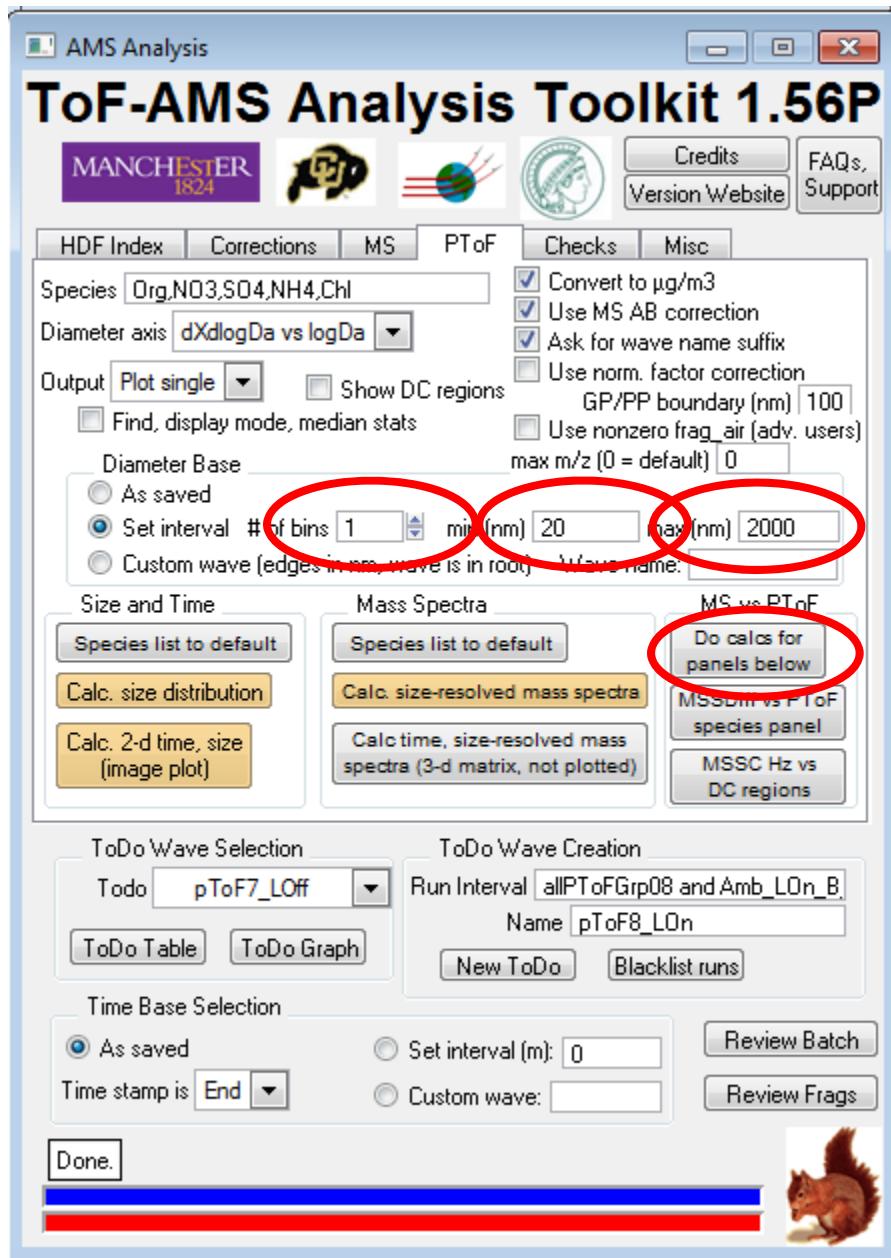


Looking at pToF/MS

Leah Williams – Aerodyne
Boulder, 18-June-2015

Can ratio of pToF to MS at 44 compared to 43 tell us anything about f44issues?

- MS at 44 affected by slow vaporization/surface chemistry
- MS at 43, pToF at 43, pToF at 44 not affected.
- Expect pToF/MS for 44 to be lower than at 43.
- Buttons/panel in pToF tab.
- Look at some field data from Detling, UK, Jan – Feb 2012



PToF Tab:

- Check Set interval with
 - 1 bin
 - lower size in between gas-phase and particle-phase signals
 - upper size after particle-phase signals
- Click “Do calcs for panels below”

AMS Analysis

ToF-AMS Analysis Toolkit 1.56P

MANCHESTER 1824

Credits Version Website FAQs, Support

HDF Index Corrections MS PToF Checks Misc

Species Org,NO3,SO4,NH4,Chl

Diameter axis dXdlogDa vs logDa

Output Plot single Show DC regions Find, display mode, median stats

Diameter Base As saved Set interval # of bins 1 min (nm) 20 max (nm) 2000 Custom wave (edges in nm, wave is in root) Wave name:

Size and Time Species list to default Calc. size distribution Calc. 2-d time, size (image plot)

Mass Spectra Species list to default Calc. size-resolved mass spectra Calc. time, size-resolved mass spectra (3-d matrix, not plotted)

MSSDif vs PToF species panel MSSC Hz vs DC regions

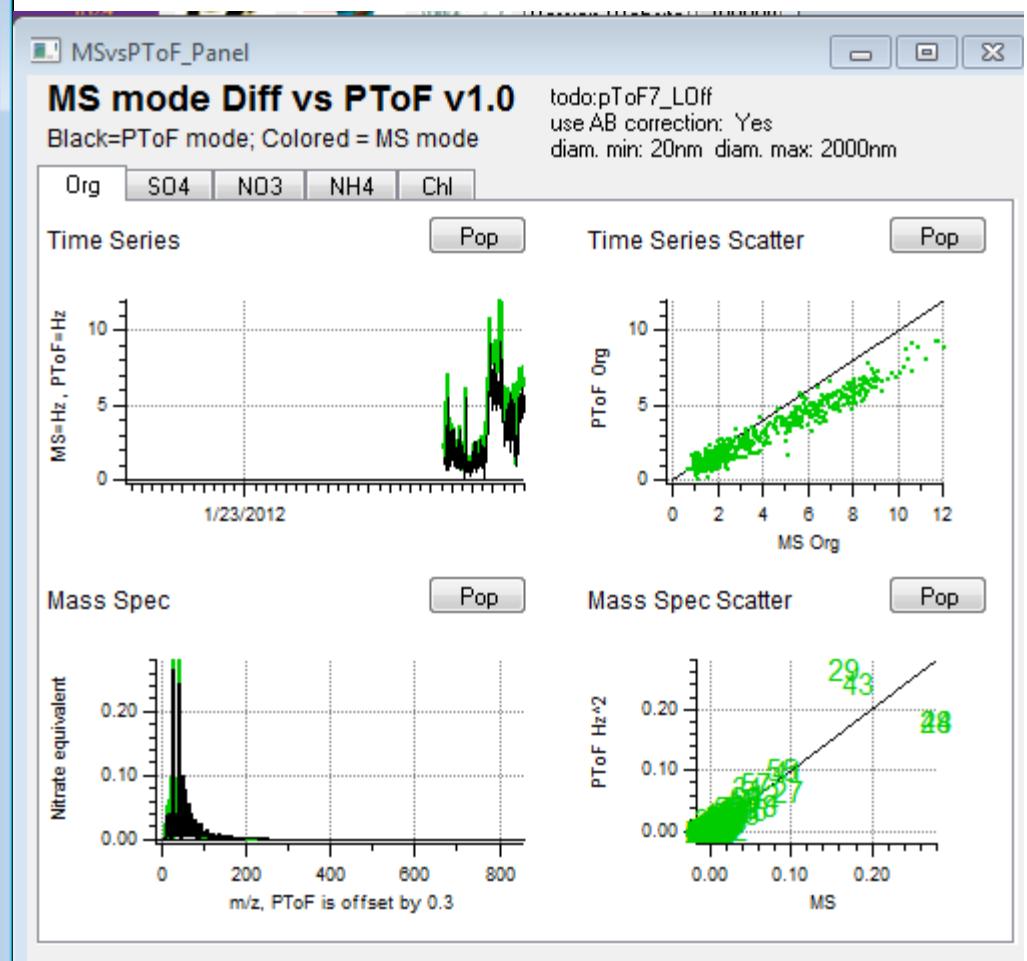
ToDo Wave Selection Todo pToF7_LOff ToDo Table ToDo Graph

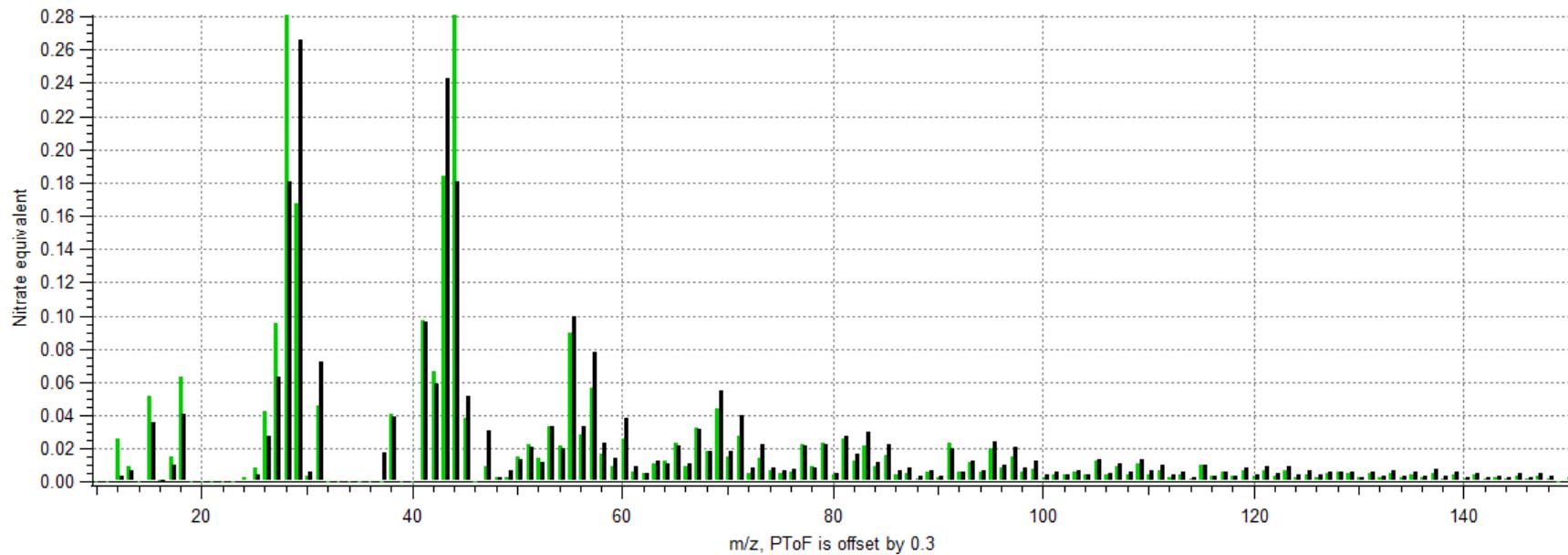
ToDo Wave Creation Run Interval allPToFGrp08 and Amb_LOn_B Name pToF8_LOn New ToDo Blacklist runs

Time Base Selection As saved Set interval (m): 0 Review Batch Custom wave: Review Frags

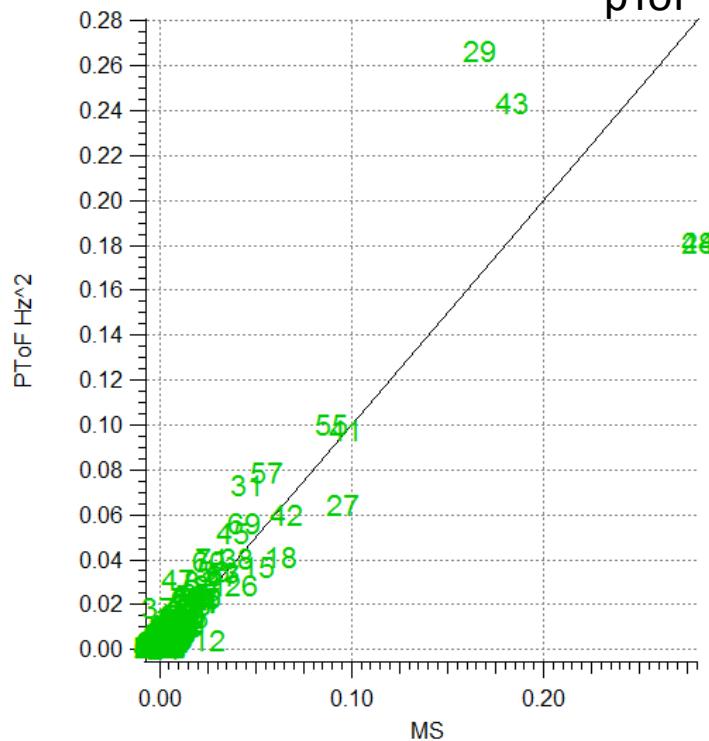
Done.

pToF vs MS by species: MS and t_series



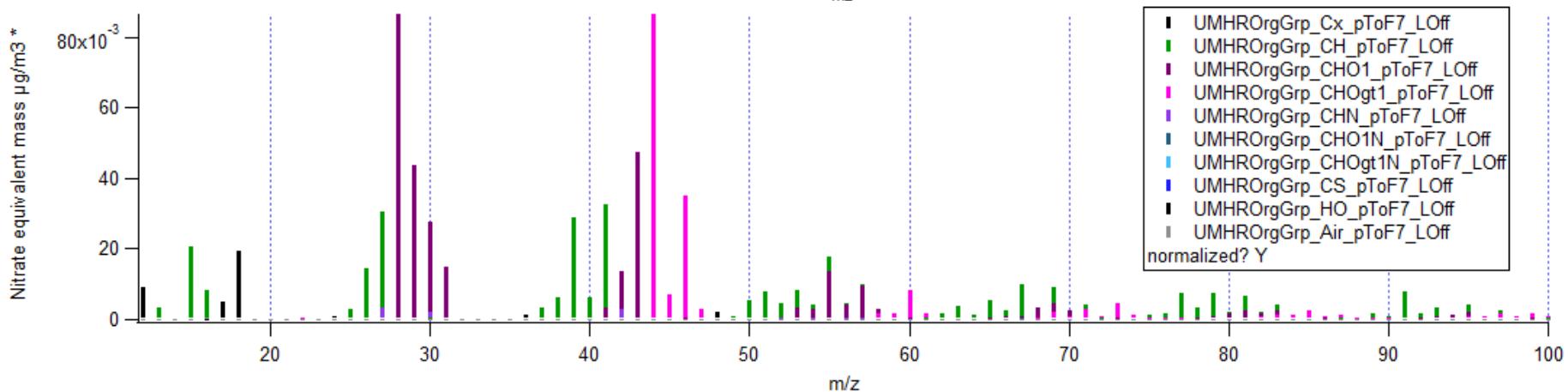
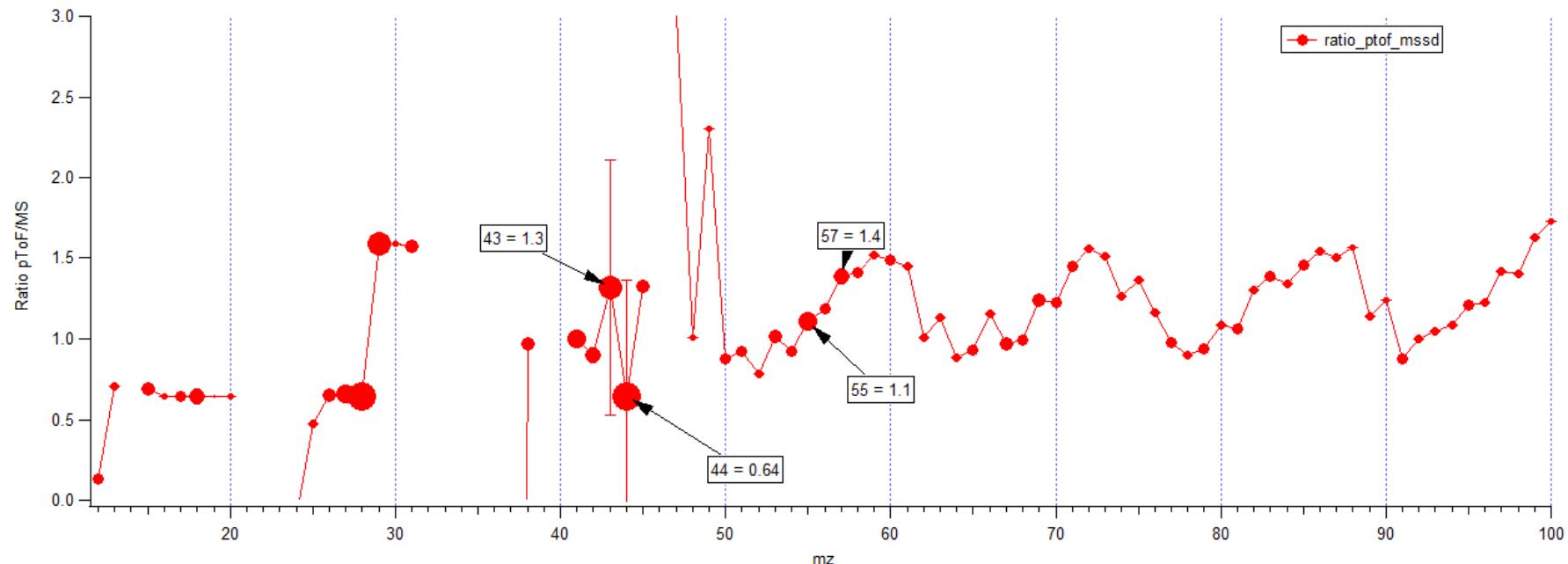


pToF MS (black) vs MSSD (green)

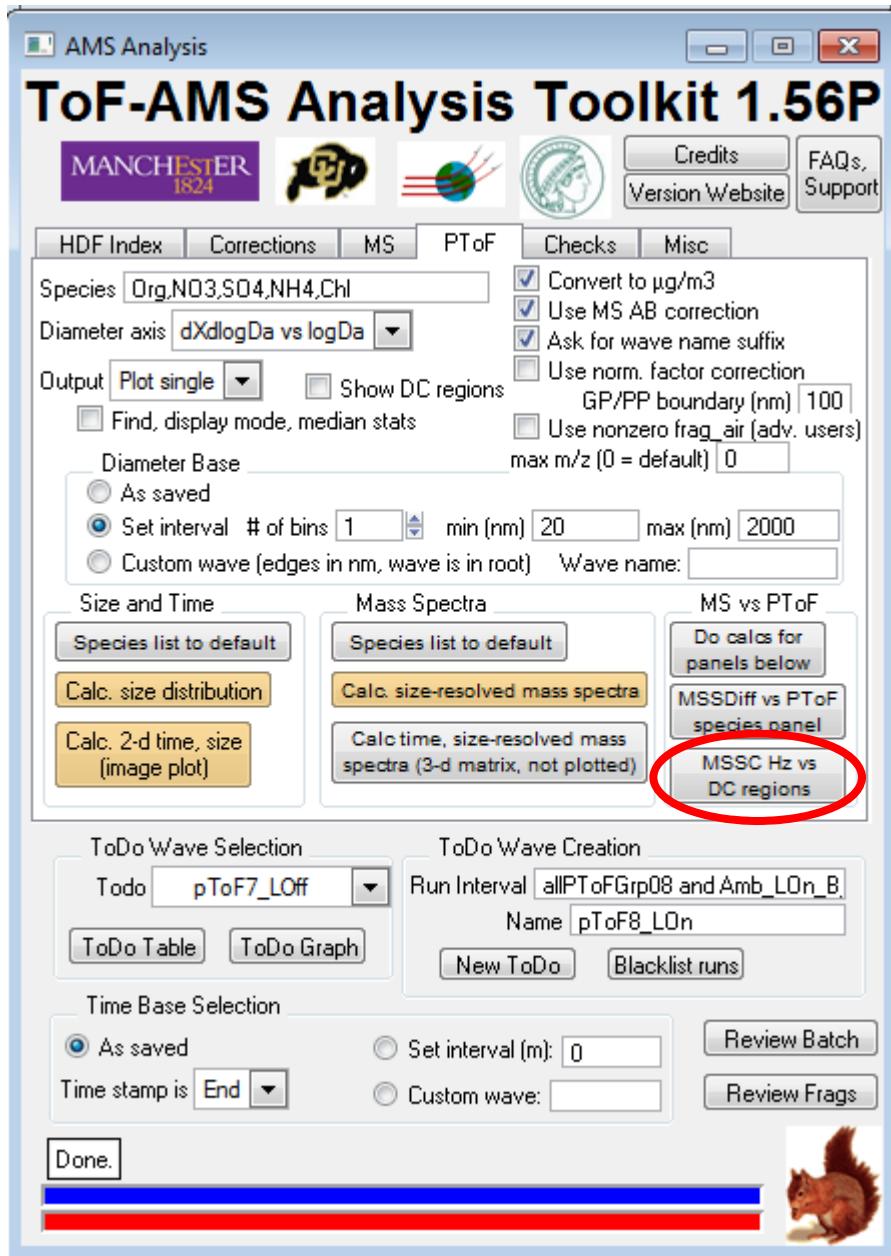


- If pToF > MSSD, then chopper duty cycle may not be correct (older choppers had a variety of slitwidths).
- Set variable root:diagnostics:chopper_duty

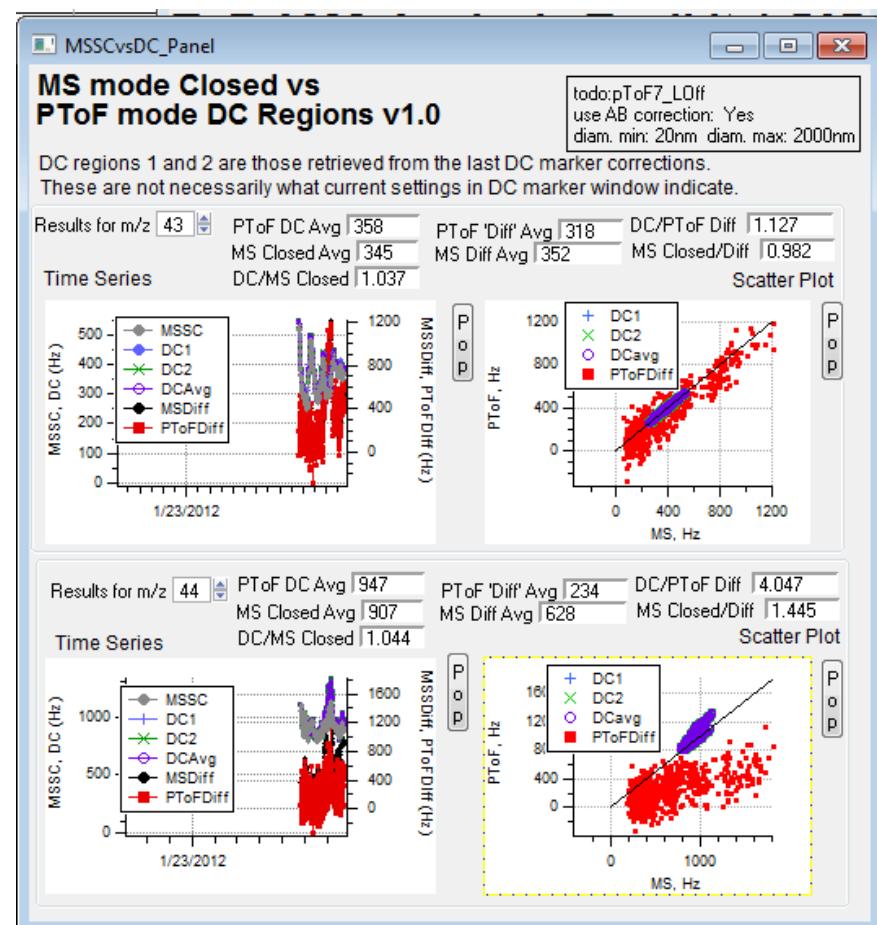
Ratio of pToF/MS from preceding panel.

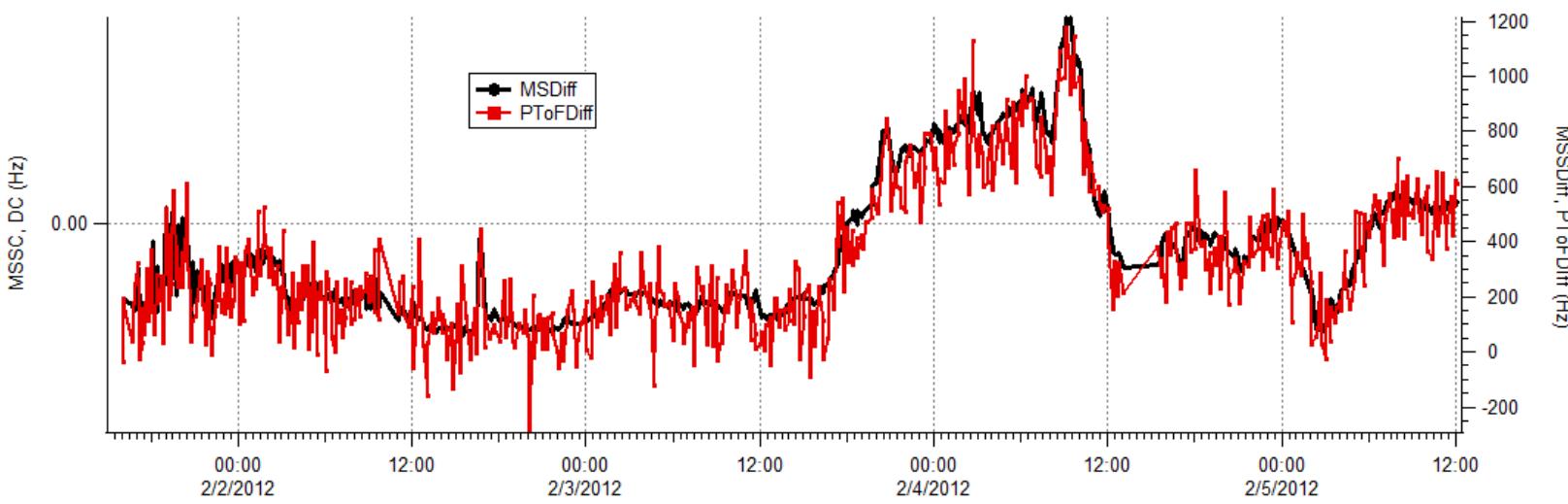


Oscillation in ratio. Not clearly fn of signal intensity or oxidation.

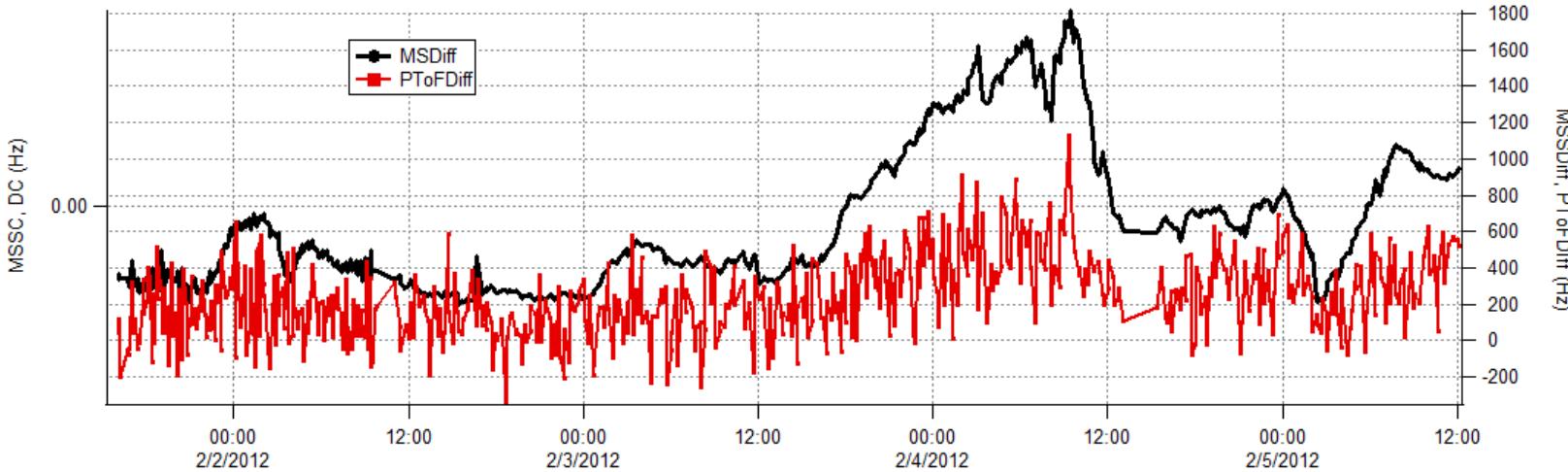


pToF vs MS by mz

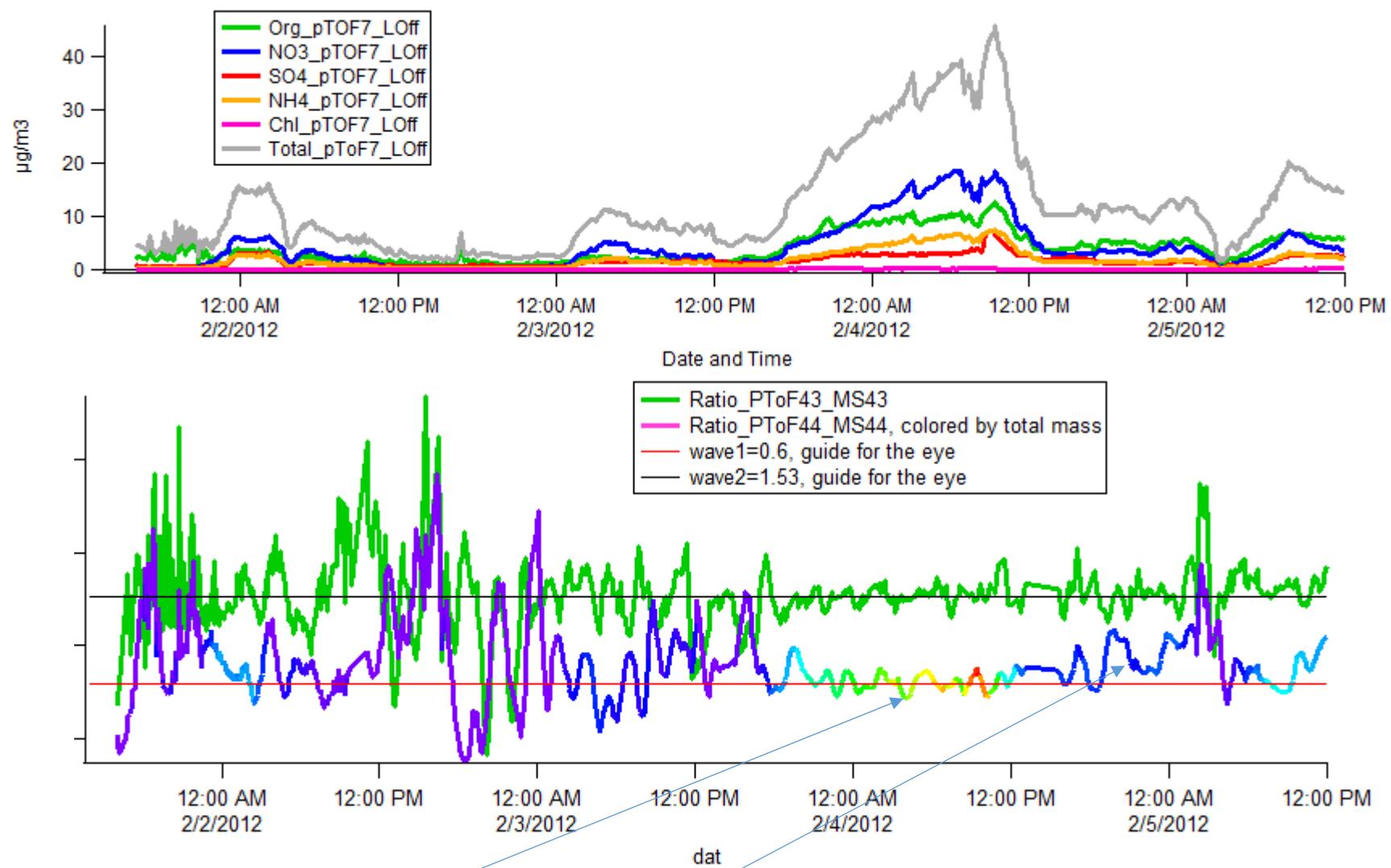




mz 43: pToF and MS same size, track in time, pToF is much noiser.



mz 44: pToF < MS same size, don't track in time, pToF is much noiser.

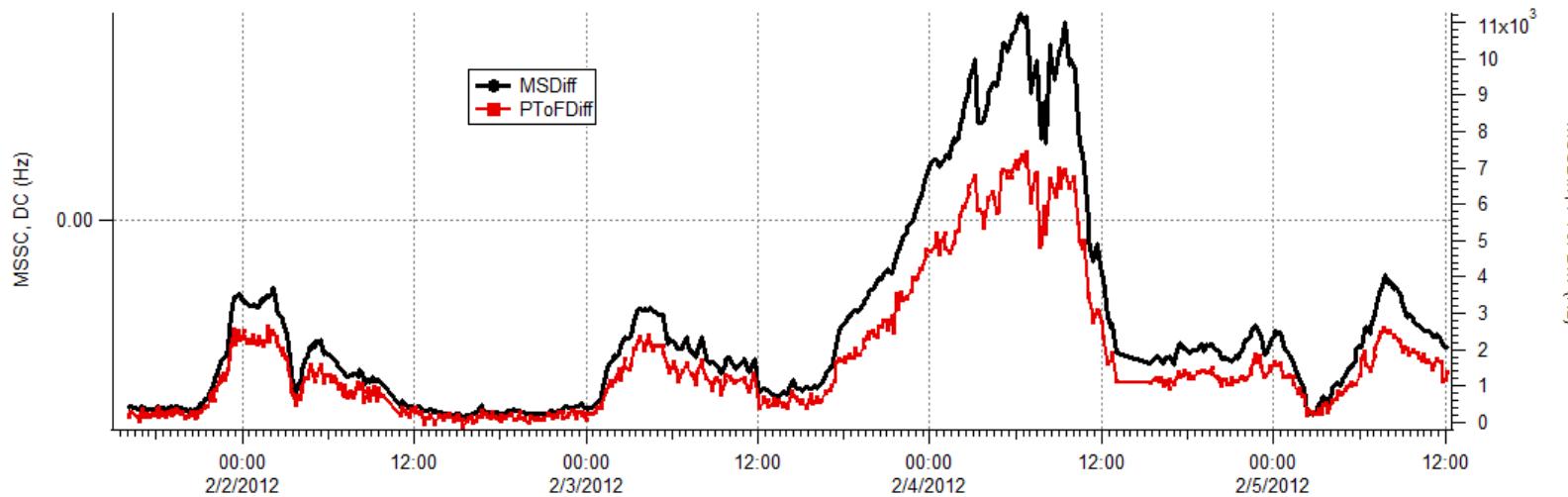


Ratio of smoothed PToF to MS at 43 (green) and 44 (colored by total mass loading in top panel). Very noisy for low mass loadings. Maybe a hint that ptof44/ms44 is lower during high mass loading than medium mass loading, while ptof43/ms43 is constant.

NO3 Fragments: NO2 mz46 “fast”, NO mz30 “slow”



mz 46: pToF and MS same size, track in time.



mz 30: pToF < MS, track in time.

