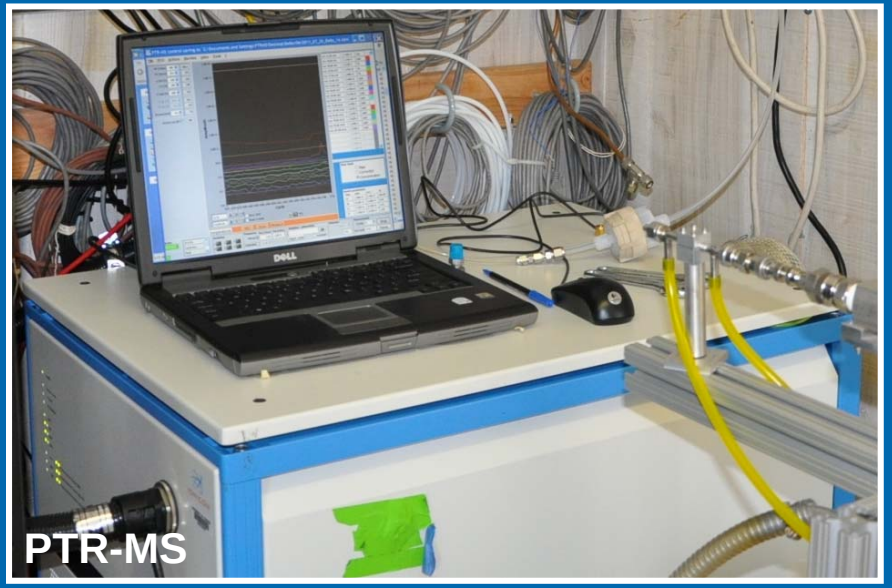
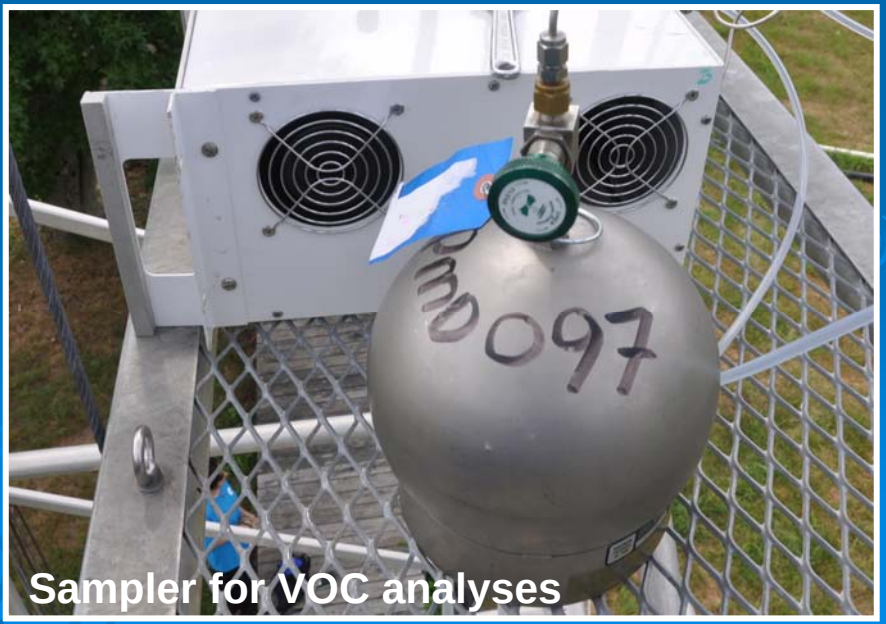
Ground Observations at Beltsville During July 2011

Ground-based observations: Gases

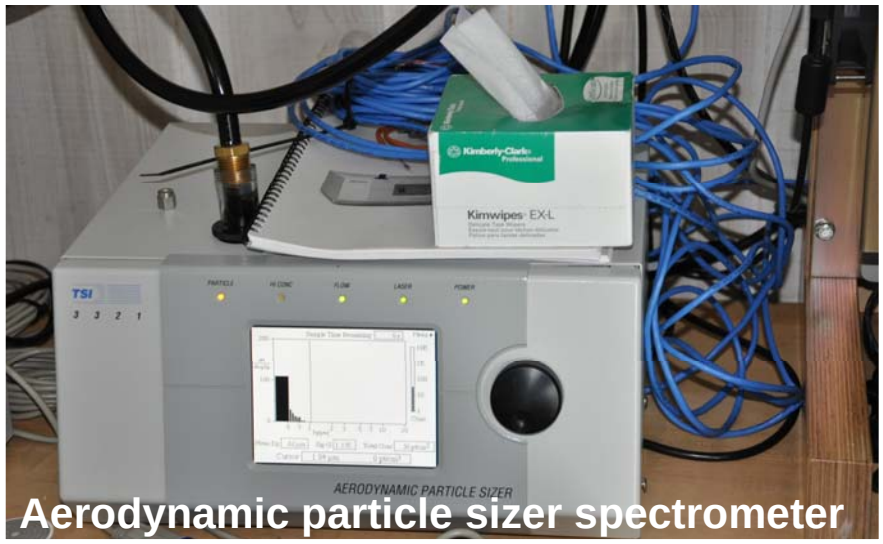
NOx and ozone gas analyzers


PTR-MS



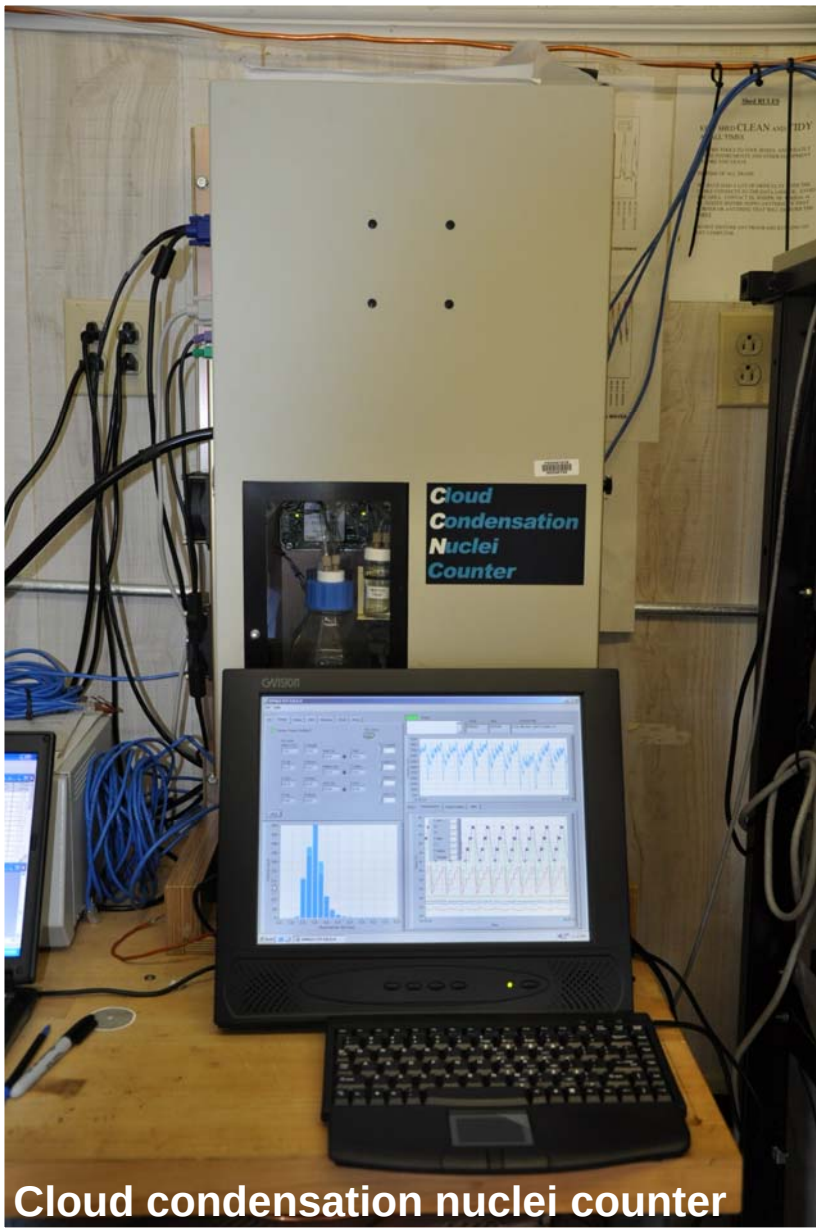
Sampler for VOC analyses

Ground-based observations: Aerosols



Aerodynamic particle sizer spectrometer

Fast mobility particle sizer spectrometer



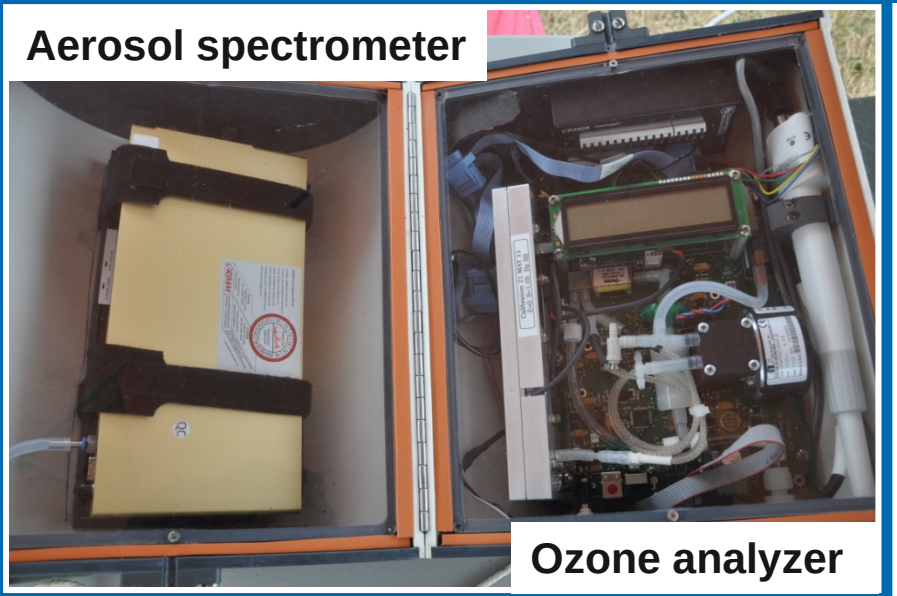
Cloud condensation nuclei counter

Airborne observations: Ozone sondes

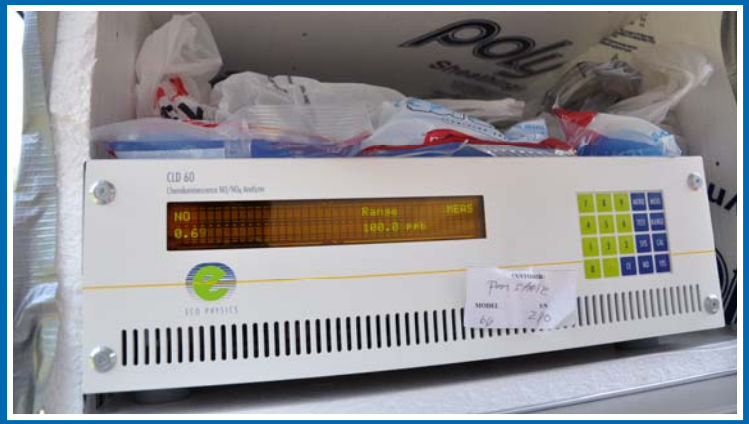
The sonde pump flow rate and background current response to ozone were tested before sonde launching.

About 3-7 days before launching, ozone sondes were conditioned.

Airborne observations: Aerosols



Airborne observations: Nitric oxide



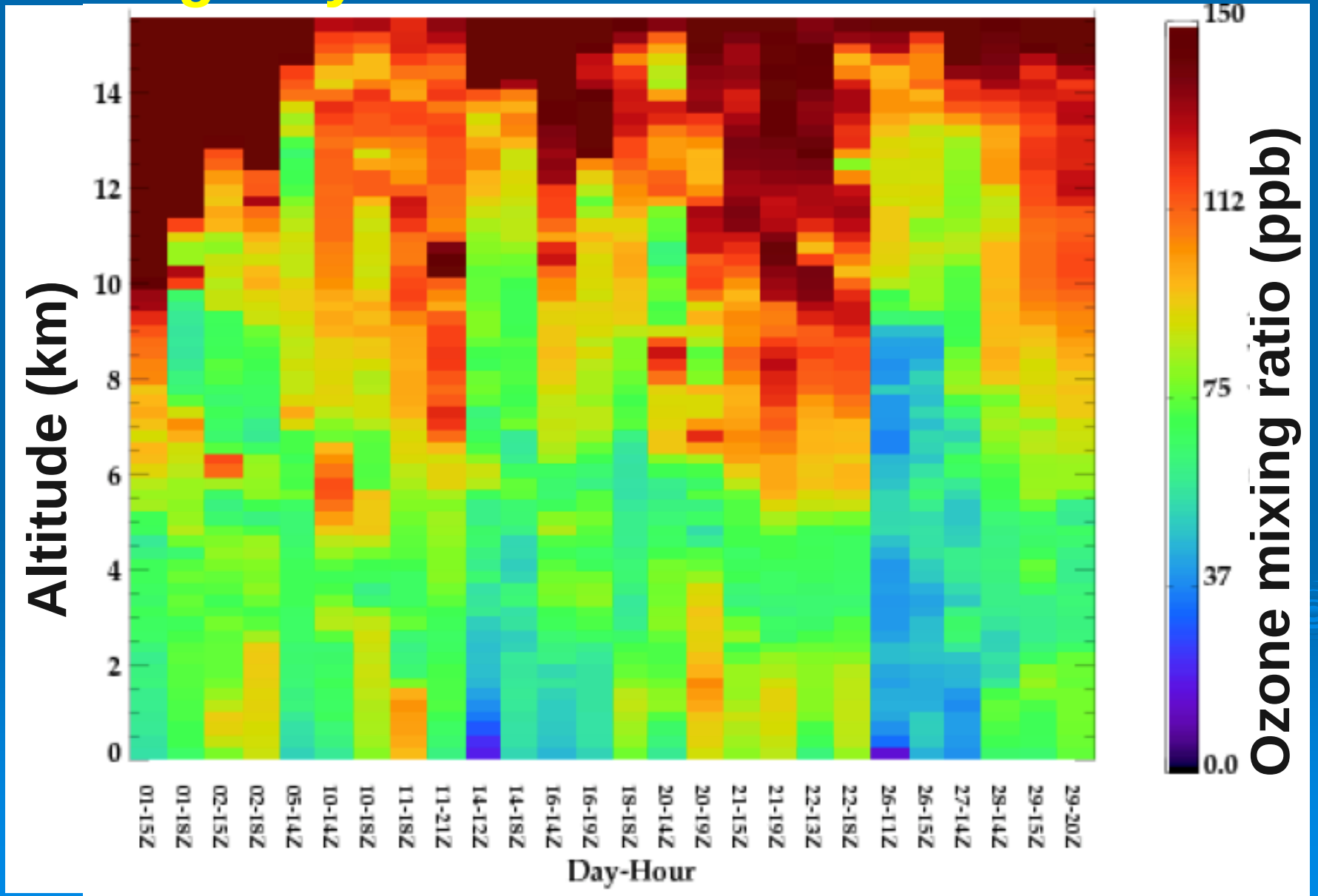
Airborne observations: Nitric oxide

Airborne observations: VOCs

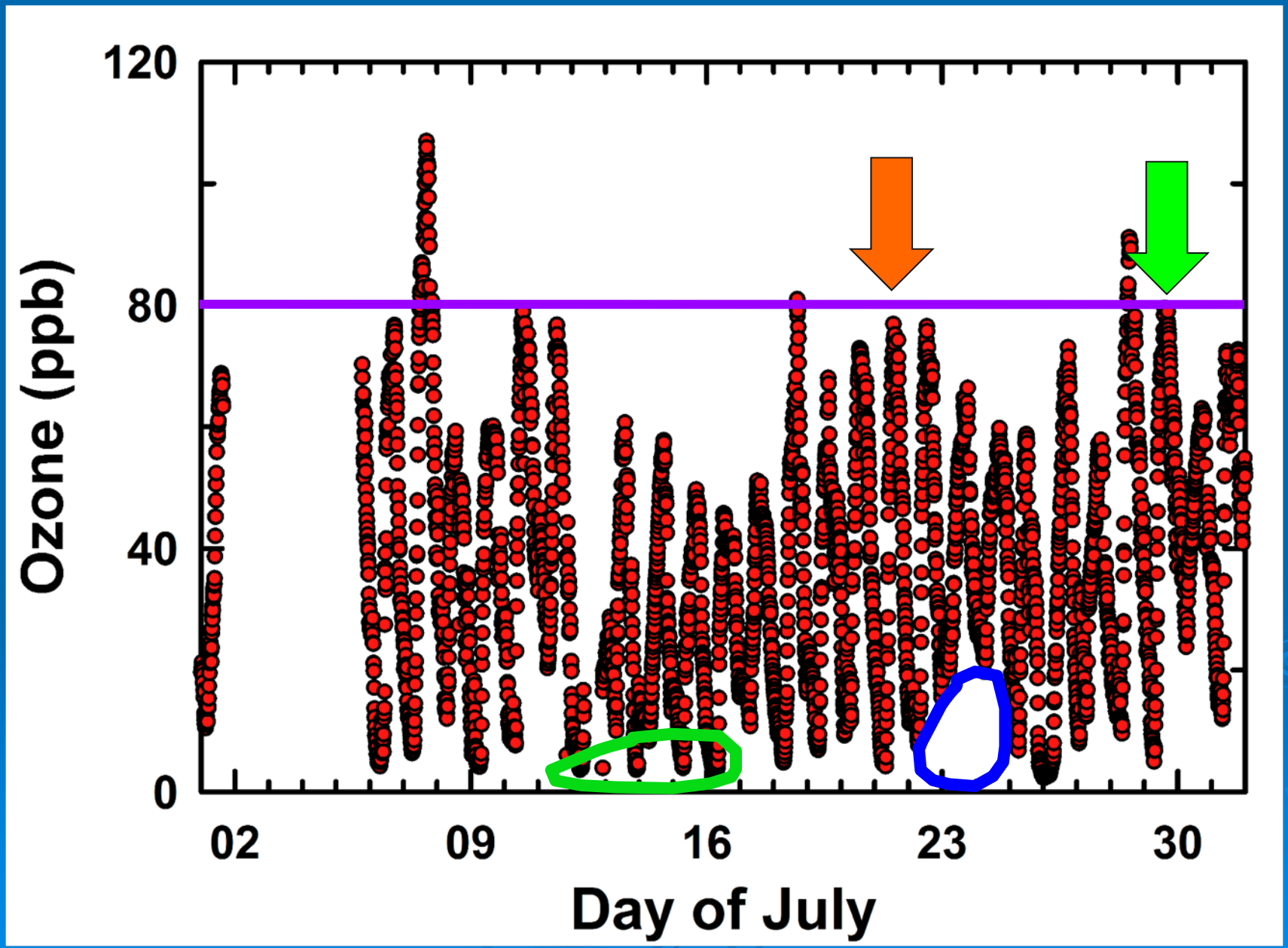
Schedule of observations at Beltsville during July 2011

DISCOVER AQ BELTSVILLE INSTRUMENT OPERATIONS						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					2 O3, NOx ECC (15,19)	3 ECC (15,19)
4 ECC (06,09)	5	6 ECC (14)	7 O3, NOx	8 O3, NOx	9 O3, NOx	10 O3, NOx
11 O3, NOx ECC (14,18)	12 O3, NOx ECC (07,18,21)	13 O3, NOx ECC (04)	14 PTR-MS O3, NOx	15 PTR-MS O3, NOx ECC (12,18)	16 PTR-MS O3, NOx	17 PTR-MS O3, NOx ECC(15,19) TSONDE (OAW)
18 PTR-MS O3, NOx	19 PTR-MS O3, NOx ECC (18) TSONDE (OAW)	20 PTR-MS O3, NOx	21 PTR-MS O3, NOx ECC (07,14,19) TSONDE (OAW)	22 PTR-MS O3, NOx ECC (07,15,20) TSONDE (OAW)	23 PTR-MS O3, NOx ECC (07,14,18) TSONDE (OAW)	24 PTR-MS O3, NOx TSONDE (AW)
25 PTR-MS O3, NOx ECC (07,18) TSONDE (AW)	26 PTR-MS O3, NOx	27 PTR-MS O3, NOx ECC (11,16) TSONDE (OAW) TSONDE (VOC)	28 PTR-MS O3, NOx ECC(14) TSONDE (OAW) TSONDE (VOC)	29 PTR-MS O3, NOx ECC (15) TSONDE (OAW) TSONDE (VOC)	30 PTR-MS O3, NOx ECC (07,15,20) TSONDE (OAW)	31 PTR-MS O3, NOx
1 PTR-MS O3, NOx	2 PTR-MS O3, NOx	3 PTR-MS O3, NOx	4 PTR-MS O3, NOx TSONDE (OAW)	5 PTR-MS O3, NOx TSONDE (OAW) TSONDE (VOC)	6 PTR-MS O3, NOx TSONDE (OAW) TSONDE (VOC)	7 PTR-MS O3, NOx

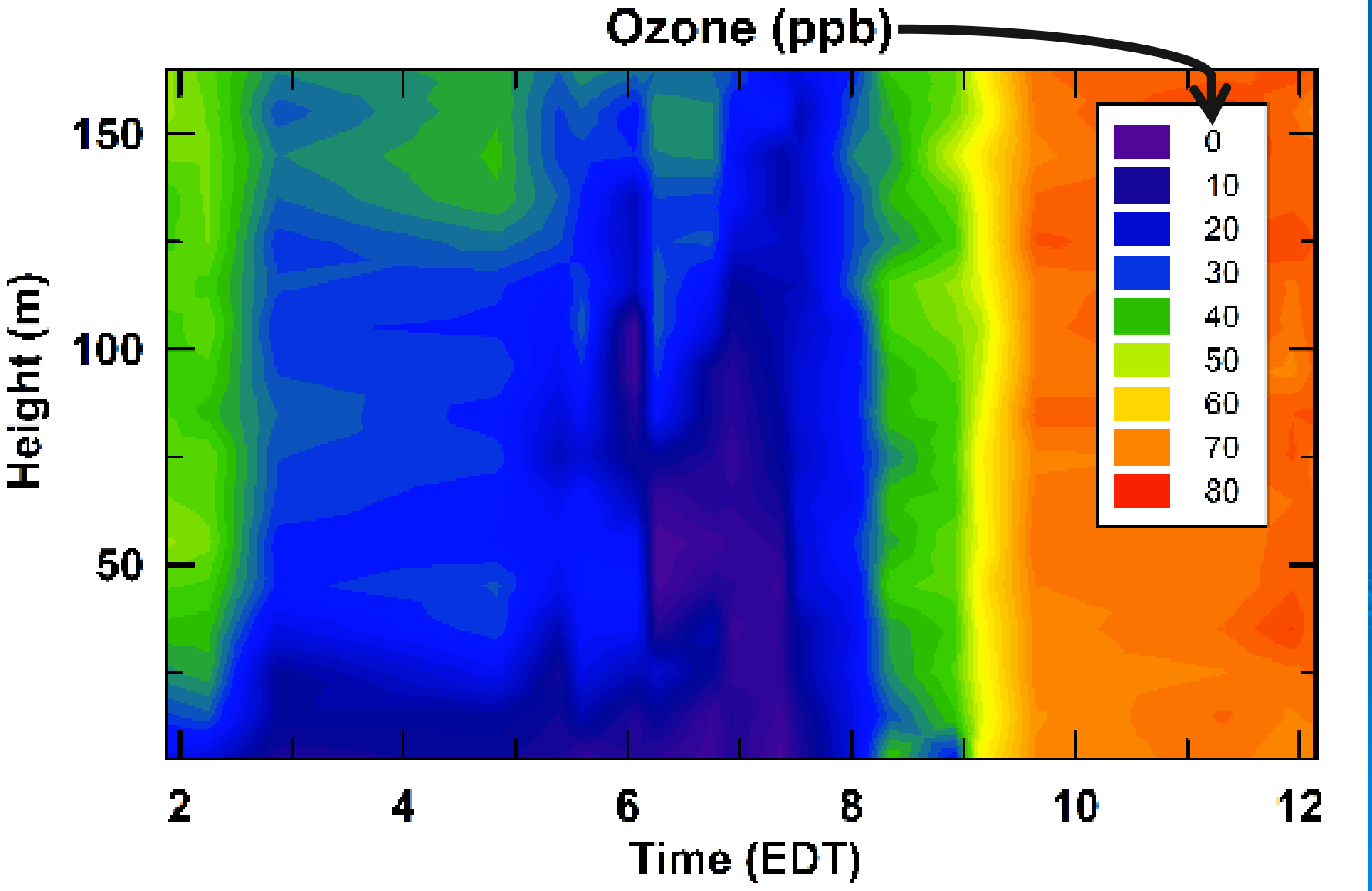
Vertical ozone distribution at Beltsville, MD during July 2011



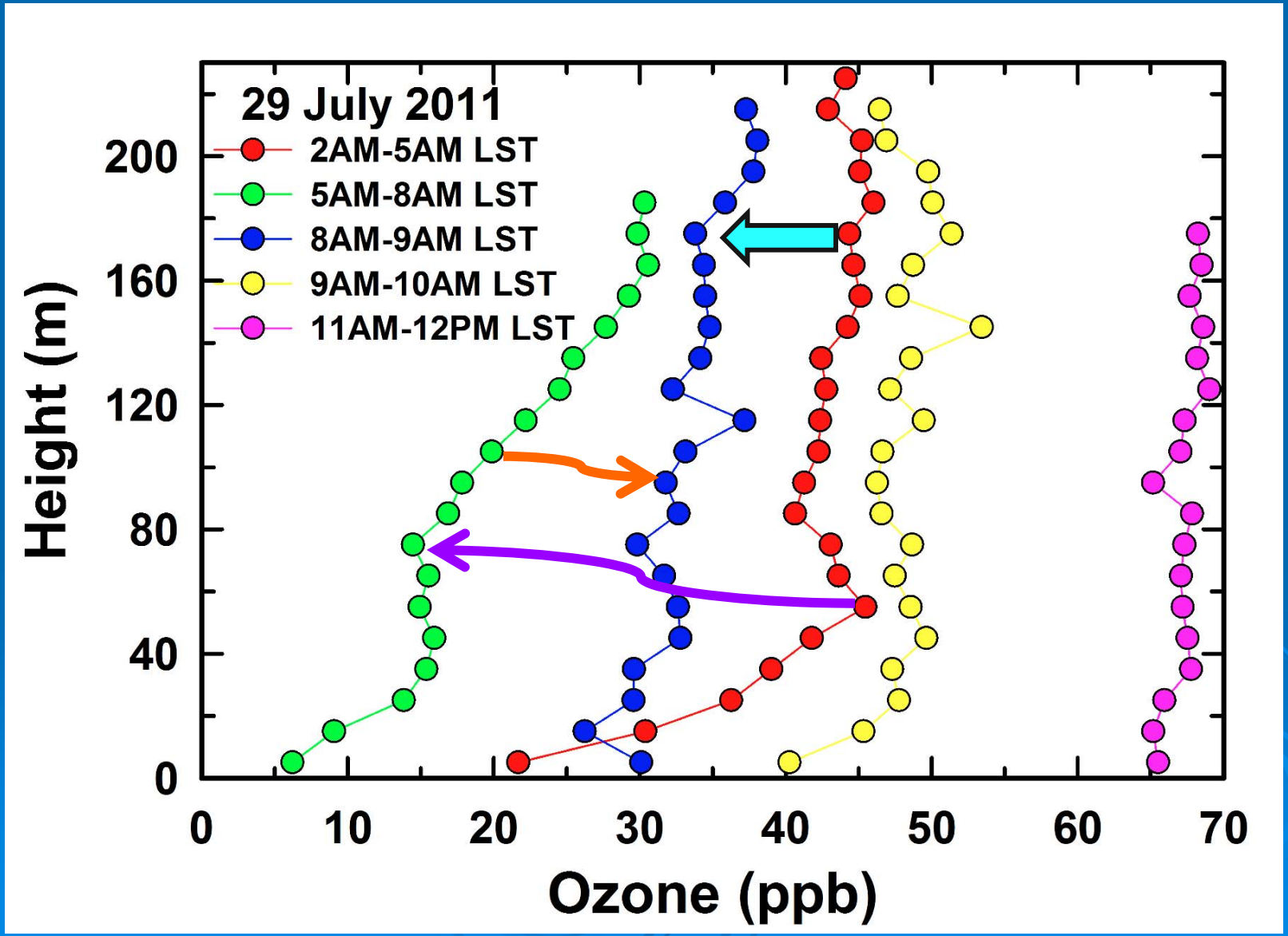
Ground-level ozone at Beltsville, MD



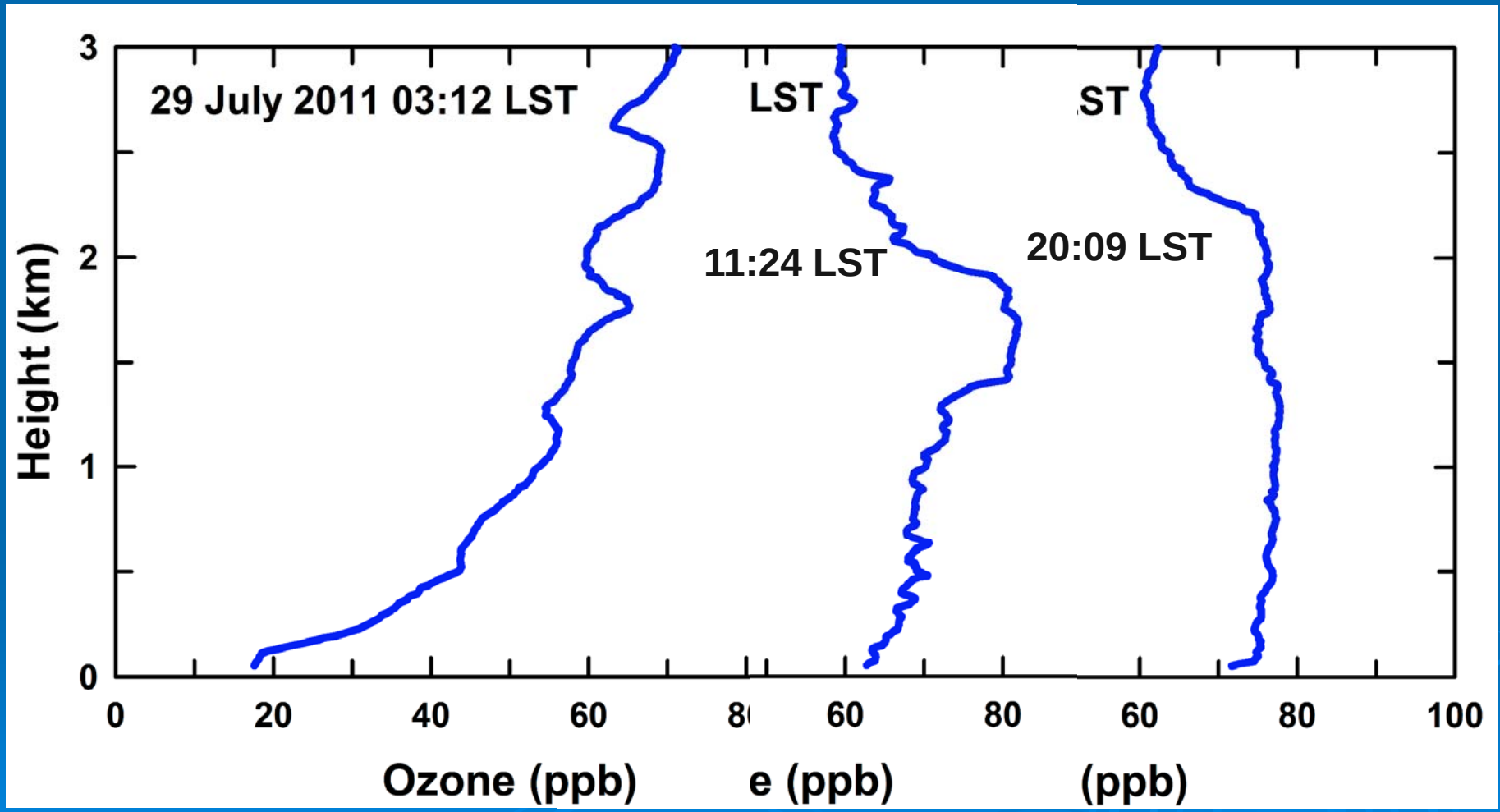
Vertical ozone distribution at Beltsville, MD on 29 July 2011



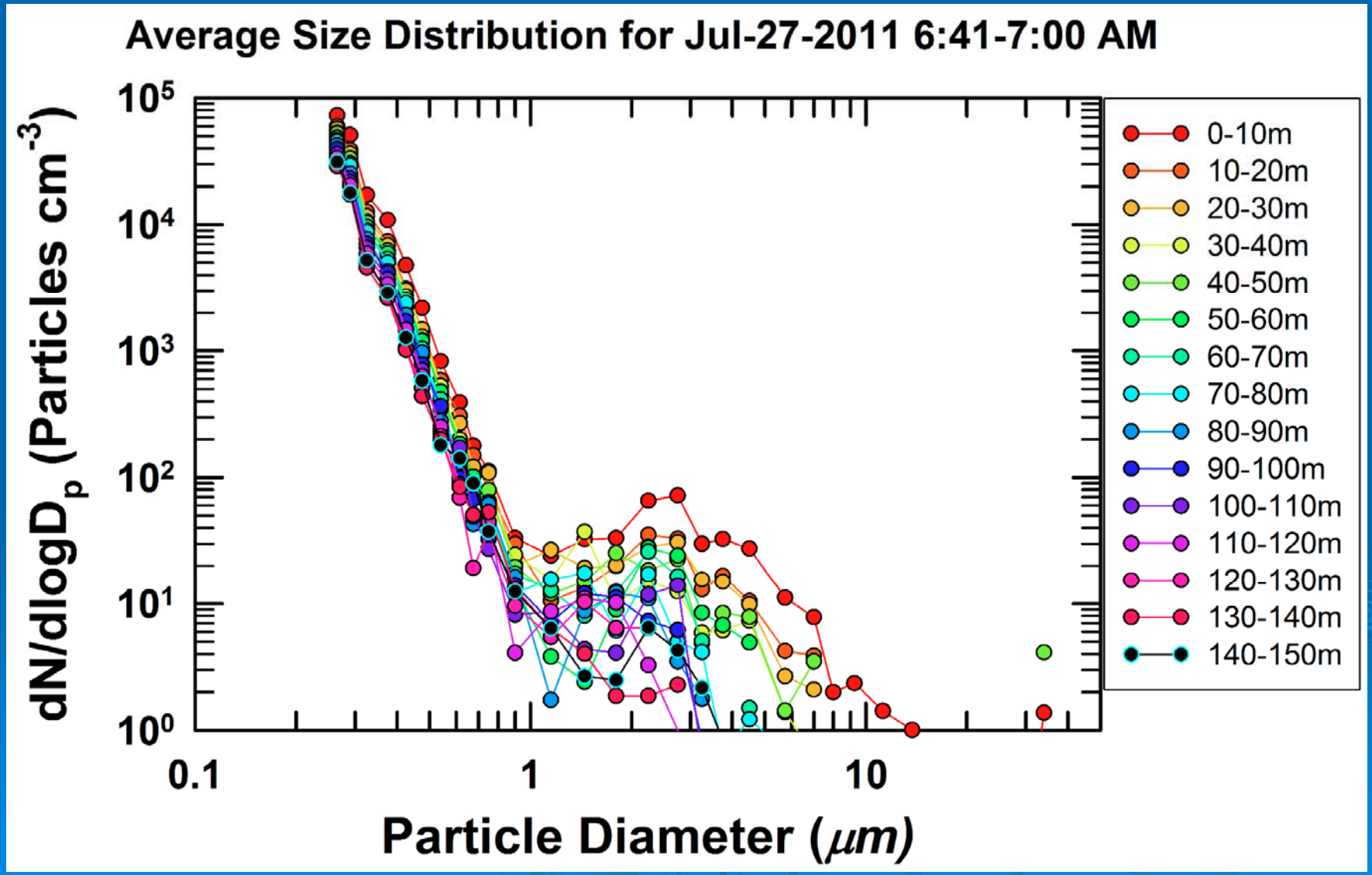
Vertical ozone distribution at Beltsville, MD on 29 July 2011



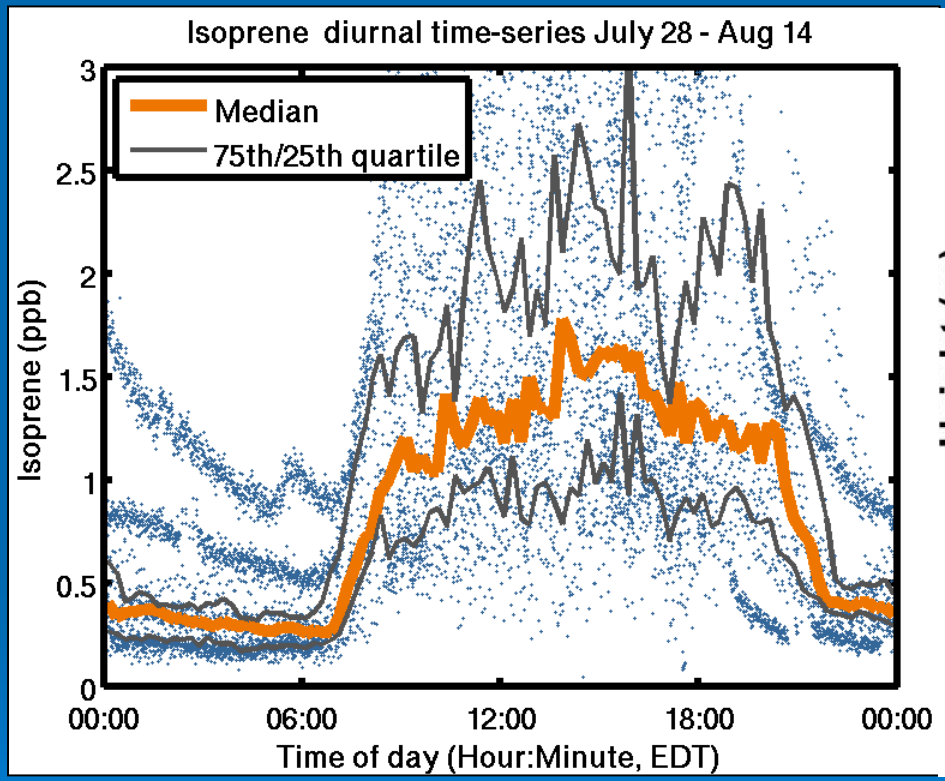
Ground-level ozone and nitrogen oxides at Beltsville, MD on 29 July 2011

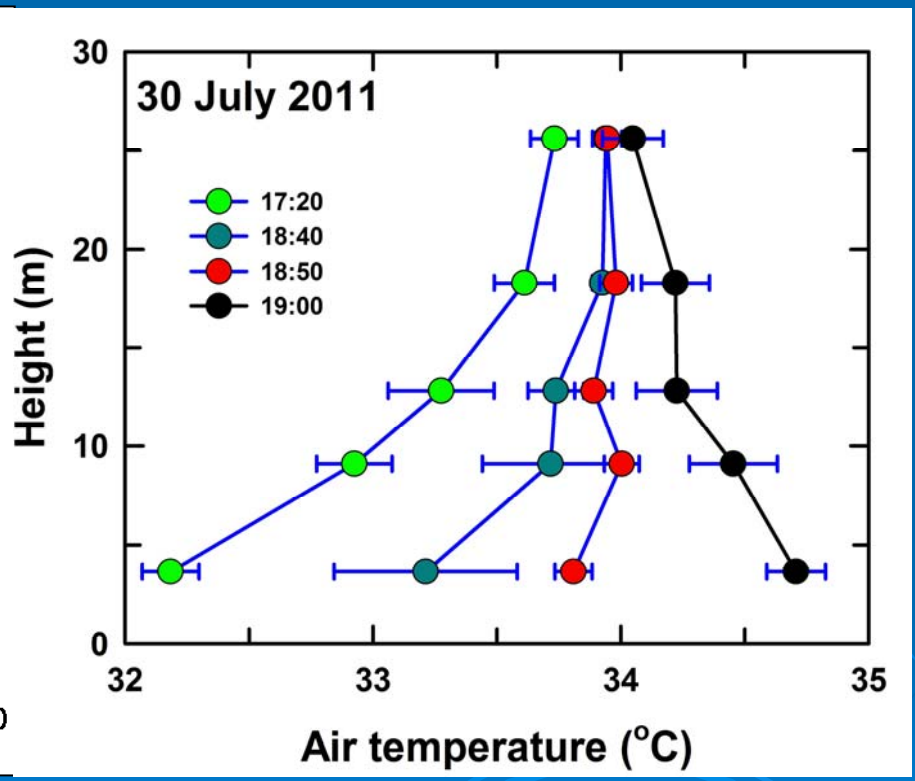


Aerosol distribution at Beltsville, MD on 27 July 2011

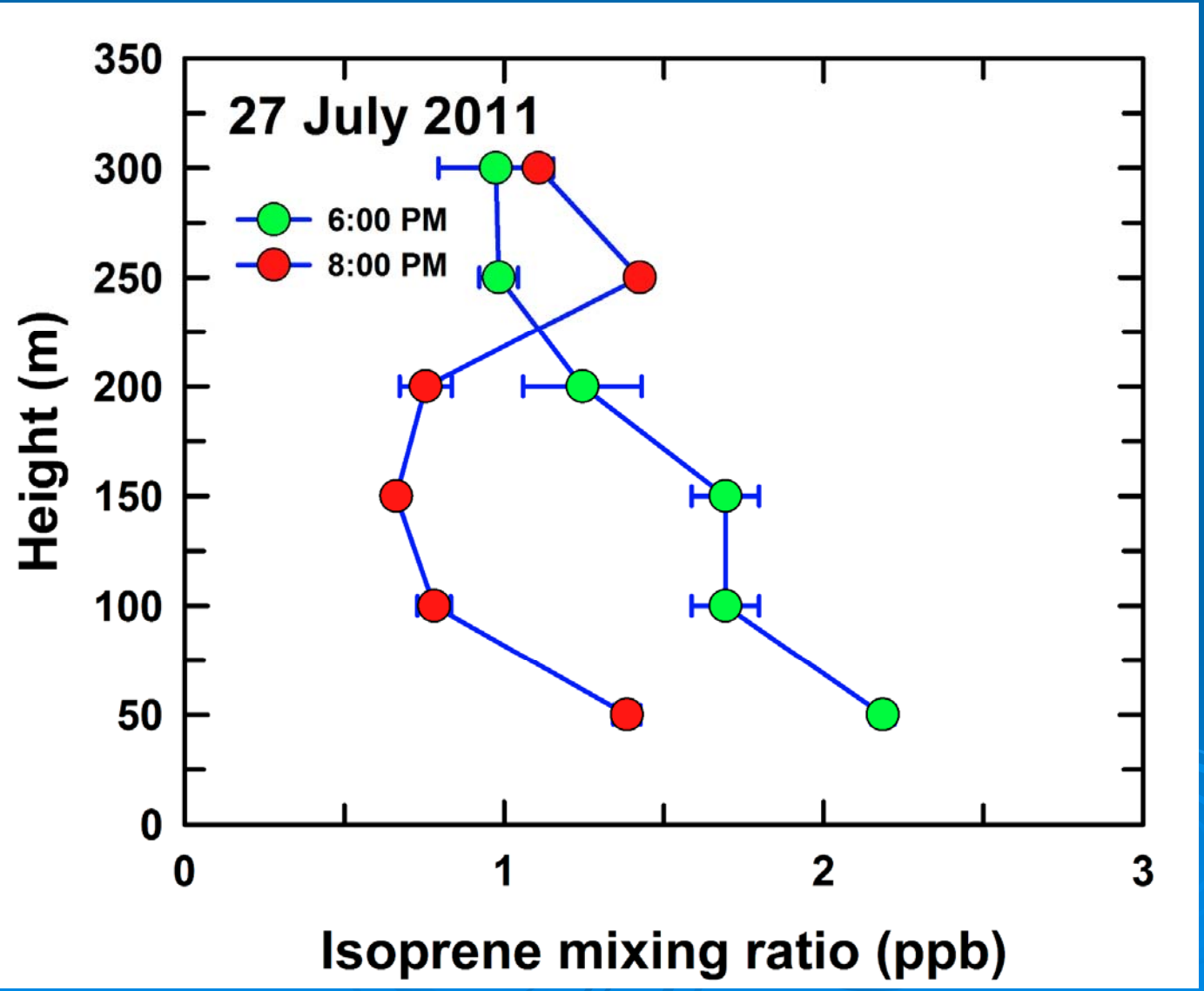


Isoprene levels at Beltsville, MD during 28 July 28 to 14 August 14 2011





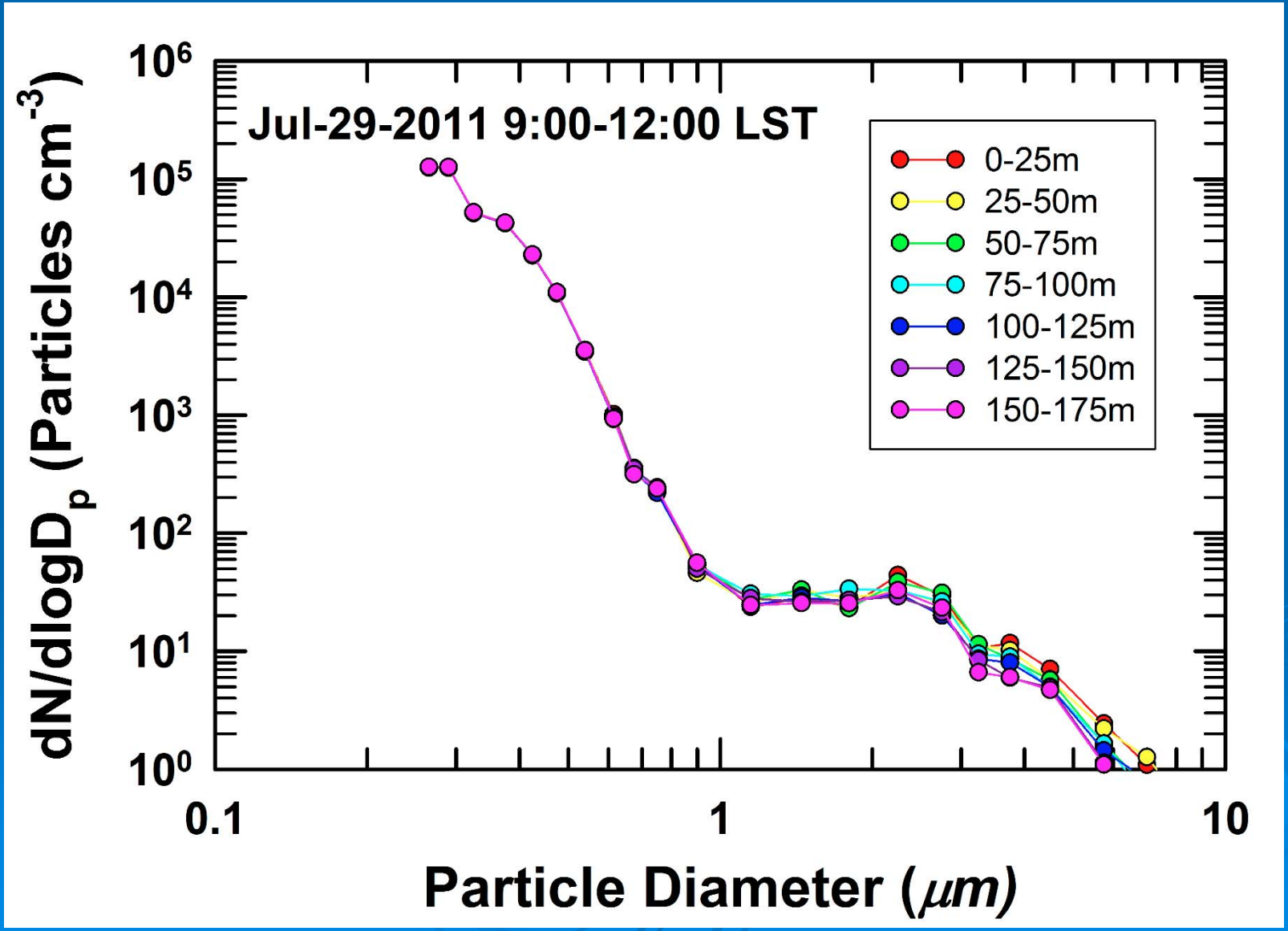
Vertical isoprene levels at Beltsville, MD on 27 July 2011



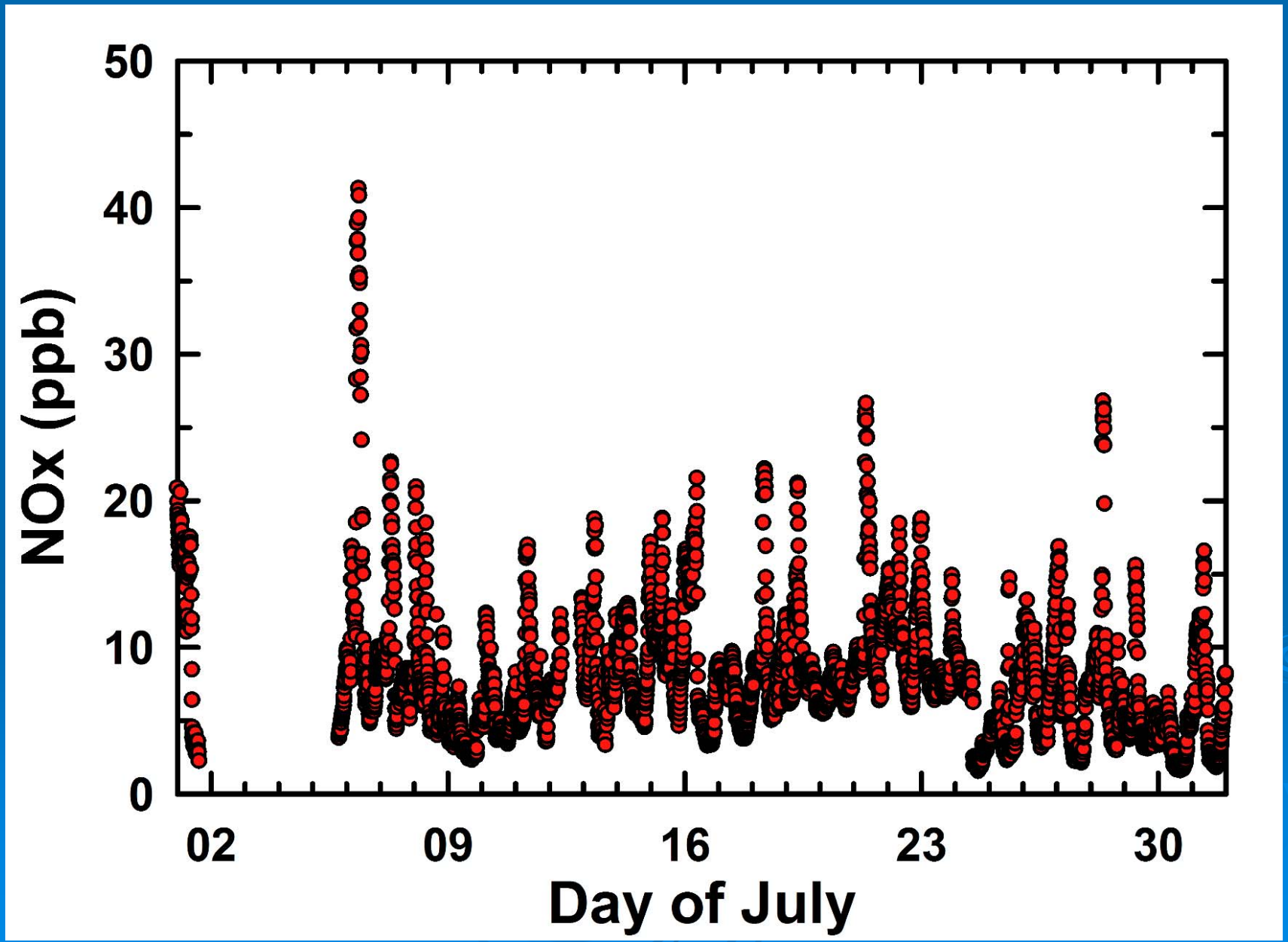
Summary

- ✓ Data sets are still undergoing quality control/assurance procedures and will soon be made available to the DISCOVER-AQ Team
- ✓ Airborne-based observations need to be interpreted within the context of boundary layer dynamics and surface attributes.
- ✓ At Beltsville, surface-atmosphere interactions and nocturnal boundary layer exert inordinate control on the temporal variability of trace gas chemistry.

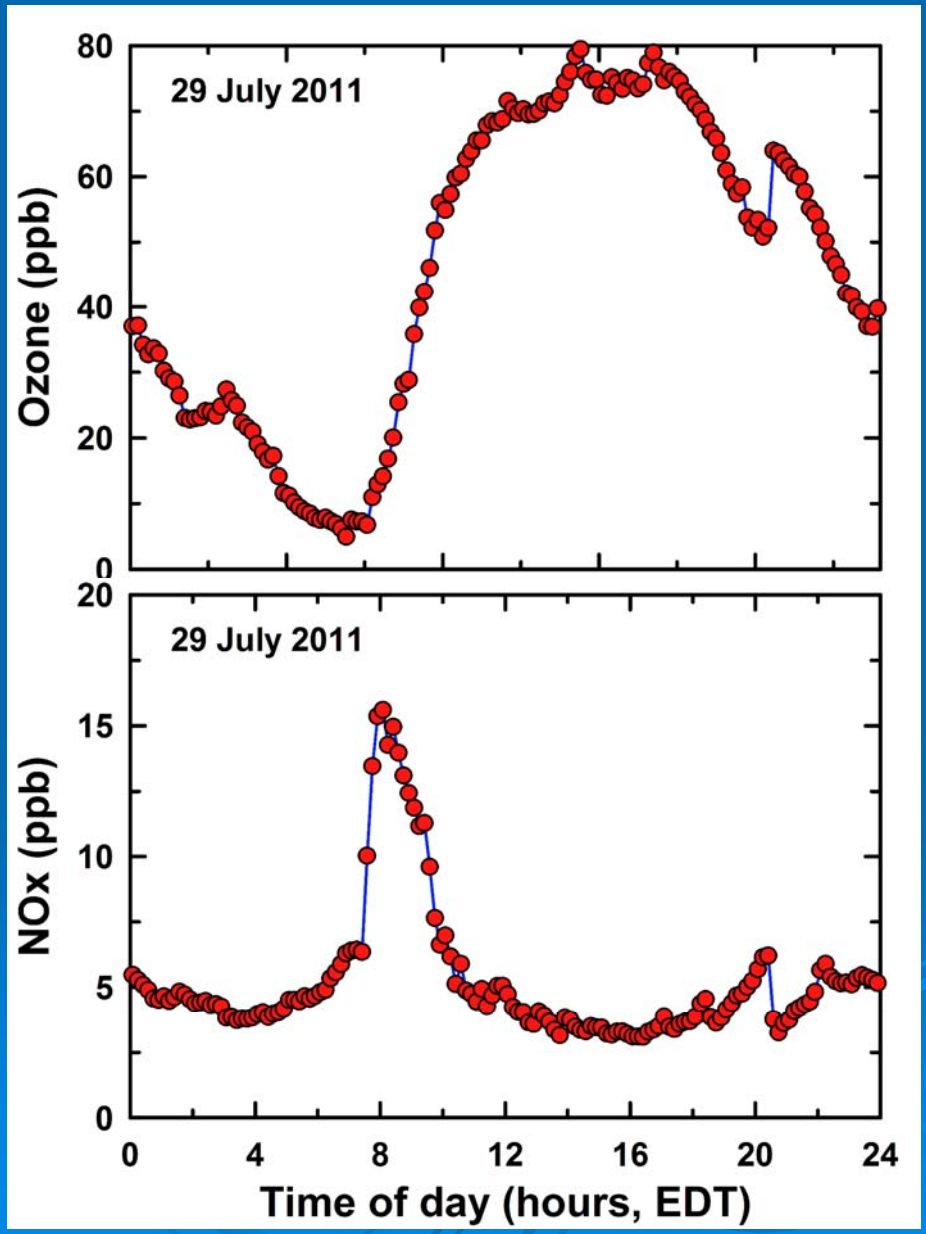
Aerosol distribution at Beltsville, MD on 29 July 2011



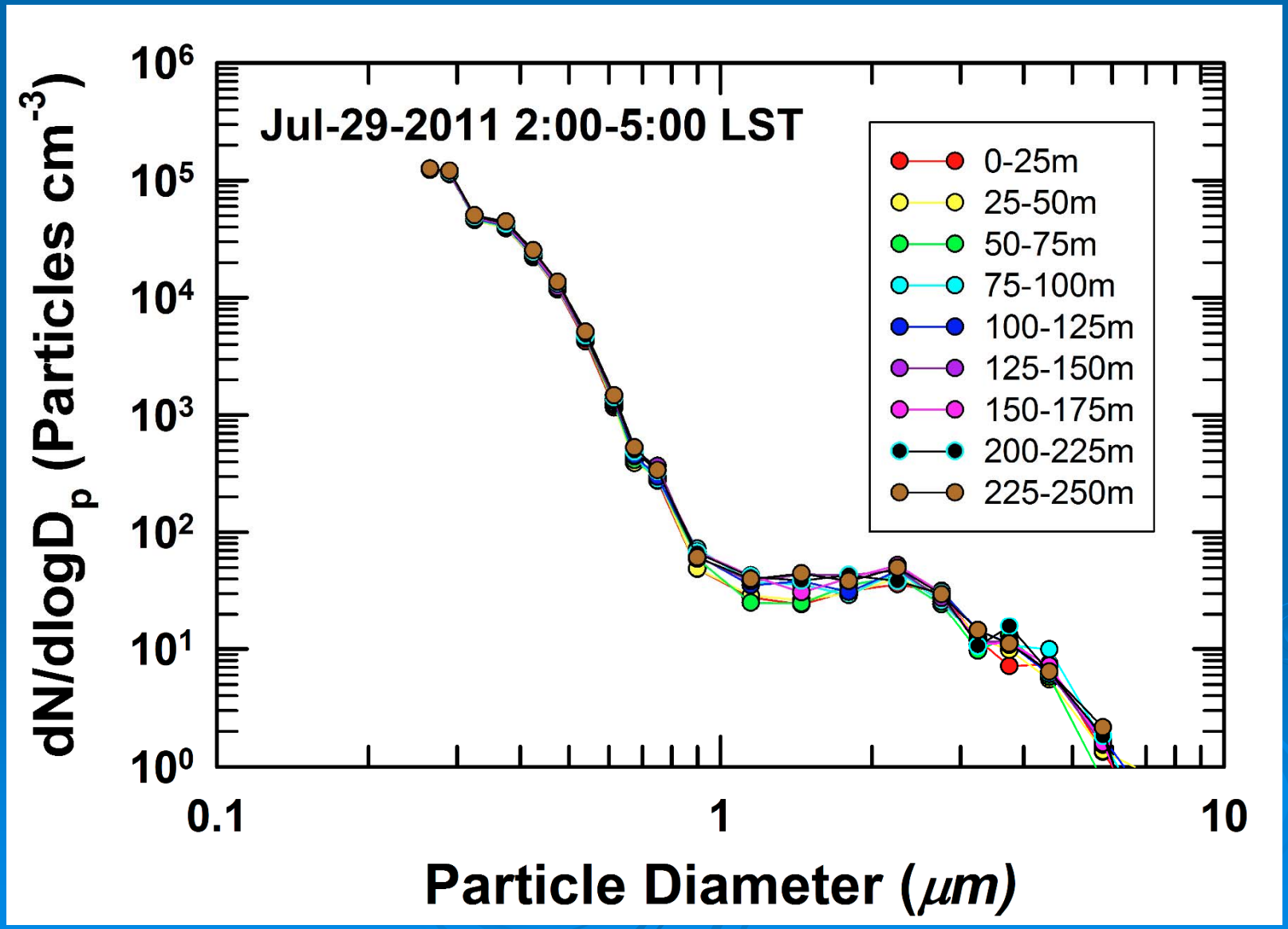
Nitrogen oxides at Beltsville, MD



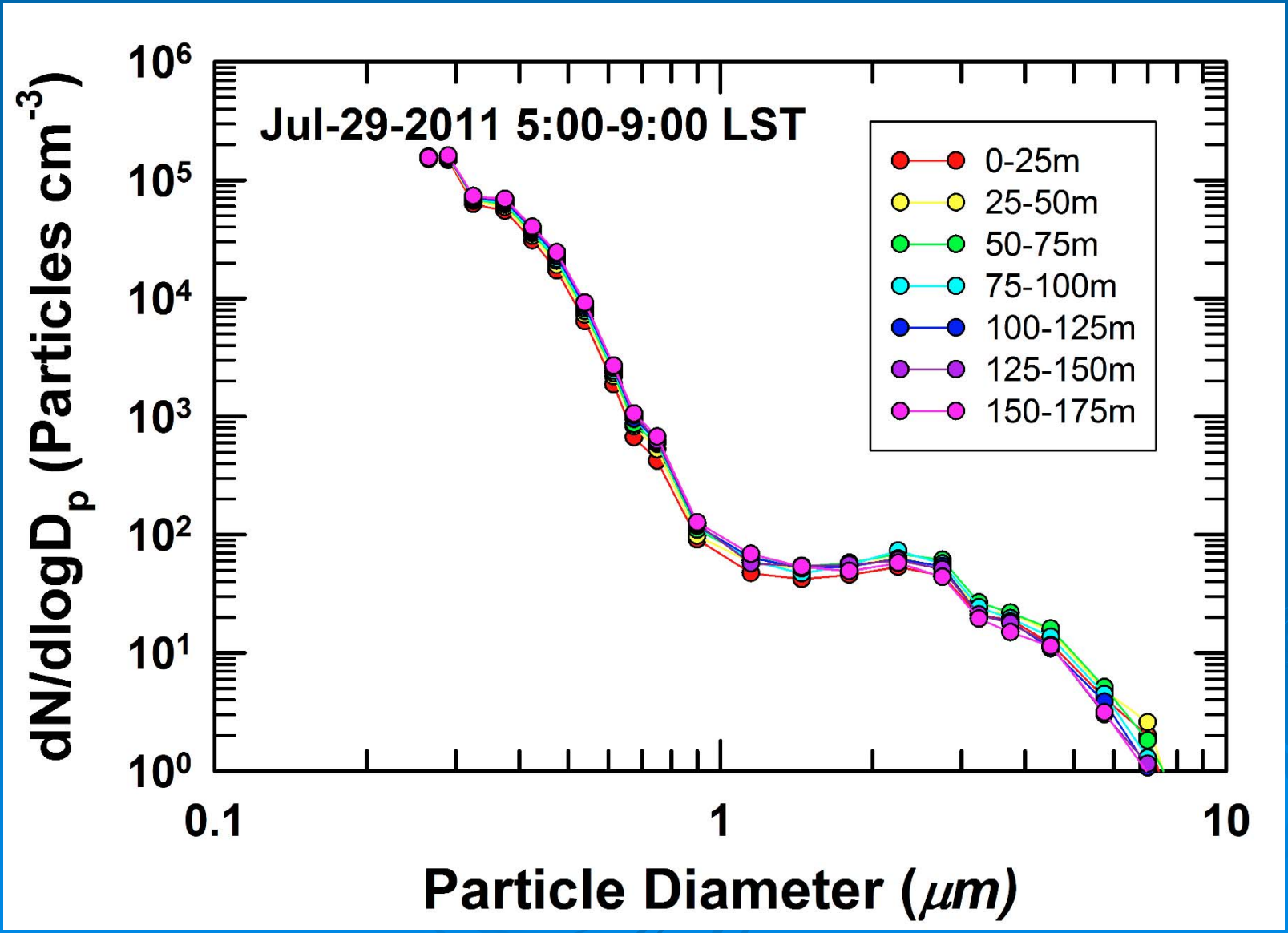
Ground-level ozone and nitrogen oxides at Beltsville, MD on 29 July 2011



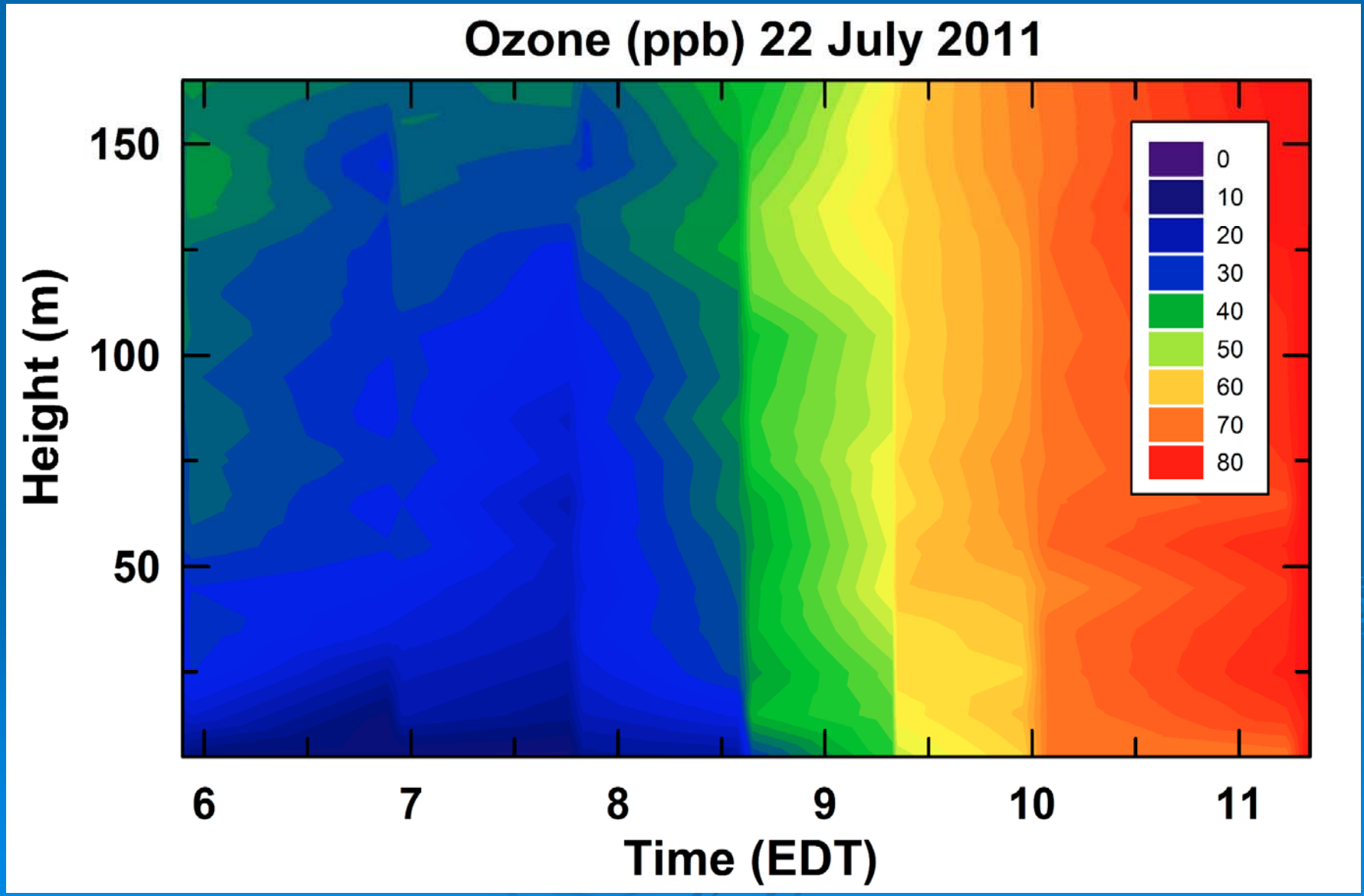
Aerosol distribution at Beltsville, MD on 29 July 2011



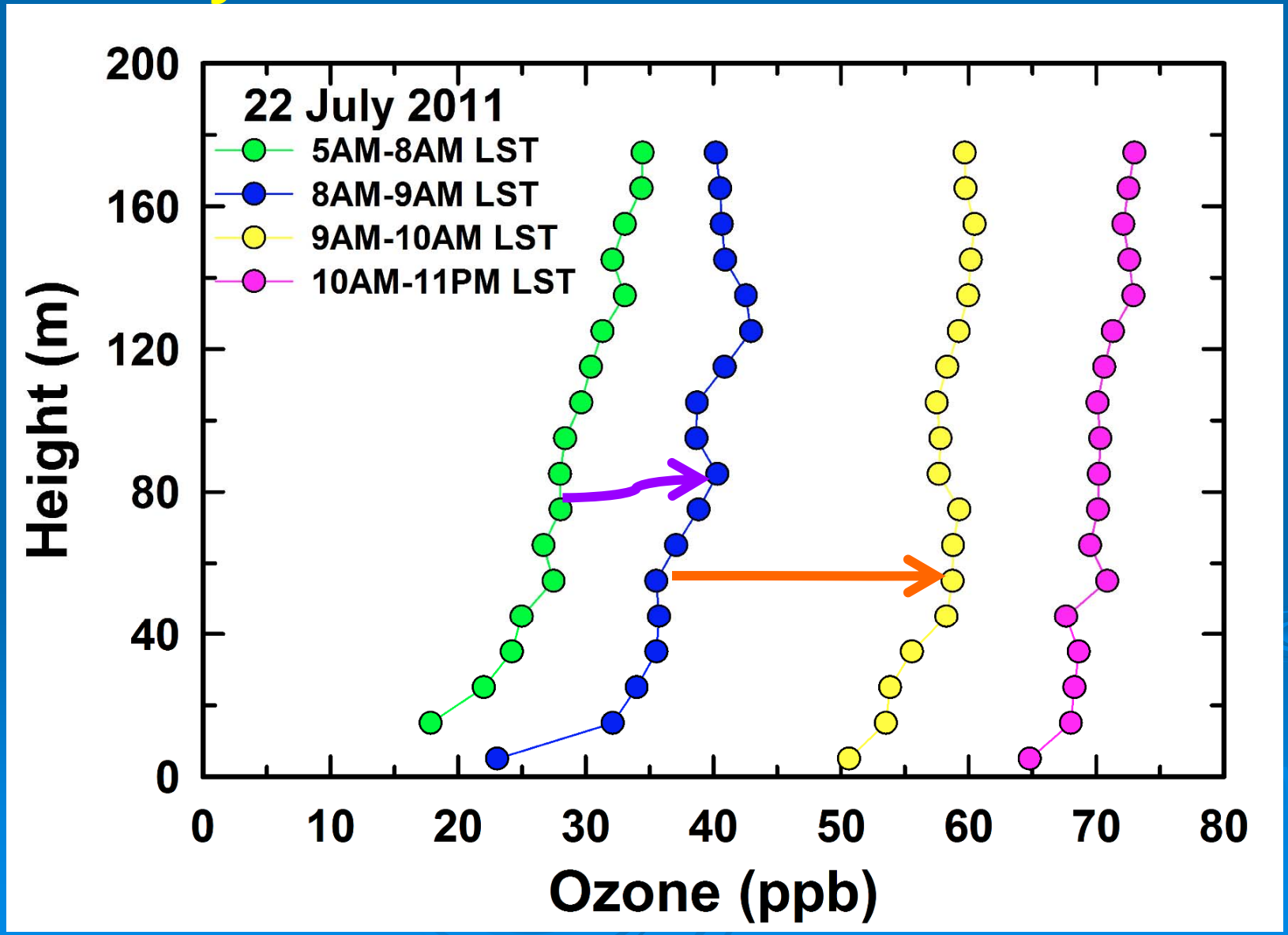
Aerosol distribution at Beltsville, MD on 29 July 2011



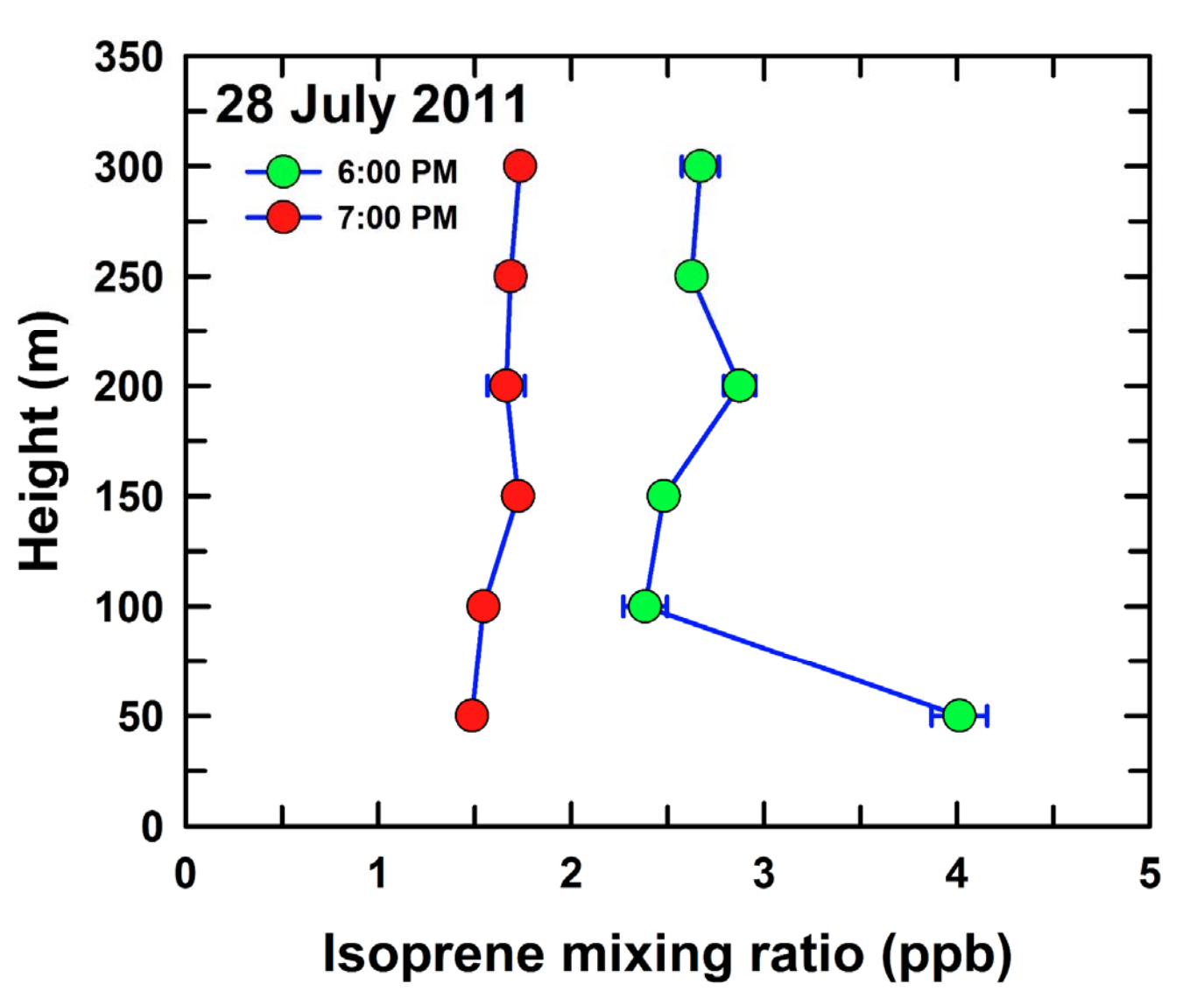
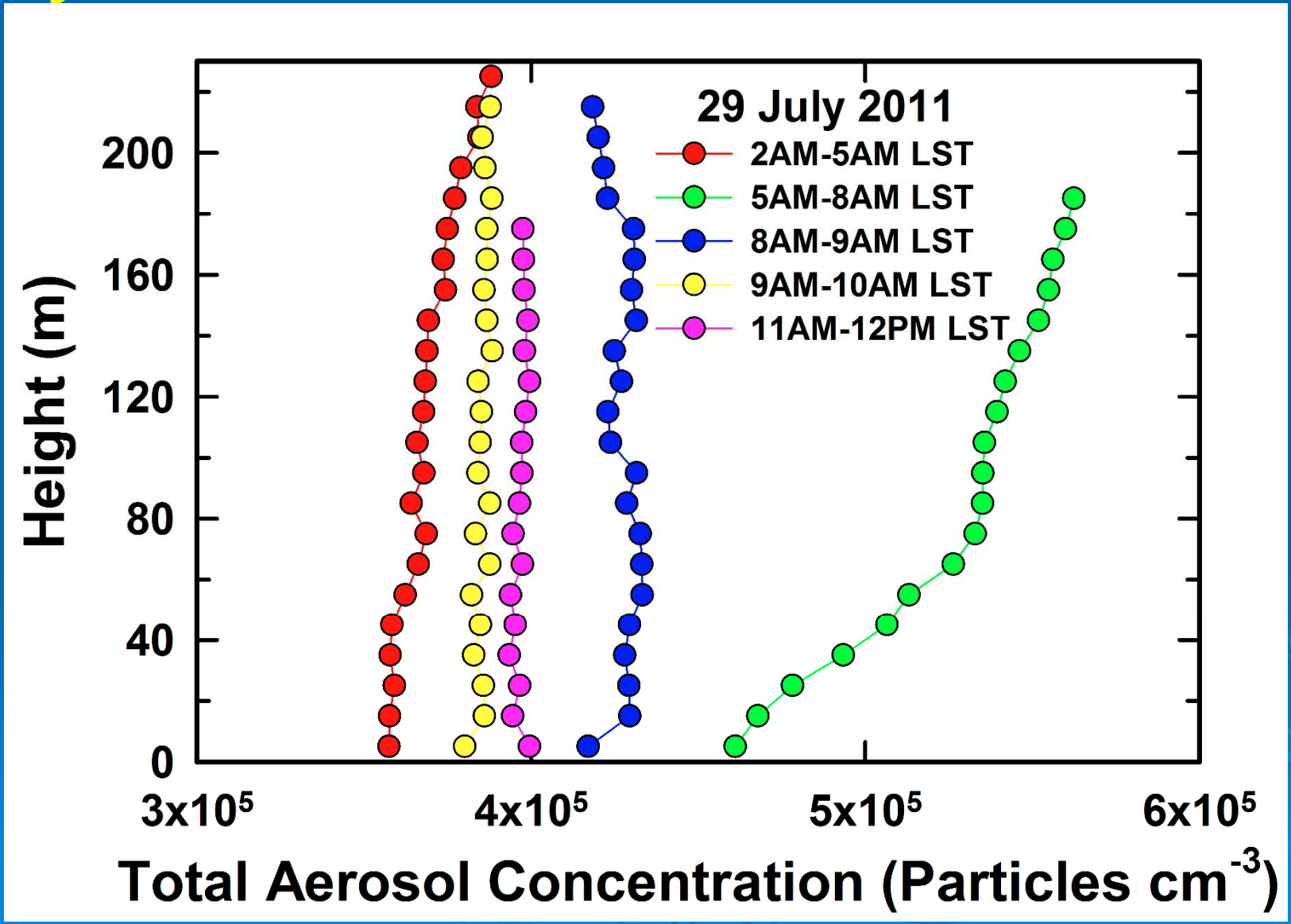
Vertical ozone distribution at Beltsville, MD on 22 July 2011



Vertical ozone distribution at Beltsville, MD on 22 July 2011



Vertical isoprene levels at Beltsville, MD on 28 July 2011



Aerosol distribution at Beltsville, MD on 29 July 2011