

Supplement of Atmos. Chem. Phys., 16, 15185–15197, 2016
<http://www.atmos-chem-phys.net/16/15185/2016/>
doi:10.5194/acp-16-15185-2016-supplement
© Author(s) 2016. CC Attribution 3.0 License.



Atmospheric
Chemistry
and Physics
Open Access
EGU

Supplement of

Physical and optical properties of aged biomass burning aerosol from wildfires in Siberia and the Western USA at the Mt. Bachelor Observatory

James R. Laing et al.

Correspondence to: Daniel A. Jaffe (djaffe@uw.edu)

The copyright of individual parts of the supplement might differ from the CC-BY 3.0 licence.

Table S1. Optical properties of the identified BB plumes at MBO during the summer of 2015. All enhancement ratios are obtained by taking the slope of a RMA linear regression between the two species. Precision uncertainty and total uncertainty are provided for each value. ND (“no data”) indicates missing data. WC in the MAE column signifies a weak correlation ($R^2 < 0.60$).

Event number	Event date and time (UTC)		$\Delta\sigma_{\text{scat}}/\Delta\text{CO}$ ($\text{Mm}^{-1} \text{ppbv}^{-1}$)	$\Delta\sigma_{\text{abs}}/\Delta\text{CO}$ ($\text{Mm}^{-1} \text{ppbv}^{-1}$)	MSE ($\text{m}^2 \text{g}^{-1}$)	MAE ($\text{m}^2 \text{g}^{-1}$)	AAE (467-660 nm)	ω (528 nm)
1	7/31/15 15:35-17:10	mean	1.13	0.036	ND	ND	3.15	0.97
		precision uncertainty	0.17	0.003	ND	ND	0.29	0.15
		total uncertainty	0.19	0.012	ND	ND	1.32	0.35
2	8/9/15 2:55-8:55	mean	0.89	WC	3.17	0.085	3.45	0.98
		precision uncertainty	0.13	WC	0.46	0.011	0.33	0.15
		total uncertainty	0.14	WC	0.51	0.034	1.60	0.41
3	8/9/15 13:35-8/10/15 0:00	mean	1.24	0.033	3.29	0.087	3.72	0.98
		precision uncertainty	0.18	0.002	0.47	0.009	0.35	0.15
		total uncertainty	0.20	0.012	0.52	0.032	1.68	0.38
4	8/10/15 1:10-5:55	mean	1.05	0.030	3.78	0.108	3.86	0.97
		precision uncertainty	0.15	0.002	0.54	0.011	0.34	0.15
		total uncertainty	0.17	0.010	0.61	0.036	1.62	0.35
5	8/10/15 6:05-11:40	mean	1.09	0.034	3.44	0.106	4.02	0.97
		precision uncertainty	0.15	0.003	0.49	0.011	0.36	0.15
		total uncertainty	0.17	0.012	0.55	0.037	1.78	0.36
6	8/10/15 11:45-14:35	mean	0.94	WC	3.27	WC	4.12	0.99
		precision uncertainty	0.13	WC	0.48	WC	0.38	0.15
		total uncertainty	0.15	WC	0.53	WC	1.89	0.38
7	8/10/15 14:40- 8/11/15 6:15	mean	1.17	0.032	3.64	0.098	3.52	0.98
		precision uncertainty	0.17	0.002	0.52	0.010	0.31	0.15
		total uncertainty	0.19	0.011	0.58	0.035	1.55	0.37
8	8/11/15 14:20-18:45	mean	1.07	0.029	2.5	0.066	2.74	0.98
		precision uncertainty	0.16	0.003	0.36	0.008	0.28	0.15
		total uncertainty	0.18	0.010	0.40	0.023	1.14	0.36
9	8/14/15 10:00-15:35	mean	0.48	0.007	2.75	0.042	3.06	0.99
		precision uncertainty	0.07	0.001	0.39	0.005	0.29	0.15
		total uncertainty	0.08	0.003	0.44	0.018	1.44	0.43
10	8/17/15 0:05-3:55	mean	1.39	0.078	ND	ND	2.48	0.95
		precision uncertainty	0.20	0.006	ND	ND	0.21	0.14
		total uncertainty	0.22	0.021	ND	ND	0.90	0.30
11	8/17/15 17:15- 8/18/15 7:00	mean	1.06	0.06	ND	ND	2.50	0.95
		precision uncertainty	0.15	0.005	ND	ND	0.22	0.15
		total uncertainty	0.17	0.020	ND	ND	0.92	0.30

Table S1. Continued.

Event number	Event date and time (UTC)		$\Delta\sigma_{\text{scat}}/\Delta\text{CO}$ ($\text{Mm}^{-1} \text{ppbv}^{-1}$)	$\Delta\sigma_{\text{abs}}/\Delta\text{CO}$ ($\text{Mm}^{-1} \text{ppbv}^{-1}$)	MSE ($\text{m}^2 \text{g}^{-1}$)	MAE ($\text{m}^2 \text{g}^{-1}$)	AAE (467-660 nm)	ω (528 nm)
12	8/18/15 16:05 - 8/19/15 16:40	mean	1.29	0.075	ND	ND	2.30	0.95
		precision uncertainty	0.18	0.005	ND	ND	0.20	0.15
		total uncertainty	0.21	0.020	ND	ND	0.83	0.30
13	8/19/15 17:40 - 8/20/15 3:05	mean	1.12	0.052	ND	ND	2.25	0.96
		precision uncertainty	0.16	0.004	ND	ND	0.20	0.15
		total uncertainty	0.18	0.014	ND	ND	0.81	0.30
14	8/22/15 15:30-18:05	mean	1.97	0.078	4.76	0.188	3.59	0.96
		precision uncertainty	0.28	0.015	0.70	0.021	0.31	0.15
		total uncertainty	0.32	0.023	0.78	0.057	1.39	0.32
15	8/23/15 3:55-7:00	mean	1.09	0.059	2.84	0.156	2.51	0.96
		precision uncertainty	0.17	0.006	0.40	0.019	0.23	0.15
		total uncertainty	0.18	0.019	0.46	0.050	0.98	0.33
16	8/23/15 9:50 - 8/25/15 6:50	mean	1.13	0.029	4.06	0.107	3.15	0.98
		precision uncertainty	0.16	0.002	0.58	0.011	0.27	0.15
		total uncertainty	0.18	0.011	0.65	0.039	1.40	0.38
17	8/25/15 12:45 - 8/26/15 19:00	mean	0.88	0.027	3.75	0.111	3.12	0.98
		precision uncertainty	0.12	0.002	0.53	0.012	0.27	0.15
		total uncertainty	0.14	0.009	0.60	0.036	1.26	0.34
18	8/26/15 7:15 - 8/28/15 11:15	mean	0.89	0.031	3.70	0.128	3.48	0.97
		precision uncertainty	0.13	0.002	0.52	0.013	0.31	0.15
		total uncertainty	0.14	0.010	0.59	0.043	1.46	0.35
19	8/28/15 17:40 - 8/29/15 6:15	mean	0.69	ND	2.94	ND	ND	ND
		precision uncertainty	0.10	ND	0.42	ND	ND	ND
		total uncertainty	0.11	ND	0.47	ND	ND	ND

Figures:

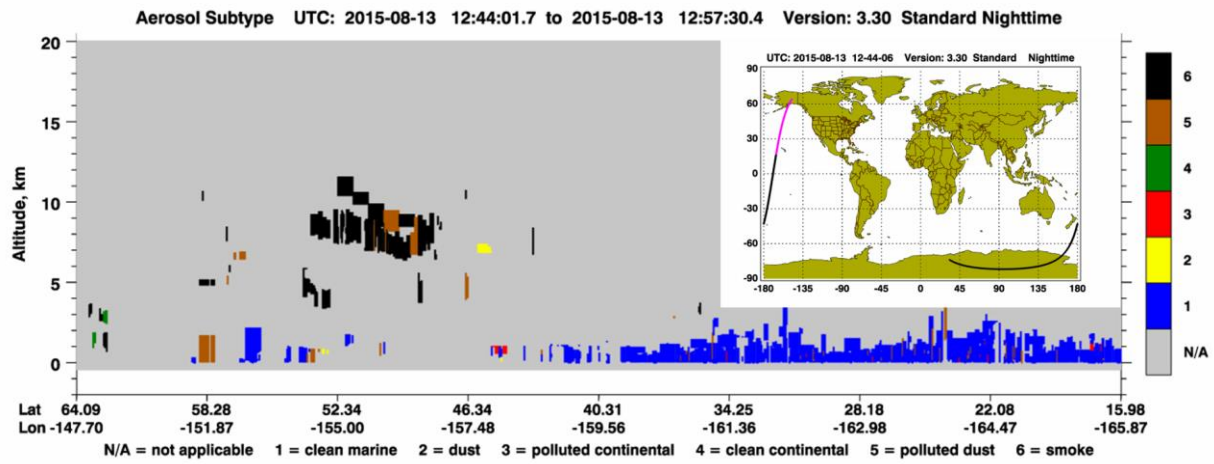


Figure S1. Aerosol types classified by CALIPSO from a transect over the Pacific Ocean on 8/13/2015 12:44 UTC showing a large smoke plume from the Siberian fires.

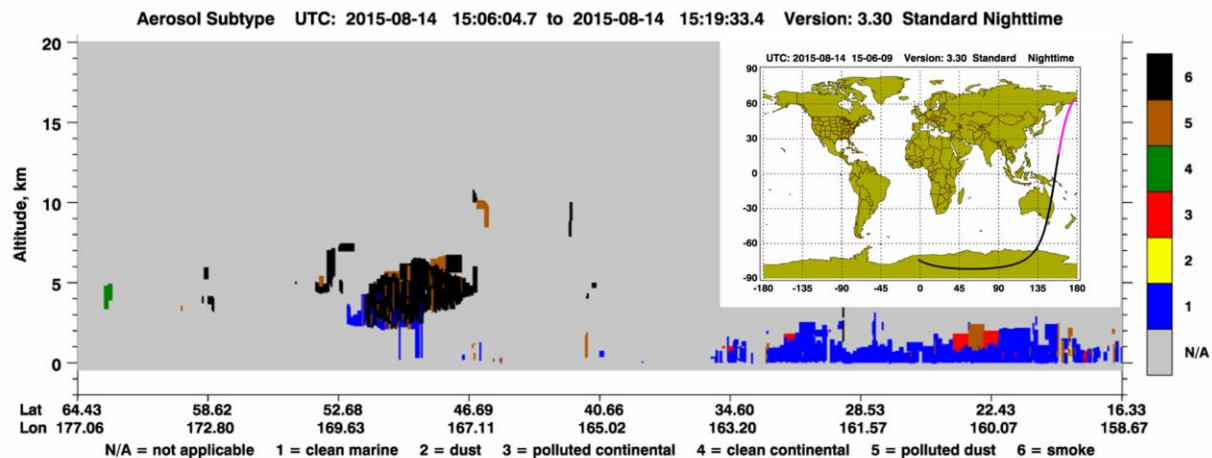


Figure S2. Similar plot as S2 for 8/14/2015 15:06 UTC confirming the eastward transport of a large Siberian smoke event.

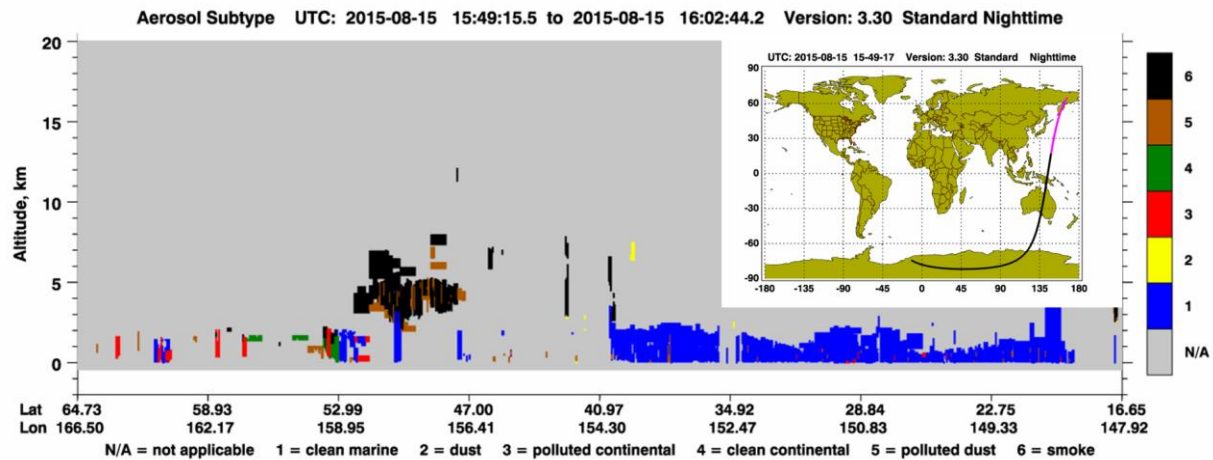


Figure S3. Similar plot as S2 for 8/15/2015 15:49 UTC.

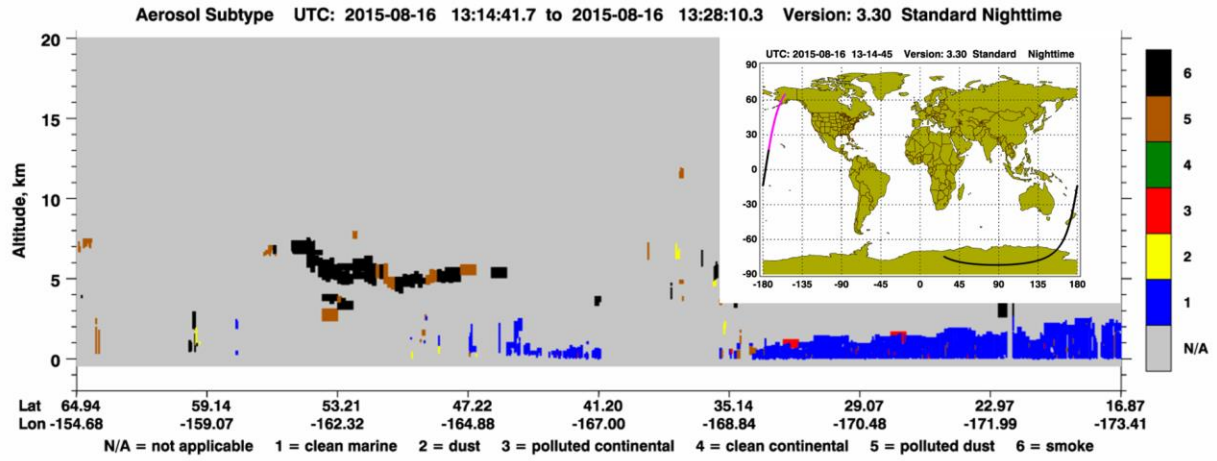


Figure S4. Similar plot as S2 for 8/16/2015 13:14 UTC.