On January 29<sup>th</sup> and 30<sup>th</sup> 2019, observations were gathered comparing unfiltered and filtered levels of PM2.5 as measured by a Purple Air monitor inside a small room equipped with a smoke source and a makeshift air filter.

The device combines an off-the-shelf 20 inch MERV-13 ventilation filter and household box fan, as described on page 9 of the following linked document:
http://cleanairplan.ca/wp-content/uploads/2019/01/2018PurpleAirAMS.pdf
It was built by a volunteer member of the BVLD Airshed Management Society along the lines set out in the video here: http://www.pscleanair.org/525/DIY-Air-Filter.

The following screenshots from the Purple Air highcharts facility depict the moving average of particulate concentration over a period of a several hours. The first chart depicts a control trial, in which the smoke source was operated for roughly a half-hour period and then shut off, allowing the particulate concentration to decay:
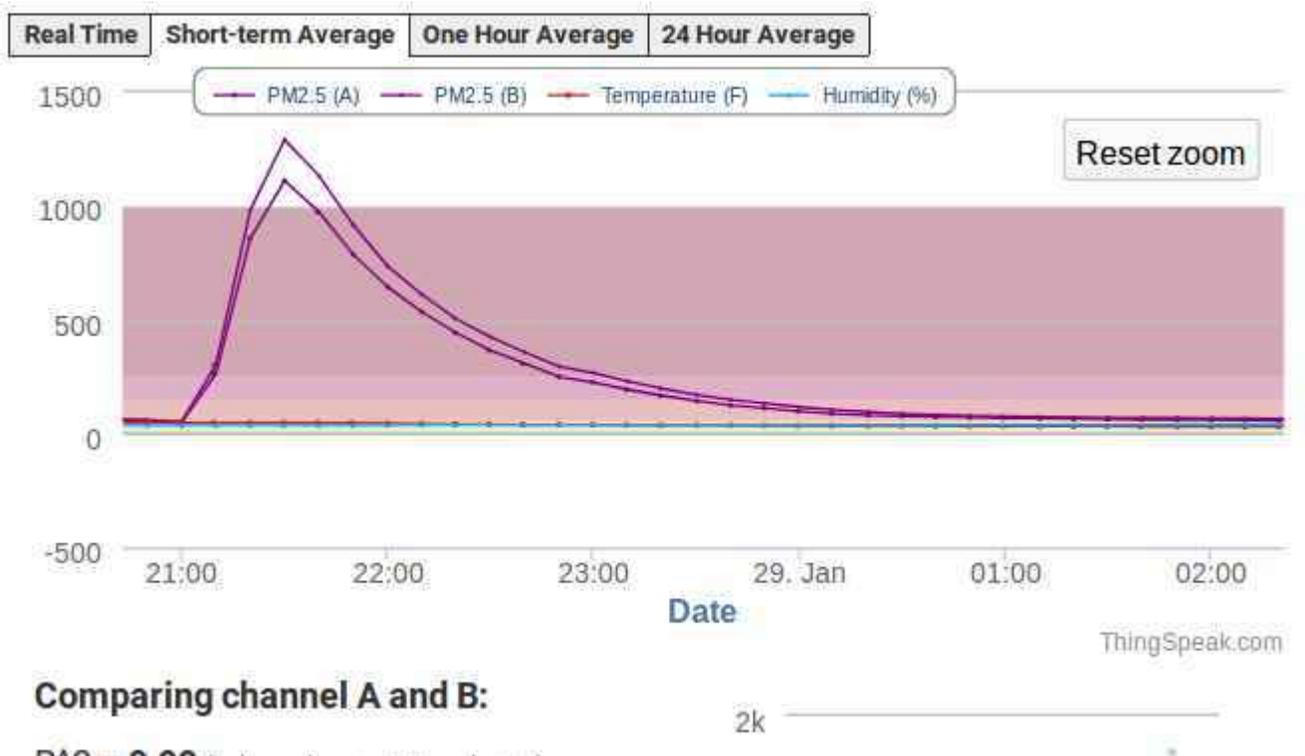


Inside the room the levels of PM2.5 from the smoke source peaked at the 21:30 timestamp at about 1300 µg/m³. There was some airflow between the room and the ambient air, and over a period of five hours following cutoff the concentration naturally decayed towards roughly 60 µg/m³.

In the same room on the following day, January 30, 2019, the smoke source was activated for roughly an hour, allowing particulate concentrations to equilibrate to roughly 1500 µg/m³ before running the filter:
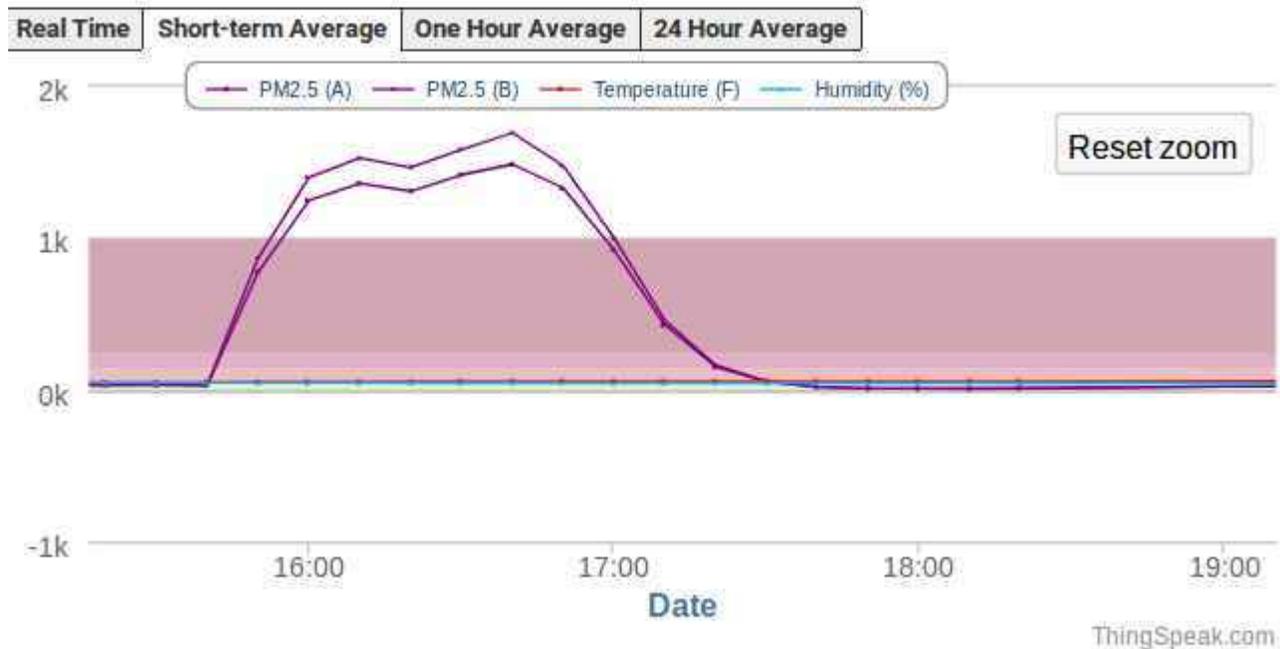


Comparing channel A and B:

The smoke source was stopped at the 16:40 timestamp and the filter activated. Over a period of 1 hour the PM2.5 level, measured in the same way with the same instrument, fell quickly and flatlined at about 6 µg/m³. The time for the particulate concentration to flatline was roughly an hour, much less compared to the five hours in the unfiltered case.

The raw data for these charts is archived at purpleair.com/sensorlist for the appropriate dates at air monitor ID cleanairplan.ca-SmithersPL-01. They are also archived and available upon request by email to info@cleanairplan.ca.