

Precursor Gas Data Validation: Let the Data Talk!

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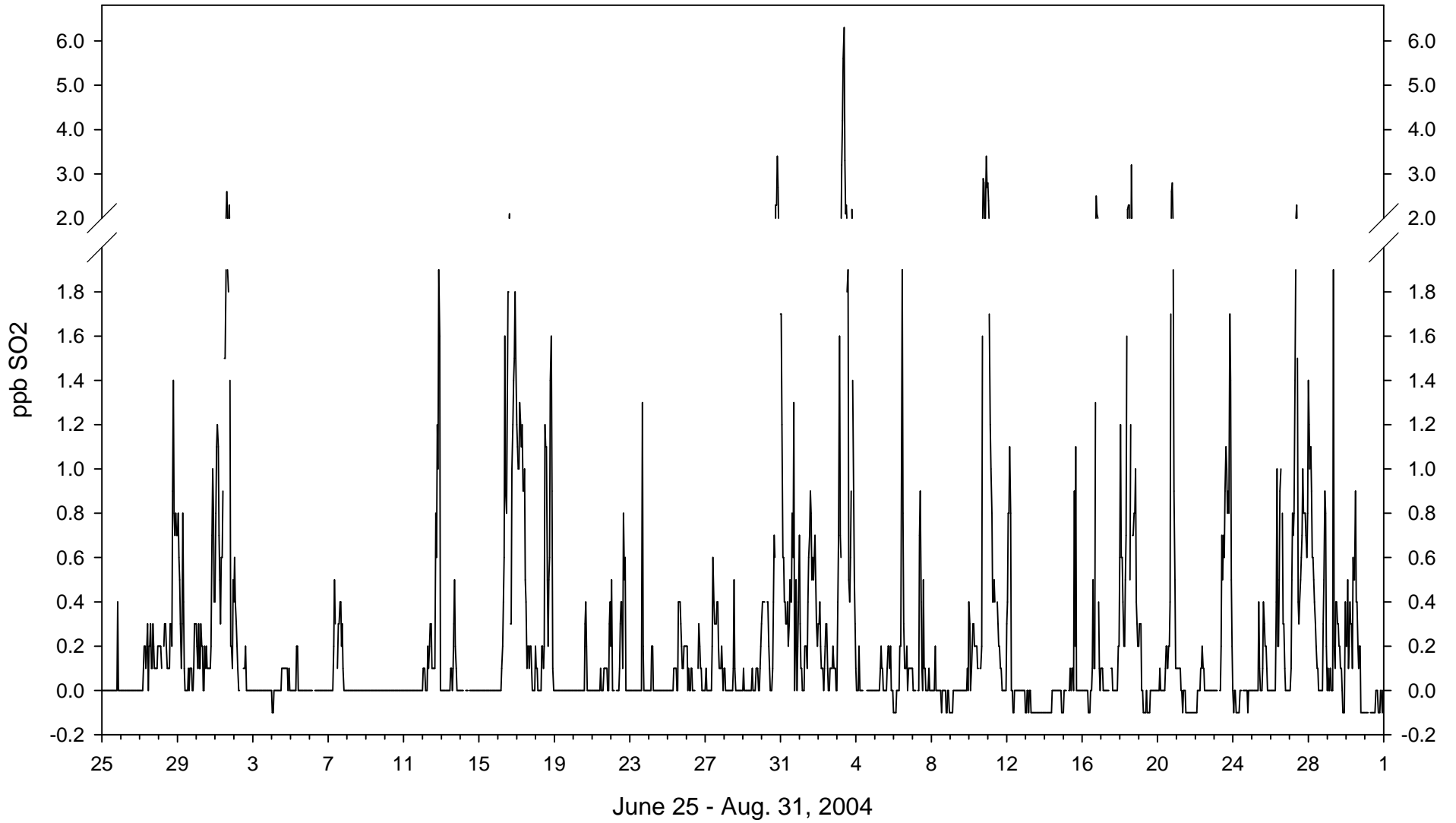
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- Precursor (trace) gas validation issues and techniques:
==> beyond normal “compliance monitoring” data validation efforts for CO, SO₂, and maybe NO_{w-x-y-z}
- Buying/installing/running a “trace” gas analyzer does not guarantee “true-trace” data quality:
“The hardware is only the beginning”...
- Many of the issues “beyond the hardware” covered in EPA Version 4 Precursor Gas TAD at: <http://www.epa.gov/ttn/amtic/pretecdoc.html>
(NO_y section still under revision)
- Another resource: RAIN SO₂ Guidance Document (G. Allen):
<http://tinyurl.com/y5e78d> (y 5 e 7 8 d)
Specific to trace SO₂; many concepts apply to other gases

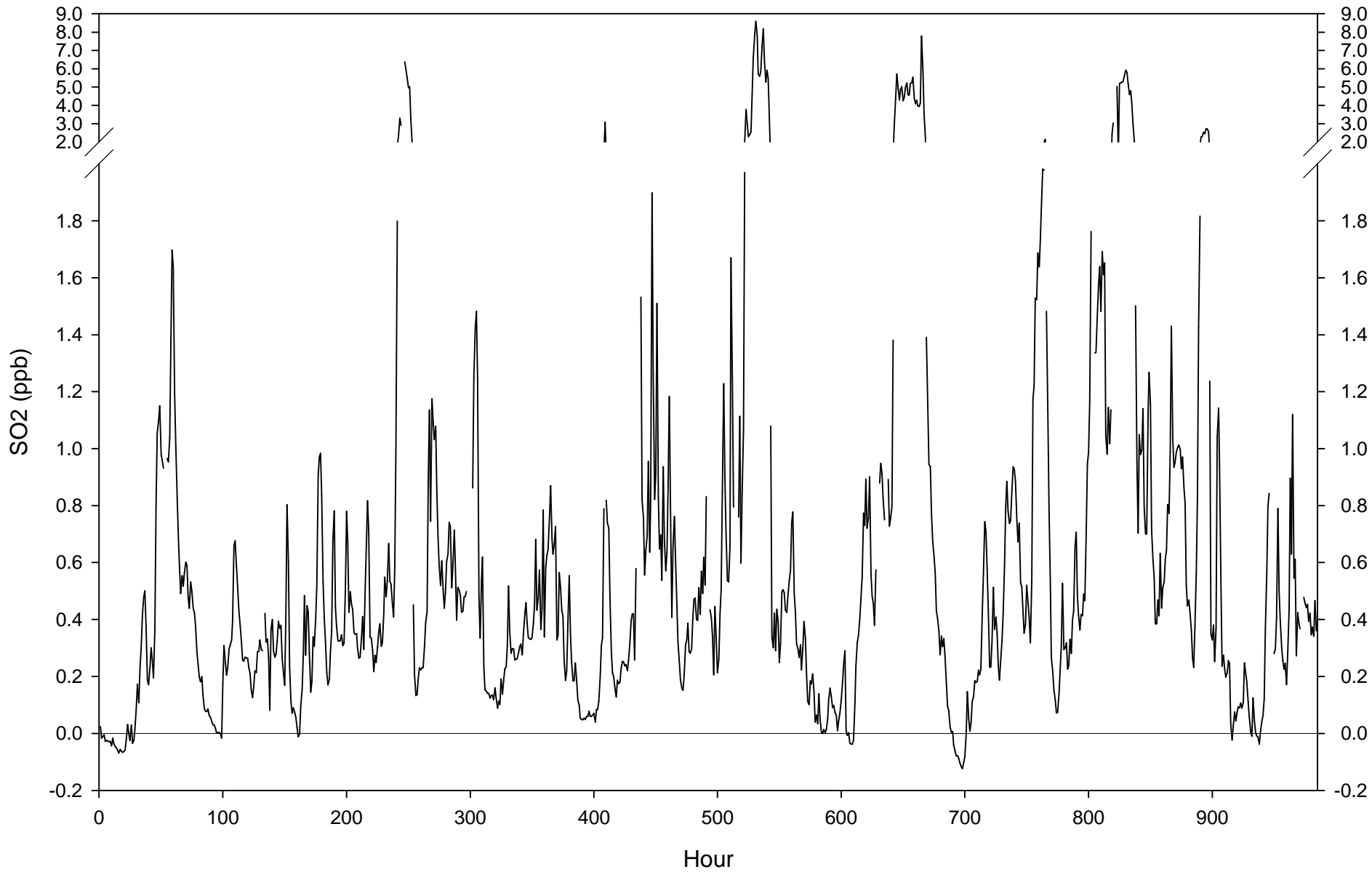
This talk:

- After routine level 1 validation, look at the resulting data
(it will talk to you if you're listening)
- Do “reality checks”: critical review of time-series plots
- Are you getting the expected data quality?
What IS the expected data quality??
What are “true-trace” level analyzers capable of?
- Does staff doing review have the proper training for this task?
- Some “case studies” illustrate the concept

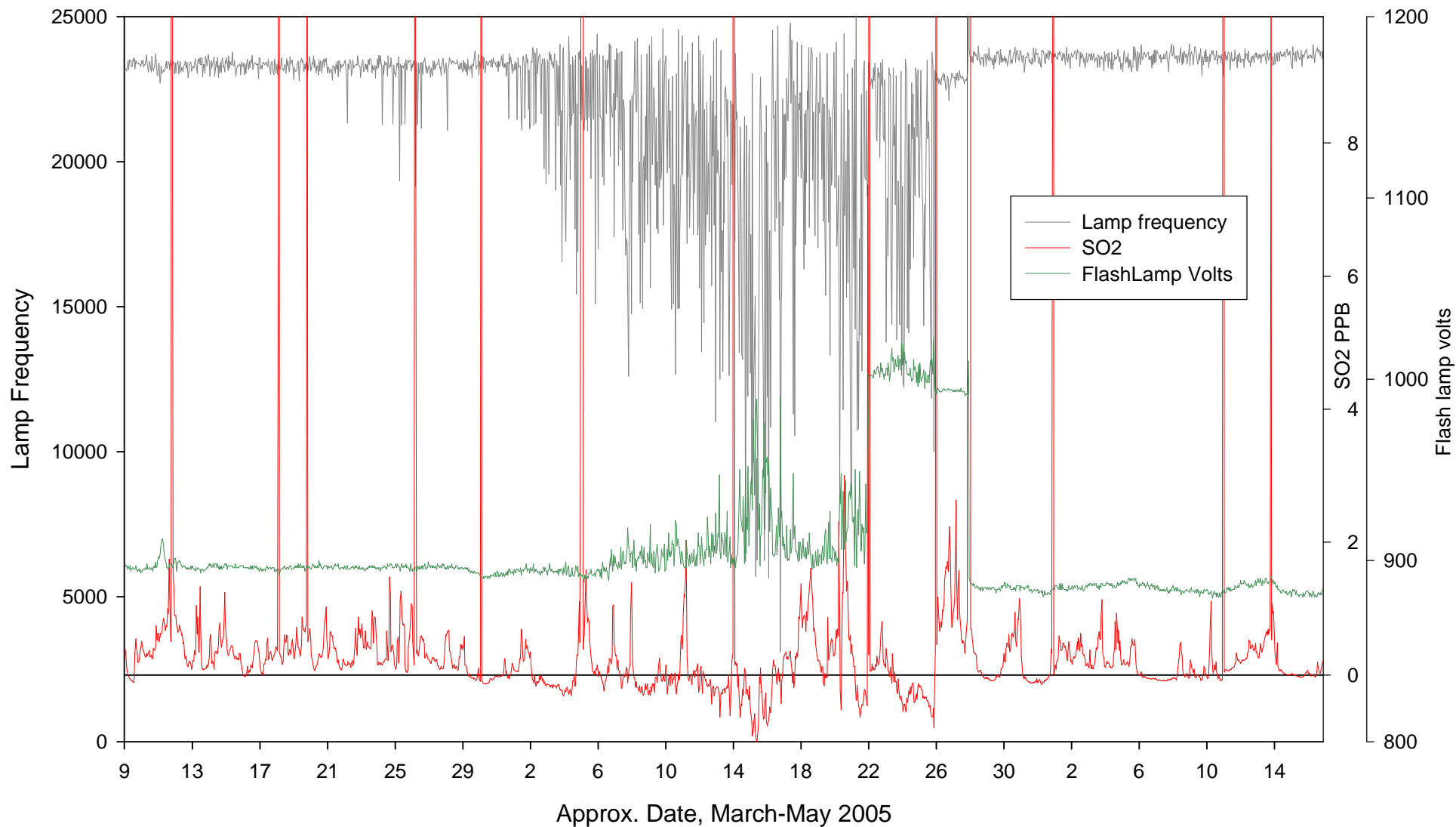
Hourly Trace SO₂ (Thermo 43C-TL)
Acadia NP (BMMH), Maine-DEP June-August, 2004



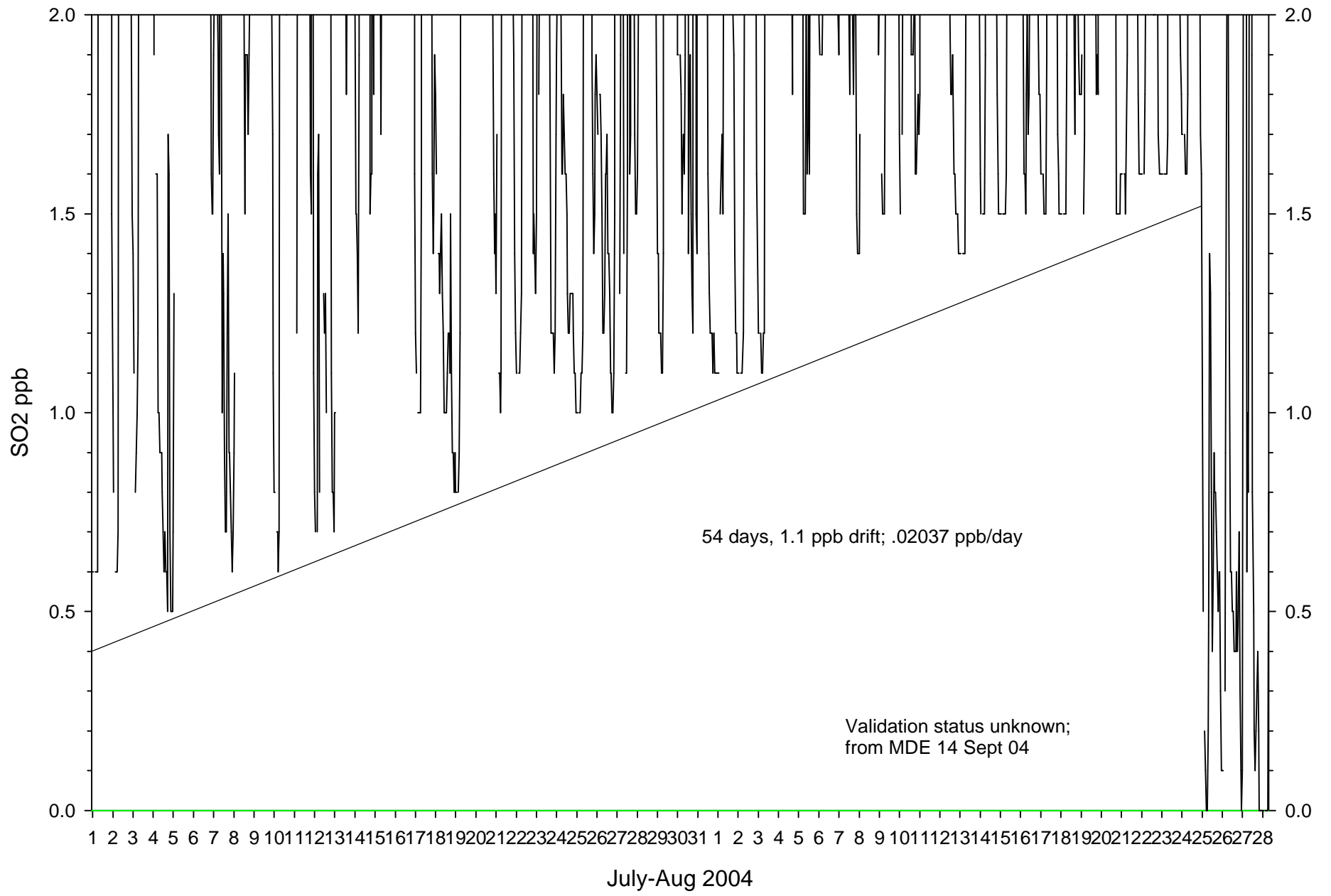
Hourly Trace SO₂ (Thermo 43C-TL)
Acadia NP (BMMH), Maine-DEP, Nov. 25 2004 - Jan. 4, 2005



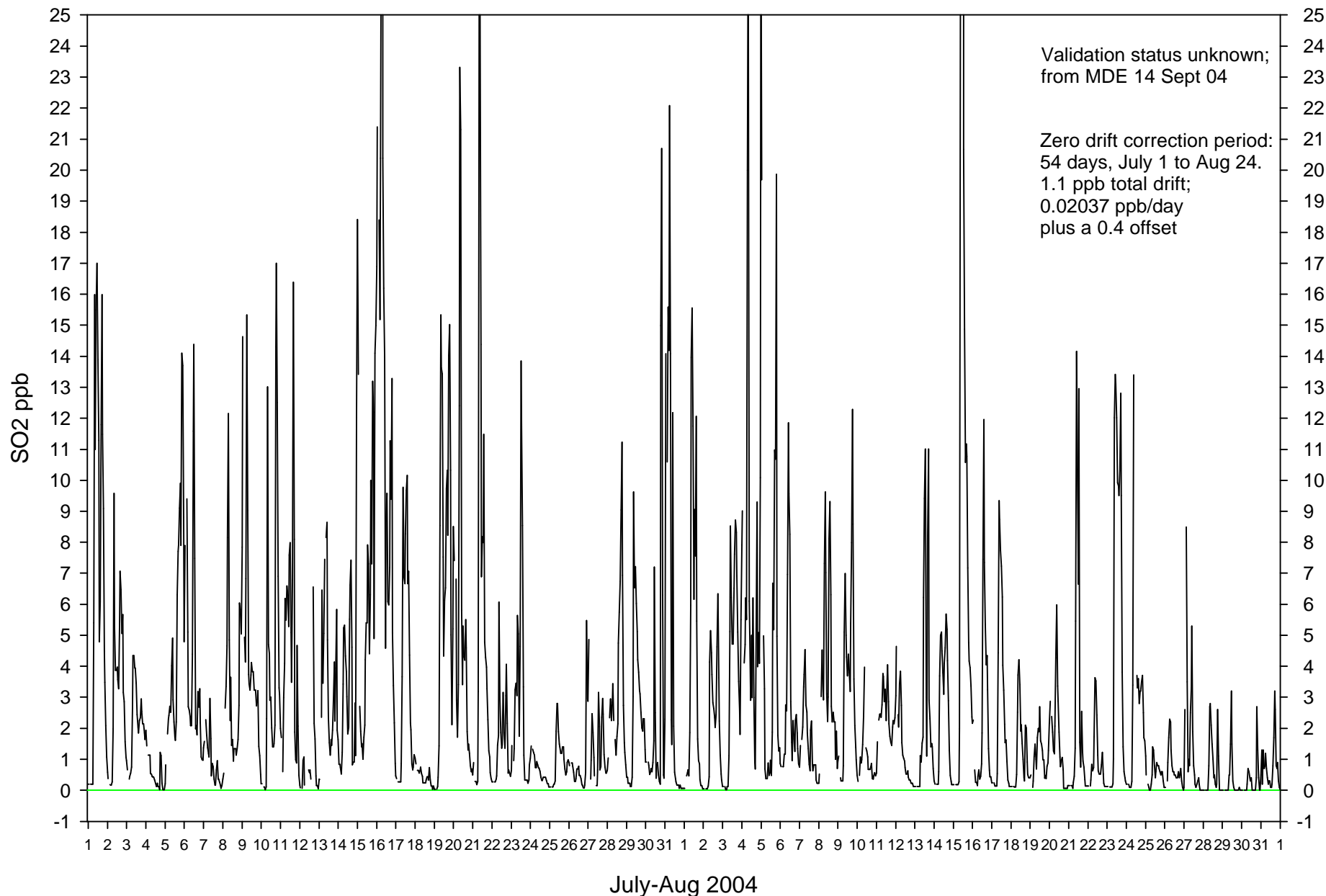
BHMF Acadia Hourly SO2 during lamp failure period

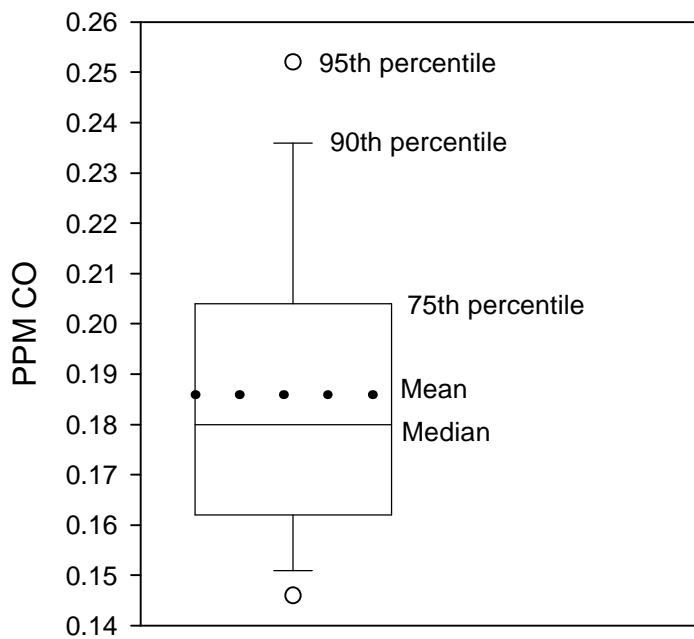
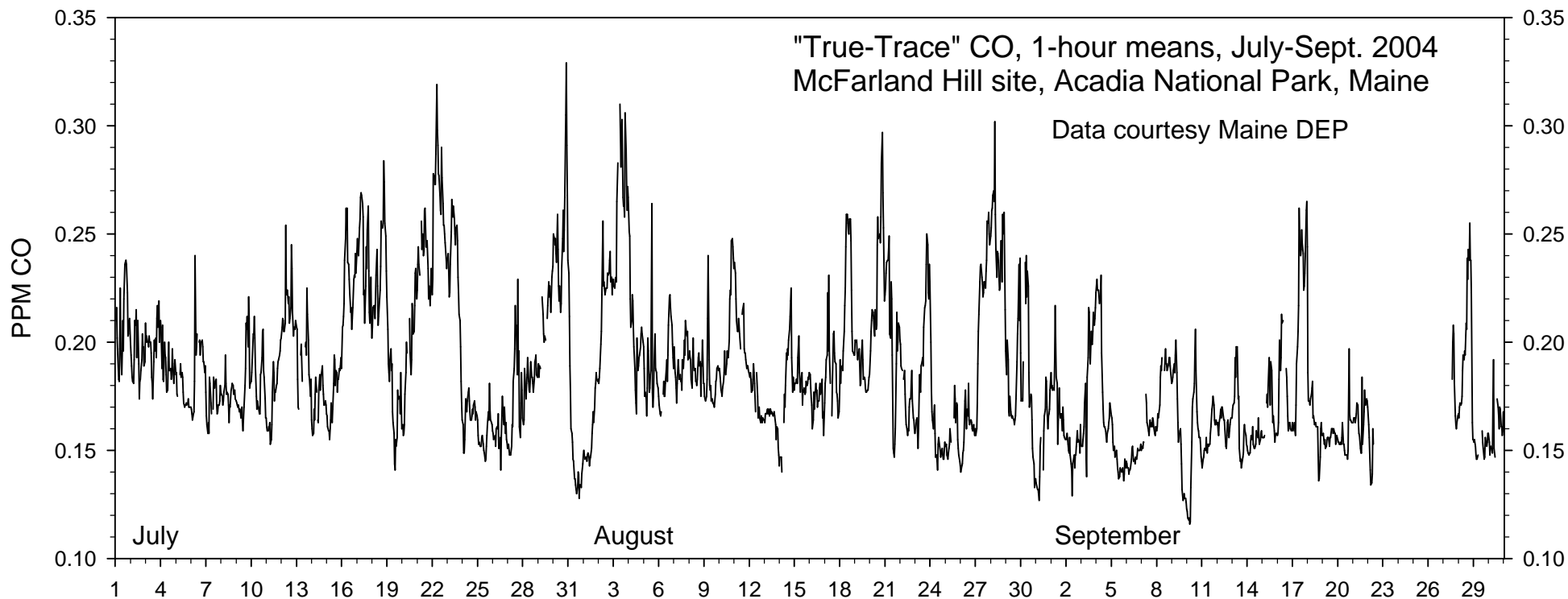


Piney Run SO2 July-Aug Baseline Drift



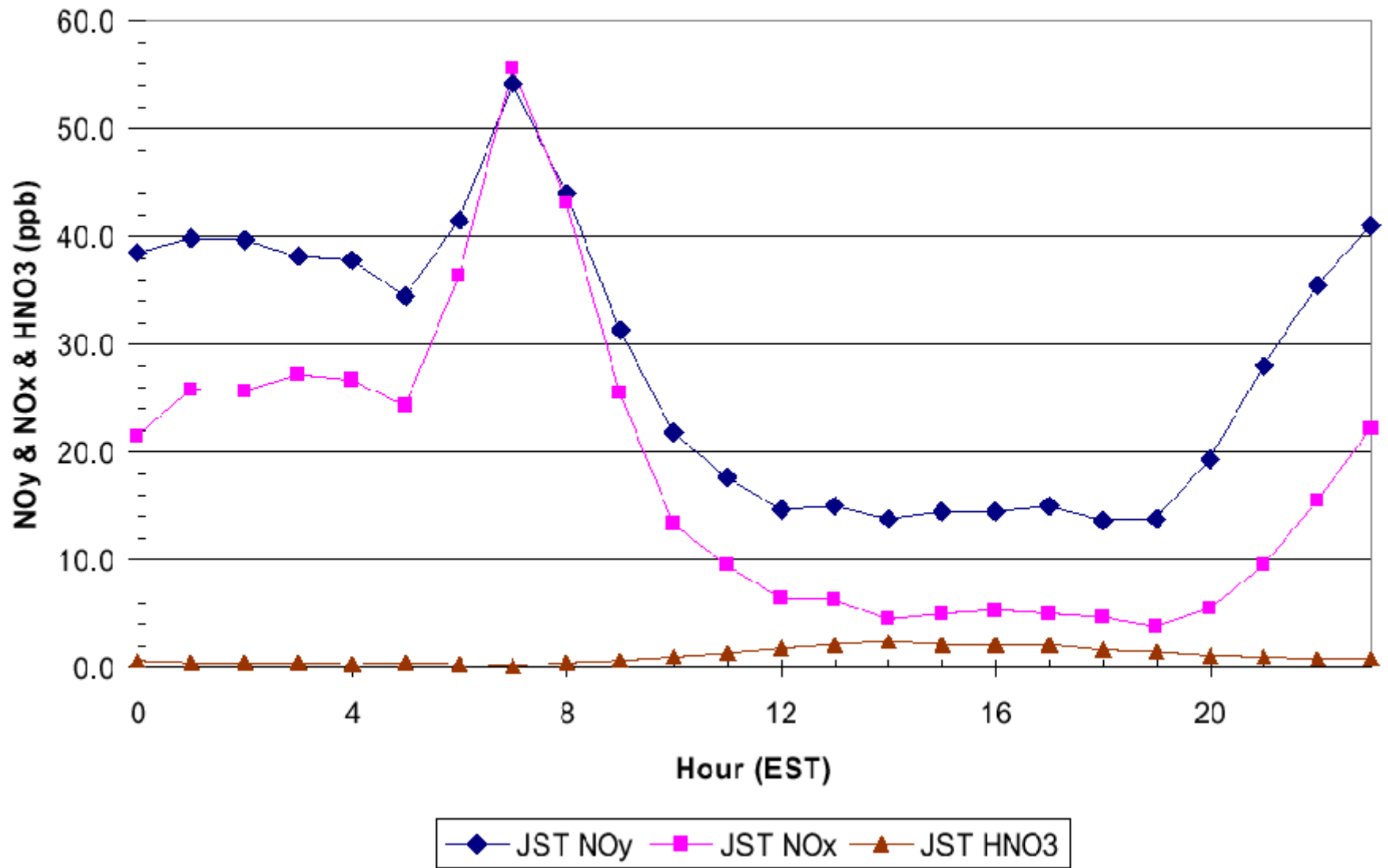
Piney Run SO2 with baseline drift correction to 8/24





Distribution of 1-hour CO data

Atlanta-JST July 2001 Observed Diurnal NOy & NOx & HNO3



Method specific issues

- Thermo 48C-TLE / I-TLE CO:
 - Uses Carolite, not Pd
 - Finite lifetime (unlike Pd catalyst approach)
 - How do you know when it needs changing?
 - Did you know it needs changing? (not in instrument manual...)
- All SO₂ analyzers:
 - Potential for NO interference in urban areas (low SO₂, high NO)
 - Do you know what your rejection ratio is?
 - Did the vendor spec it correctly? (not always...)
 - Trust but verify?
- NO_y: useful commercial analyzers just starting to be available
 - Existing commercial NO_y instruments:
 - under measure NO_z, over measure NO₂