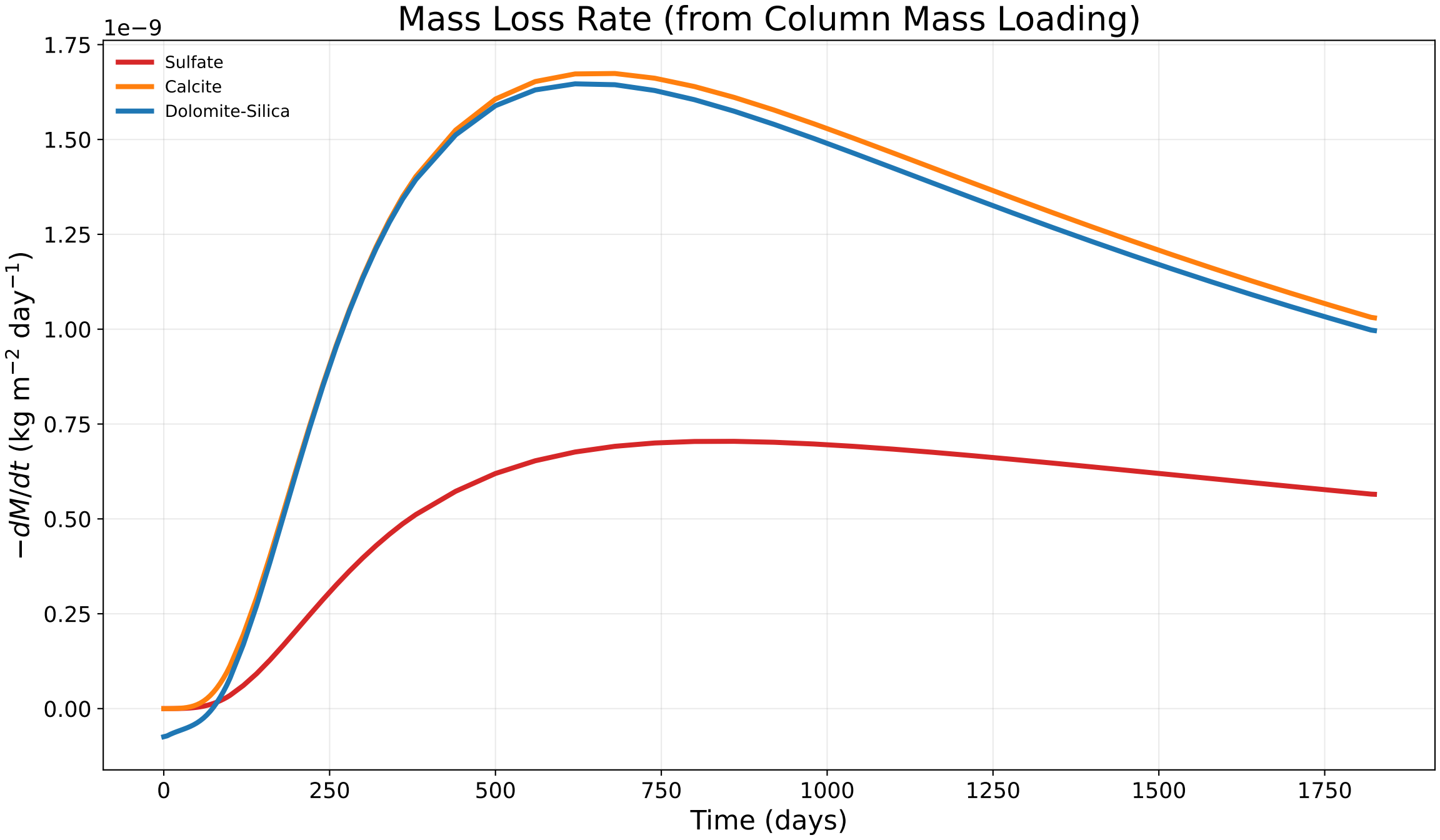

Surface Area Density (SAD) Evolution (Domain Mean)
Sulfate
Calcite
Dolomite-Silica
SAD ($\mu m^2\ cm^{-3}$)
1.0
0.9
0.8
0.7
0.6
0
250
500
750
1000
1250
1500
1750
Time (days)

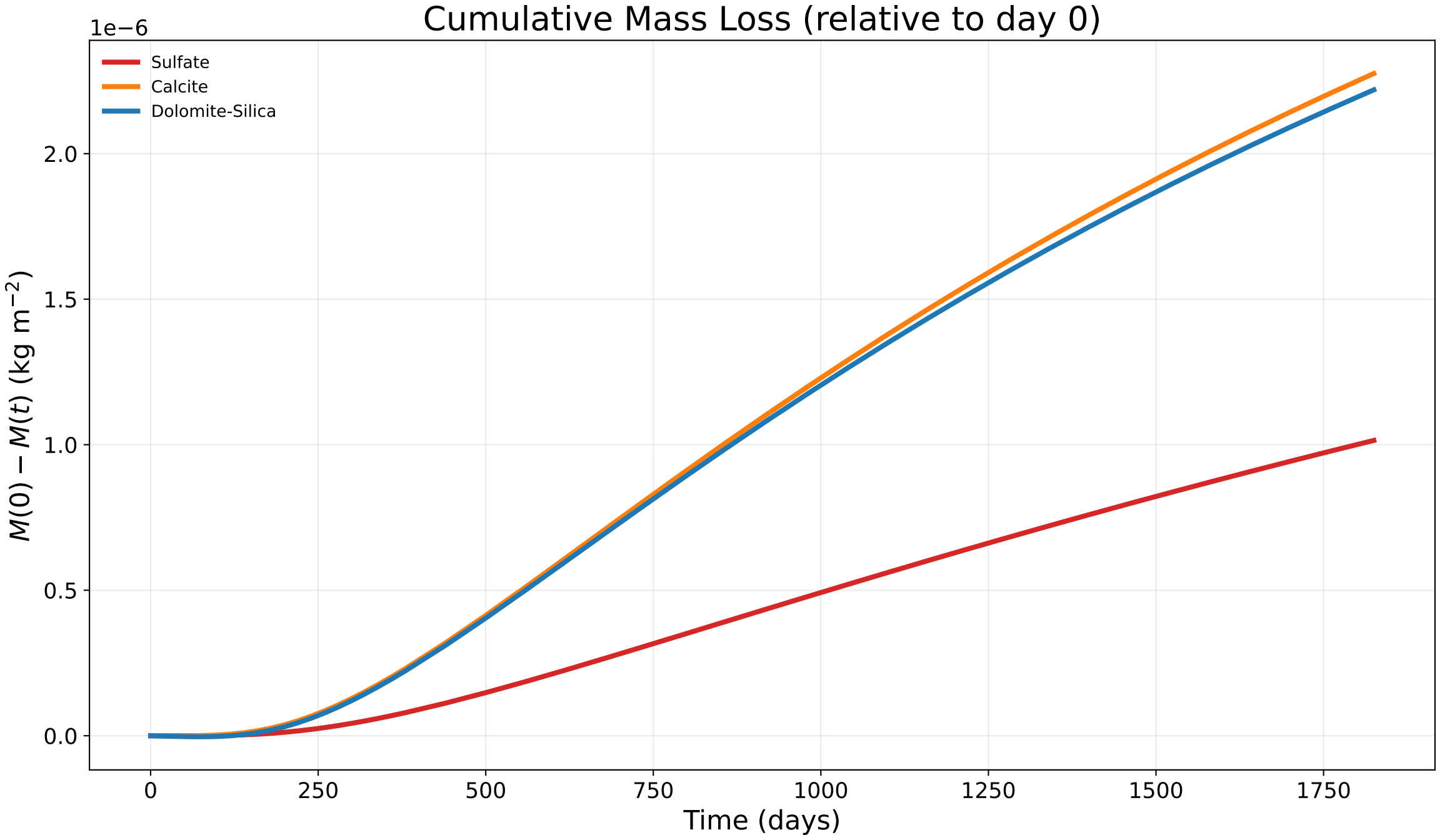

Effective Radius Growth (R_{eff}, Column-Integrated)
Sulfate
Calcite
Dolomite-Silica
0.180
0.178
0.176
0.174
0.172
0.170
0.168
0.166
R_{eff} (μm)
0
250
500
750
1000
1250
1500
1750
Time (days)

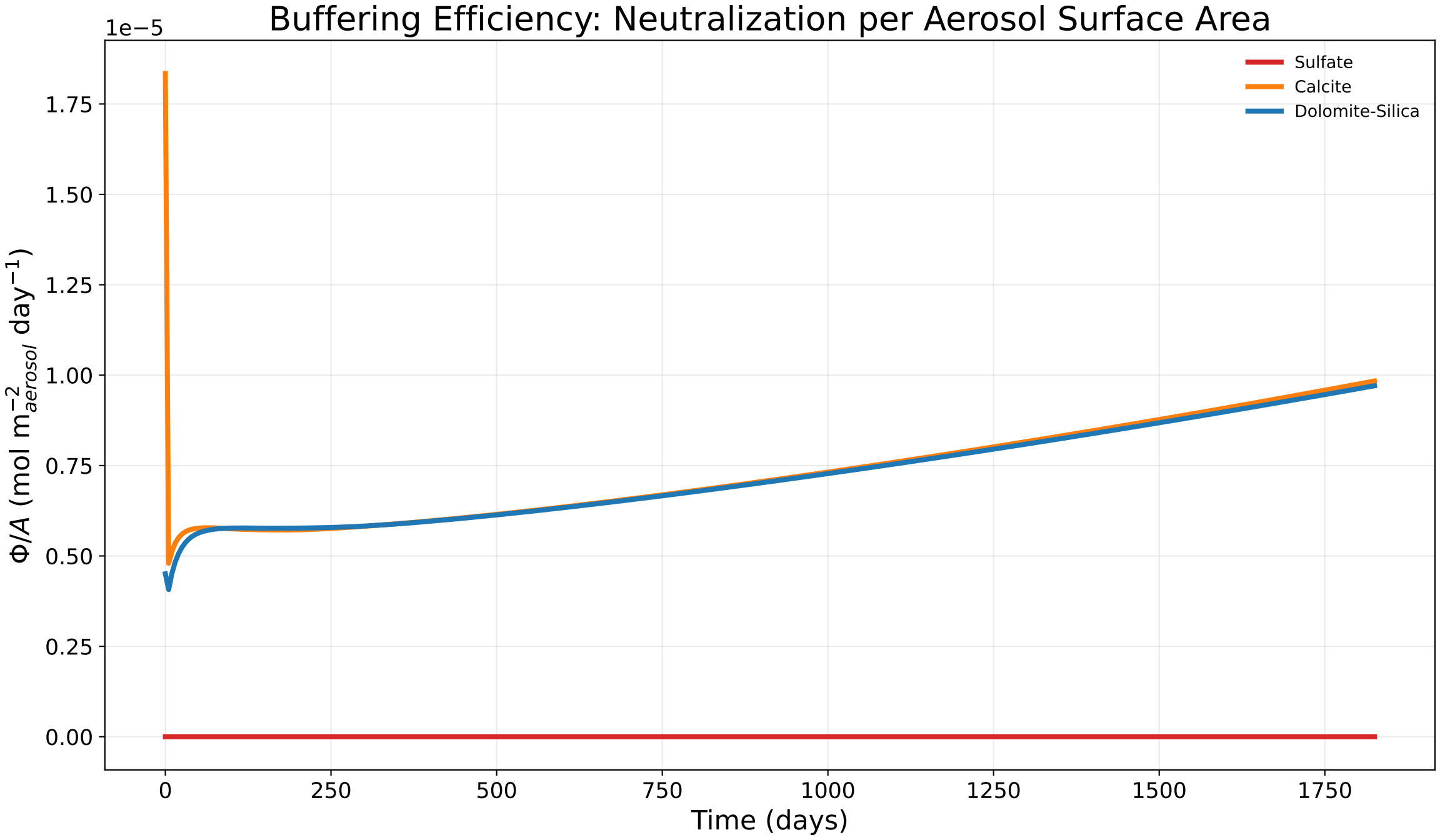

Cooling Efficiency: RF/M (Cooling per kg)
Sulfate
Calcite
Dolomite-Silica
−710000
−720000
−730000
−740000
−750000
−760000
RF/M (W kg^{-1})
0
250
500
750
1000
1250
1500
1750
Time (days)

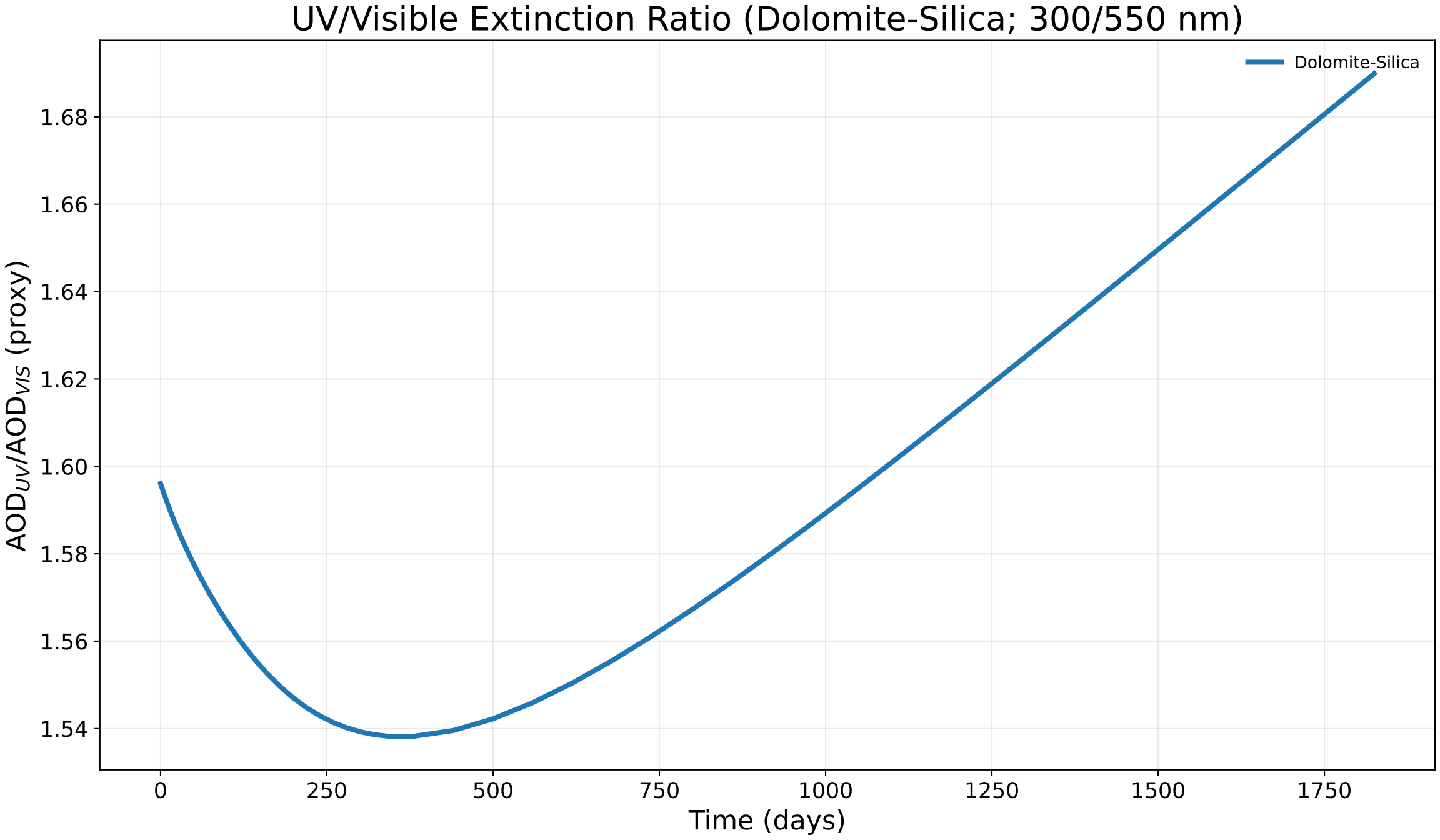

Ozone Column Evolution (Explicit O_3)
Sulfate
Calcite
Dolomite-Silica
Ozone Column (DU)
450
400
350
300
250
0
250
500
750
1000
1250
1500
1750
Time (days)

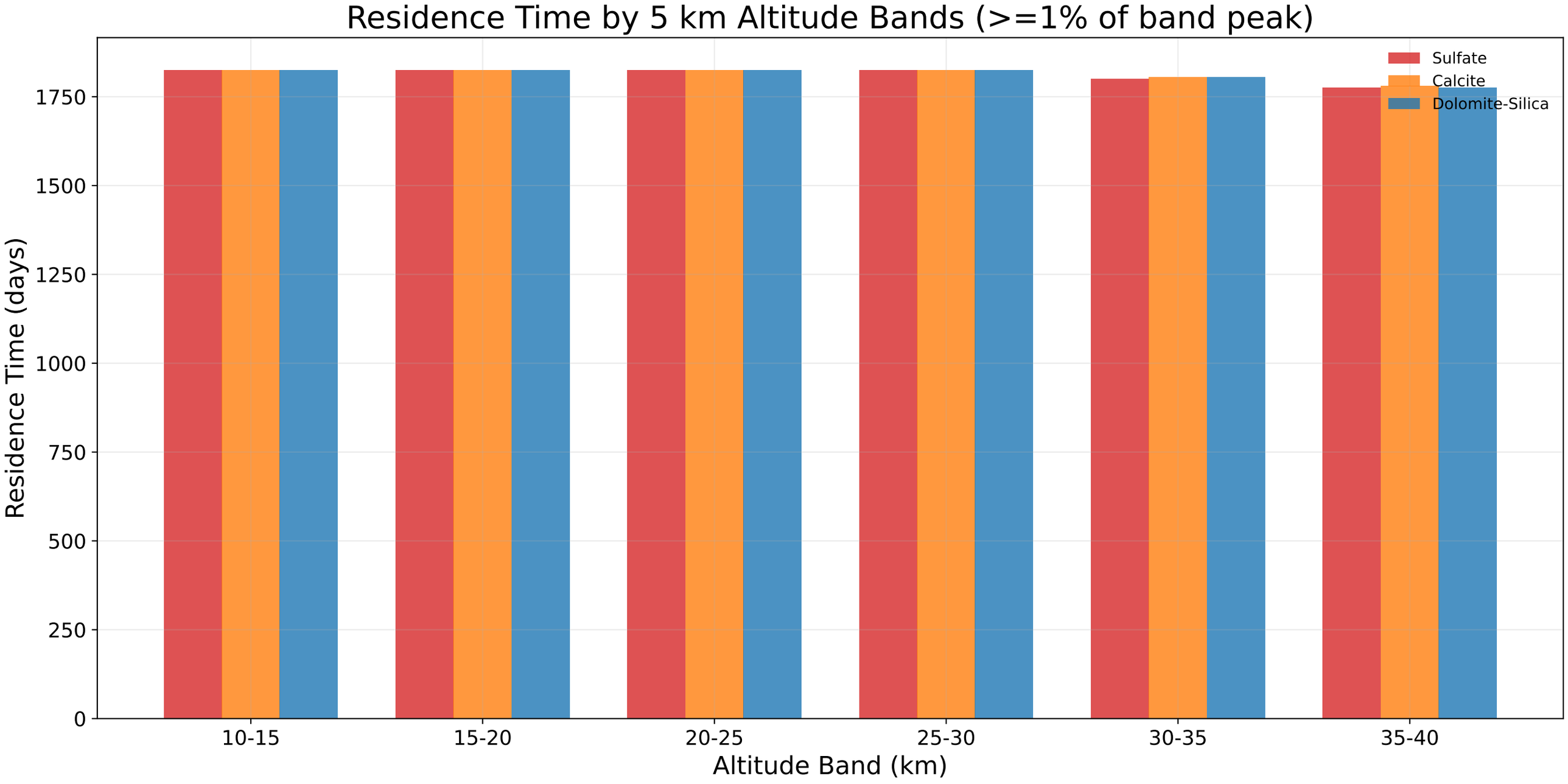

Mechanism Check: Ozone vs Neutralization
Calcite: r=+0.38
Dolomite-Silica: r=-0.66
Ozone Column (DU)
450
400
350
300
250
0
1
2
3
4
5
6
1e−7
H_2SO_4 Neutralization Flux (mol m^{-2} day^{-1})
Sulfate
Calcite
Dolomite-Silica

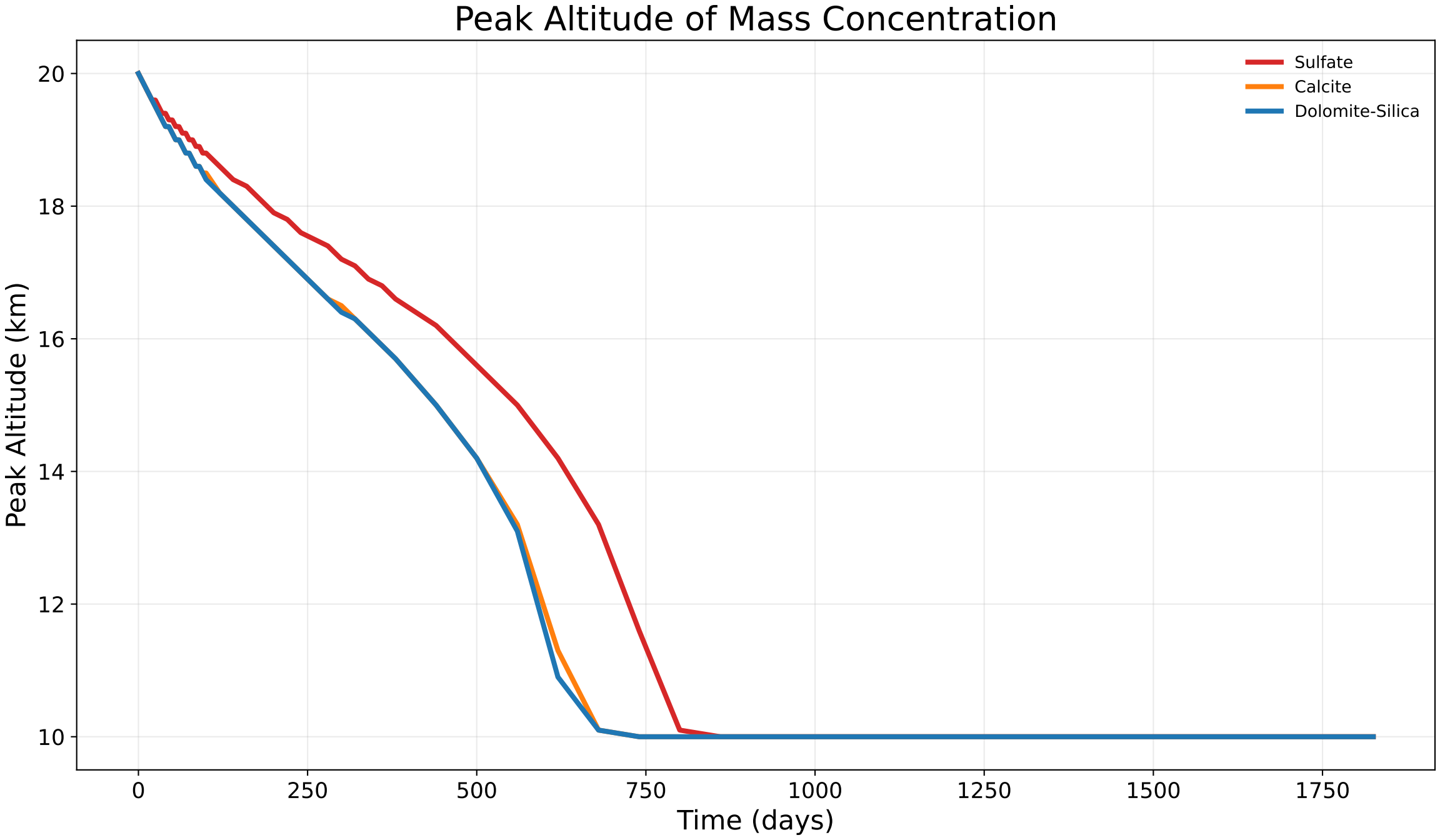

Mass Loss Rate (from Column Mass Loading)
1e−9
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
−dM/dt (kg m−2 day−1)
Sulfate
Calcite
Dolomite-Silica
0
250
500
750
1000
1250
1500
1750
Time (days)

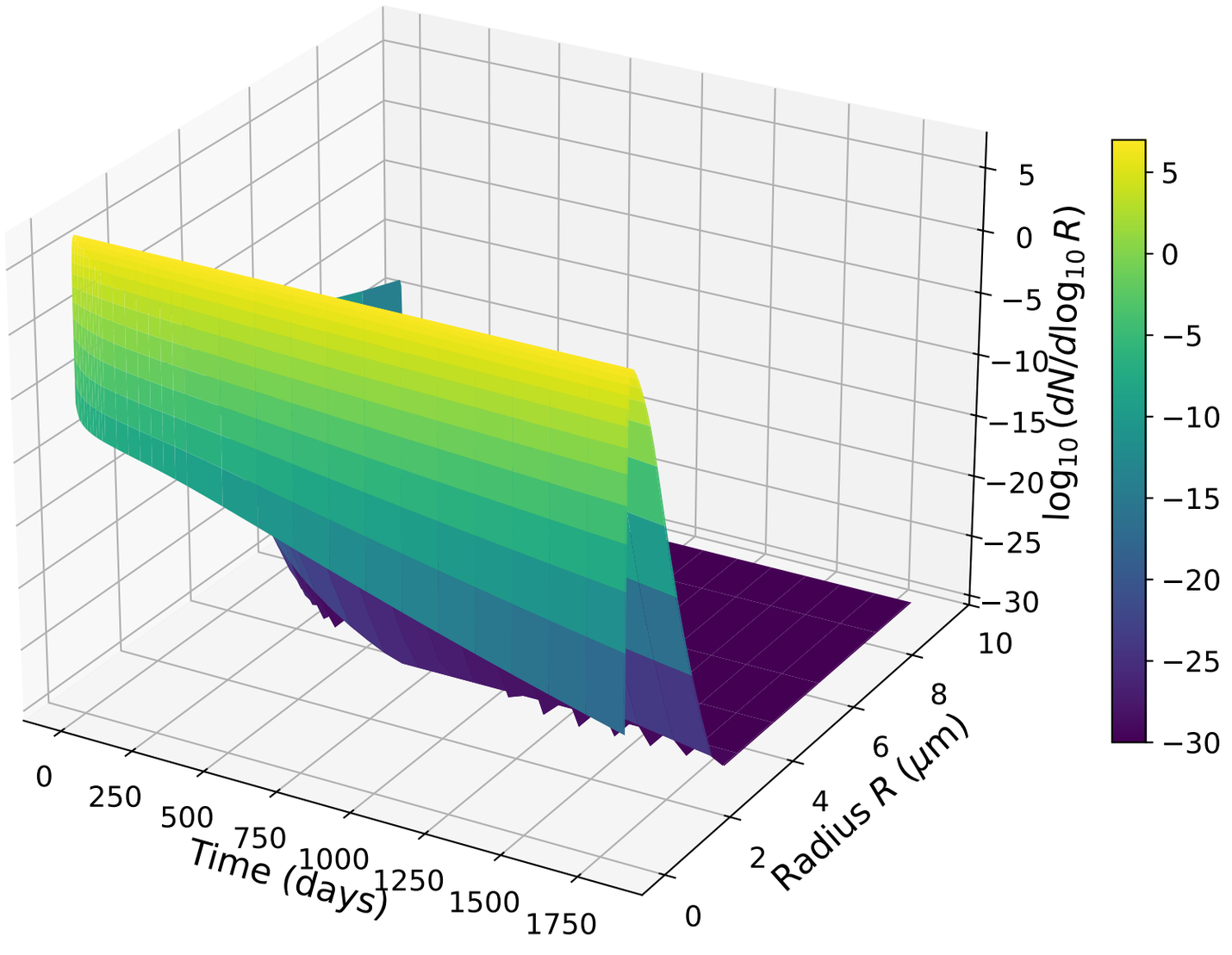

Cumulative Mass Loss (relative to day 0)
1e−6
Sulfate
Calcite
Dolomite-Silica
2.0
1.5
1.0
0.5
0.0
$M(0) - M(t)$ (kg m^{-2})
0
250
500
750
1000
1250
1500
1750
Time (days)

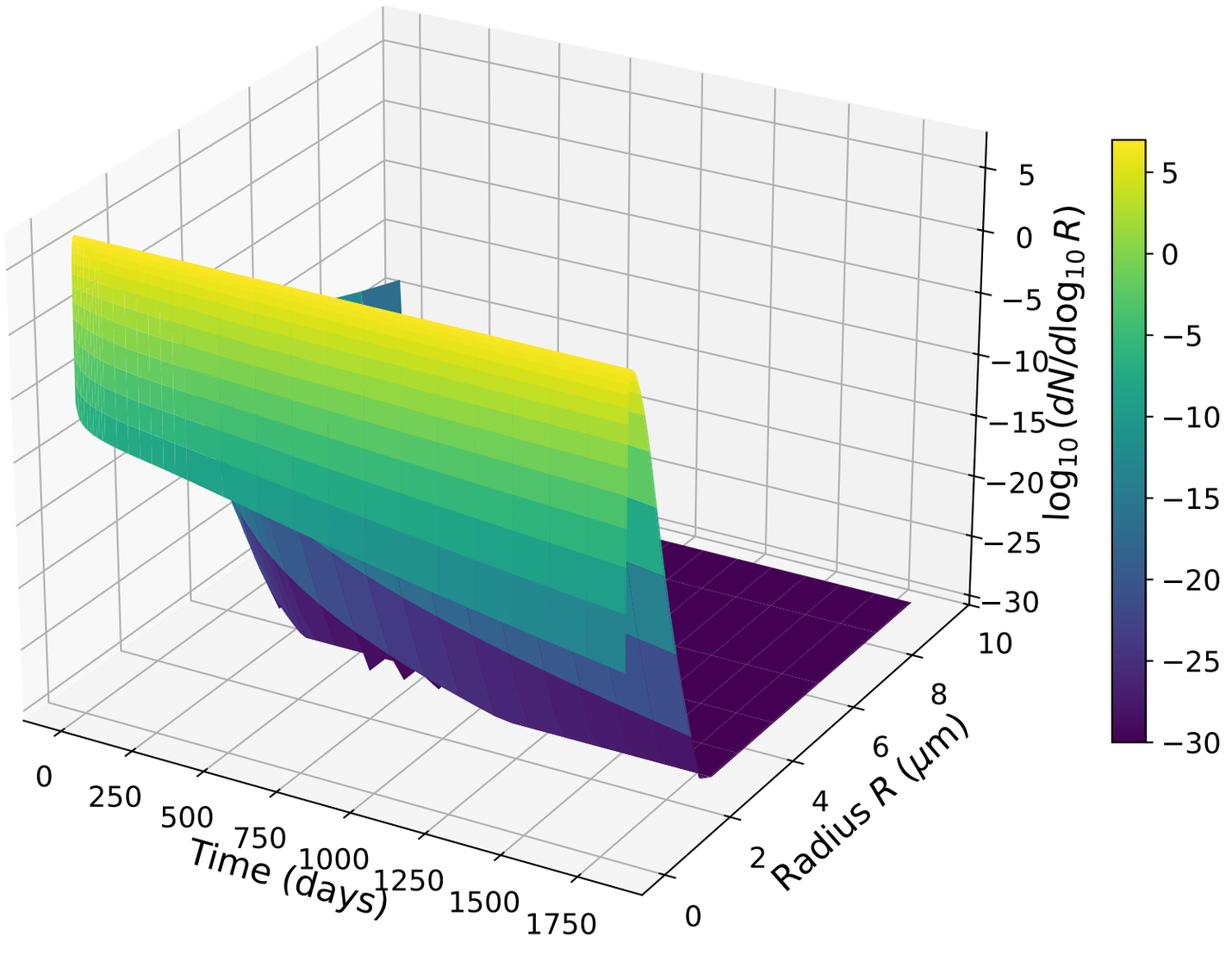

Buffering Efficiency: Neutralization per Aerosol Surface Area
1e−5
Sulfate
Calcite
Dolomite-Silica
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Φ/A (mol m$^{-2}_{aerosol}$ day^{-1})
0
250
500
750
1000
1250
1500
1750
Time (days)

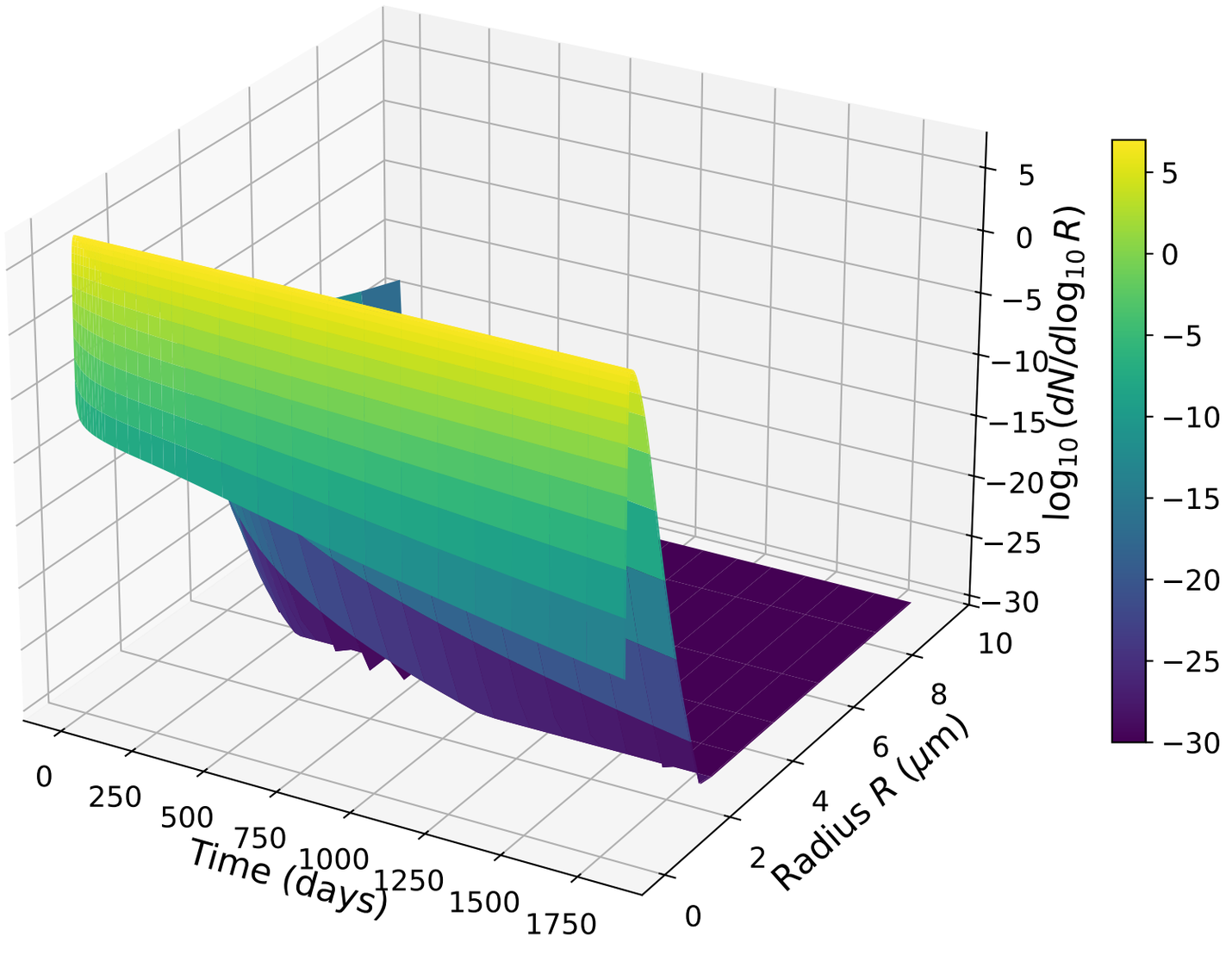

UV/Visible Extinction Ratio (Dolomite-Silica; 300/550 nm)
Dolomite-Silica
1.68
1.66
1.64
1.62
1.60
1.58
1.56
1.54
AOD$_{UV}$/AOD$_{VIS}$ (proxy)
0
250
500
750
1000
1250
1500
1750
Time (days)

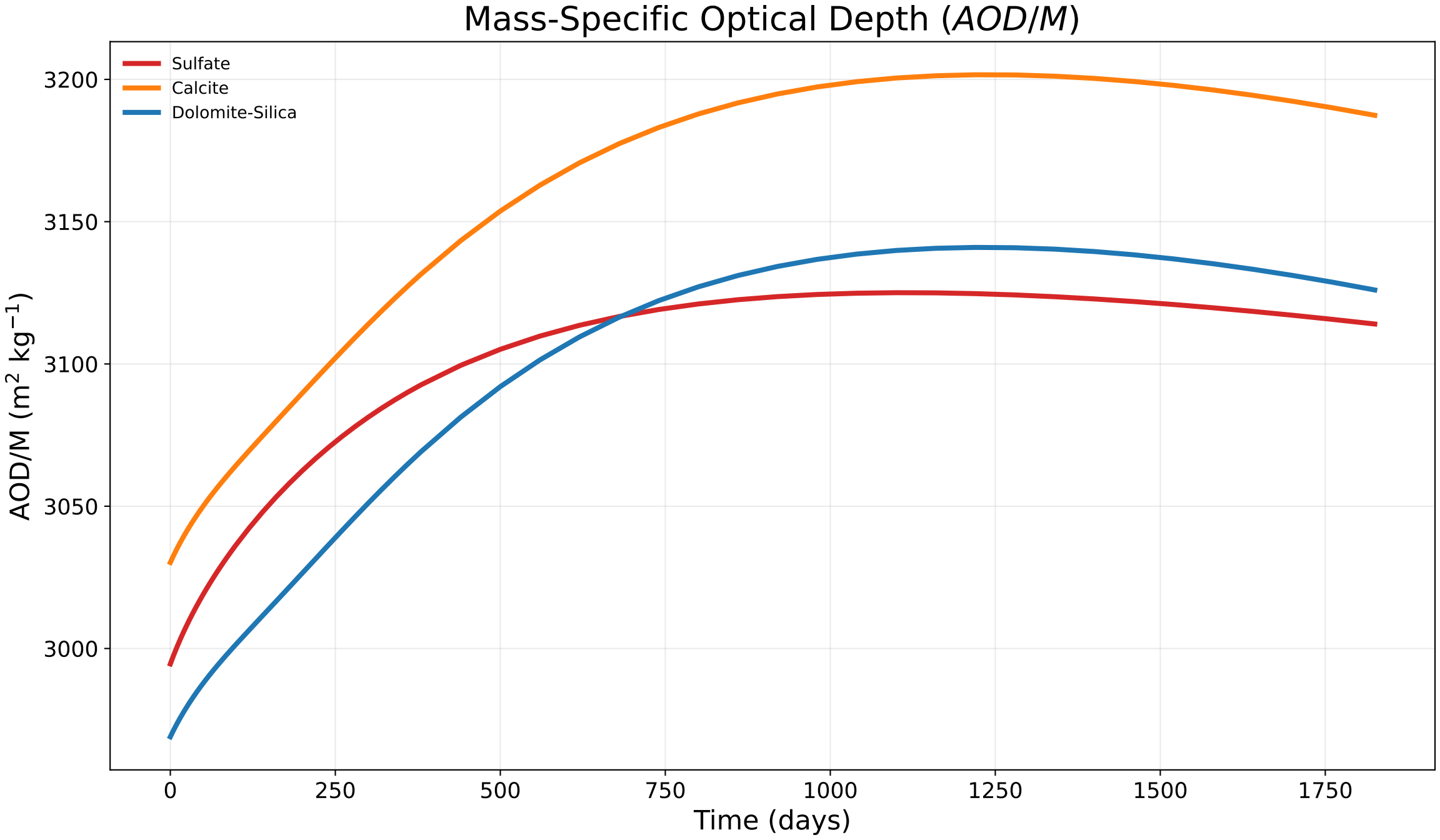

Residence Time by 5 km Altitude Bands (>=1% of band peak)
Sulfate
Calcite
Dolomite-Silica
Residence Time (days)
0
250
500
750
1000
1250
1500
1750
10-15
15-20
20-25
25-30
30-35
35-40
Altitude Band (km)

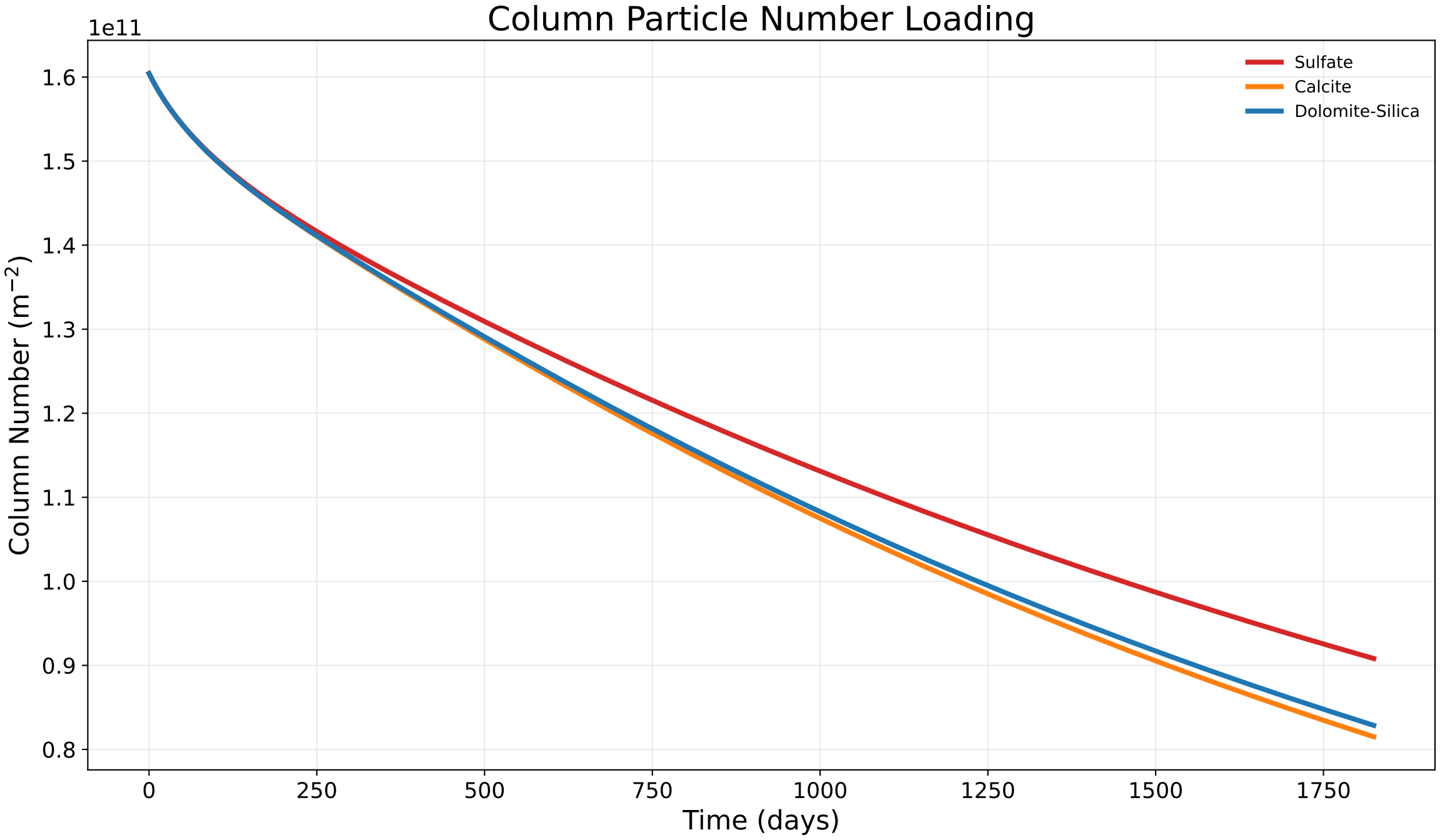

Peak Altitude of Mass Concentration
Sulfate
Calcite
Dolomite-Silica
Peak Altitude (km)
20
18
16
14
12
10
0
250
500
750
1000
1250
1500
1750
Time (days)

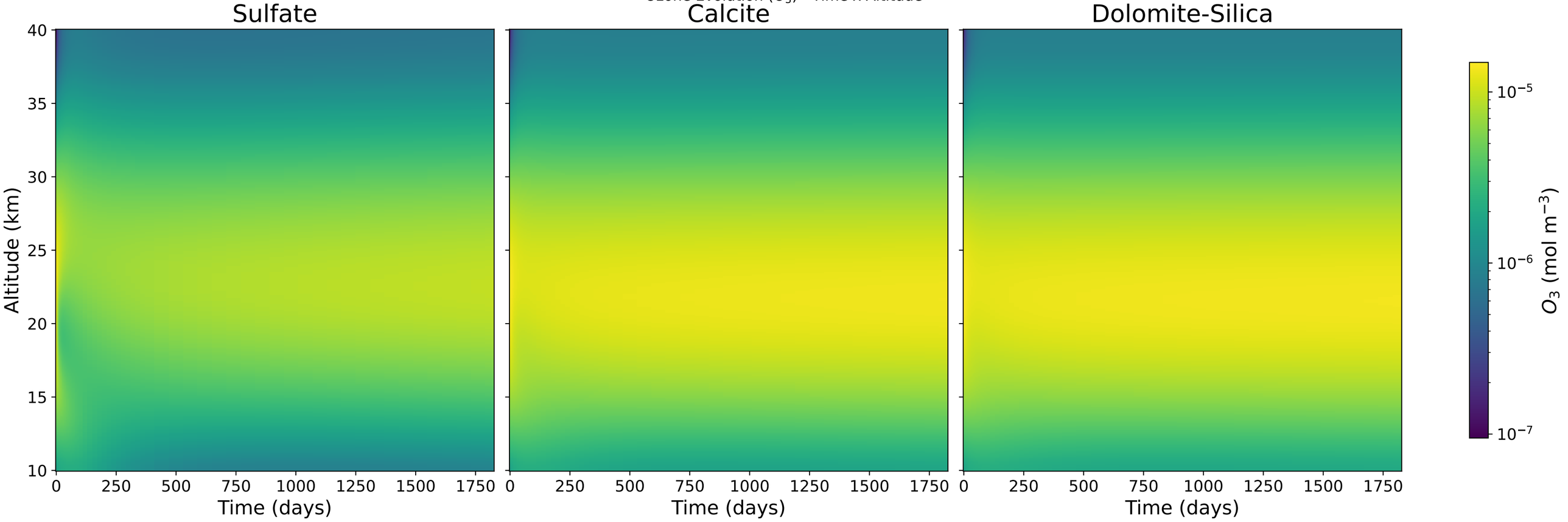

3D Size Distribution Surface: Sulfate
Time (days)
0
250
500
750
1000
1250
1500
1750
Radius R (μm)
0
2
4
6
8
10
log10(dN/dlog10R)
5
0
−5
−10
−15
−20
−25
−30

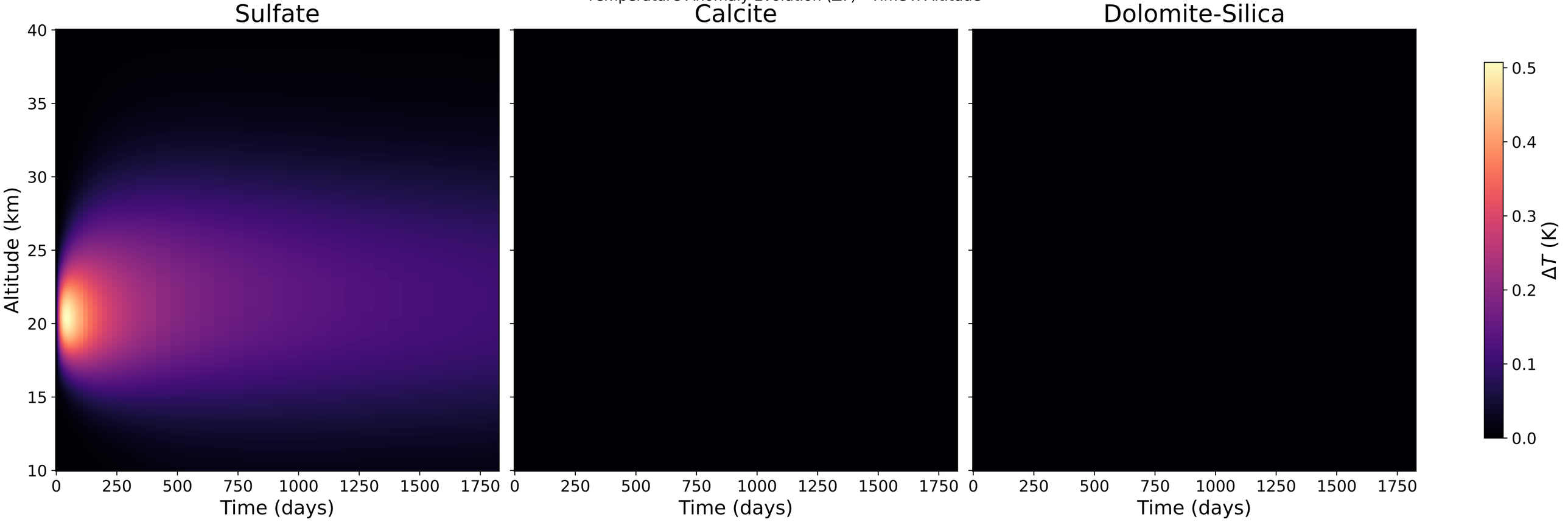

3D Size Distribution Surface: Calcite
Time (days)
0
250
500
750
1000
1250
1500
1750
Radius R (μm)
0
2
4
6
8
10
log10(dN/dlog10R)
5
0
−5
−10
−15
−20
−25
−30

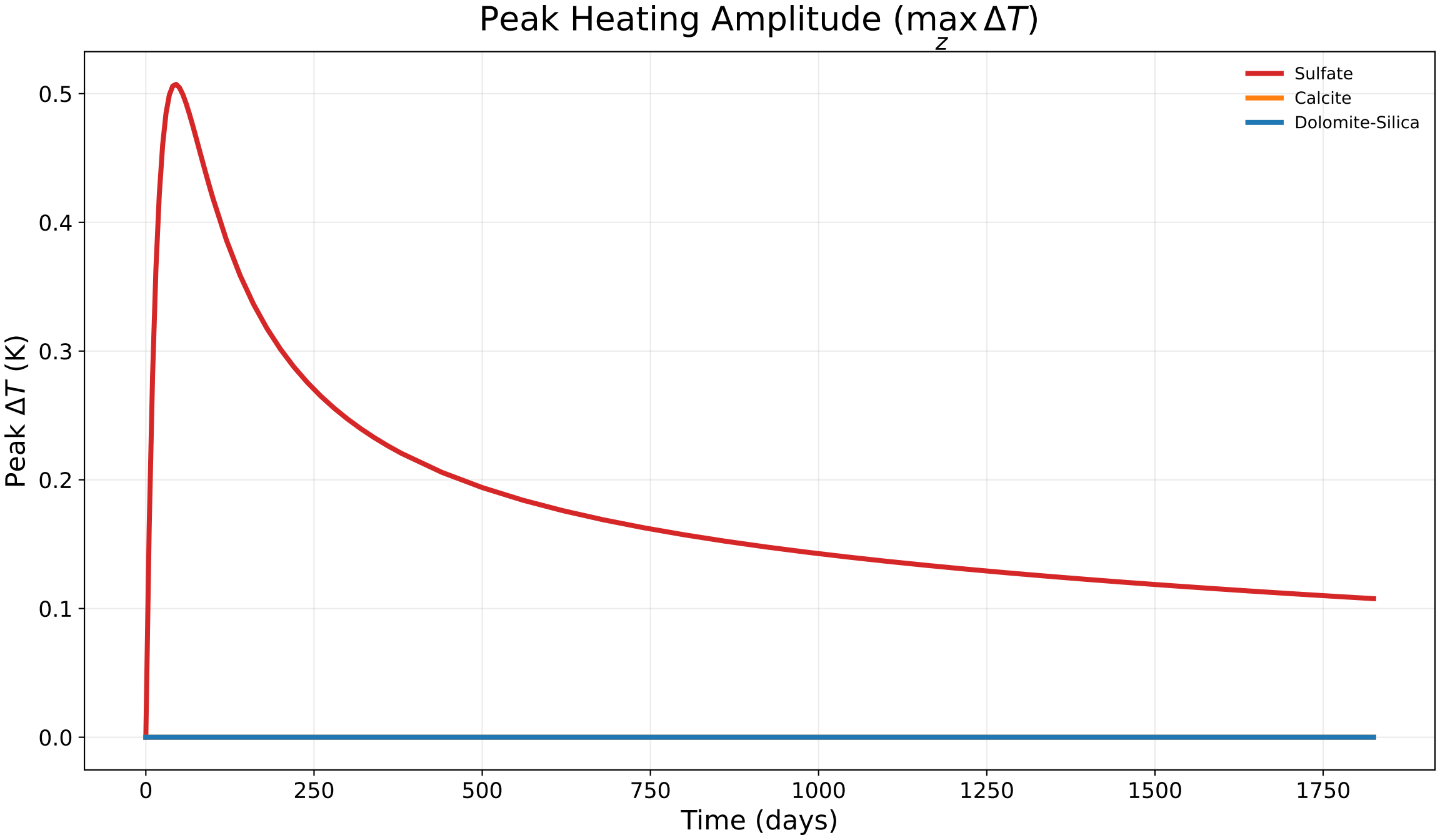

3D Size Distribution Surface: Dolomite-Silica
Time (days)
0
250
500
750
1000
1250
1500
1750
Radius R (μm)
0
2
4
6
8
10
log10(dN/dlog10R)
5
0
−5
−10
−15
−20
−25
−30

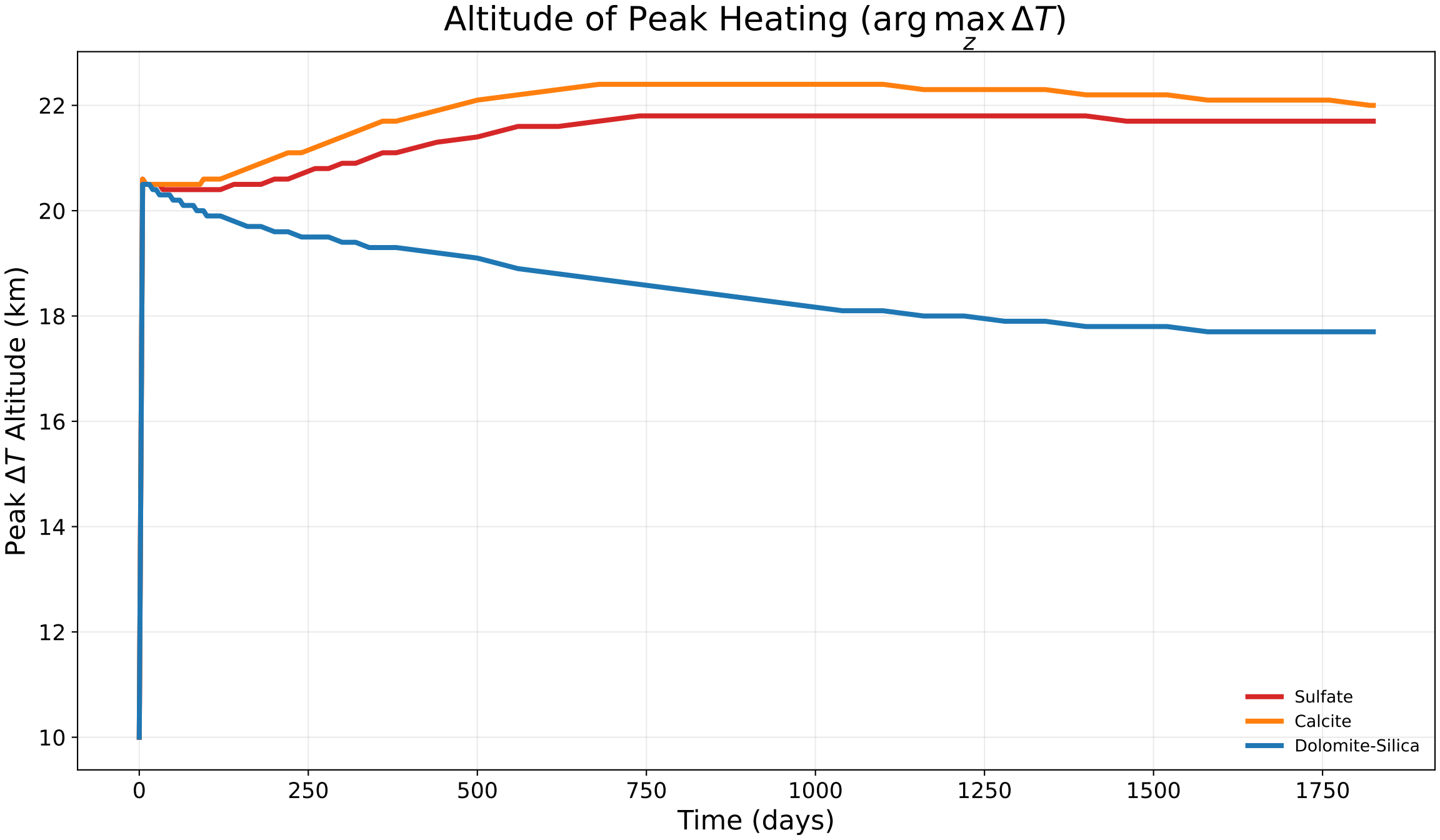

Mass-Specific Optical Depth (AOD/M)
Sulfate
Calcite
Dolomite-Silica
3200
3150
3100
3050
3000
AOD/M (m² kg⁻¹)
0
250
500
750
1000
1250
1500
1750
Time (days)

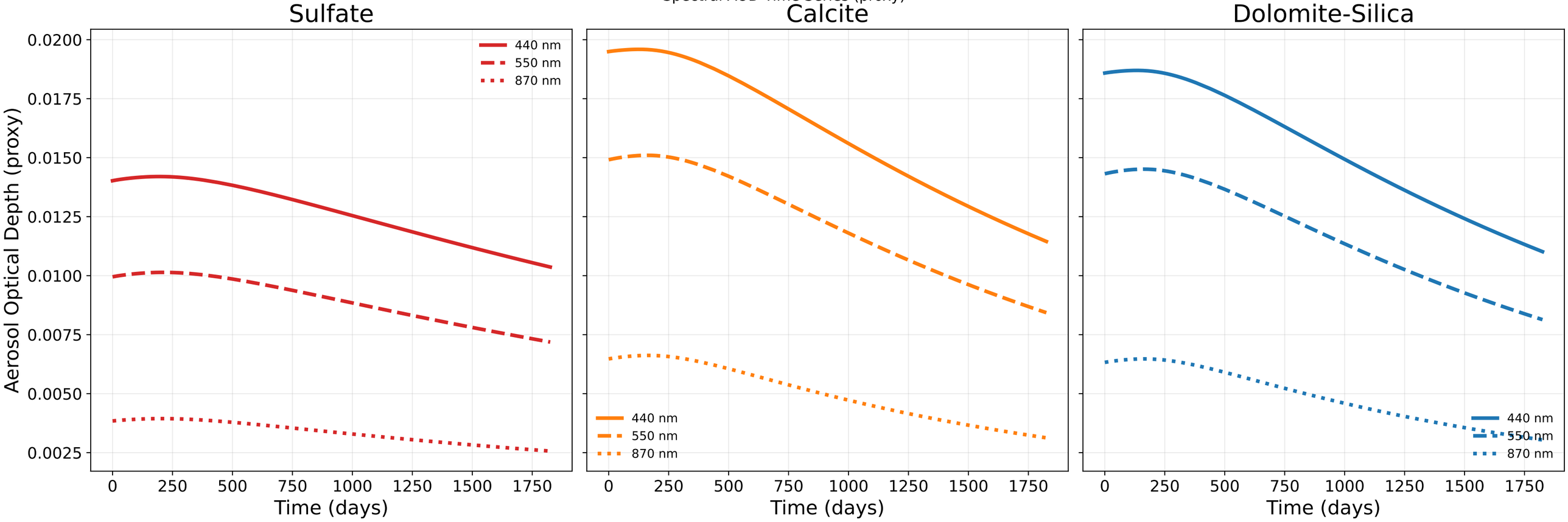

Column Particle Number Loading
1e11
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
Column Number (m^{-2})
0
250
500
750
1000
1250
1500
1750
Time (days)
Sulfate
Calcite
Dolomite-Silica

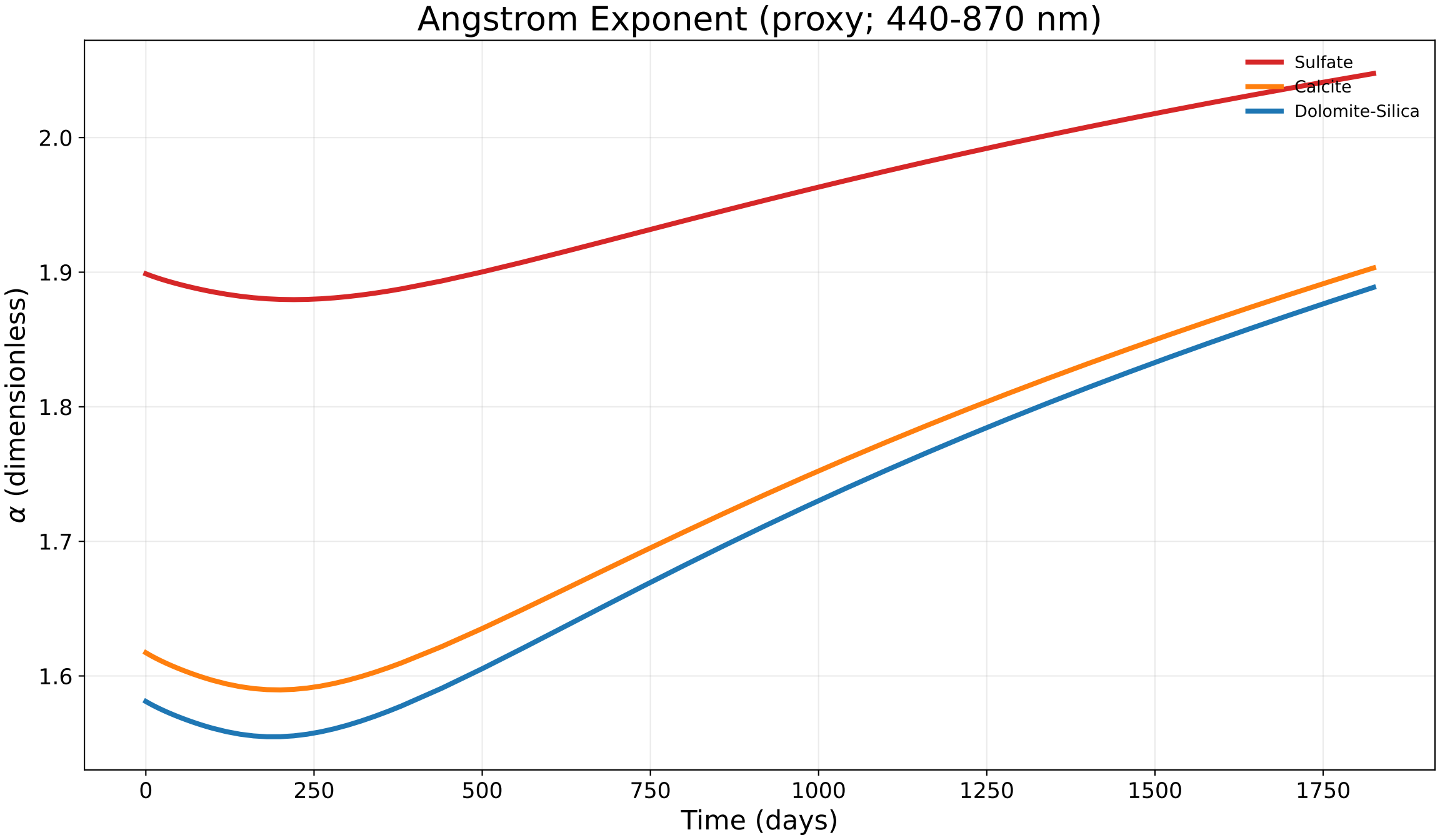

Sulfate
Calcite
Dolomite-Silica
Altitude (km)
40
35
30
25
20
15
10
0
250
500
750
1000
1250
1500
1750
Time (days)
10^{-5}
10^{-6}
10^{-7}
O_3 (mol m^{-3})

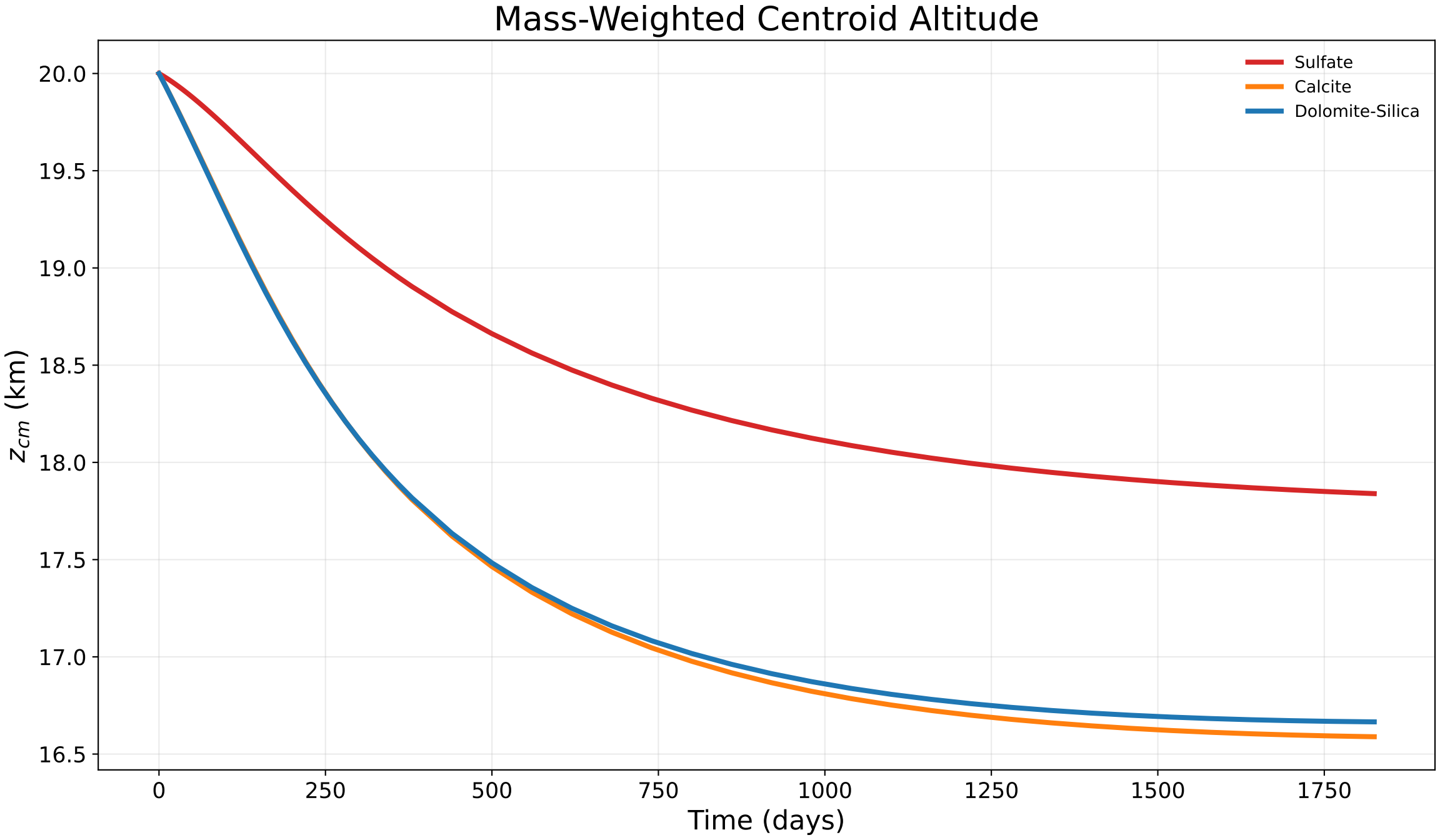

Temperature Anomaly Evolution (ΔT) – Time x Altitude
Sulfate
Calcite
Dolomite-Silica
Altitude (km)
40
35
30
25
20
15
10
0
250
500
750
1000
1250
1500
1750
Time (days)
ΔT (K)
0.5
0.4
0.3
0.2
0.1
0.0

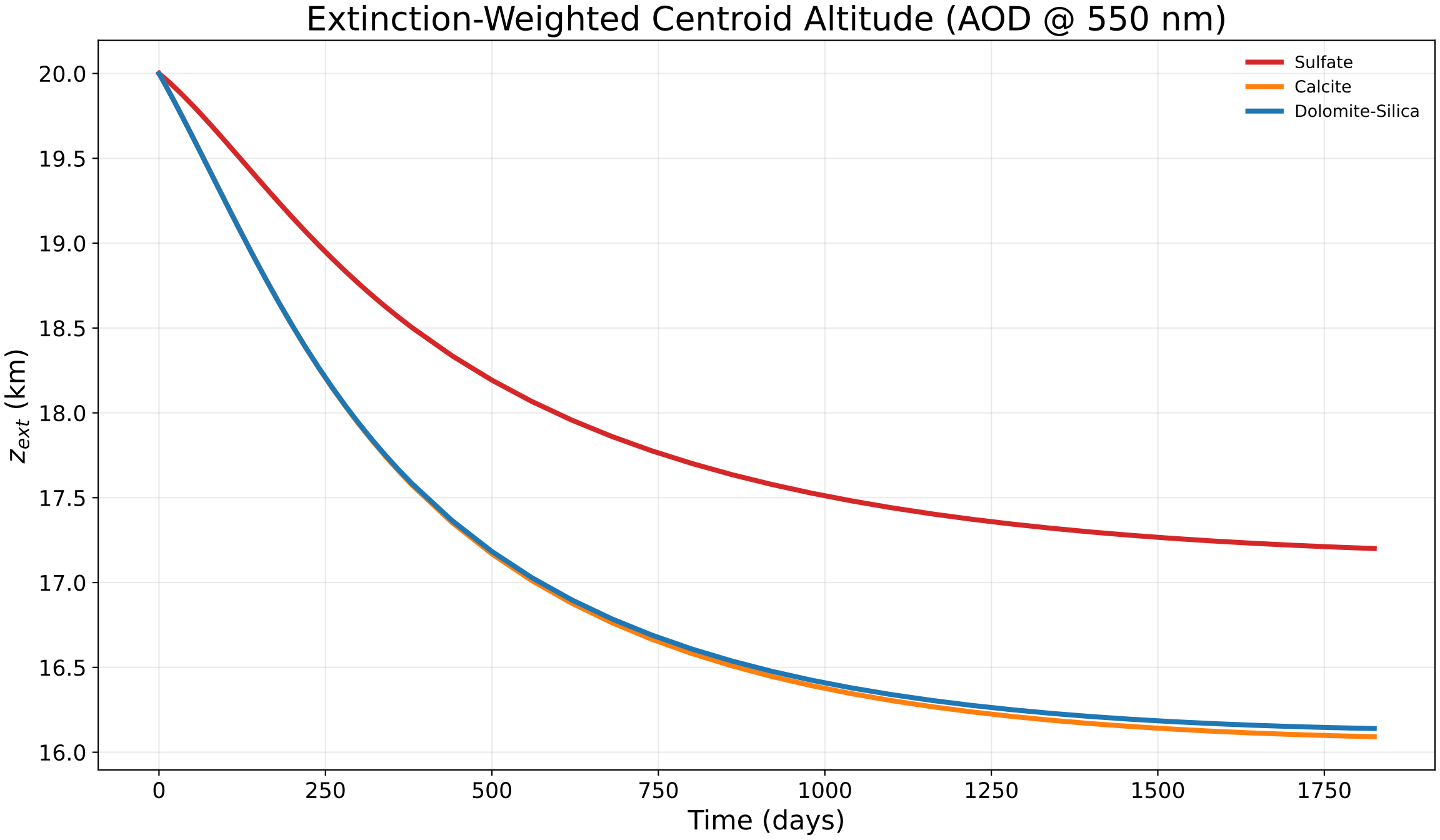

Peak Heating Amplitude ($\max_z \Delta T$)
Sulfate
Calcite
Dolomite-Silica
Peak ΔT (K)
0.0
0.1
0.2
0.3
0.4
0.5
0
250
500
750
1000
1250
1500
1750
Time (days)

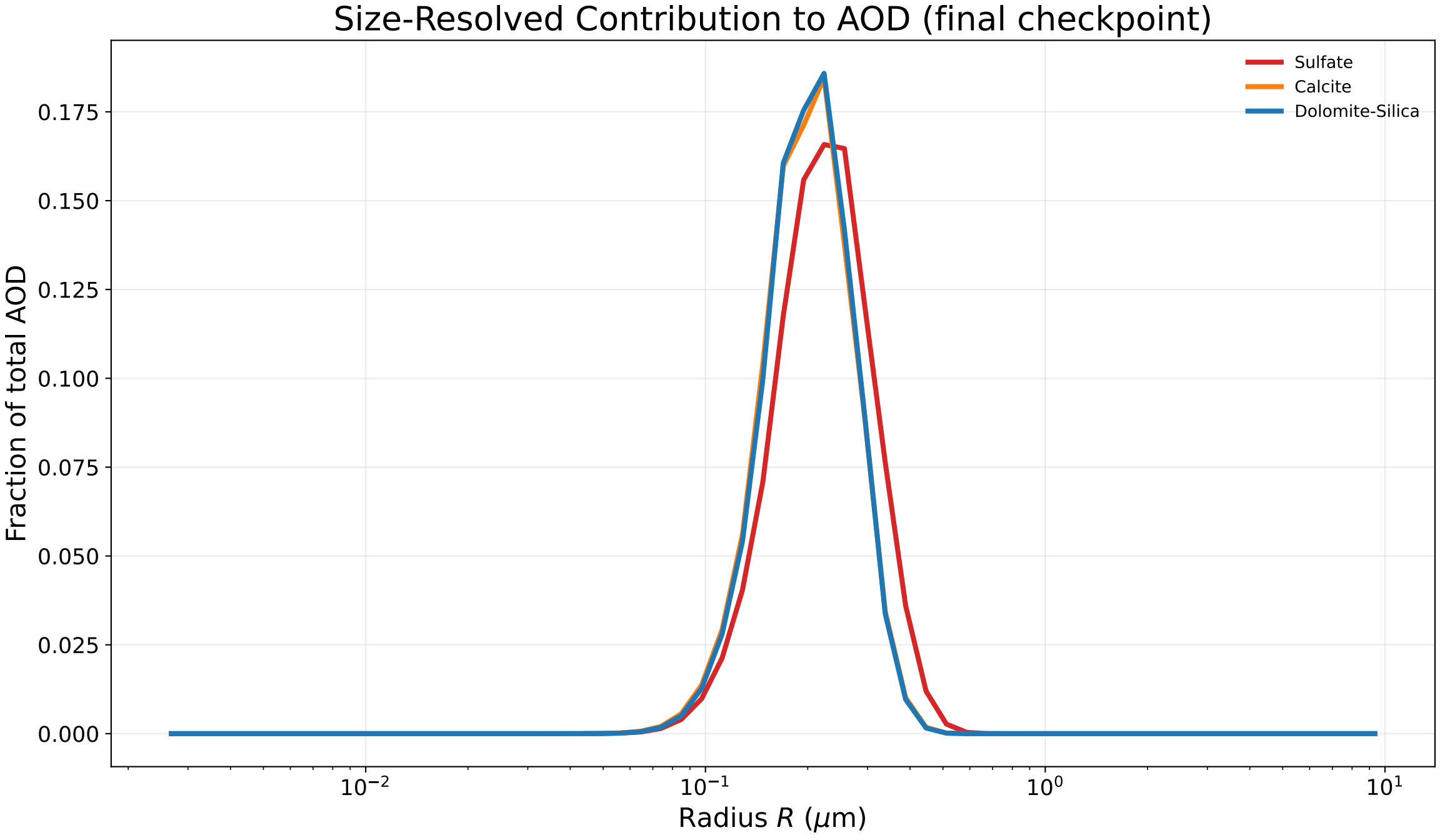

Altitude of Peak Heating ($\arg\max_z \Delta T$)
Peak ΔT Altitude (km)
22
20
18
16
14
12
10
0
250
500
750
1000
1250
1500
1750
Time (days)
Sulfate
Calcite
Dolomite-Silica


Spectral AOD Time Series (proxy)
Sulfate
Calcite
Dolomite-Silica
Aerosol Optical Depth (proxy)
0.0200
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
440 nm
550 nm
870 nm
0
250
500
750
1000
1250
1500
1750
Time (days)


Angstrom Exponent (proxy; 440-870 nm)
Sulfate
Calcite
Dolomite-Silica
2.0
1.9
1.8
1.7
1.6
α (dimensionless)
0
250
500
750
1000
1250
1500
1750
Time (days)


Mass-Weighted Centroid Altitude
Sulfate
Calcite
Dolomite-Silica
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
z_{cm} (km)
0
250
500
750
1000
1250
1500
1750
Time (days)


Extinction-Weighted Centroid Altitude (AOD @ 550 nm)
Sulfate
Calcite
Dolomite-Silica
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
16.0
z_{ext} (km)
0
250
500
750
1000
1250
1500
1750
Time (days)


Size-Resolved Contribution to AOD (final checkpoint)
Sulfate
Calcite
Dolomite-Silica
Fraction of total AOD
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
10^{-2}
10^{-1}
10^{0}
10^{1}
Radius R (μm)