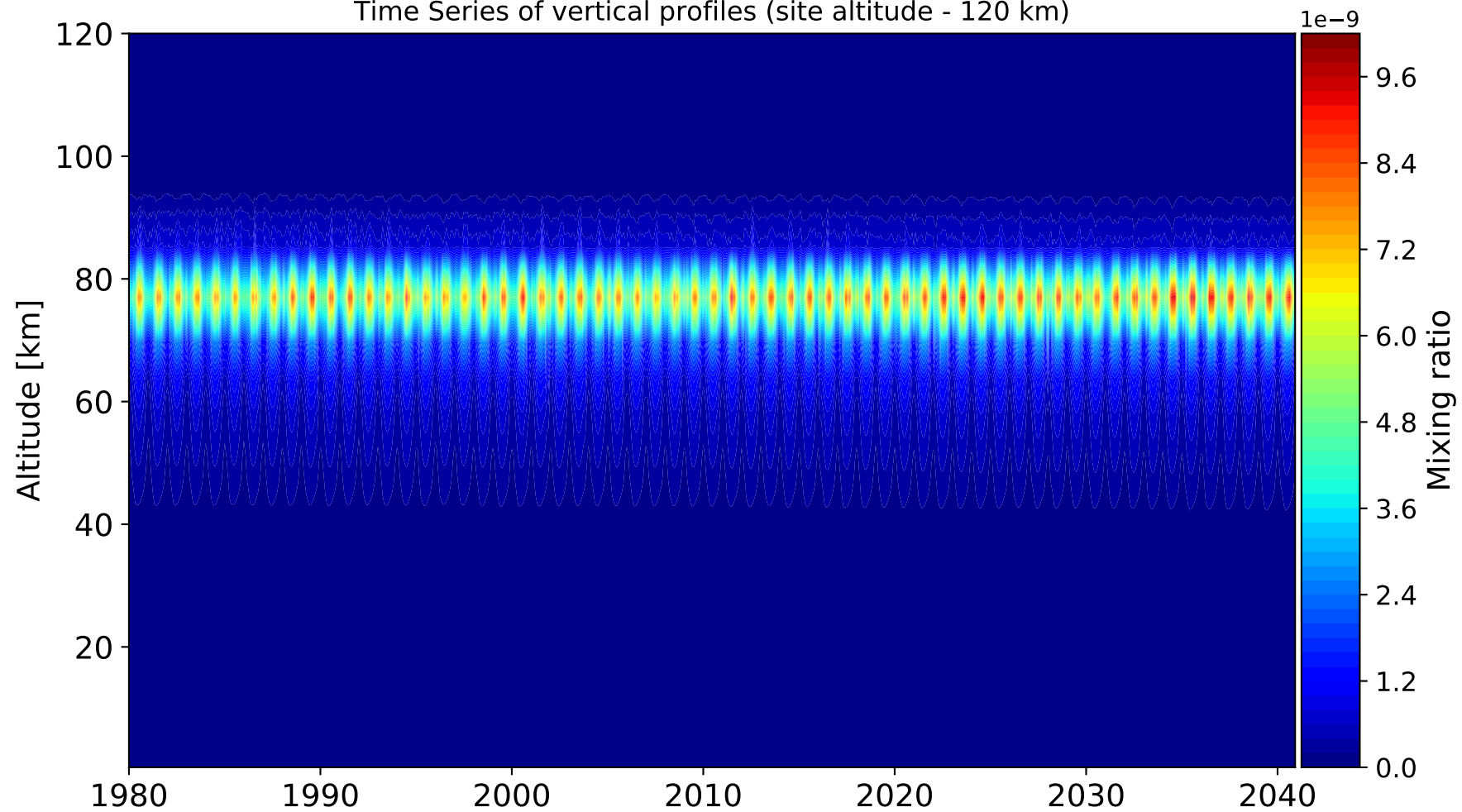
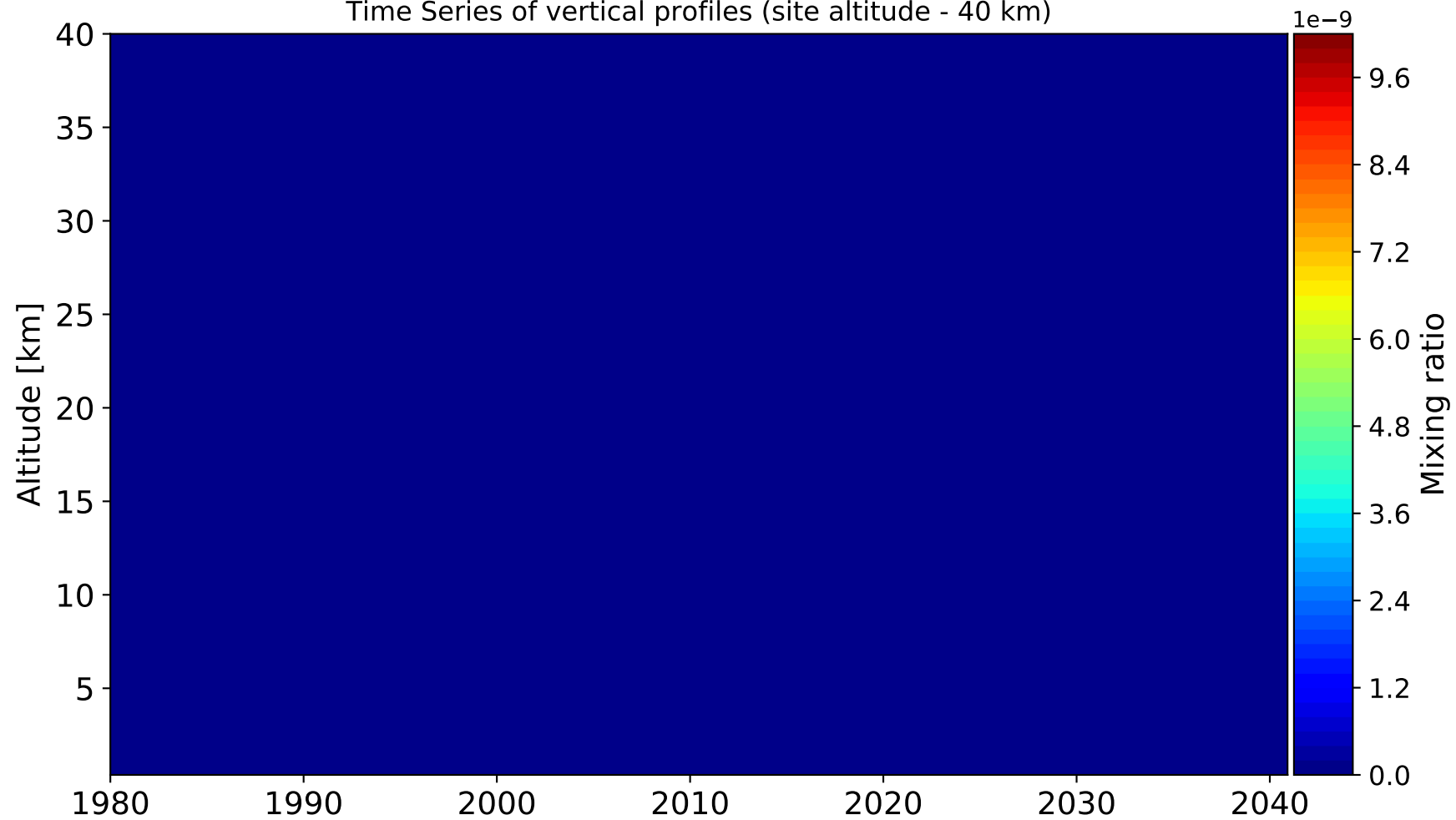


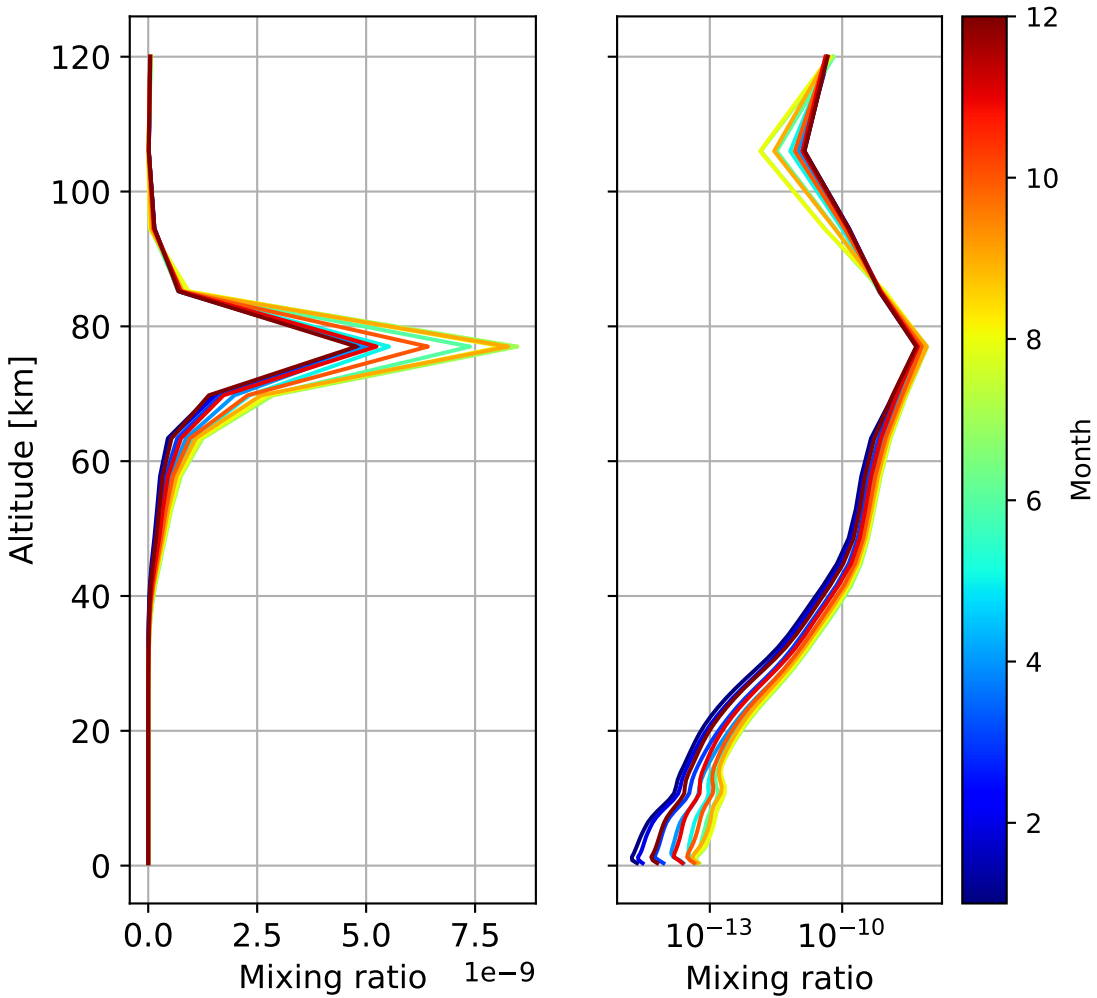
Time Series of vertical profiles (site altitude - 120 km)



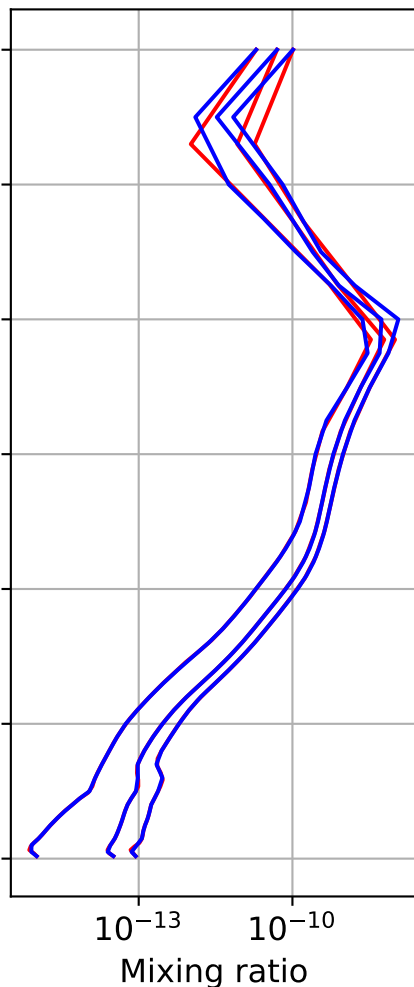
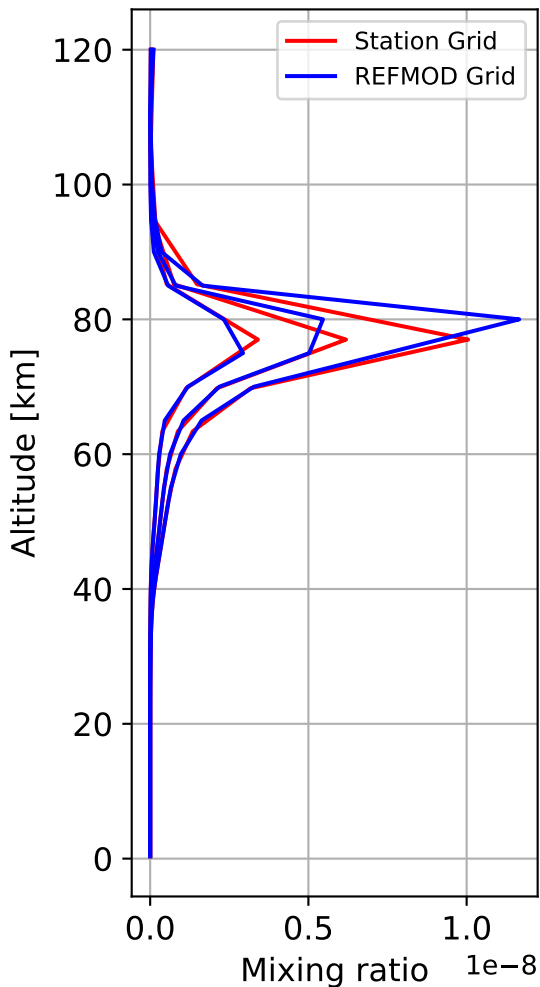
Time Series of vertical profiles (site altitude - 40 km)



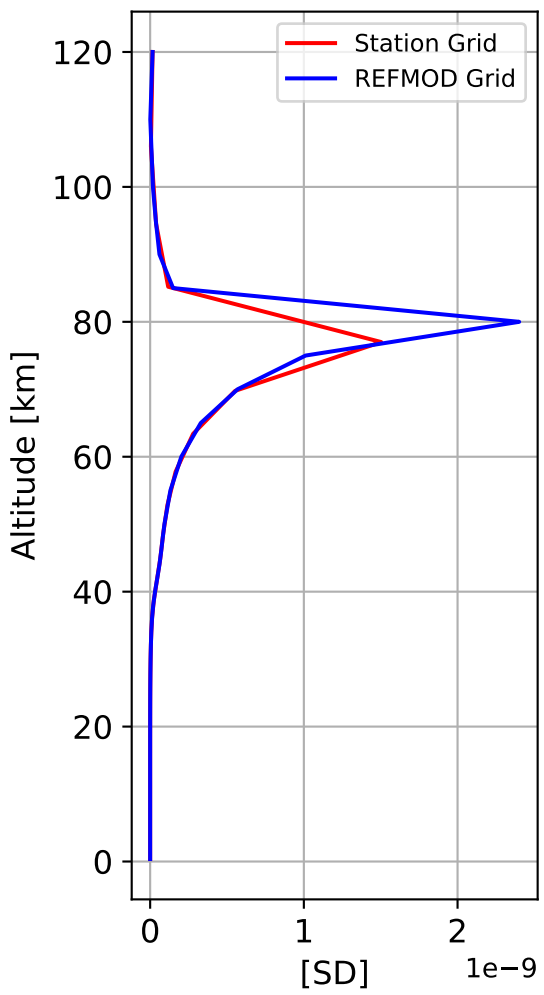
Monthly mean WACCM profile (interpolated to station grid)  
Fort\_McMurray, 56.65N, 248.78E, 0.369kmasl



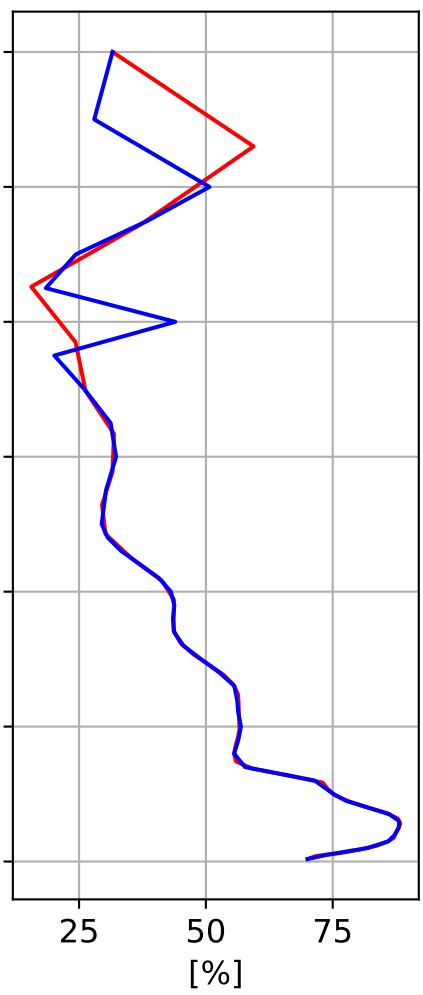
Min, Max, Mean of 732 profiles  
Fort\_McMurray, 56.65N, 248.78E, 0.369kmasl



### Std. Deviation



### Percent Deviation



# Level covariance matrix

1e-18

Altitude [km]

120  
100  
80  
60  
40  
20

20 40 60 80 100 120

Altitude [km]

2.25  
2.00  
1.75  
1.50  
1.25  
1.00  
0.75  
0.50  
0.25  
0.00

Mixing ratio[ $\sim 2$ ]

