Preliminary Results using Event Trigger

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Two Airborne Field Studies:

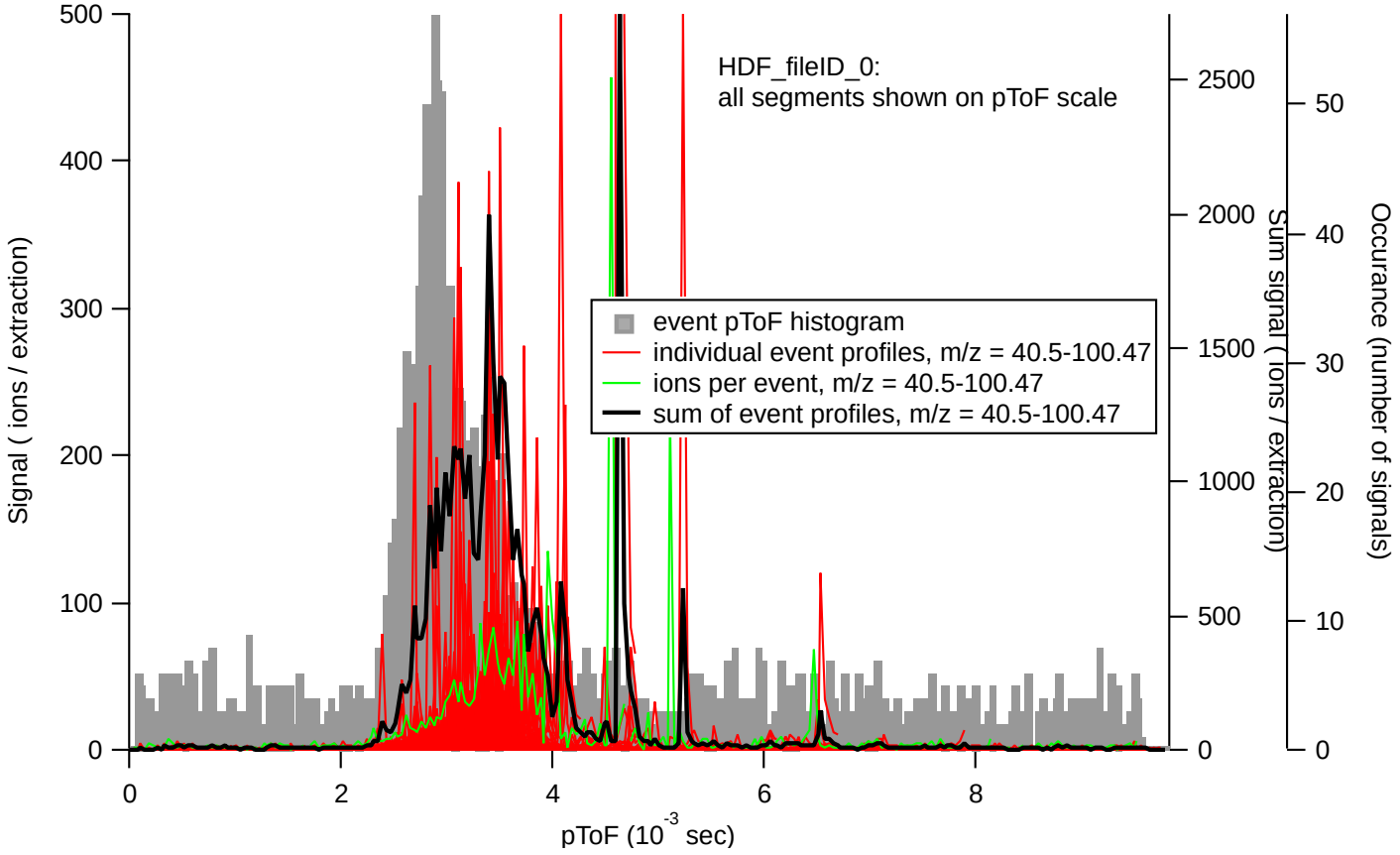
SP-AMS plus ET

1) Intense BB Event sampled over NWT and Northern Ontario – 07/2014

2) Three flights in the Canadian High Arctic, sampling "Arctic Haze" from 60m to 3500m – 04/2015

1. Northern Canada Biomass Burning

Flying at constant altitude (~3km), running ET alone with 60s duration



Example from 60s of data

Trigger: m/z 36 OR m/z 40-100

Large particles and very (!) high mass loading…

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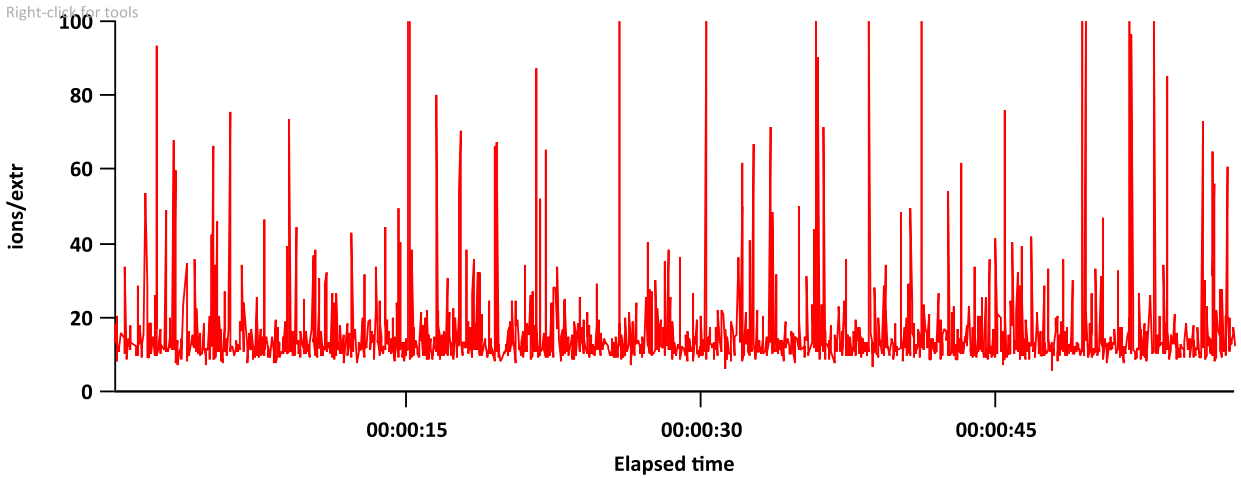
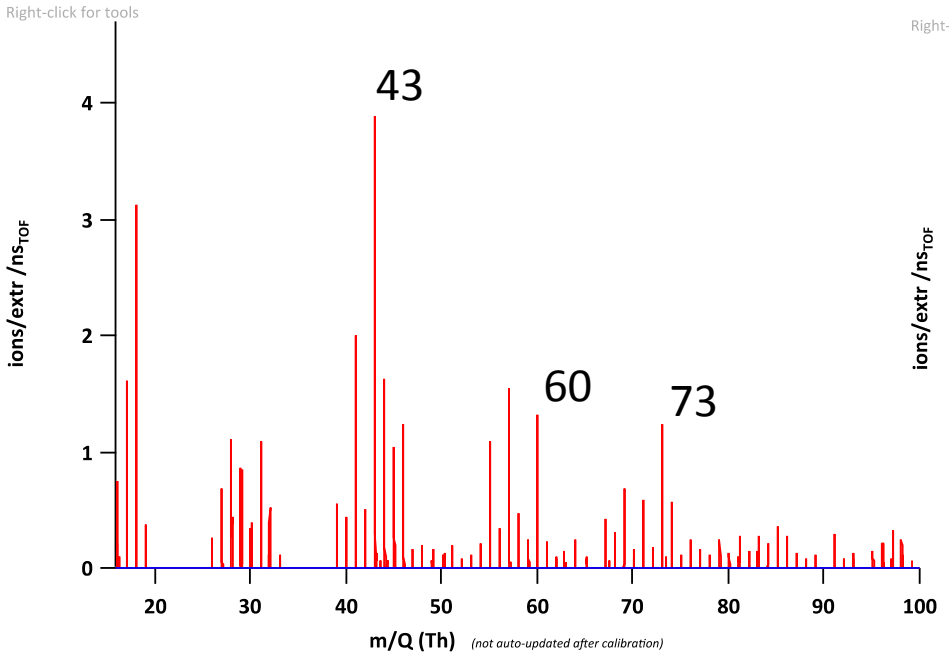
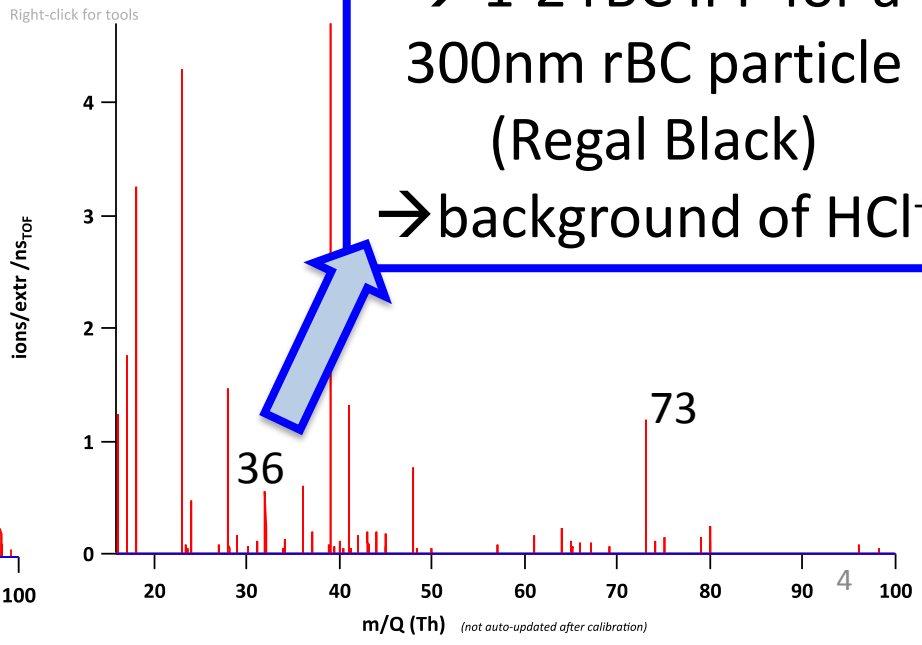






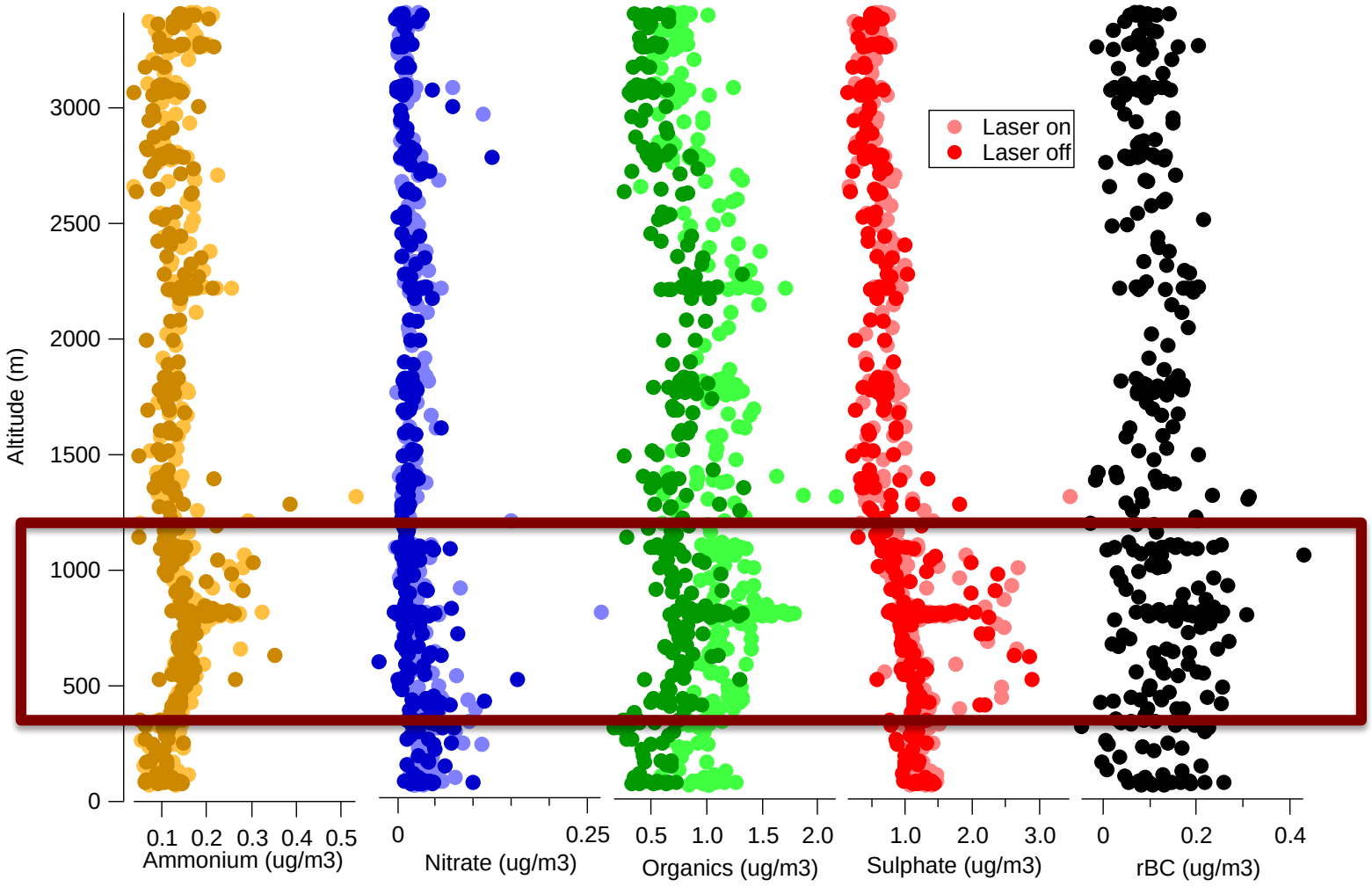
Note: Current rBC sensitivity ~100-200 ions/pg

→ 1-2 rBC IPP for a 300nm rBC particle (Regal Black)

→background of HCl^+

2. Canadian High Arctic Haze

One example from April 13, 2015, switching ET and BA (10s)



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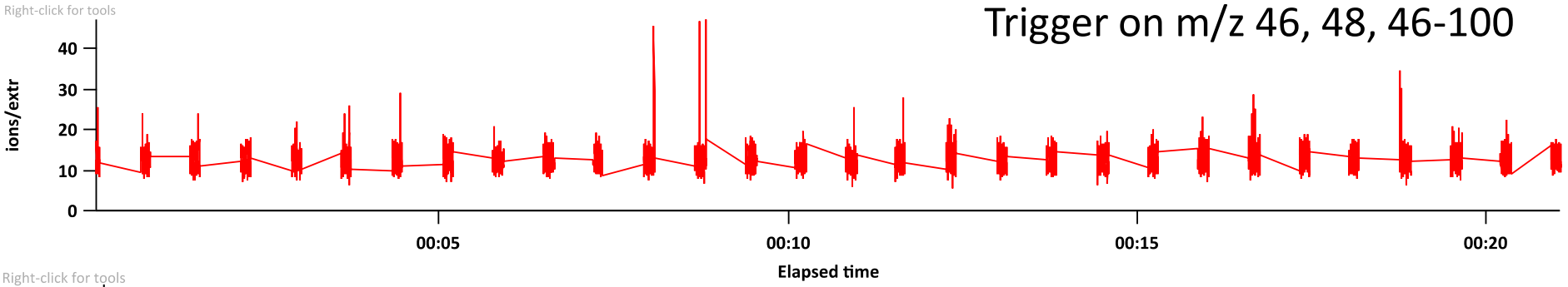

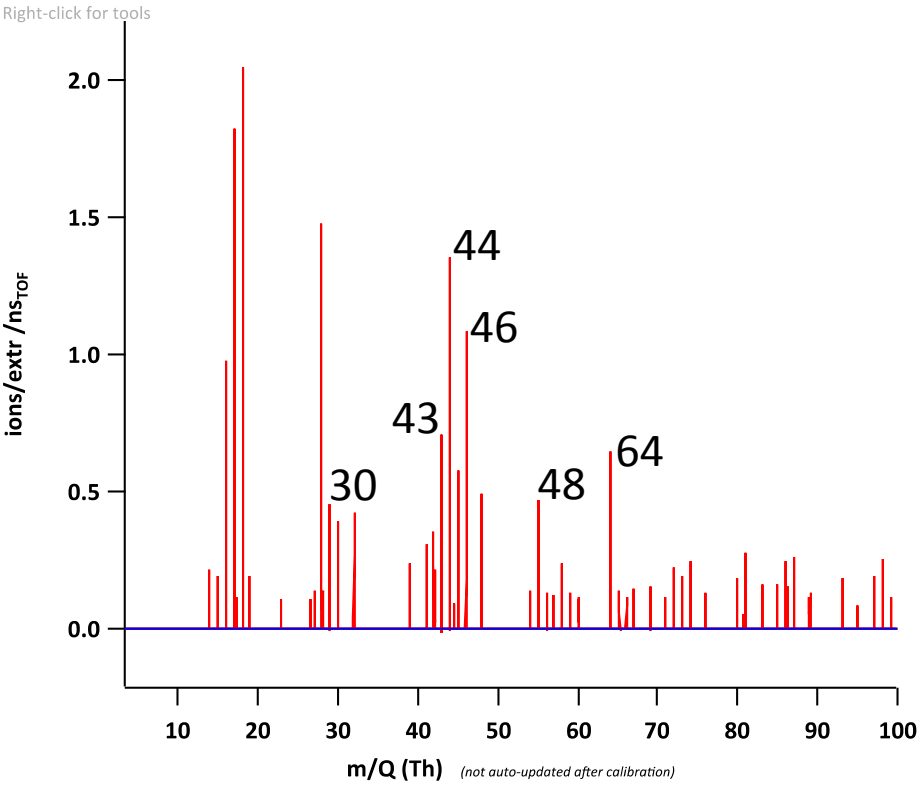

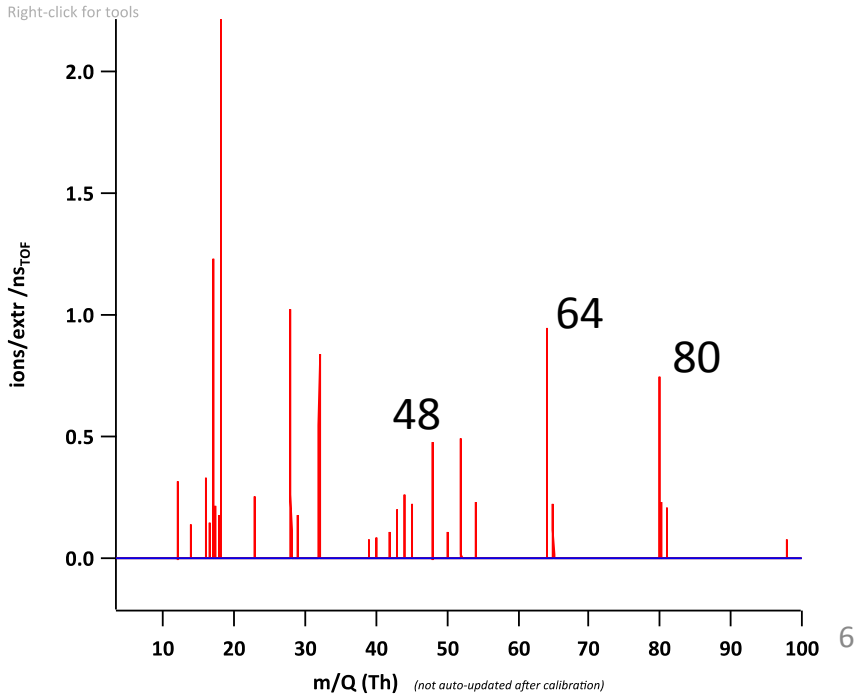

Next Steps & Questions

- **Our goal:** identify “real” particles based on total ions per particle →cluster analysis → insight into mixing state

- **What we want to do in Tofware**:
  - Similar to Sparrow – differentiate real particles from false positives using IPP minus air fragments
    - Plot total aerosol ions per event (excluding air) versus pToF
    - Plot a histogram of total aerosol ions per event

- **Next…**
  - With ET we see what we see → how can we get insight into what we miss
  - Can we use light scattering information with ET?