Supplement of

Examination of brown carbon absorption from wildfires in the western US during the WE-CAN study

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**Figure Captions**

**Figure S1.** (a-i) PAS total Abs 405 BrC/WSOC and PILS water-soluble Abs 405/WSOC as a function of time since emission for all data shown in Figure 10a on an individual flight basis.

**Figure S2.** (a-i) PAS total Abs 405 BrC/ΔCO and PILS water-soluble Abs 405/ΔCO as a function of time since emission for all data shown in Figure 10b on an individual flight basis.

**Figure S3.** (a-i) PAS total Abs 405 BrC/levoglucosan and PILS water-soluble Abs 405/levoglucosan as a function of time since emission for all data shown in Figure 10c on an individual flight basis.

**Figure S4.** (a) PILS water-soluble Abs 365/WSOC, (b) PILS water-soluble Abs 365/ΔCO, and (c) PILS water-soluble Abs 365/levoglucosan as a function of time since emission for all WE-CAN flights with the data segregated by flight.

**Figure S5.** PILS WSOC/ΔCO as a function of time since emission for all WE-CAN flights with the data segregated by flight.

**Figure S6.** (a-i) PAS total Abs 405 BrC/WSOC and PILS water-soluble Abs 405/WSOC as a function of modified combustion efficiency (MCE) for all data shown in Figure 11a on an individual flight basis.

**Figure S7.** (a-i) PAS total Abs 405 BrC/ΔCO and PILS water-soluble Abs 405/ΔCO as a function of modified combustion efficiency (MCE) for all data shown in Figure 11b on an individual flight basis.

**Figure S8.** (a-i) PAS total Abs 405 BrC/levoglucosan and PILS water-soluble Abs 405/levoglucosan as a function of modified combustion efficiency (MCE) for all data shown in Figure 11c on an individual flight basis.
Figure S1

![Graphs showing Abs 405/WSOC (Mm⁻¹/µg C/m³) vs Time Since Emission (h) for different sampling locations RF02, RF03, RF04, RF06, RF07, RF09, RF11, RF13, RF15. Each graph contains scatter plots with data points for PAS and PILS emissions.]
Figure S2

Absorption of 405nm light (As 405/ΔCO (Mm⁻¹/ppbv)) vs. time since emission (h) for RF02 (a), RF03 (b), RF04 (c), RF06 (d), RF07 (e), RF09 (f), RF11 (g), RF13 (h), and RF15 (i). The graphs show the absorption as a function of time for different emission events, with some data points labeled as PAS and PILS.
Figure S3

Abs 405/Levoglucosan (Mm$^{-1}$/µg C/m$^3$)

Time Since Emission (h)

RF02 (a)

RF03 (b)

RF04 (c)

RF06 (d)

RF07 (e)

RF09 (f)

RF11 (g)

RF13 (h)

RF15 (i)
Figure S4

(a) Absorption at 365 nm of WSOC (Mm$^{-1}$/µg C/m$^3$) vs. time since emission (h) for different RF samples.

(b) Absorption at 365 nm of CO (Mm$^{-1}$/ppbv) vs. time since emission (h) for different RF samples.

(c) Absorption at 365 nm of levoglucosan (Mm$^{-1}$/µg C/m$^3$) vs. time since emission (h) for different RF samples.
Figure S6

(a) RF02

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(b) RF03

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(c) RF04

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(d) RF06

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(e) RF07

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(f) RF09

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(g) RF11

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(h) RF13

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)

(i) RF15

Abs 405/WSOC (Mm^-1 / μg C/m^3)

MCE (g C/g C)
