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Aerosol/Clouds observations at ESO Paranal Observatory and Paposo during VOCALS-Rex

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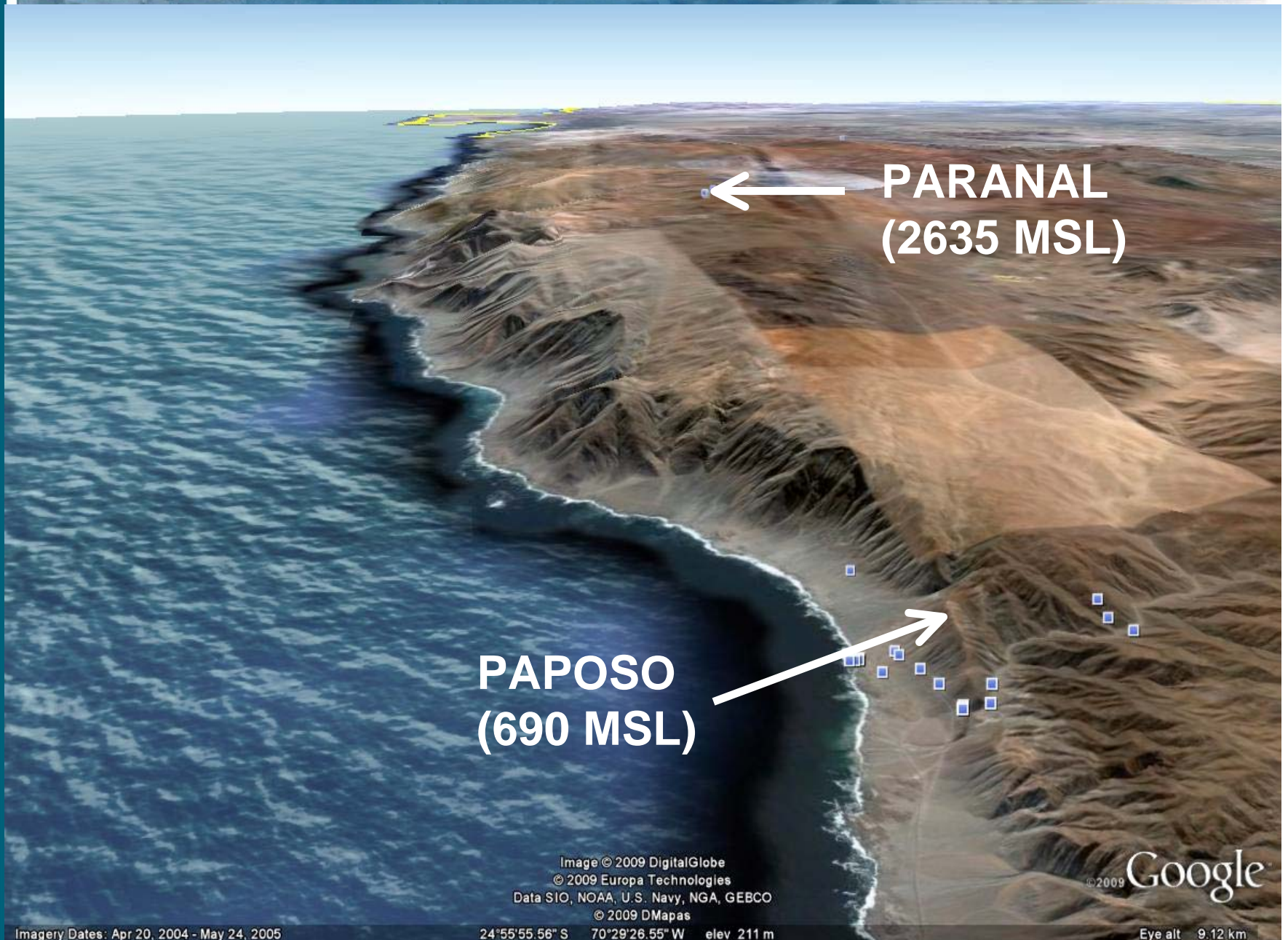
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PARANAL
(2635 MSL)

PAPOSO
(690 MSL)

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SU Instrumentation at Paranal and Paposo (measurements for Paposo only indicated in green)

Twin DMPS 10 (6) - 300 nm (one on ambient air, second after thermodenuder set to 300 C) and total CPC (> 10 nm)

V-TDMA 25, 50, 79, 126, 199 nm (Volatility Tandem Differential Mobility Analyzer) and total CPC (> 10 nm)

CVI - Twin DMPS 10 - 300 nm (one on ambient air, second after thermodenuder set to 300 C) and total CPC

CVI - V-TDMA 25, 50, 79, 126, 199 nm (Volatility Tandem Differential Mobility Analyzer) and total CPC (> 10 nm)

Thermodenuder temperature scans from 50 to 400 C

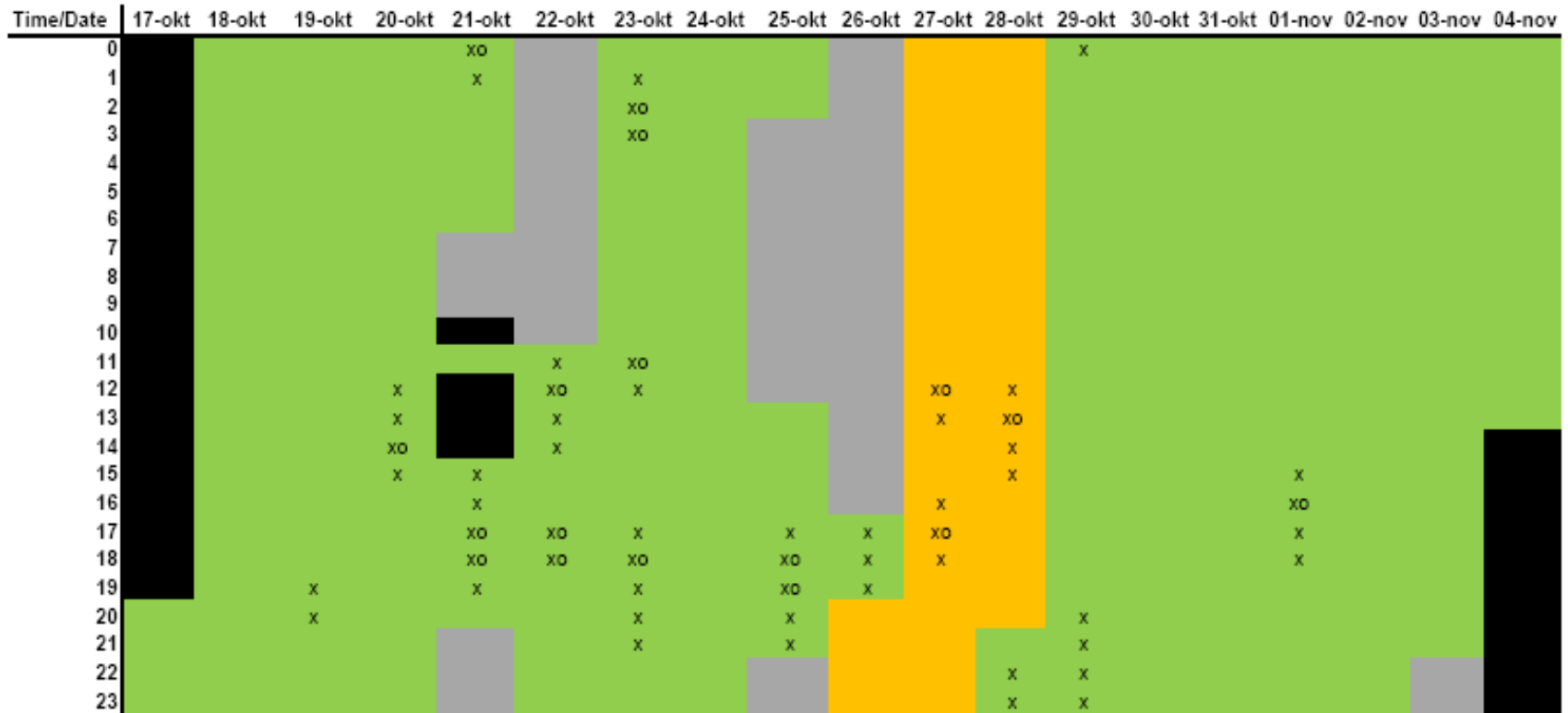
Filter samples for single particle analysis (Paranal - 14 samples, Paposo 25 samples)

Samples for Raman spectroscopy

PSAP, Aethelometer, Nephelometer (Paranal only), OPC, Total CPC (> 10 nm) were operated continuously (total CPC measuring ambient aerosol or cloud residuals from CVI)

TDL hygrometer (1 Hz) operated continuously from 6 November, LWC behind CVI or ambient water vapor mixing ratio

Paranal Observatory – Data availability



- All times are in UTC
- Twin DMPS 10 - 350 nm (one on ambient air, second after thermodenuder set to 300 C), Total CPC (> 10 nm, 1 min res.), one size distribution every 3 min
- V-TDMA 25, 50, 79, 126, 199 nm (Volatility Tandem Differential Mobility Analyzer), Total CPC (> 10 nm, 1 Hz)
- x Thermodenuder temperature scans
- o Filter samples for single particle analysis
- No data
- Nephelometer, PSAP, OPC, Aethelometer were operated continuously
- PSAP and Nephelometer data missing
- Changes might occur after data quality assurance, but equipment worked fine and no significant changes are expected



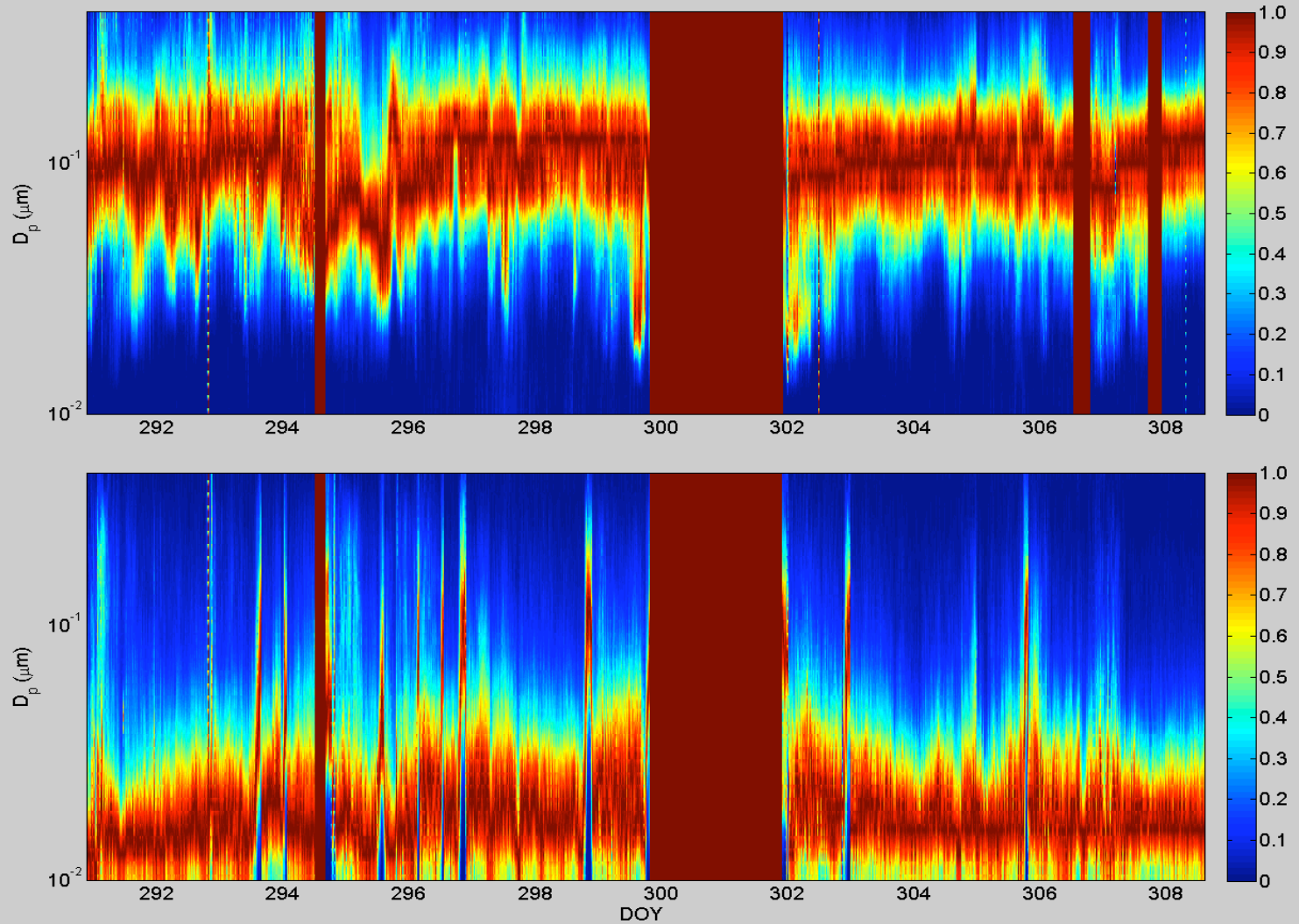
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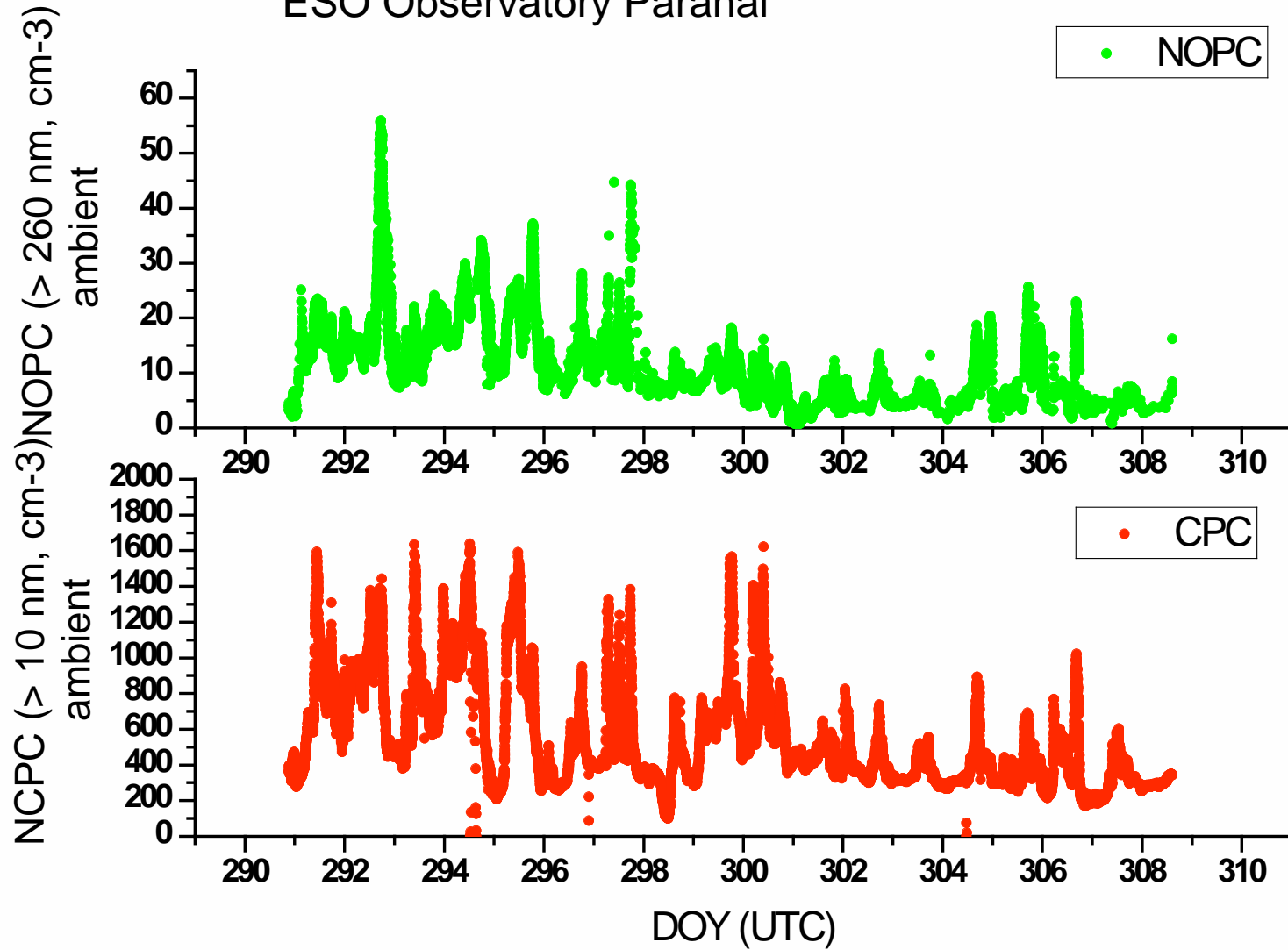


Paranal – normalized aerosol size distributions

Ambient (upper panel), heated (lower panel)

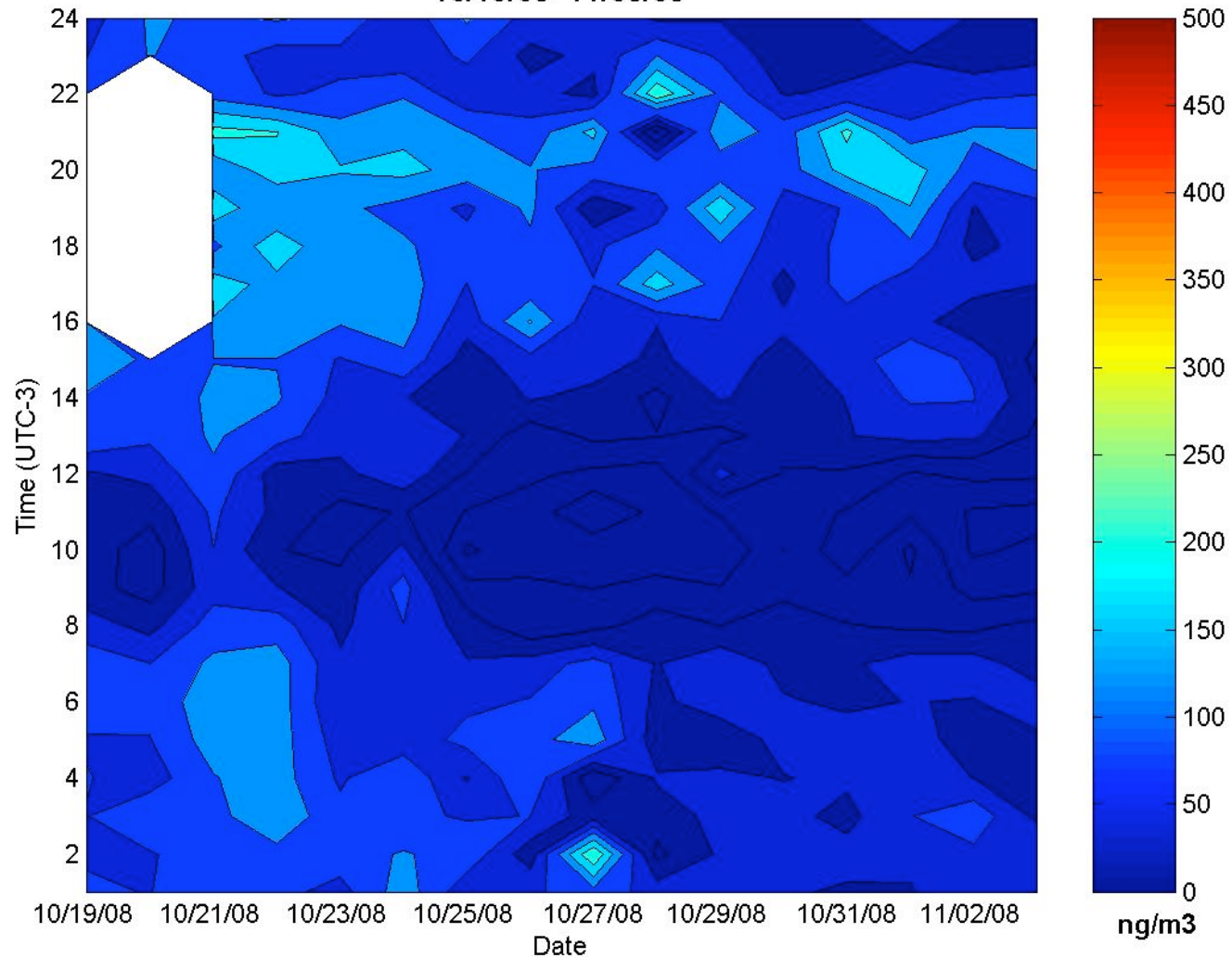


ESO Observatory Paranal

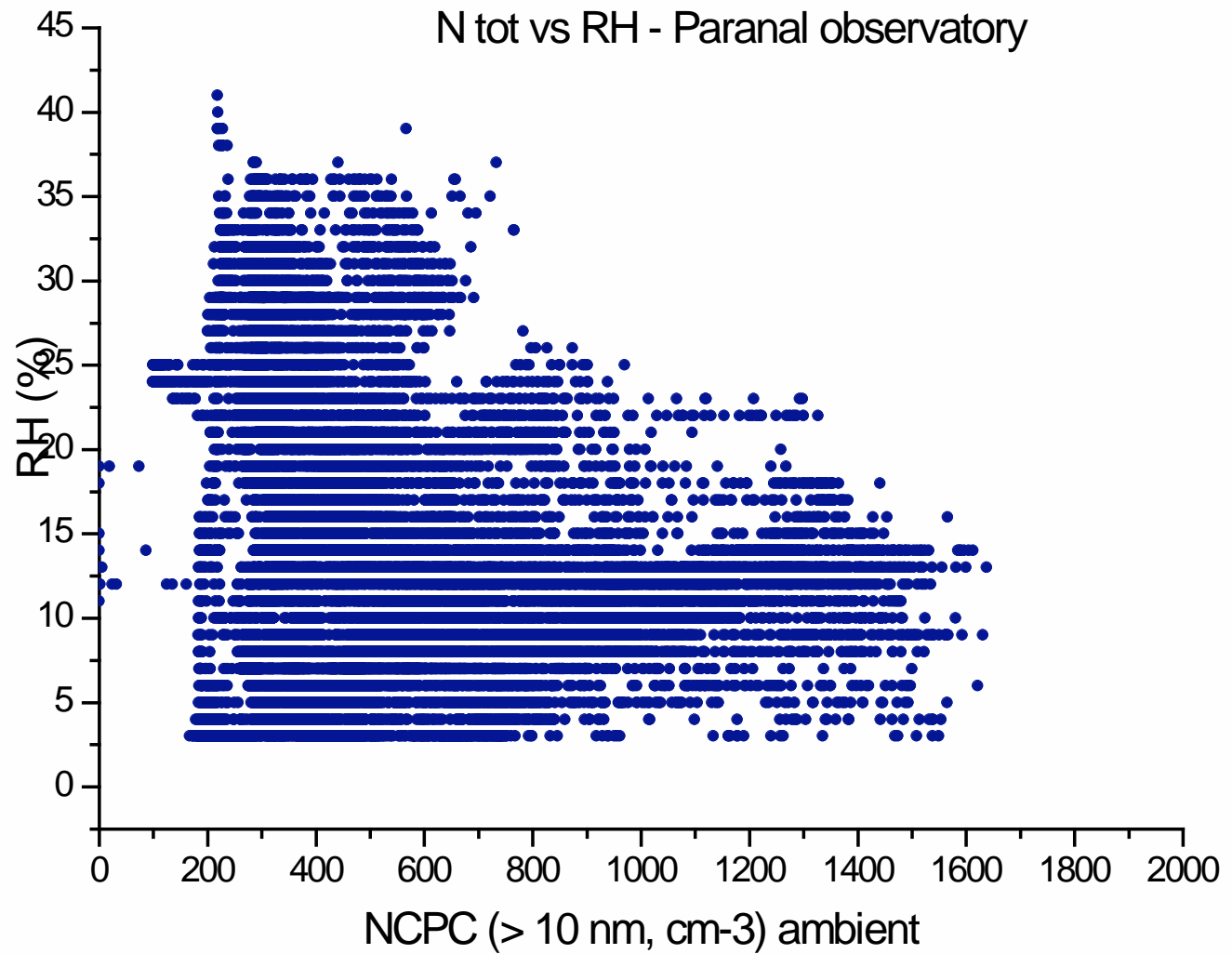


Paranal Observatory – Light absorbing aerosol

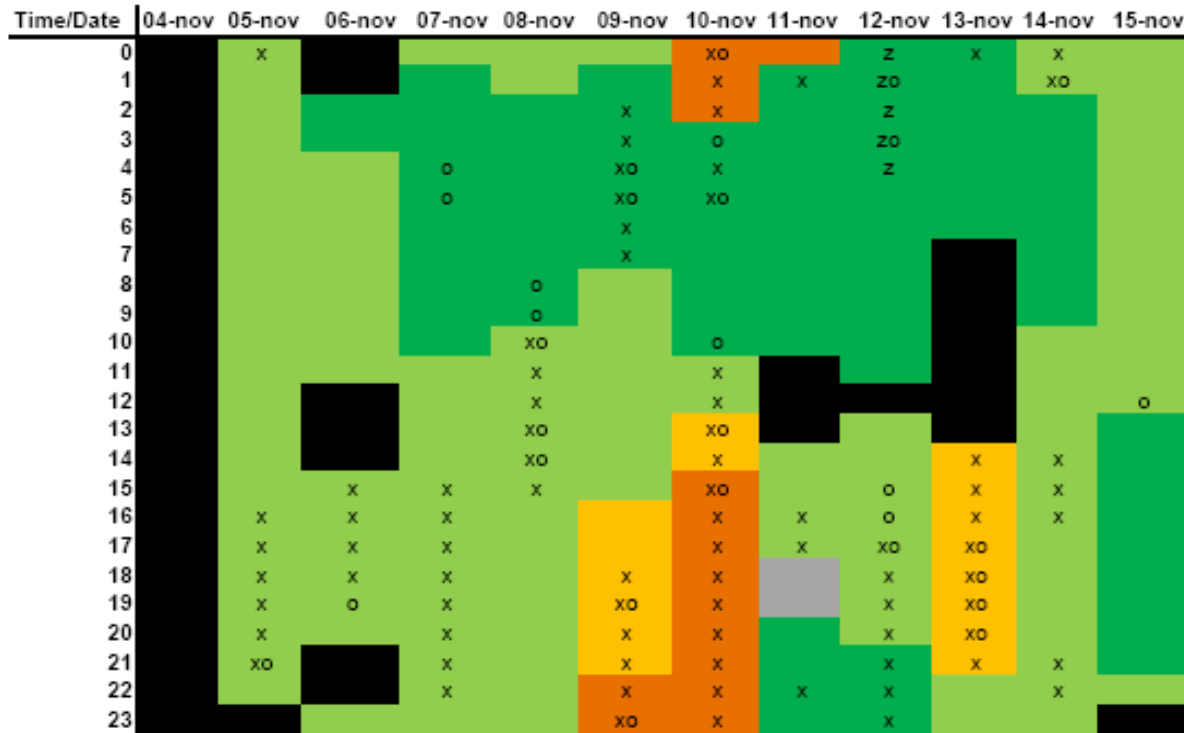
Paranal Aethalometer BC
10/19/08- 11/03/08



Courtesy of Ana Maria Cordova – Universidad Valparaiso




Paposo – Data availability




All times are in UTC


 Twin DMPS 10 - 300 nm (one on ambient air, second after thermodenuder set to 300 C) and total CPC (> 10 nm, 1 min) one size distribution every 150 sec


 V-TDMA 25, 50, 79, 126, 199 nm (Volatility Tandem Differential Mobility Analyzer) and total CPC (> 10 nm, 1 Hz)

 CVI - Twin DMPS 10 - 300 nm (one on ambient air, second after thermodenuder set to 300 C) and total CPC (1 min), one size distribution every 150 sec

 CVI - V-TDMA 25, 50, 79, 126, 199 nm (Volatility Tandem Differential Mobility Analyzer) and total CPC (> 10 nm, 1 Hz)


 Thermodenuder temperature scans

 Filter samples for single particle analysis

 Sample for Raman spectroscopy

 No data

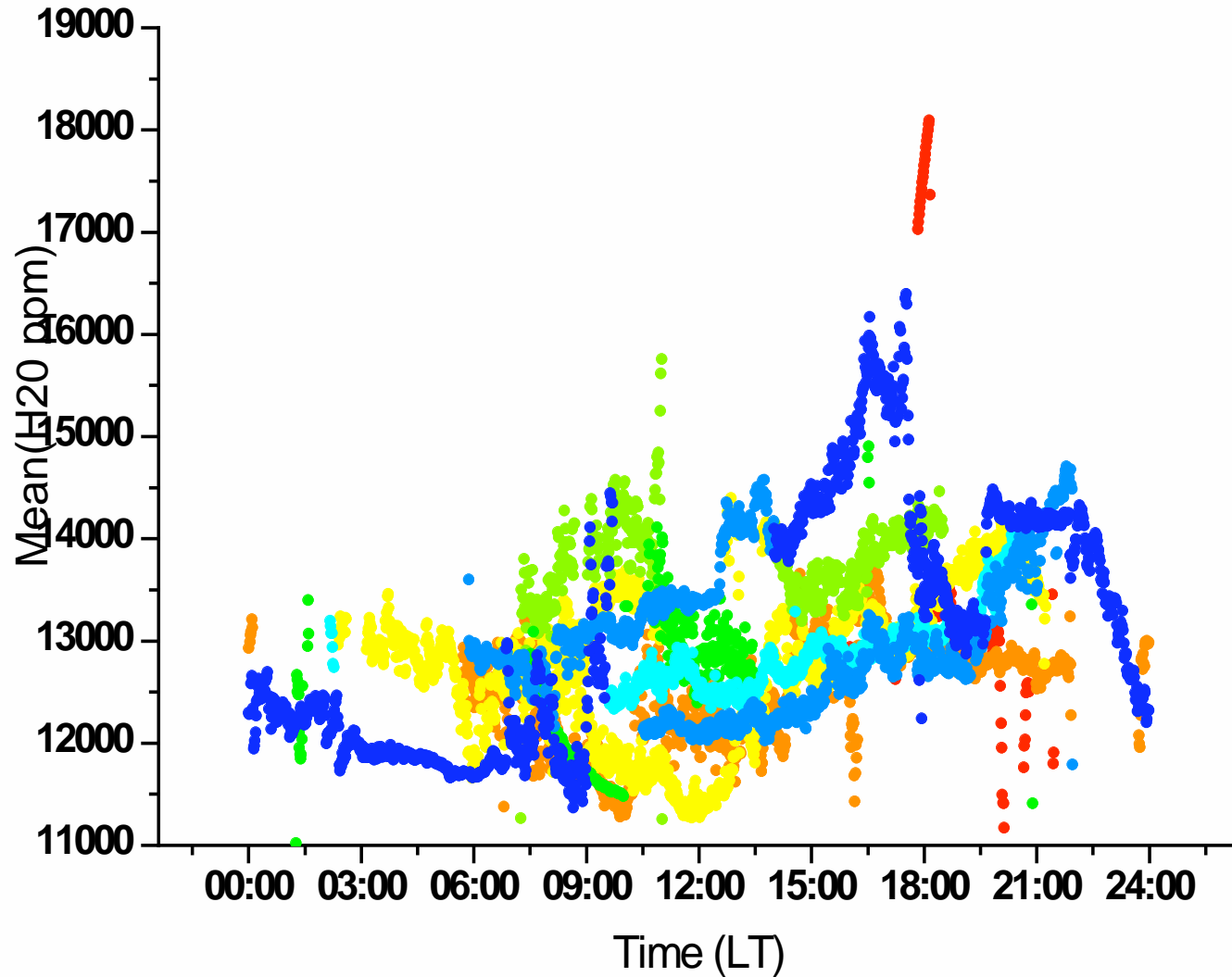
PSAP, OPC (1 Hz), Total CPC (> 10 nm, 1 Hz) were operated continuously (total CPC measuring ambient aerosol or cloud residuals from CVI)

 PSAP, hygrometer and total CPC (1 Hz) data missing

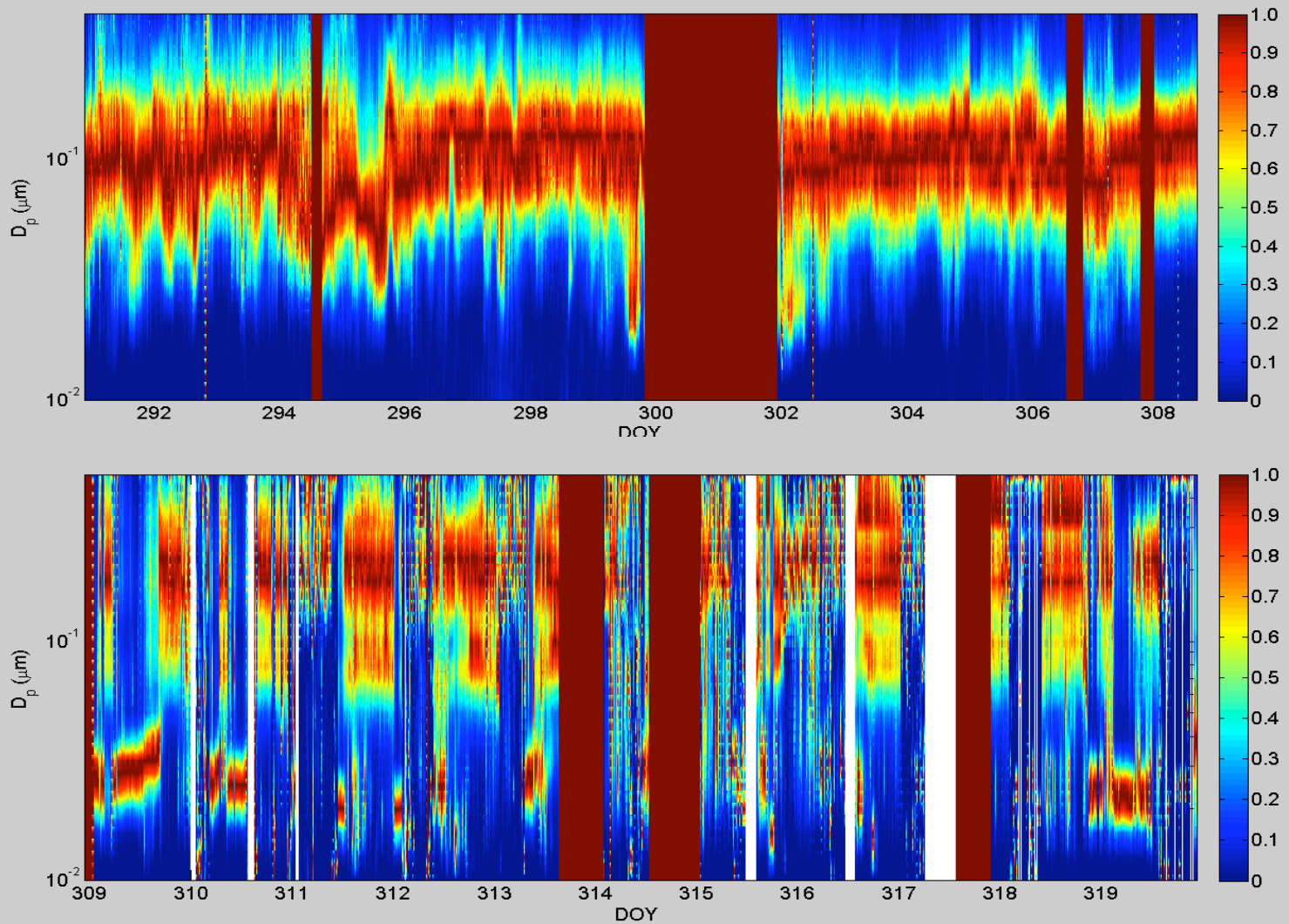
TDL hygrometer (1 Hz) operated continuously from 6 November 21:30 UTC

Changes might occur after data quality assurance, but equipment worked fine and no significant changes are expected

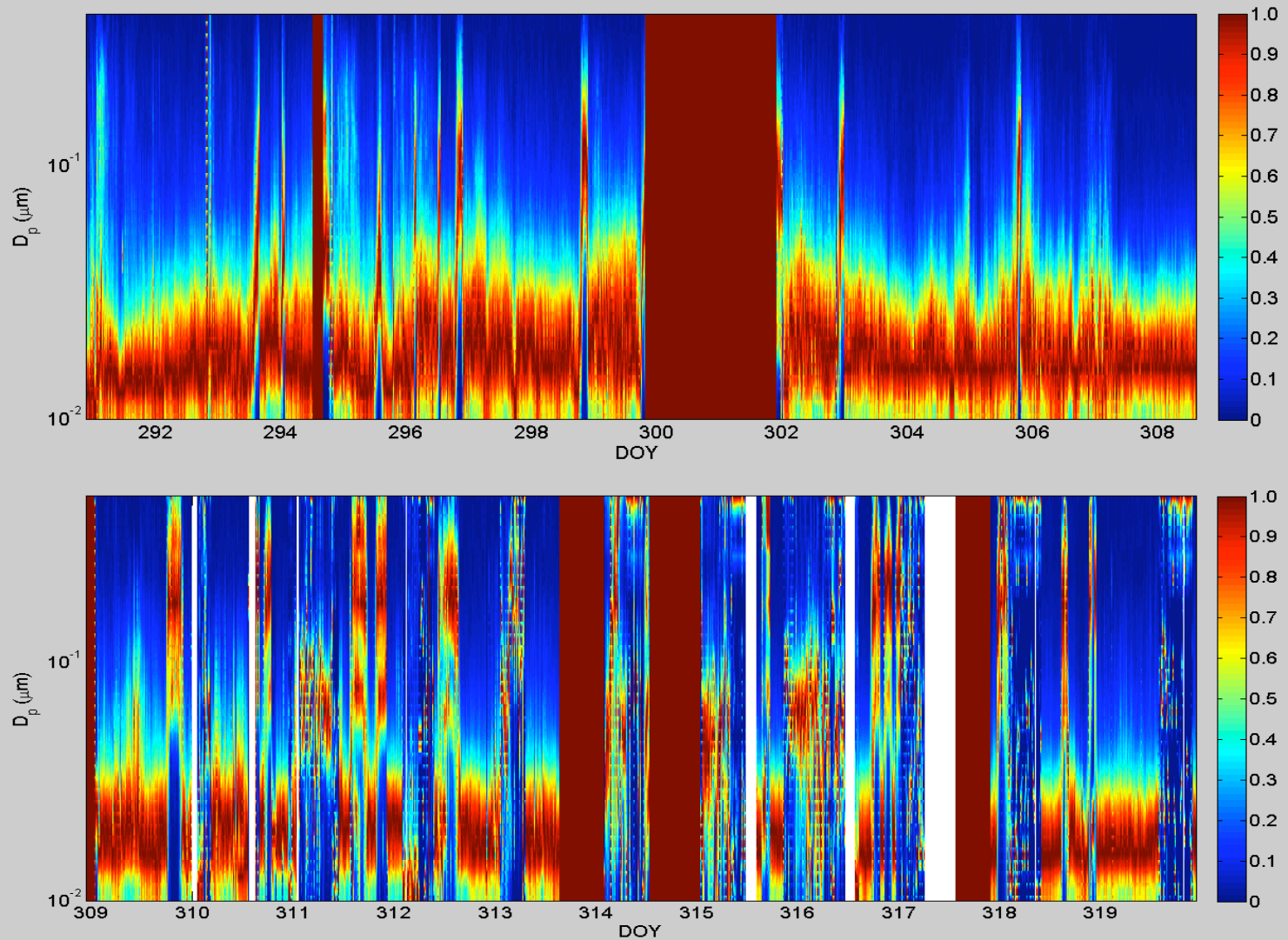
Diurnal water vapor mixing ratio cycle - Paposo



Paranal – Paposo: Normalized aerosol size distributions Paranal (upper panel), Paposo (lower panel)



Paranal – Paposo: Normalized heated aerosol size distributions Paranal (upper panel), Paposo (lower panel)



SUMMARY – Deliverables

Aerosol: Paranal (17 Oct – 4 Nov), Paposo (5 Nov – 16 Nov)

Total number density: > 10 nm (CPC), > 260 nm (OPC), 1Hz

Aerosol size distribution (0.01 μ m – 2.2 μ m), 2.5 min

Heated Aerosol size distribution (0.01 μ m – 0.3 μ m), 2.5 min
(300 C, temperature scans from 50 C to 400 C)

Volatility-TDMA (25, 50, 79, 126, 199 nm), occasionally

Light absorbing aerosol (PSAP, Aethelometer)

Aerosol Light Scattering (Nephelometer, Radiance research), Paranal only

Single particle analysis (ESEM – Phillips FEG 30, particles > 0.08 μ m)

Cloud residuals (CVI): Paposo (5 Nov – 16 Nov)

Total number density: > 10 nm (CPC), > 260 nm (OPC), 1Hz

Aerosol size distribution (0.01 μ m – 2.2 μ m), 2.5 min

Heated Aerosol size distribution (0.01 μ m – 0.3 μ m), 2.5 min
(300 C, temperature scans from 50 C to 400 C)

Volatility-TDMA (25, 50, 79, 126, 199 nm), occasionally

Light absorbing aerosol (PSAP)

Single particle analysis (ESEM – Phillips FEG 30, particles > 0.08 μ m)

Liquid water content LWC (TDL hygrometer), 1 Hz

Ambient water vapor mixing ratio (TDL hygrometer) 1 Hz (when not operated behind CVI)



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