1 *Supplementary*

2 **Insights on Atmospheric Oxidation Processes by Performing Factor Analyses on**
3 **Sub-ranges of Mass Spectra**

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Figures

Figure S1 Mathematical parameters for PMF results of Ranges 1, 2, 3 and Range Combined. Left panels (a-d) shows Q/Qexp values as a function of the number of factors, and right panels (e-h) show mean scaled residuals. From top to bottom, the results for Range 1 (a, e), Range 2 (b, f), Range 3 (c, g) and Range Combined (d, h) are shown.

Figure S2 The contamination factor resolved from 6-factor result in Range 2, with the main masses 324 Th and 339 Th showing apparent negative mass defect

Figure S3 time series of three contamination compounds in 1-min time resolution

Figure S4 time series correlation between three contamination compounds, in 1-min time resolution (upper panels: a, b), and1-h time resolution (lower panels: c, d), with zero data (left: a, c) and without zero data (right: b, d).

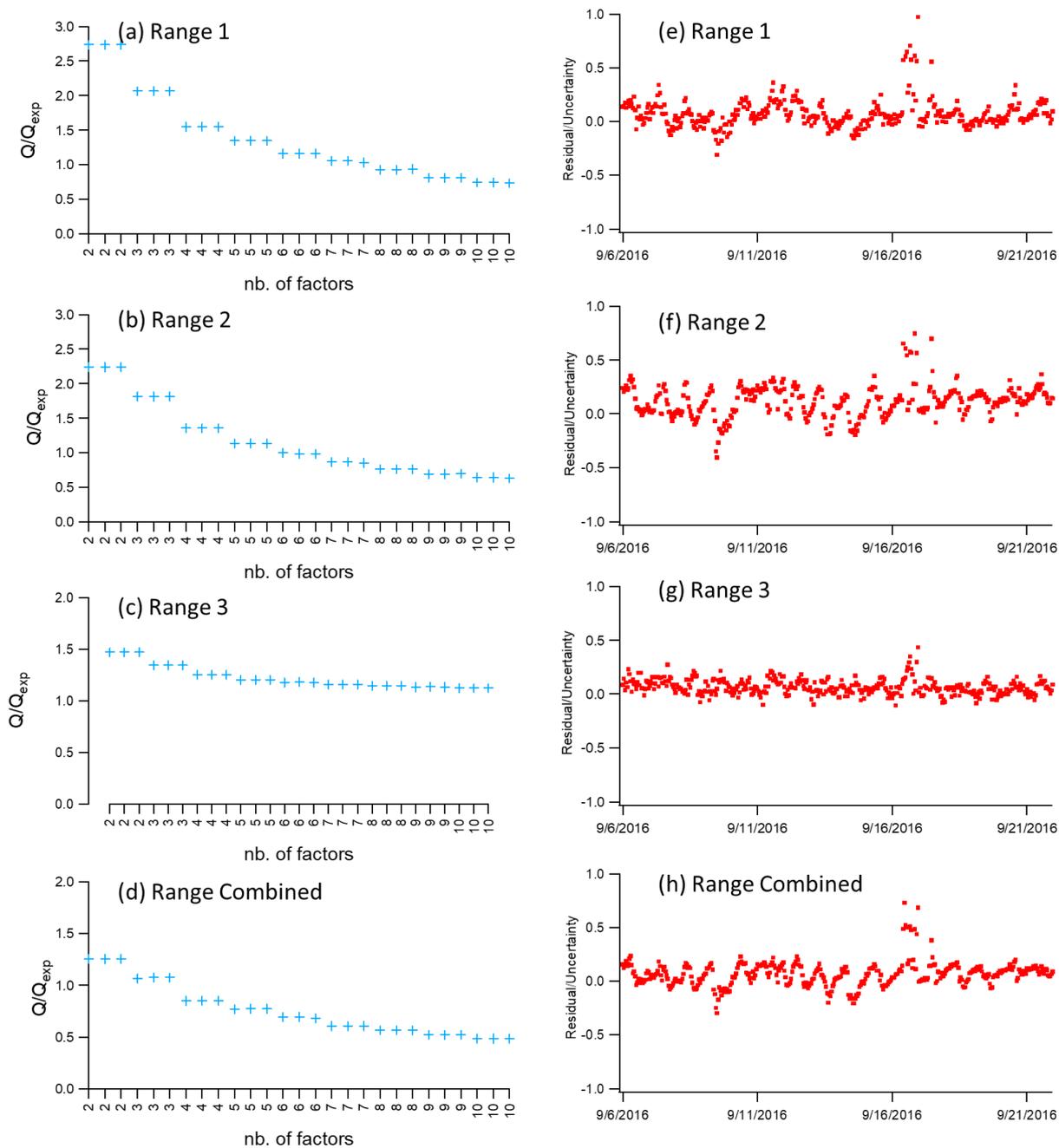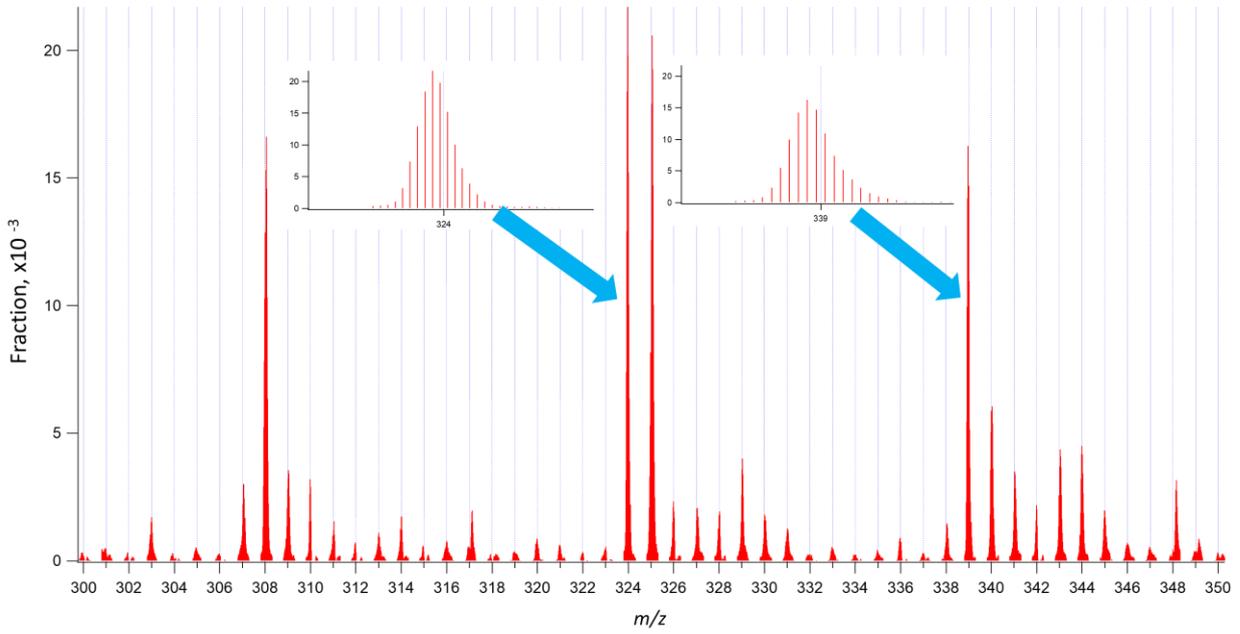**Figure S5** Comparison of profiles for contamination factors for Range Combined and Range 3

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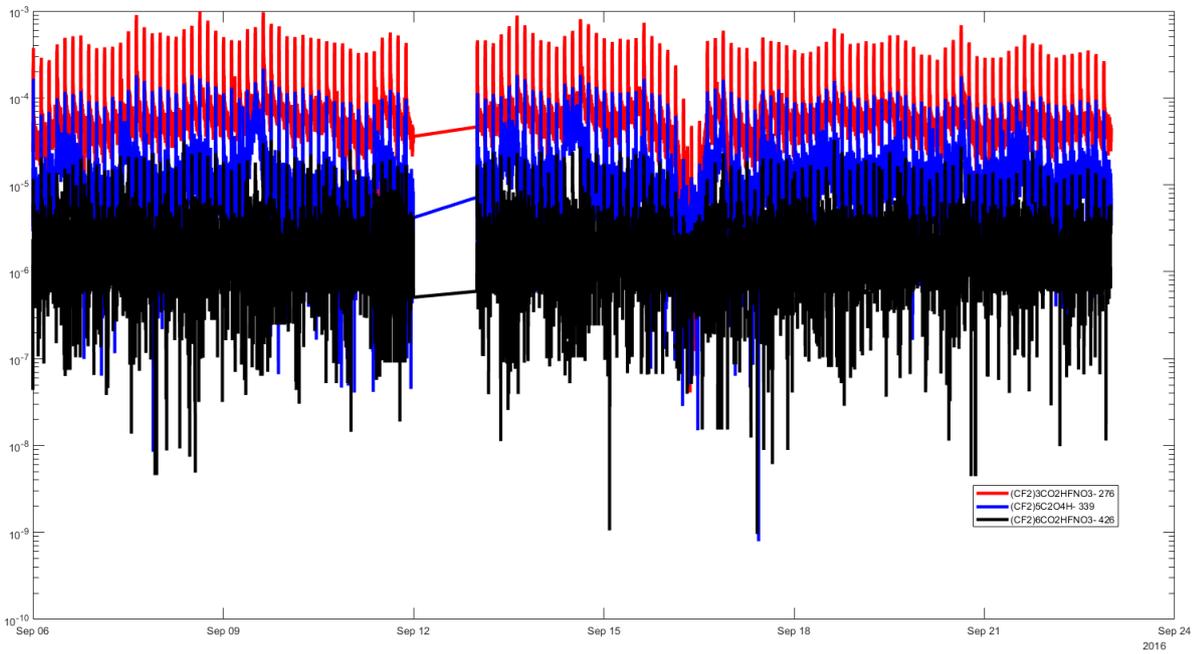Figure S2 The contamination factor resolved from 6-factor result in Range 2, with the main masses 324 Th and 339 Th showing apparent negative mass defect

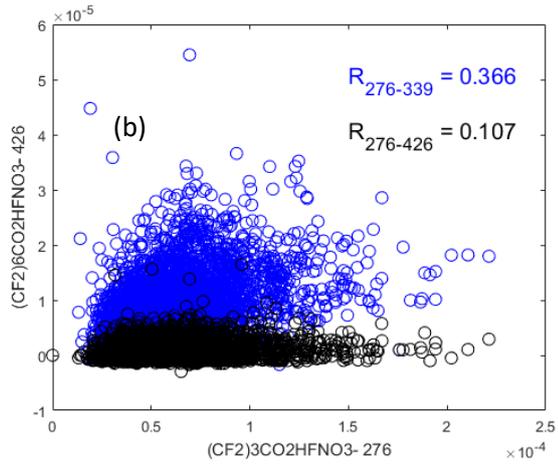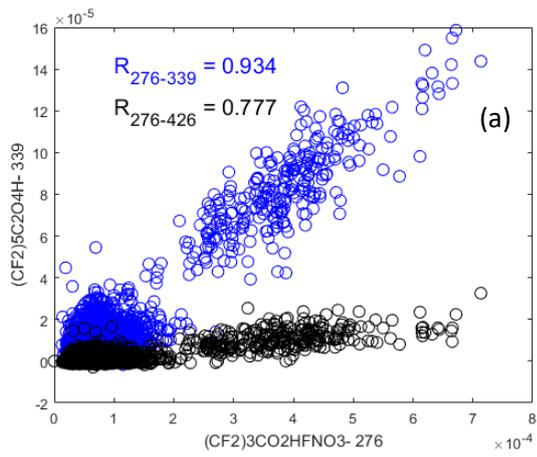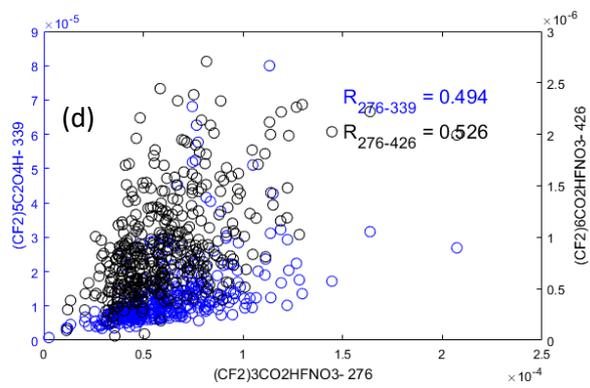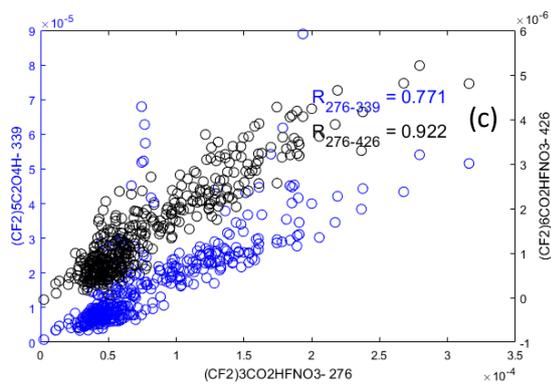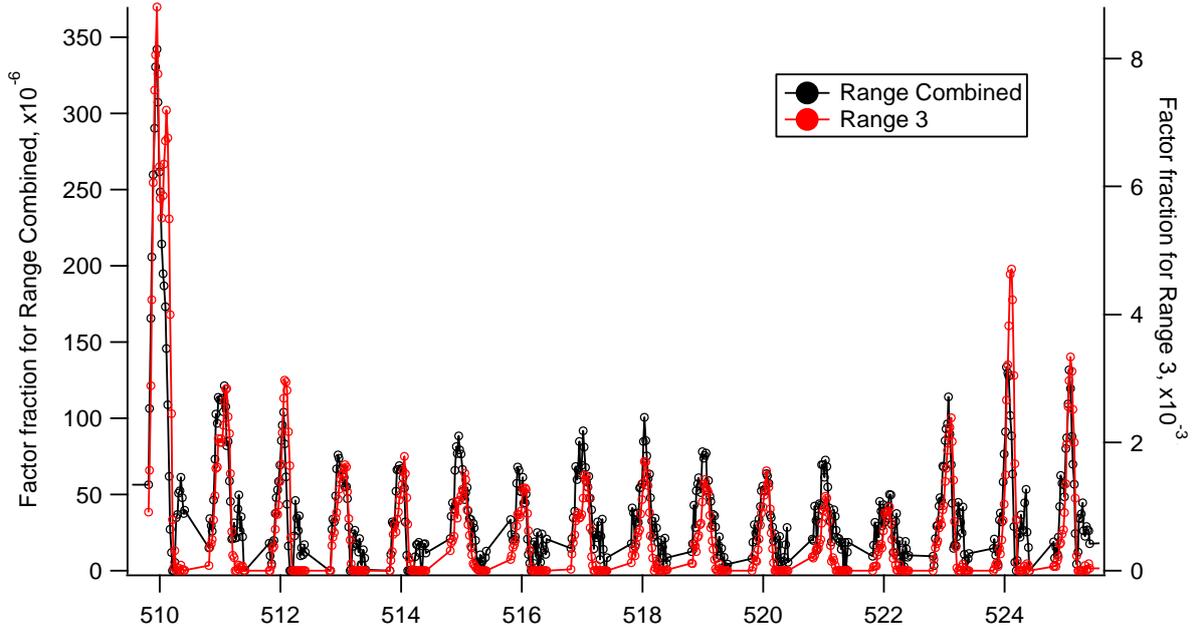Figure S3 time series of three contamination compounds in 1-min time resolution

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