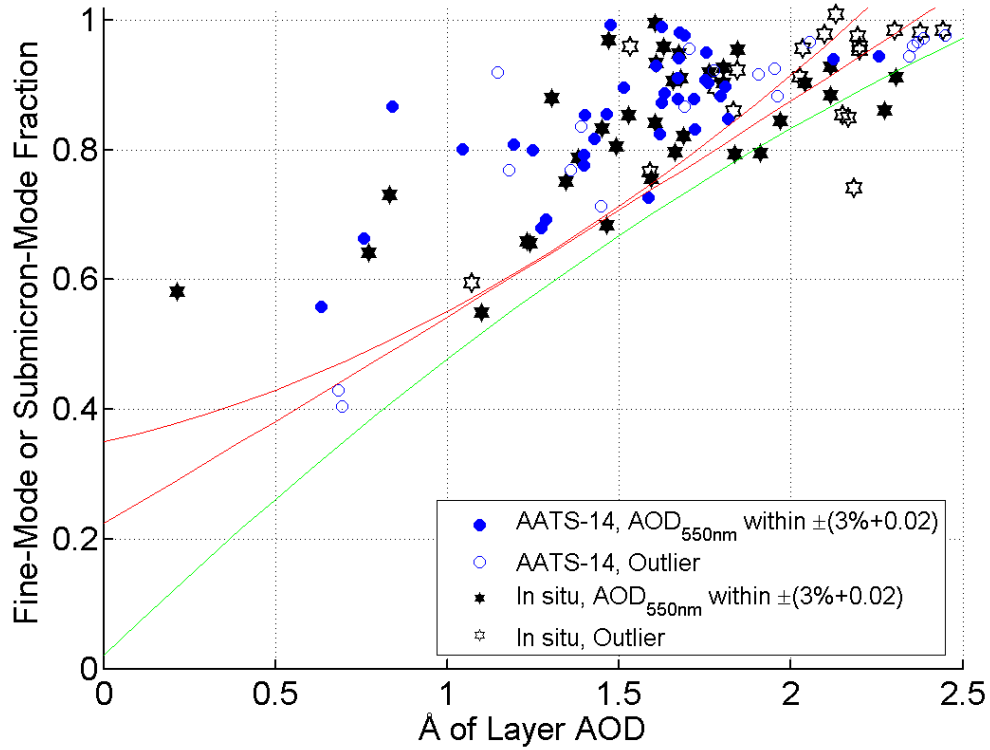


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2 Supplementary Figure S1. Mid-visible AOD and scattering coefficient profiles near Fort
 3 McMurray during the first half of the July 3 flight. The P-3 aircraft encountered a well-mixed
 4 local pollution layer up to ~2 km GPS altitude and a long-range transport air mass above, both
 5 homogenous over >200 km.



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 2 Supplementary Figure S2. Blue circles indicate the fine-mode fraction (at 500 nm) of
 3 AATS-14 derived layer AOD (also shown in Figure 8a) compared with Angstrom exponent
 4 of the layer AODs derived from AATS-14 (also shown in Figure 7a). Black hexagrams
 5 indicate the submicron-mode fraction of in situ derived layer AOD adjusted to 500 nm (also
 6 shown in Figure 8a) compared with Angstrom exponent of the layer AODs derived from the
 7 in situ instruments (also shown in Figure 7a). The Angstrom exponents are at 550 nm. The
 8 green and red curves indicate results from East Asia (Anderson et al., 2005) and Mexico
 9 (Redemann et al., 2009b), respectively.

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