Is my seed contaminated? (semi-update from yesterday)

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High NOx SOA Experiment

Very strange organic signal in W-mode...
Strange m/z 504 - 506

These masses were most likely a result of the pulsers firing again, before the first spectra finished acquiring
- The solution was to just multiply these m/z's in the frag table by zero.

Experiment after removing those masses...

Frag Table Changes to get the Org signal at its current state:
- Frag_O16 at m/z 16
- Frag_CO2 at m/z 44
- Removed m/z 504 – 506 from organic signal (electrical defect due to pulsers firing again, before the first spectra finished acquiring)
Beginning of Experiment

(Before the injection of seeds)

A time series shows that organic signal is \(~ 0.12 \text{ ug/m}^3\) for HEPA and Empty Chamber periods

End of Experiment

HEPA Period at the end of the experiment also shows about 0.12 \text{ ug/m}^3...
Slight increase in organics

Non-zero organic signal during HEPA period, coinciding with 0 counts in SMPS data (not shown here)
Empty Chamber
(Before the injection of seeds)

Non-zero organic signal during HEPA period AND during Empty Chamber period, coinciding with 0 counts in SMPS data (not shown here)

Perhaps this organic signal is not ‘real’ particle signal?

Seed-Only Period

- m/z 12 increases by ~0.11 ug/m3 (from 0.01 to 0.11) in nitrate equivalent mass...
  - This increase in organic signal is dominated by m/z 12
  - but m/z 12 in the frag table ONLY comes from itself (ie: row 12 in frag_org = ‘12’) and every other column in row 12 is empty
m/z 12 showing some strange signal, most likely a result of interactions between V and W modes

Summary

• Pulser period too long, which caused strange signals to show up at m/z 504 – 506, which significantly affected organic signal.

• Signal at m/z 12 might be a result of V and W mode interactions
  – ie: “dromedaires”, “volkswagons”, and “camels”
  – More info on this on AMS wiki under “I have weird ions that have strange shapes and don’t make sense chemically, what’s going on?”:
    http://cires.colorado.edu/jimenez-group/wiki/index.php/FAQs_AMS_Data_Analysis#The_standard_frag_table_produces_unusual_results.2C_should_I_modify_it_and_how.3F