RIE for SO4 and NH4

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AMS Users’ Mtg
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Data for RIEs

• Inspired by Qi’s talk yesterday …
  – Is RIE for NH4 different for NO3 and SO4?
• Need a dataset containing ammonium nitrate, ammonium sulfate, and mixed particles, generated on or about the same day.
  – Do not want datasets with a variation in RIE for NH4.
• Have this from 2005 and 2006 Quad.
NH4 Fragmentation Pattern

Ammonium Fragments
- ▲ 17/16, nitrate particles
- ● 15/16, nitrate particles
- ▼ 17/16, sulfate particles
- ○ 15/16, sulfate particles

m/z 15 or 17 relative to m/z 16

Sampling Line Relative Humidity (%)
Calculate RIE for SO4

Use the analysis program to determine RIE for SO4 with mixed ammonium sulfate/nitrate particles.

1) Calculate NO3 with RIE=1.05 and SO4 with RIE = 1, and “default” frag waves.
2) Plot SO4/NO3 vs solution concentration and determine slope thru 0.
3) This slope = RIE for SO4.
Determine RIE NH4 from NH4 vs NH4_calc

1) Calculate NO3 with RIE = 1.05, SO4 with RIE = 0.89 (previous slide), and NH4 with RIE = 1.
2) Plot NH4 measured vs NH4 calculated (=18*(SO4/96*2+NO3/62)) and determine slope thru 0.
3) This slope = RIE NH4.
Is RIE for NH4 different for NH4NO3 and (NH4)2SO4?

Maybe … should look at other datasets.