## SUPPORTING INFORMATION

## Direct estimates of biomass burning NO<sub>x</sub> emissions and lifetime using daily observations from TROPOMI

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Figure S1 Illustration of a fire plume that does not align with the wind direction. We define the rotation biases as the angle of the two red lines.



Figure S2 Same as Figure 3(d) but for (a) grassland, (b) savanna and (c) shrubland separately.



Figure S3 Same as Figure 3 but using original TROPOMI NO<sub>2</sub> data without updating the *a priori* profile.





Figure S5 Scatter plot between MODIS and VIIRS FRP for the selected fire events. The line is fitted with ordinary least squares, and the shadow represents 95% CI.



Figure S6 Same as Fig. 3 but for VIIRS FRP.