

Supplement of Atmos. Chem. Phys., 16, 12329–12345, 2016
<http://www.atmos-chem-phys.net/16/12329/2016/>
doi:10.5194/acp-16-12329-2016-supplement
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Atmospheric
Chemistry
and Physics
Open Access
EGU

Supplement of

Colorado air quality impacted by long-range-transported aerosol: a set of case studies during the 2015 Pacific Northwest fires

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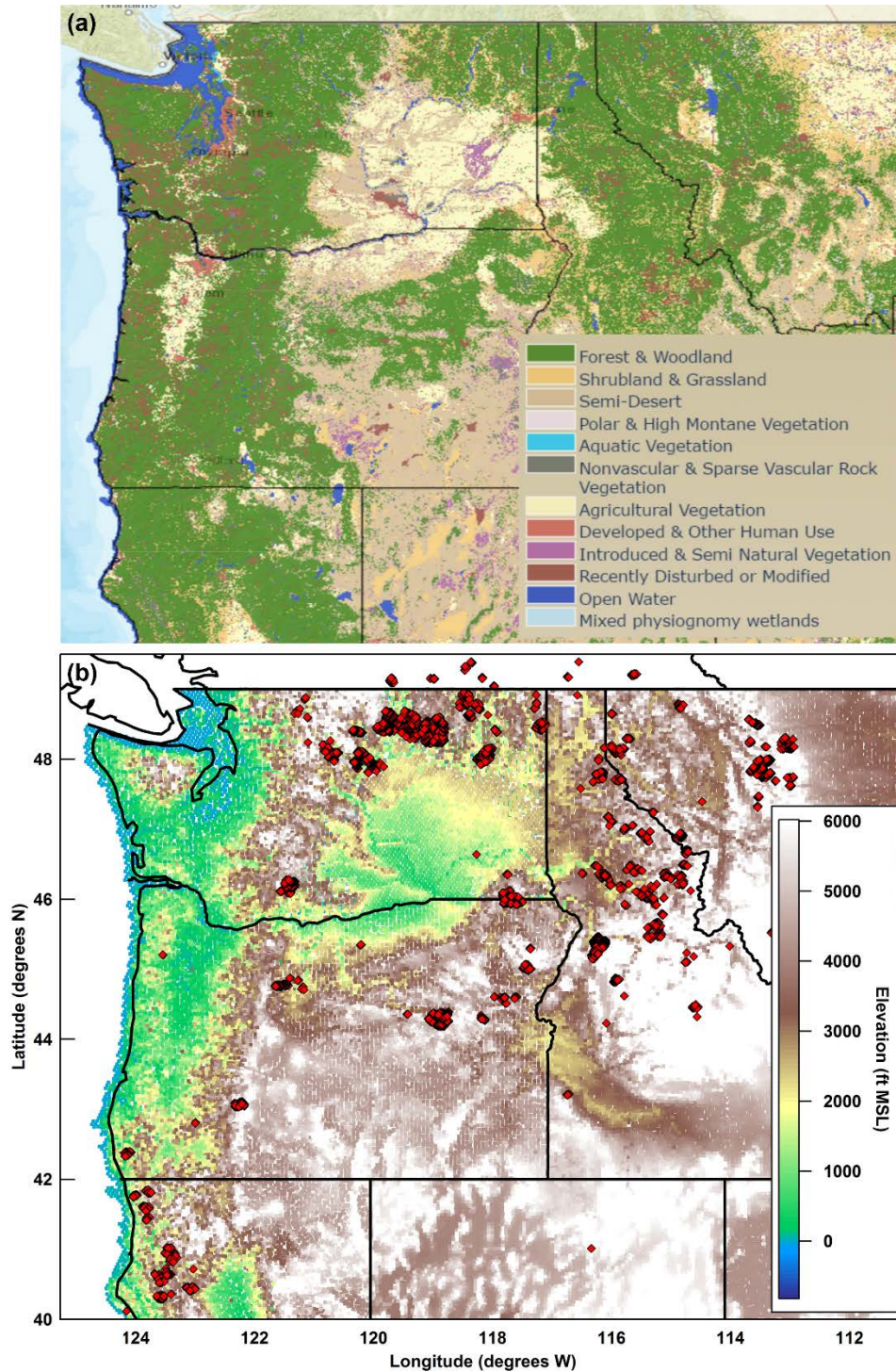


Figure S1. (a) Land cover data from the U.S. Geological Survey determined using multi-season satellite imagery from 1999–2001 in conjunction with digital elevation model (DEM) derived datasets (e.g. elevation, landform) to model natural and semi-natural vegetation (http://gis1.usgs.gov/csas/gap/viewer/land_cover/Map.aspx). (b) Elevation data from the U.S. Forest Service (http://apps.fs.fed.us/fiadb-downloads/CSV/datamart_csv.html; surveys vary by state, but were conducted 1989–2014) in addition to all MODIS thermal anomalies (i.e., fire hotspots) detected during the study time period. Fires occurred on higher elevation forest, shrub, and grass lands, but predominantly in forested or woodland areas. Few fires occurred on lower elevation agricultural lands.

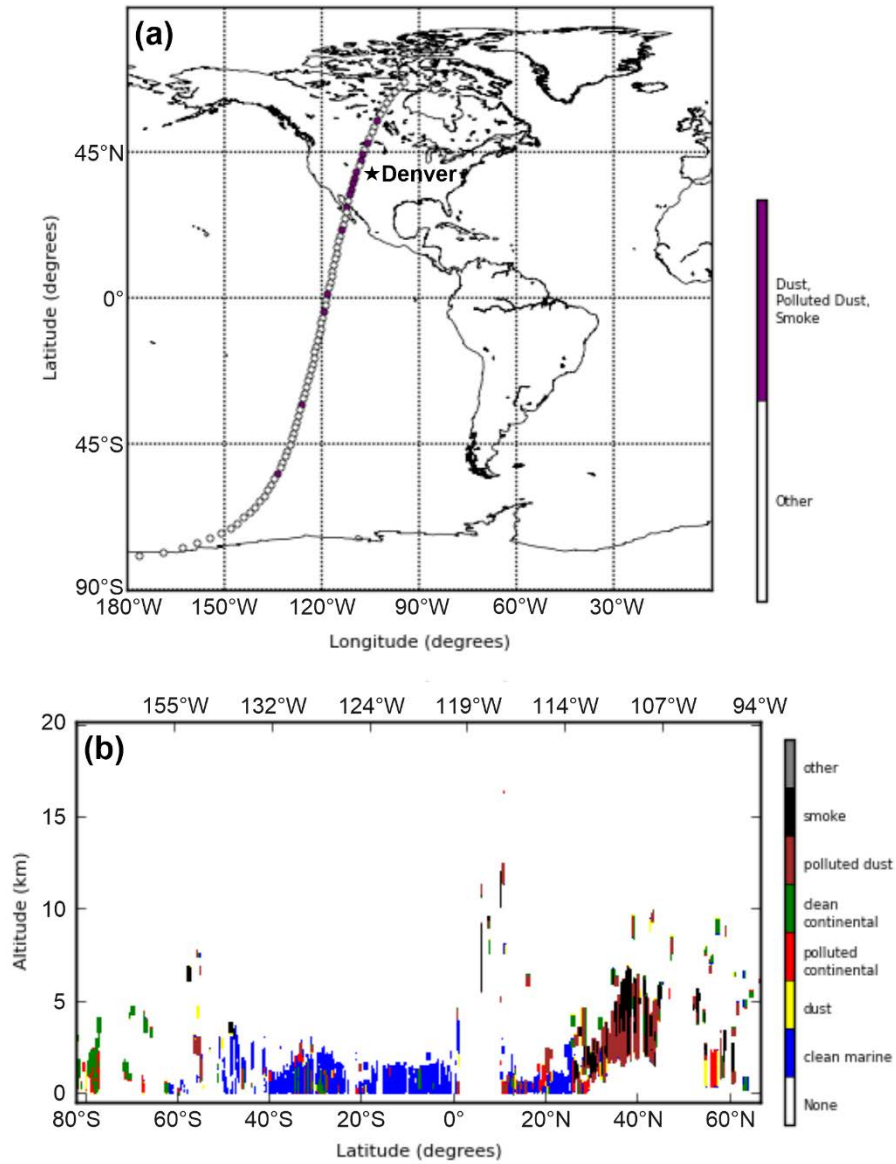


Figure S2. Same as Figure 10 in the manuscript, but for the night prior to Event 2 and from 22 Aug 2015 09:19:24 UTC.

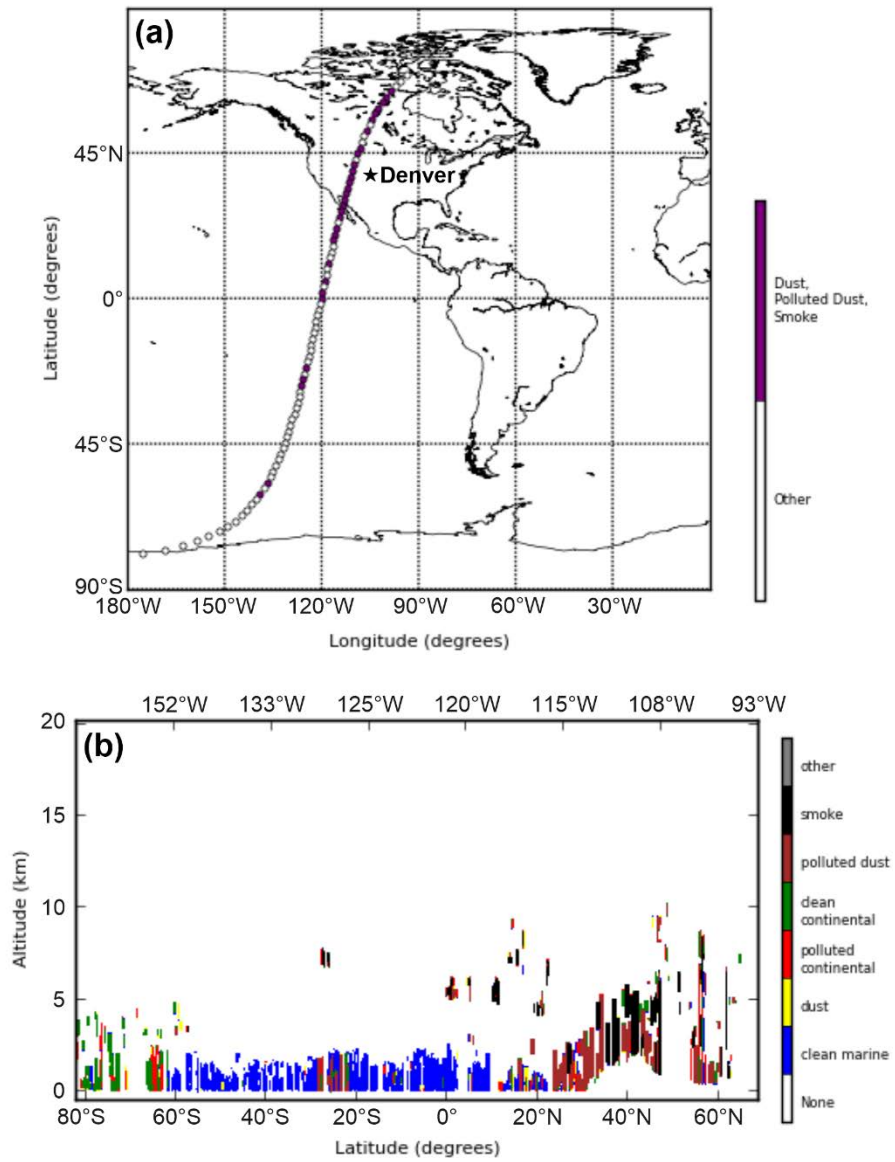


Figure S3. Same as Figure 10 in the manuscript, but for the day of Event 3 and from 29 Aug 2015 09:24:15 UTC.

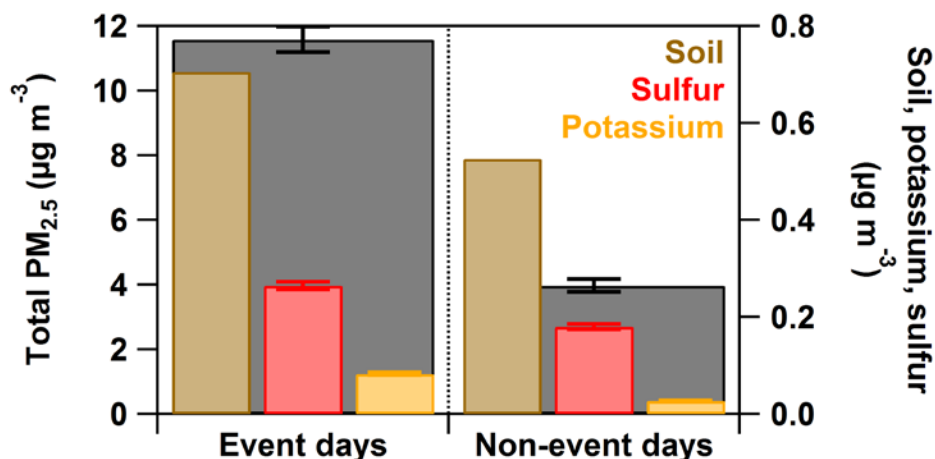


Figure S4. Concentrations of total PM_{2.5}, soil, S, and K from the IMPROVE monitoring site in Rocky Mountain National Park (ROMO; 40.28°N, 105.55°W; 2,760 m MSL) during event days and non-event days during the month of August 2015. Data and information on sampling and analytical protocols are found at <http://views.cira.colostate.edu/fed/> (Malm et al., 1994; Hand et al., 2011). Eleven samples were collected and analyzed during this time period. Uncertainty values are provided by IMPROVE for total mass and element concentration measurements (S and K), but not soil.

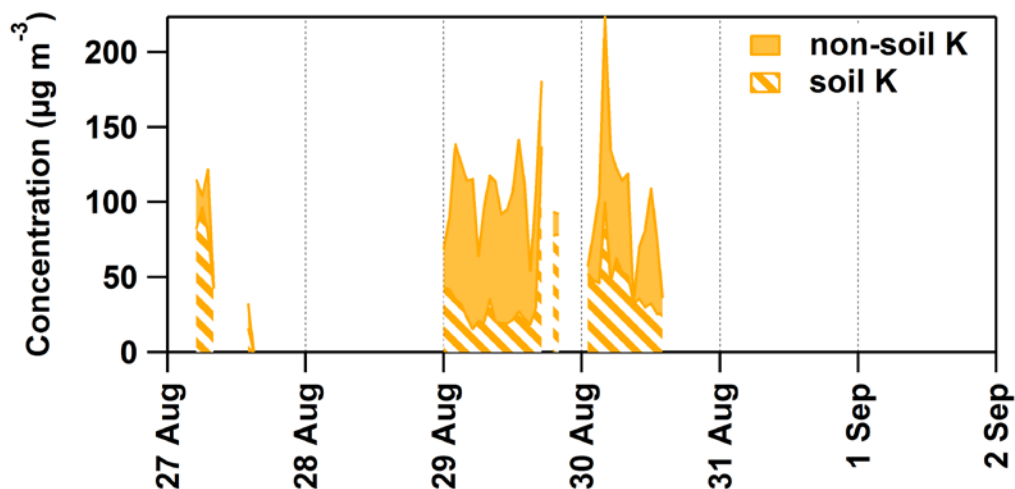


Figure S5. Non-soil and soil K concentrations measured by the PX-375 during the study time period. Concentrations were calculated from total K based on the methods on Kreidenweis et al. (2001), where [non-soil K] = [K] - 0.6[Fe] and [soil K] = [total K] - [non-soil K]. It is apparent that non-soil K and soil K were present during the Event 3 time period when the PX-375 was operable. Time periods without measurements were due to the K concentrations being below the LDL.

References

- Hand, J. L., Copland, S. A., Dillner, A. M., Indresand, H., Malm, W. C., McDade, C. E., Moore, C. T., Pitchford, M. L., Schichtel, B. A., and Watson, J. G.: Spatial and Seasonal Patterns and Temporal Variability of Haze and its Constituents in the United States Report V Cooperative Institute for Research in the Atmosphere, 2011.
- Kreidenweis, S. M., Remer, L. A., Bruinjtes, R., and Dubovik, O.: Smoke aerosol from biomass burning in Mexico: Hygroscopic smoke optical model, *J Geophys Res-Atmos*, 106, 4831-4844, 2001.

Malm, W. C., Sisler, J. F., Huffman, D., Eldred, R. A., and Cahill, T. A.: Spatial and Seasonal Trends in Particle Concentration and Optical Extinction in the United-States, *J Geophys Res-Atmos*, 99, 1347-1370, 1994.