Comparing epToF and pToF data:

- Field campaign in Fresno, CA, Dec 2014 – Jan 2015
- SP-AMS with laser vaporizer only = low signals
- Alternated epToF (27 s/2 minute run) and pToF (45 s/2 minute run)
- epToF duty cycle = 50%, pToF duty cycle = 2%
- epToF should have better S/N by sqrt(25)*sqrt(27/45) ~4
Regal black, 300 nm size-selected.
Need new size calibration for epToF!
Donna – Can we have two sets of vel cal parameters that get applied separately to epToF and pToF?
Ambient data, bypass only, 56 runs each mode.

~ 1 ug/m3 organics

epToF does not look less noisy than pToF!
mz 43

**epToF** – simple matrix inversion
- baseline ~ 200 Hz
- peak + 300 Hz

**pToF**
- baseline ~ 200 Hz, less noisy because 25 times more time spent sampling
- peak + 12 Hz, consistent with 25 times less signal
Latest version of DCMarker panel – work in progress!
Rich’s demux slightly less noisy than simple matrix inversion.
Increasing denoise makes pToF less noisy, but doesn’t conserve area and changes shape of size distribution.
With denoise = 1, compared to standard ptof. Less noisy, but different shape.

- First step: Smooth raw data before deconvolving.
- Second step: Deconvolve (with or without denoise depending on S/N).

- Ratio of max signal to ECL guides settings.
- First guess -10 point smooth, reduced for better S/N.
- Donna – shouldn’t part B use max peak/ECL for smoothed data? Looks like it using ECL for raw data.
- ECL seems high compared to peak signal.
Look at mz=40, more signal, ECL about the same.
- No smoothing applied.
- Denoise = 4 (max allowable, because peak signal >> ECL)

Maybe air peaks shouldn’t be included when determining smoothing and denoise?
With adaptive filtering, epToF looks very nice! Much less noisy than pToF.
Look at just a few runs (5 of pToF, 8 of eToF). I’m a believer!