Welcome & Introduction to the 3rd AMS Users’ Meeting

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A Growing User Base

How do we deal with the growth?
Welcome to 3rd AMS User’s Meeting

- 1st Meeting: during AAAR 2001 (1/2 day)
- 2nd Meeting: November 2001 (3 days)
- Summary and feedback are on the web
- Future:
  - Keep this format?
    - Attend AAAR en masse, learn about each other’s results there
    - Use the AMS Users’ meeting later to address common technical and scientific issues
- Timetable for this meeting?
- I will email feedback questions after the meeting
Objectives of 3\textsuperscript{rd} AMS User’s Meeting

- Get to know each other
- Learn from each other’s experiences
- Provide feedback to Aerodyne for continued development
- Divide outstanding problems between users
  - So that they can be tackled more quickly
- Avoid repeating work that someone else is already doing
- Putting our results together into the big scientific picture
- \textit{Bottom-line: the AMS & the 4D data that it produces are very complex, users should be committed}
Aerodyne’s Approach to Distributing the AMS

- Highly unusual
  - Aerodyne is as interested in research as it is on making instruments
  - Very different from e.g. TSI
  - Pros
    - Highly dynamic team
    - Continuous improvement (“Worsnop’s law”)
    - We tell you everything we know
    - Foster user community
    - Support is better than some fully commercial companies
  - Con: things are always in flux, you have keep up with them

The Worsnop-Jayne’s Law

- Continuous improvements on hardware + software
- We have made enormous progress in a very short time
The Worsnop-Jayne’s Law, Part II

**x 3 signal every year**

**70% lower noise every year**

**Philosophy of the AMS Users Group**

- “Open Source” Paradigm
  - If we work together and share the information (such as in this meeting), **we all win**
    - Technical issues are addressed faster & in more focused way
    - You find out about problems & data analysis & interpretation much faster
    - You don’t duplicate other people’s work
    - We can more easily collaborate in meta-studies
  - Individual users can decide to which extent they want to be “open source” or “proprietary”
    - You won’t get much out if you don’t put something in
    - *So far more “proprietary” users are doing less well!*
- Big question: how will this evolve as we grow?
  - Core “open source” user group?
Examples of Benefits of Openness

- Characterizing the instrument very fast
  - Work of Frank, Rami, Phil
- What works + does not work in the field
- James Allan’s data analysis program
  - Much faster and consistent data analysis
  - Lots of people can catch bugs, suggest improvements
    - E.g. Qi thoroughly compared old + new version
- Manual
  - Frank, Alice, & Manjula have put many hours into it
  - Great to introduce new users to the AMS, serve as a reference
- Worksheets
  - Serve as a repository of our knowledge about how to operate the instruments, what can go wrong, and appropriate order to check things
- Airplane integration group
- *A lot more fun!*

Issues to Continue Working On

- Most important
  - Transmission of non-spherical particles
  - Transmission of the lens vs. particle size
  - Mass calibration factors
    - Particle transmission
    - Ionization efficiency
    - Quadrupole transmission + multiplier response vs. m/z
- Other ongoing issues
  - Detection of refractory materials
  - Interpretation of the organic signals
  - Consistency in instrument operation & data analysis
Main technical issues as of Aug. 2000

- Particle beam alignment
- Measurement / improvement of the transmission efficiency of the aerodynamic lens
- Unexplained variations in sensitivity
- Particle bounce / oven design
- Reducing the background
- Investigation of the sensitivity of the instrument to organics, to inorganic-organic mixtures, and heater setting for ambient organics
- Development of a consistent set of software tools for data analysis
- Airplane & truck integration

  - Almost all solved or a lot of progress made
  - MUCH faster than other groups in the same situation

Means of communication

- Yearly users’ meetings
- Mailing lists
  - www.aerodyne.com, follow link to mailing lists
    - ams-users@aerodyne.com (general purpose)
      - Add your new users or email addresses ASAP to the list!
    - ams-igor@aerodyne.com (igor data analysis updates)
    - ams-support@aerodyne.com (hardware + software support from Aerodyne)
- AMS Web page
  - http://cires.colorado.edu/~jjose/ams.html
  - Meeting summaries, component manuals, papers, links to web pages of all users (and also laser-AMSSs), general aerosol + MS information & links
  - Aerosol MS tutorial
- FTP site:
- Maybe: local user’s groups (Boston, Japan, Boulder…)
Other Notes

- Format of science presentations
  - Most are 15 minutes
  - 10 slides (summarize, can’t tell everything)
  - Time for discussion is very important
  - We will keep track of time
- If interested in aerosol climatology paper:
  - Email me ambient presentations
- For list of publications (to be distributed, put on web page)
  - Email me the references (reprints) for papers submitted, published, in (advanced) preparation

Other Notes

- Note takers
  - Experienced user: Ann Middlebrook
  - New user: Qi Zhang
  - Ann & Qi will produce a meeting summary to be posted on the web
    • Jose + Manjula will proofread
  - Anyone else taking good electronics & paper notes, please forward them to Ann + Qi at the end of the meeting
    • Help on compiling the notes would be highly appreciated
In summary

- This is an informal meeting
- We are here to get to know each other, share information, and discuss issues
- *Ask many questions!*