

MCMA BOUNDARY MEASUREMENTS DURING THE MILAGRO CAMPAIGN

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CENICA



Criteria pollutants and meteorological parameters automatic monitoring in boundary sites under QA/QC standards

INTRODUCTION

- An extensive air quality monitoring campaign named MILAGRO was conducted in the Mexico City Metropolitan Area (MCMA) in March 2006 in order to assess the air pollutants transport and their influence at regional and global scales.
- In support of this campaign a number of criteria pollutants and meteorological parameters measurements were conducted in boundary sites of the MCMA in order to determine the surface conditions in these transition sites.



MAIN OBJECTIVE

Automatic monitoring of criteria pollutants and meteorological parameters at border sites of the MCMA, under quality control and quality assurance criteria.

GOALS

- To measure criteria pollutants and meteorological parameters at border sites of the MCMA
- To cover different scenarios of ventilation
- To have data at locations with no historical data

PARTICIPANTS

- GDF/SIMAT MOBILE UNIT
- GUANAJUATO INSTRUMENTS
- HIDALGO MOBILE UNIT
- INE/DGCENICA MOBILE UNIT
- MONTERREY MOBILE UNIT
- QUERETARO MOBILE UNIT
- TOLUCA MOBILE UNIT
- UNAM MOBILE UNIT

Summary of Pollutants Measured

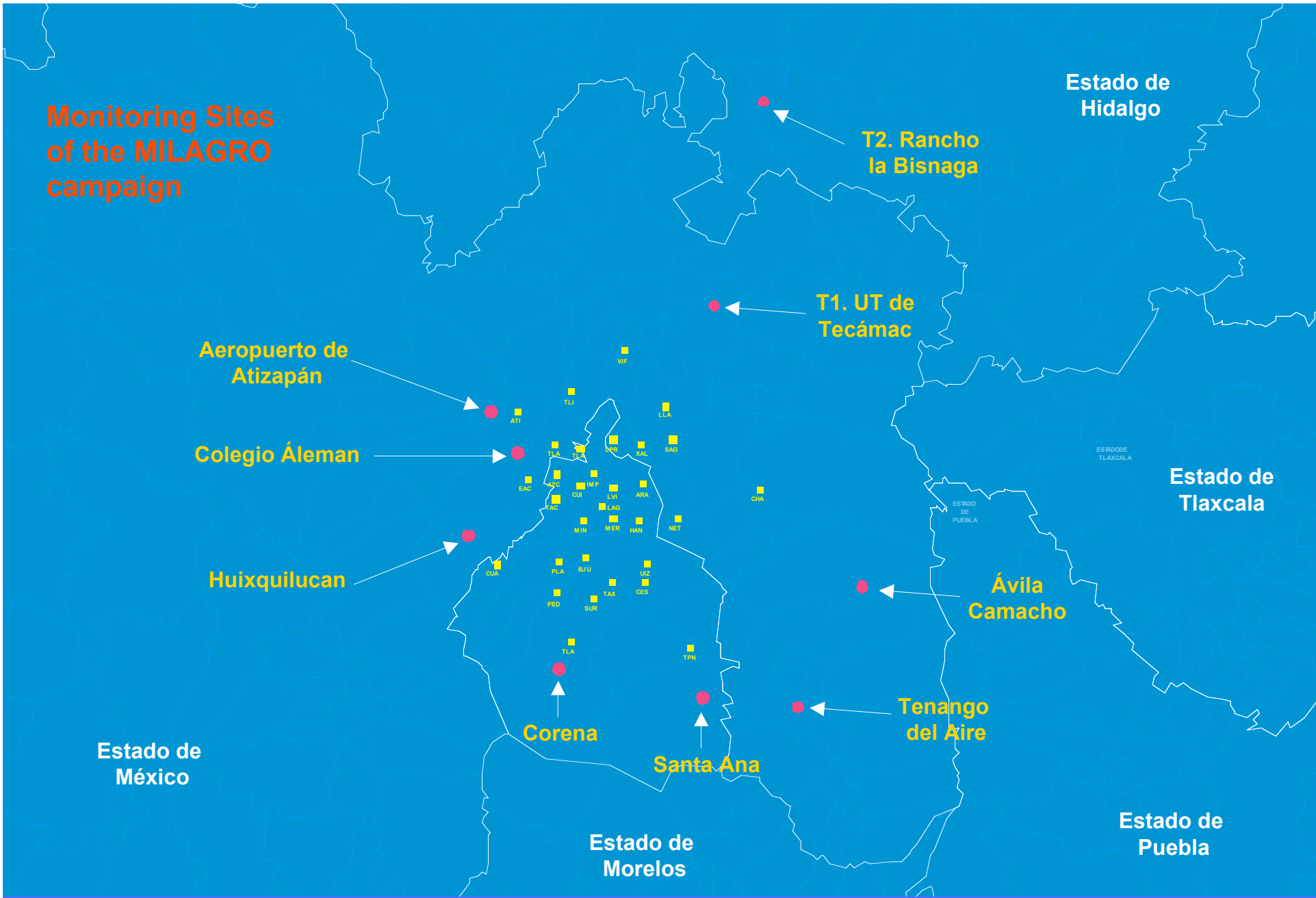
Institutions	Location	Parameters							
		O3	NO2	NO	NOx	SO2	CO	PM10	PM2.5
Mexico City									
INE - CENICA	CORENA								
SMA-GDF	T1								
UNAM	Tenango del aire								
Instruments from different institutions	Huixquilucan								
Tula, Hidalgo	T2								
Toluca, México Estate	Atizapan								
Monterrey, Nuevo León	Santa Ana								
Querétaro, Querétaro	Avila Camacho								
Salamanca/Instruments from different institutions, Guanajuato	Colegio Alemán								

Summary of Meteorological Parameters

Institutions	Location	Meteorological Parameters						
		WS	WD	TEMP	RH	PP	PB	SOLAR RAD
Mexico City								
INE - CENICA	CORENA							
SMA-GDF	T1							
UNAM	Tenango del aire							
Instruments from different institutions	Huixquilucan							
Tula, Hidalgo	T2							
Toluca, México	Atizapan							
Monterrey, Nuevo León	Santa Ana							
Querétaro, Querétaro	Avila Camacho							
Salamanca/Instruments from different institutions, Guanajuato	Colegio Alemán							

Monitoring Sites of the MILAGRO campaign

No.	Monitoring Site	Code	Operating Institution
1	Tenango del Aire	TG	UNAM-Atmospheric Sciences Center
2	Santa Ana	SA	DGCENICA-Tecamachalco
3	Corena	CR	DGCENICA-Tecamachalco
4	Huixquilucan	HX	DGCENICA-Tecamachalco
5	Atizapan Airport	AE	DGCENICA-Tecamachalco
6	Avila Camacho	AC	DGCENICA-Tecamachalco
7	UT de Tecámac	T1	GDF Environmental Secretariat
8	Rancho la Bisnaga	T2	COEDE - Hidalgo
9	Colegio Aleman	CA	DGCENICA-Tecamachalco

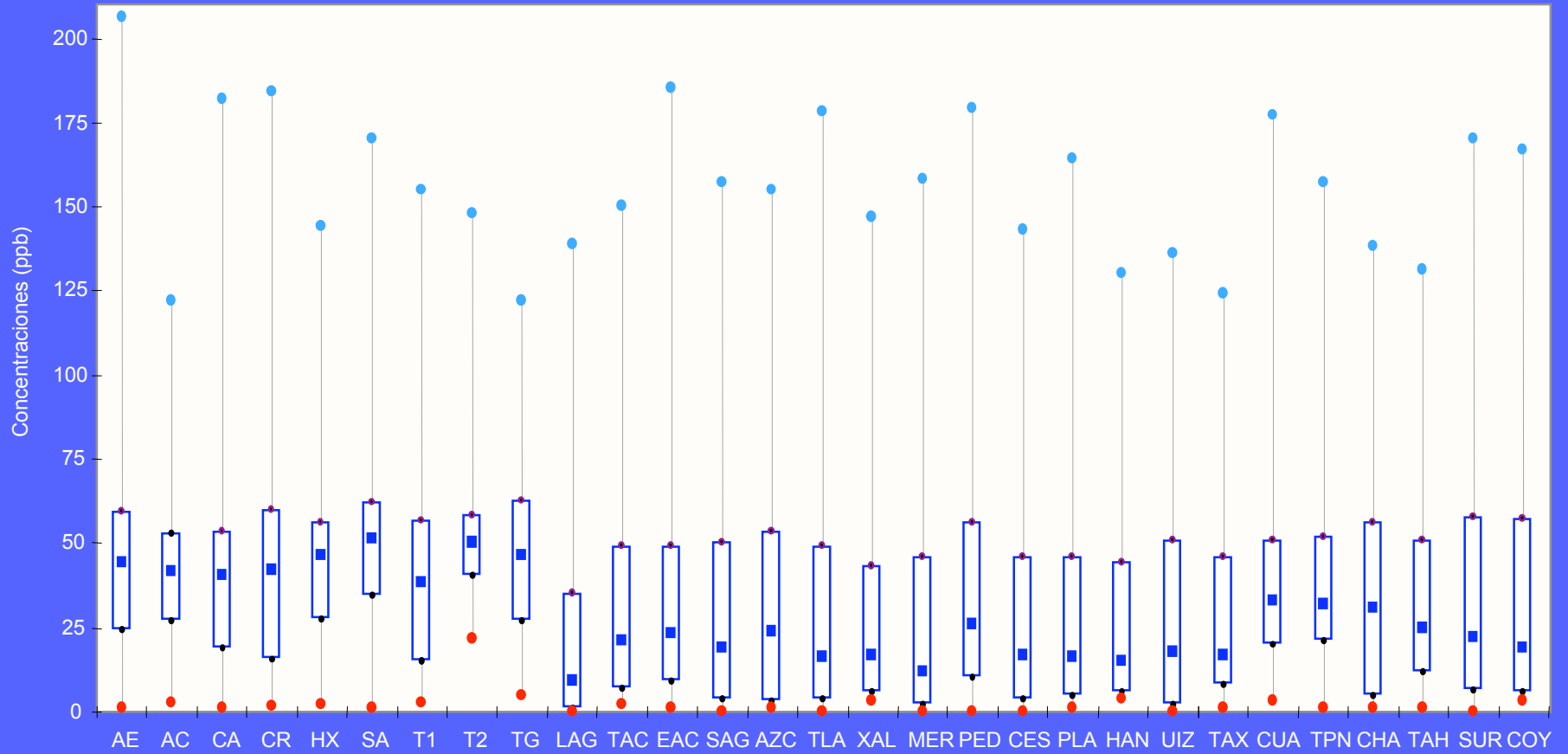


Percentage of data capture per Station

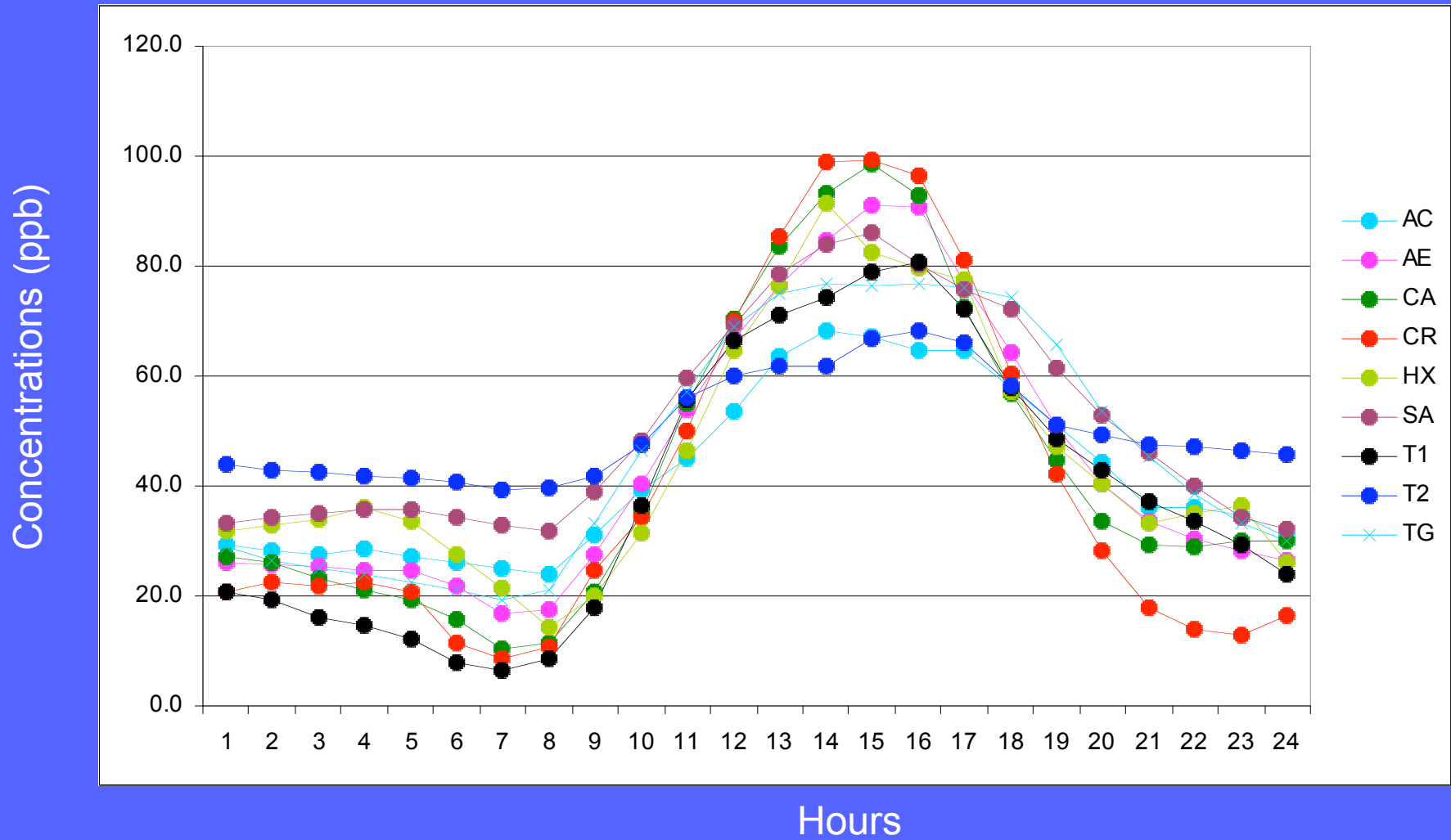
Station	Raw Data	Level 1 Validation
AP	96	94
AC	90	50
CA	92	71
CO	84	83
HX	78	60
T1	66	57
T2	79	72
SA	99	91



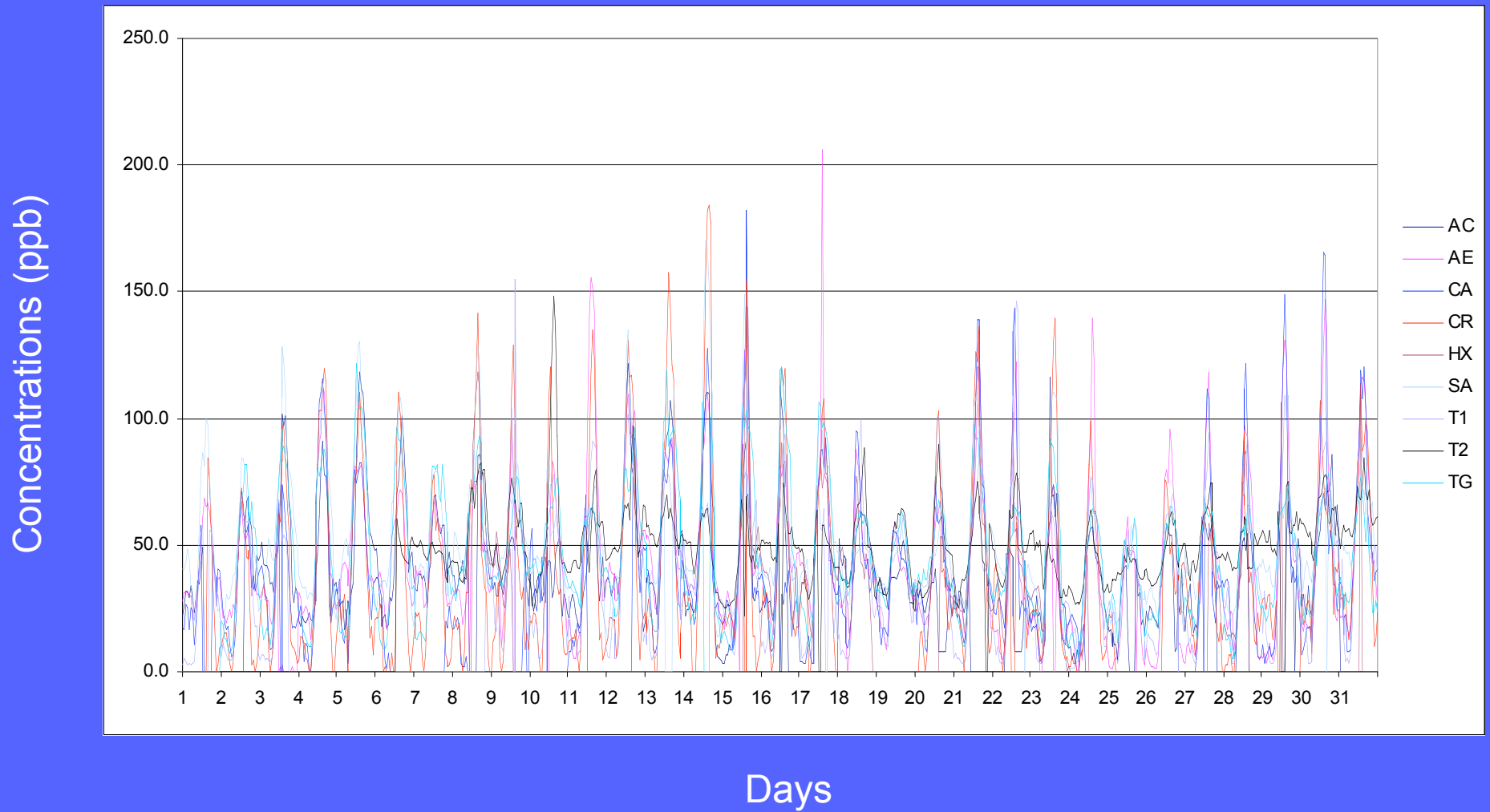
Ozone. One hour average Box Plot



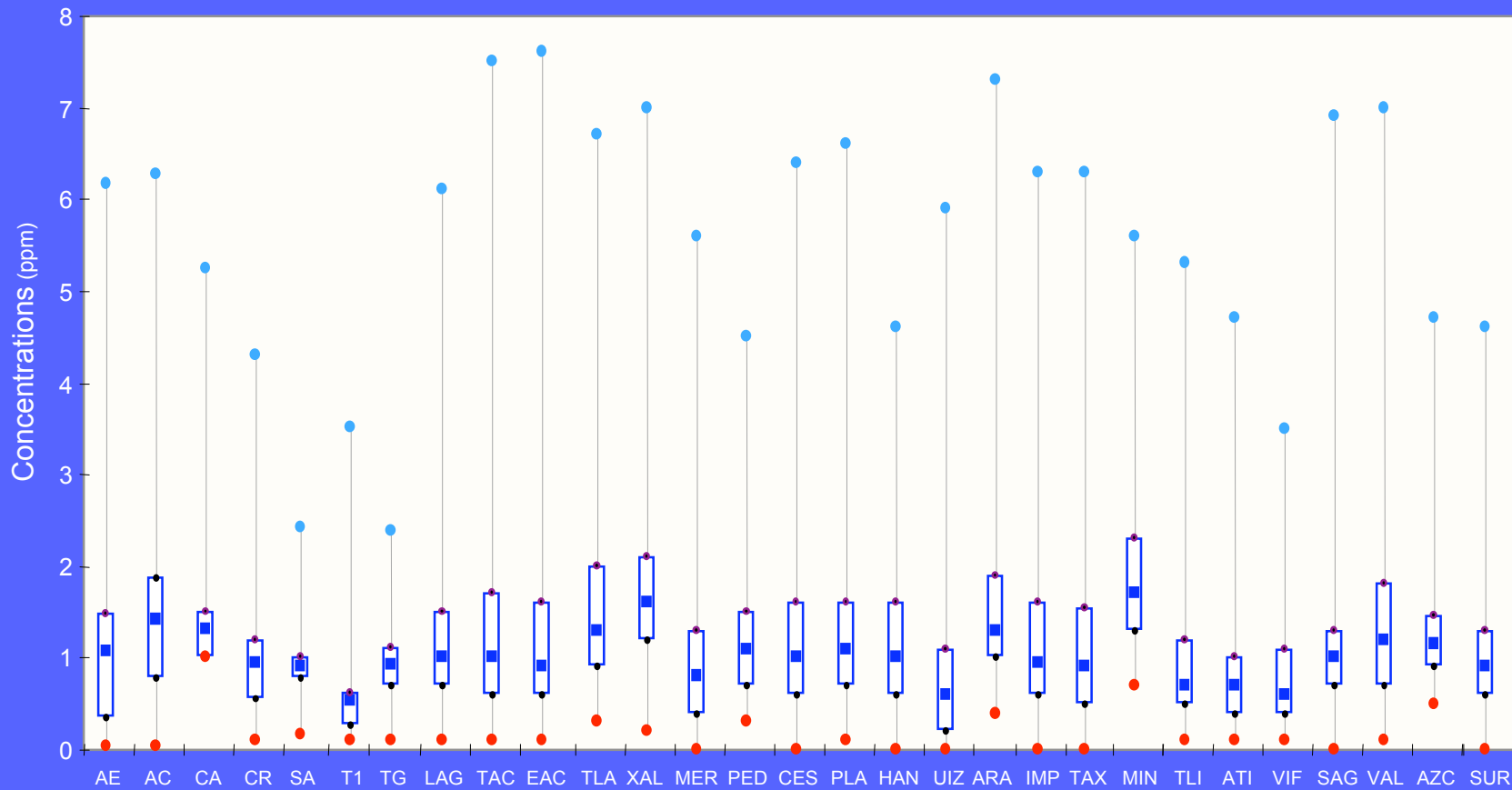
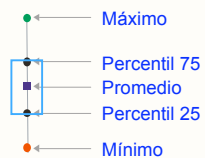
Ozone, hourly average



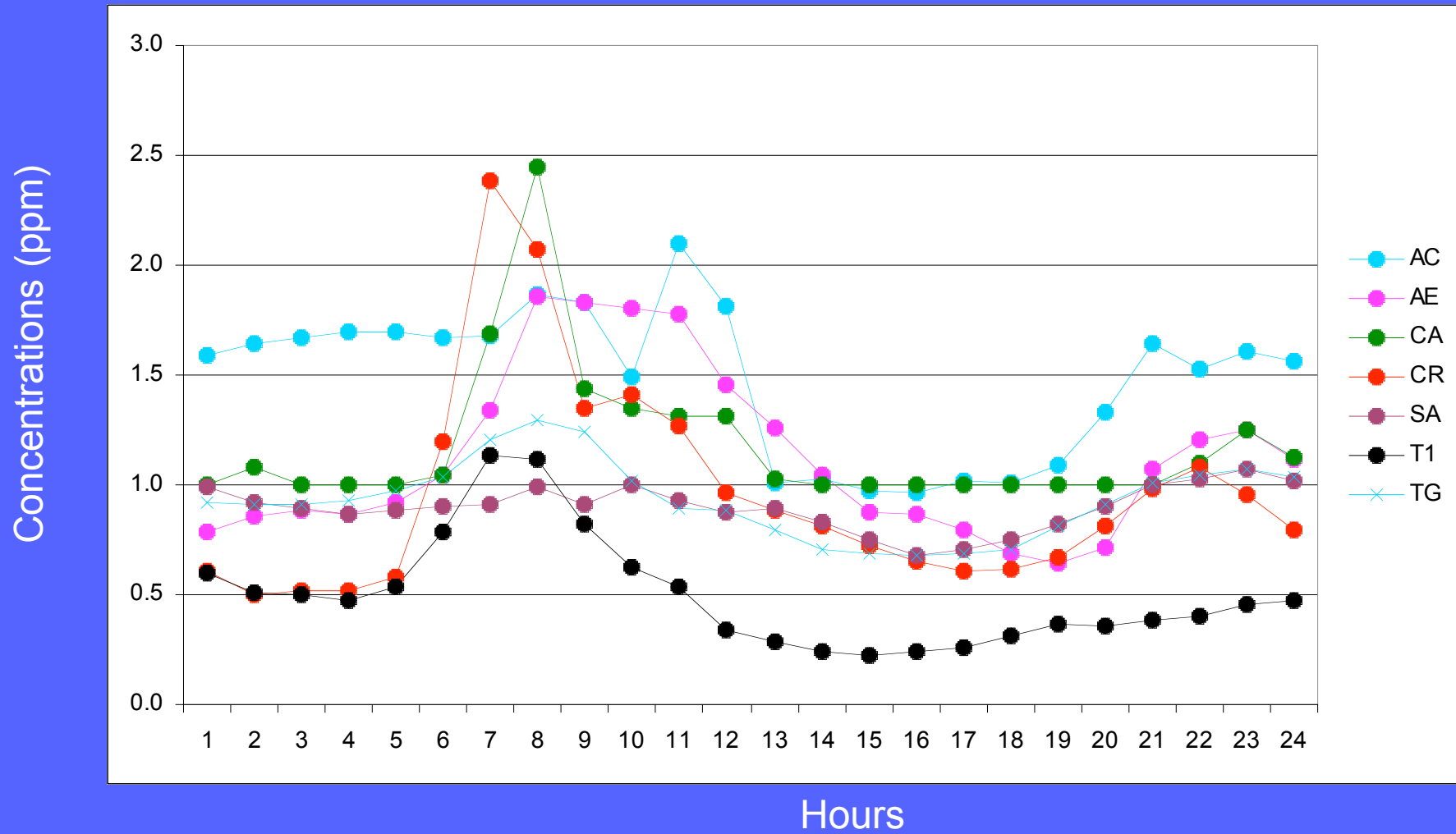
Ozone. Time series, hourly concentrations



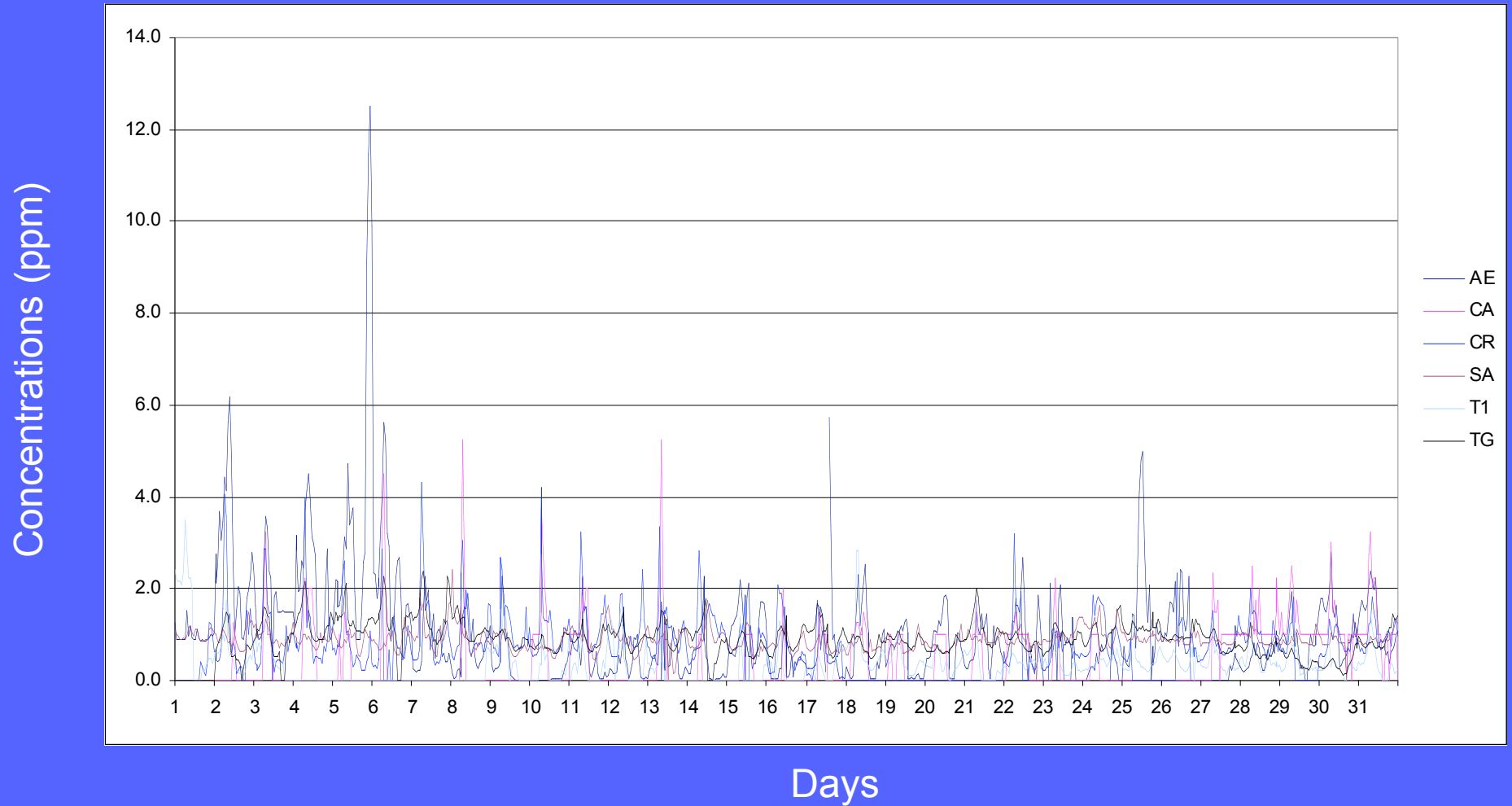
CO. One hour average Box Plot



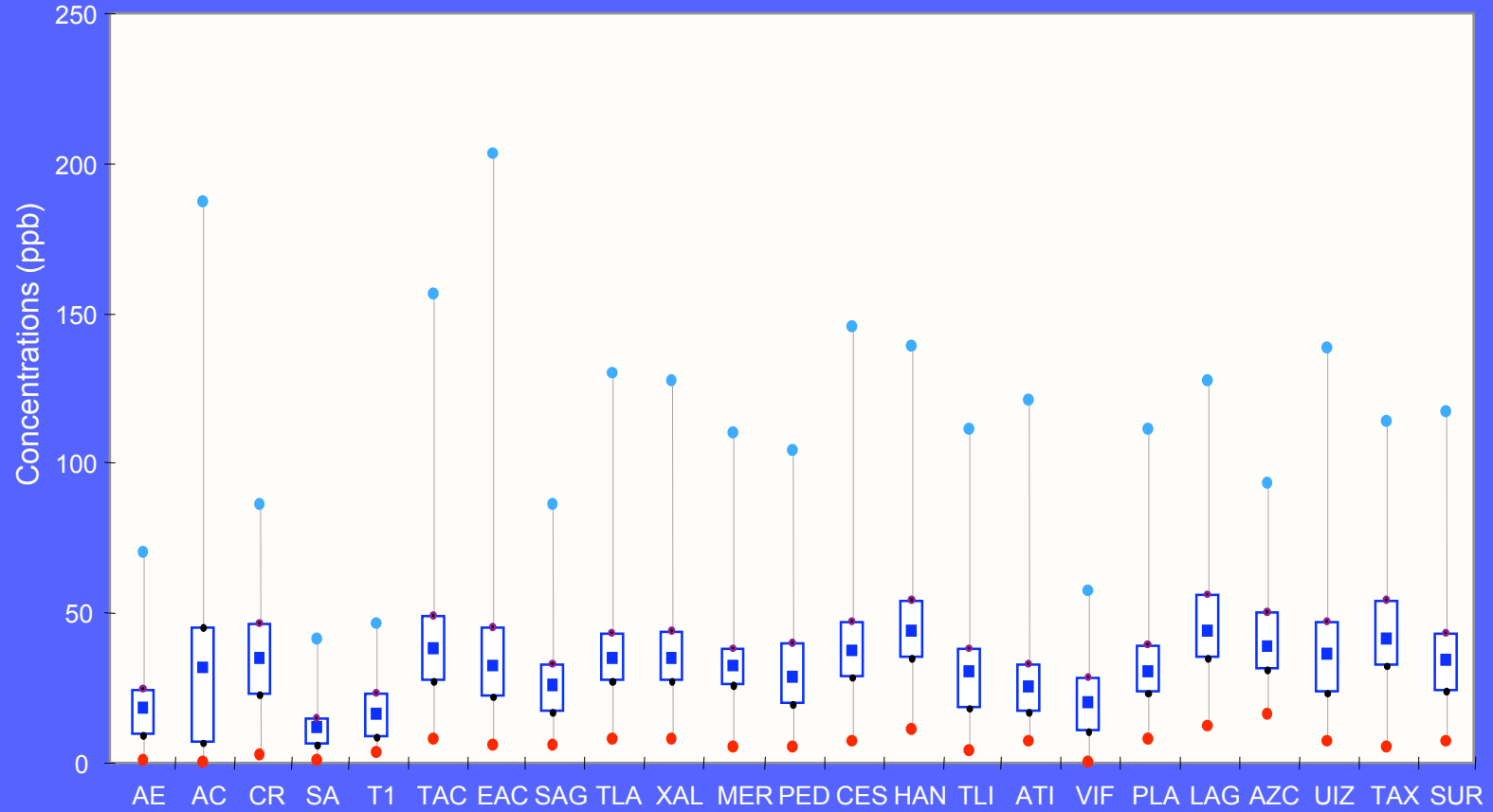
CO. hourly average



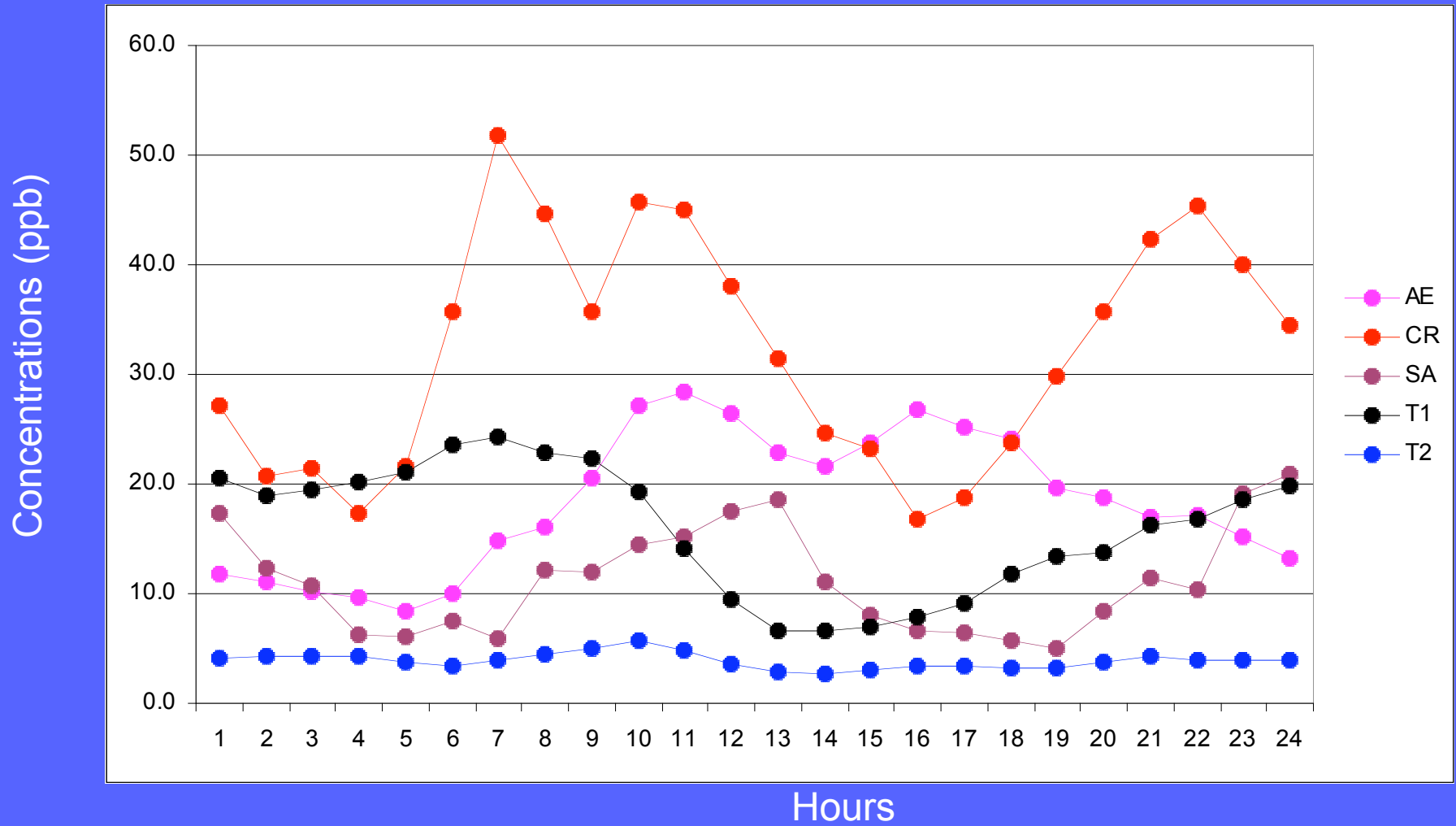
CO. Time series, hourly concentrations



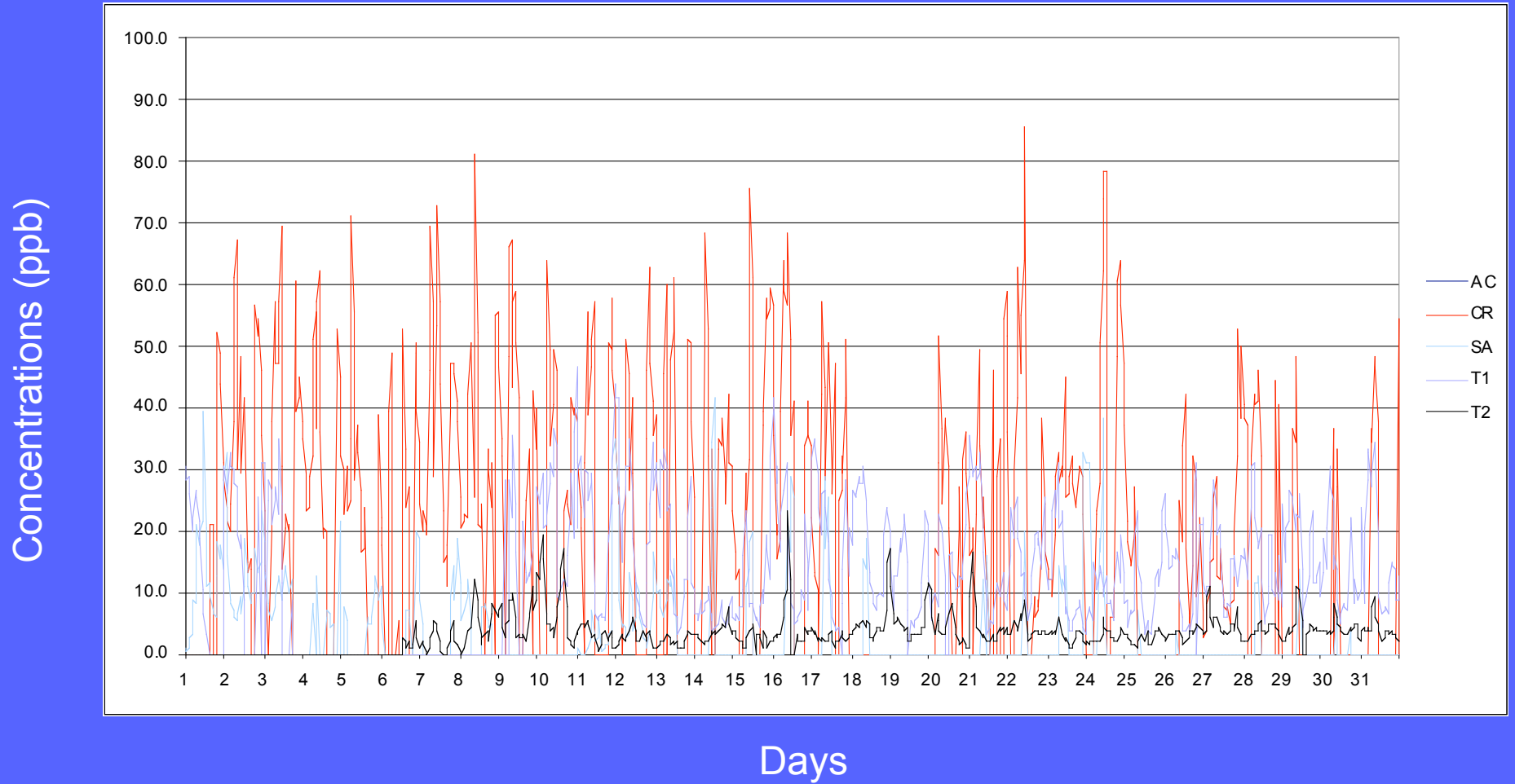
NO2. One hour average Box Plot



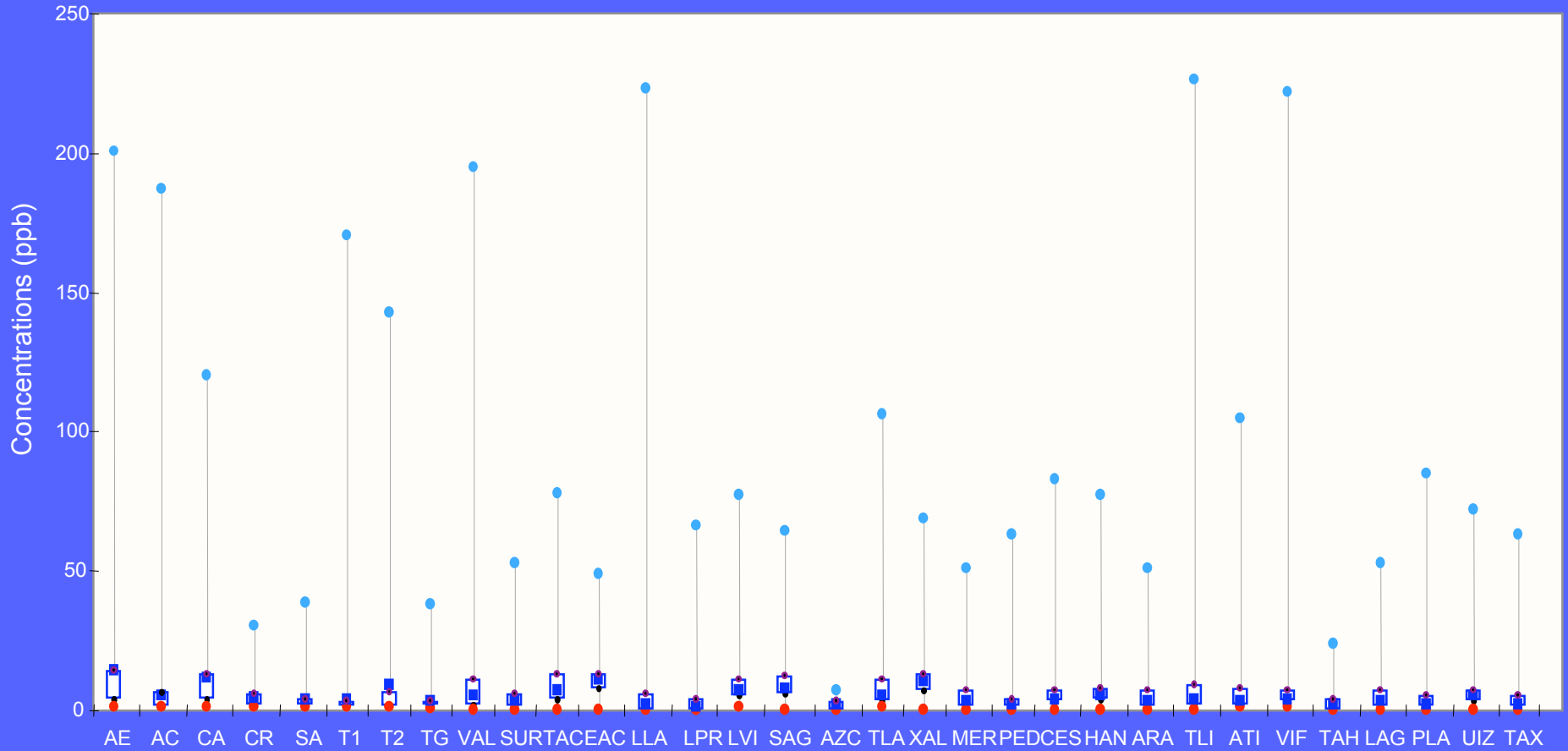
NO₂, hourly average



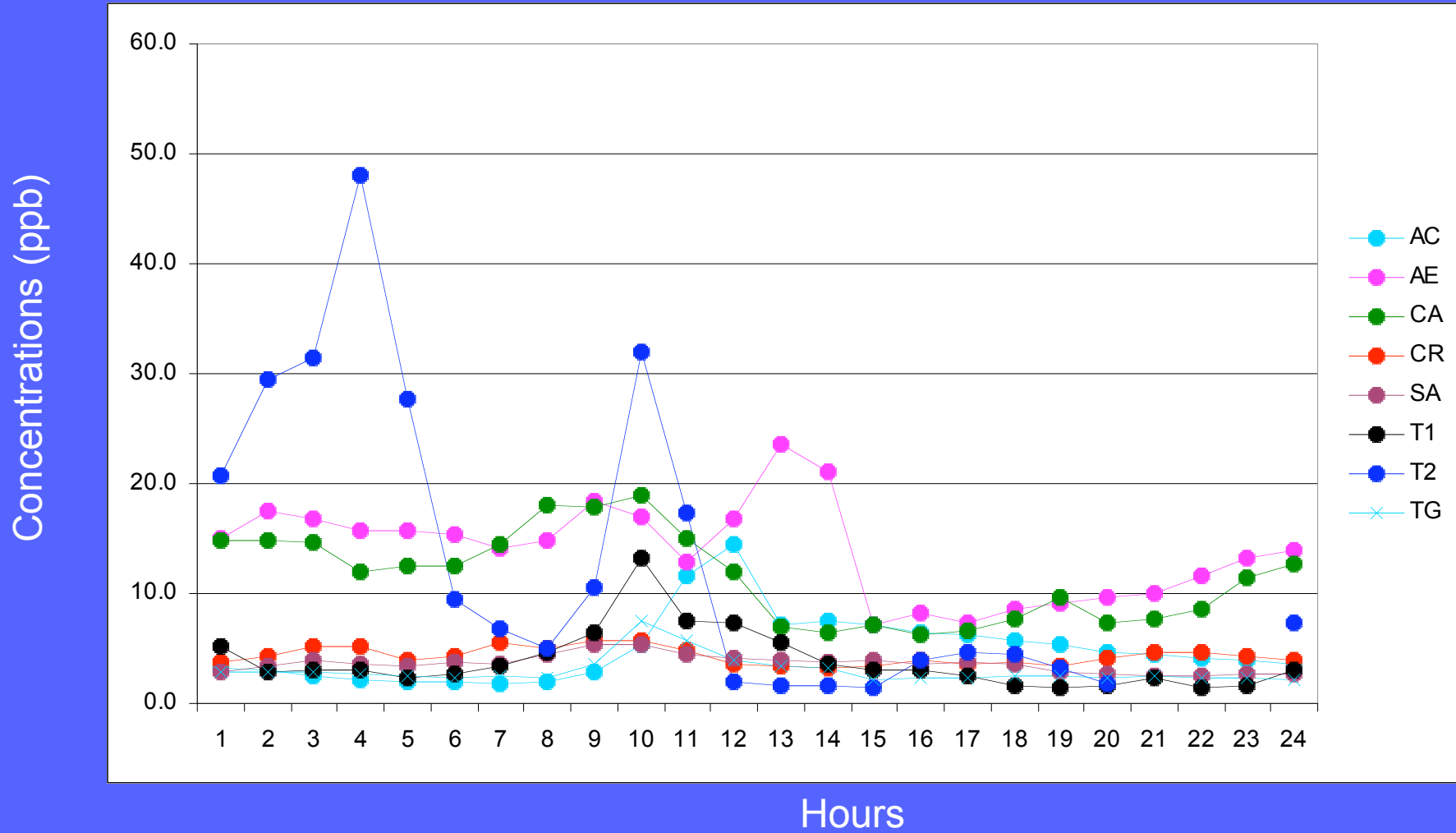
NO2. Time series, hourly concentrations



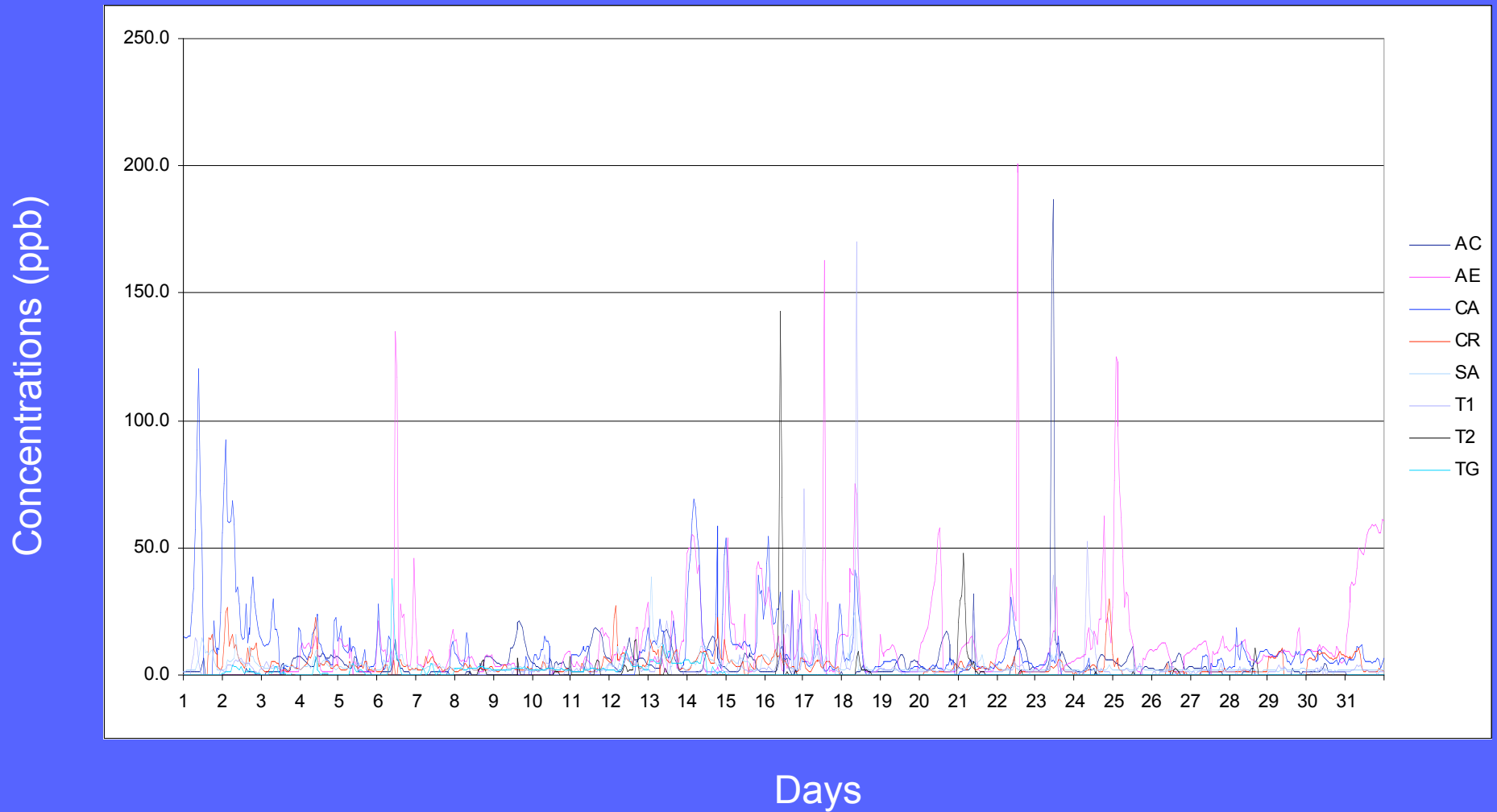
SO2. One hour average Box Plot



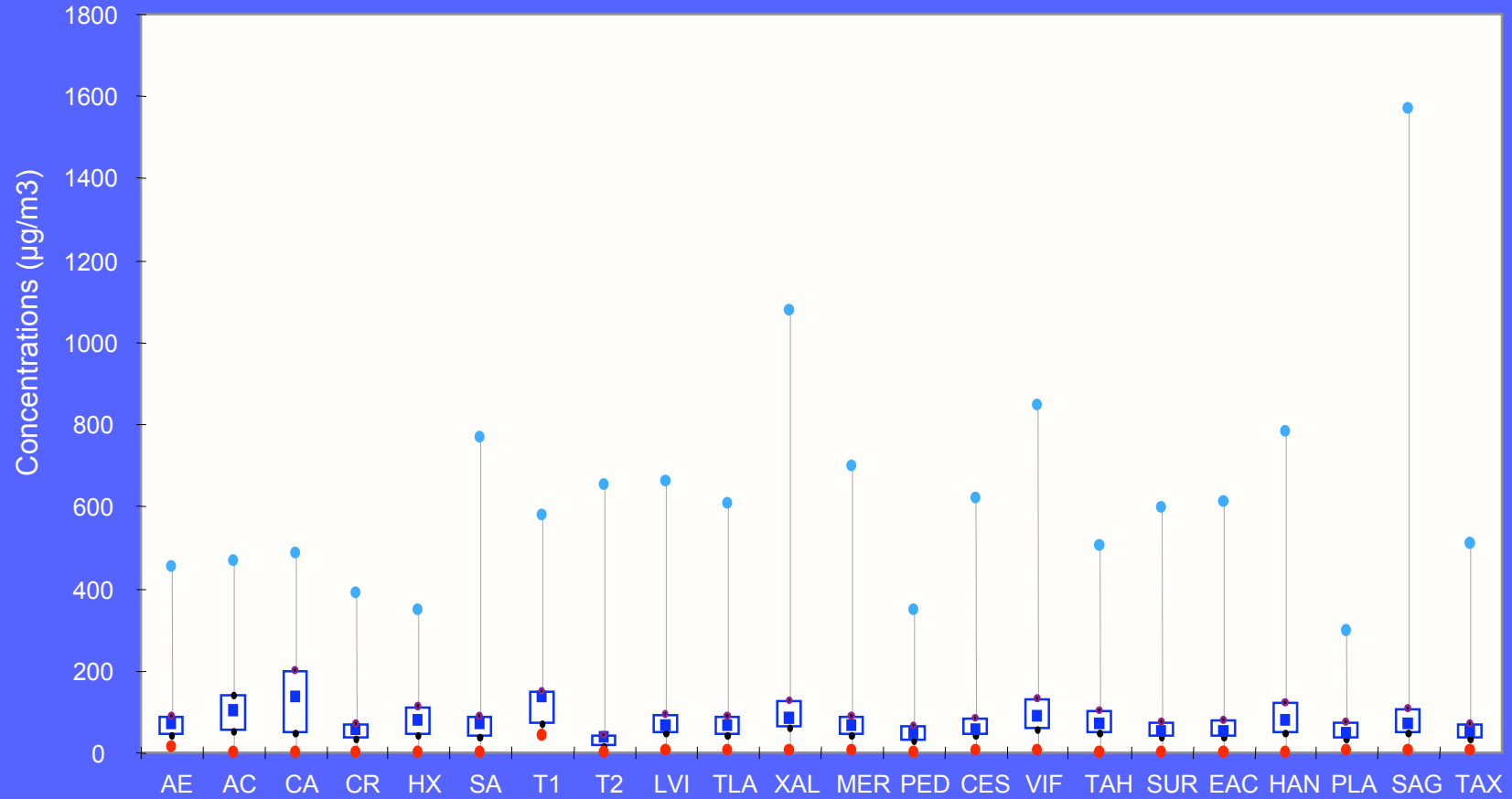
SO2, hourly average



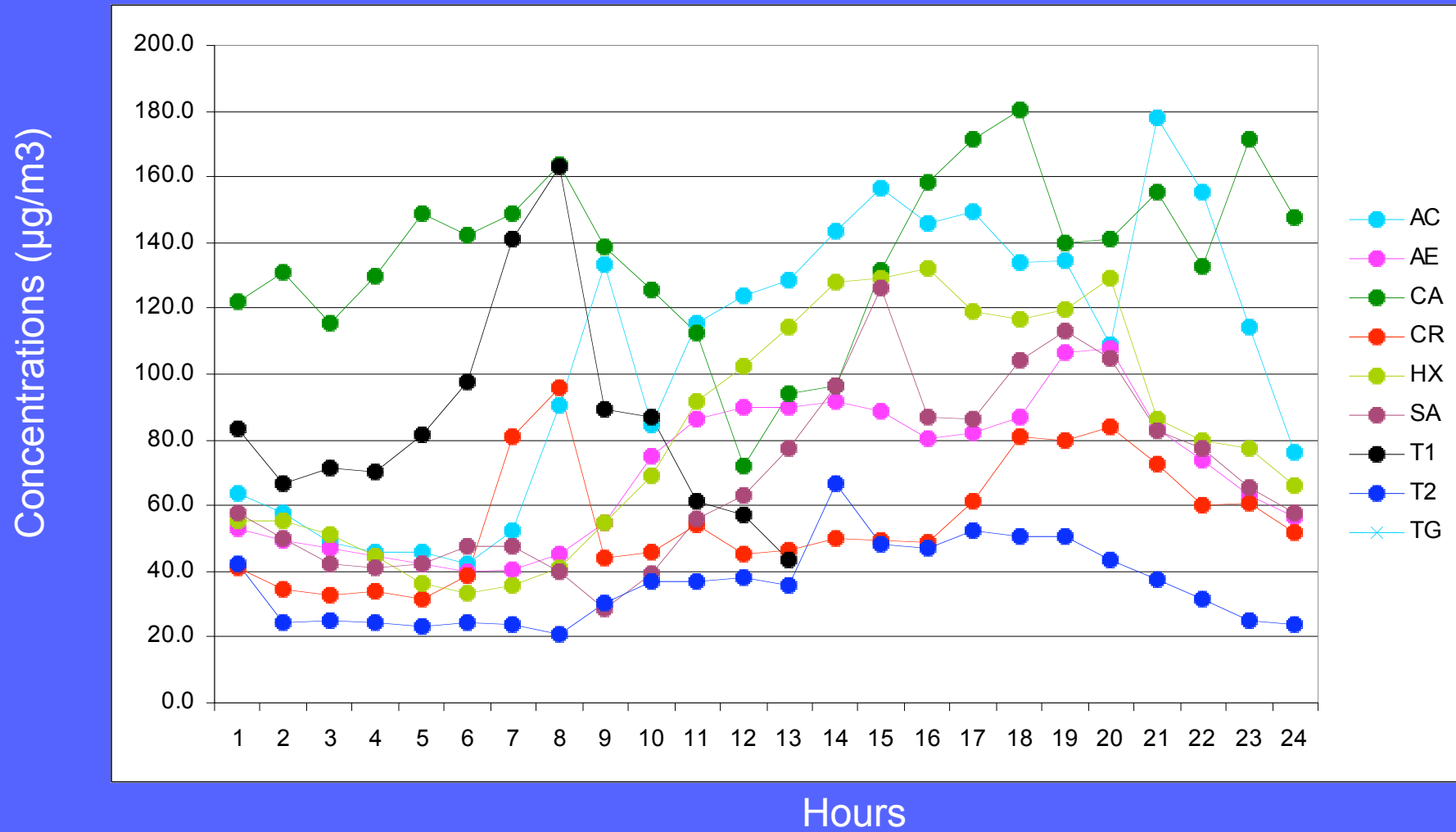
SO2. Time series, hourly concentrations



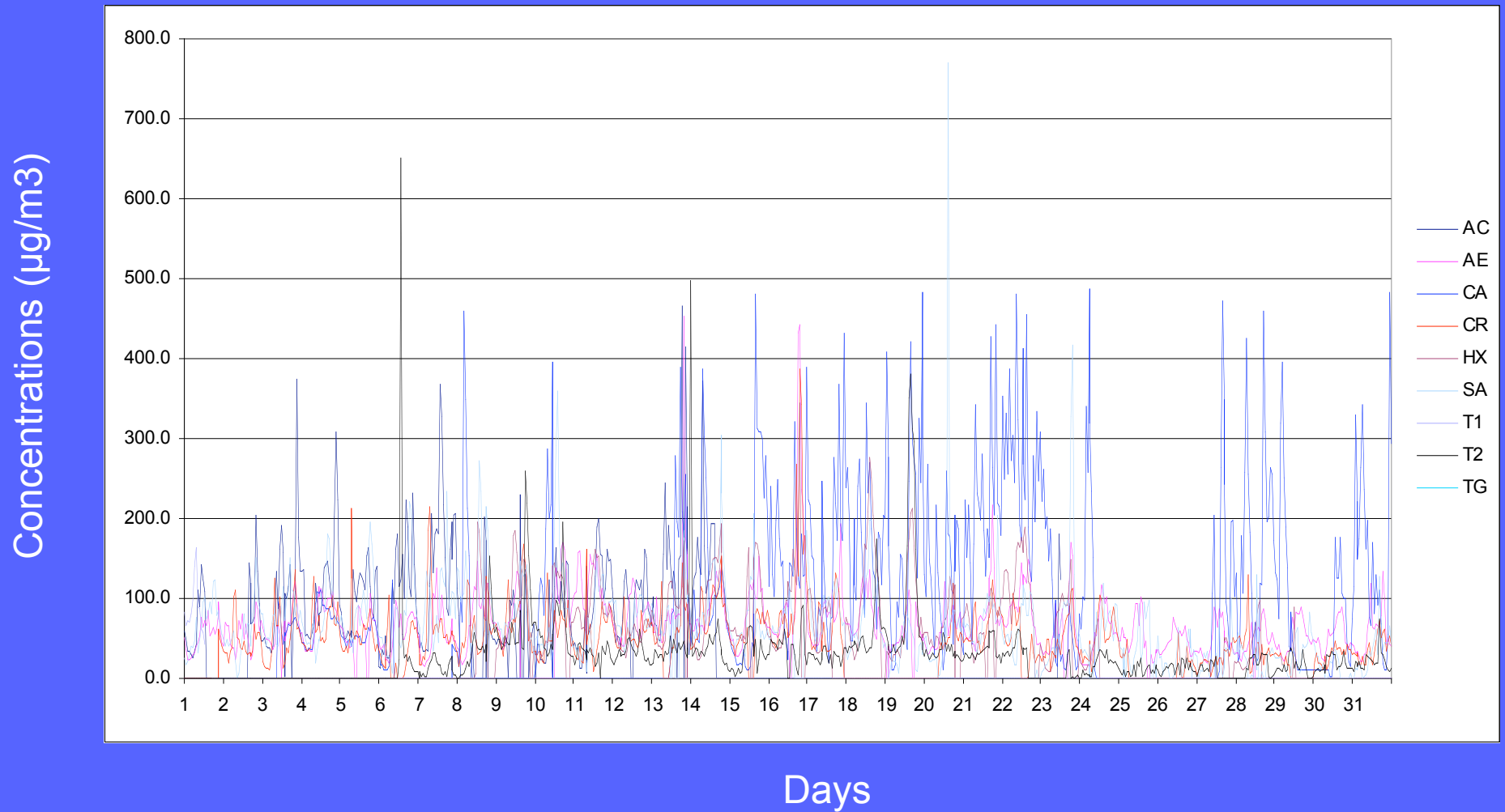
PM10. One hour average Box Plot



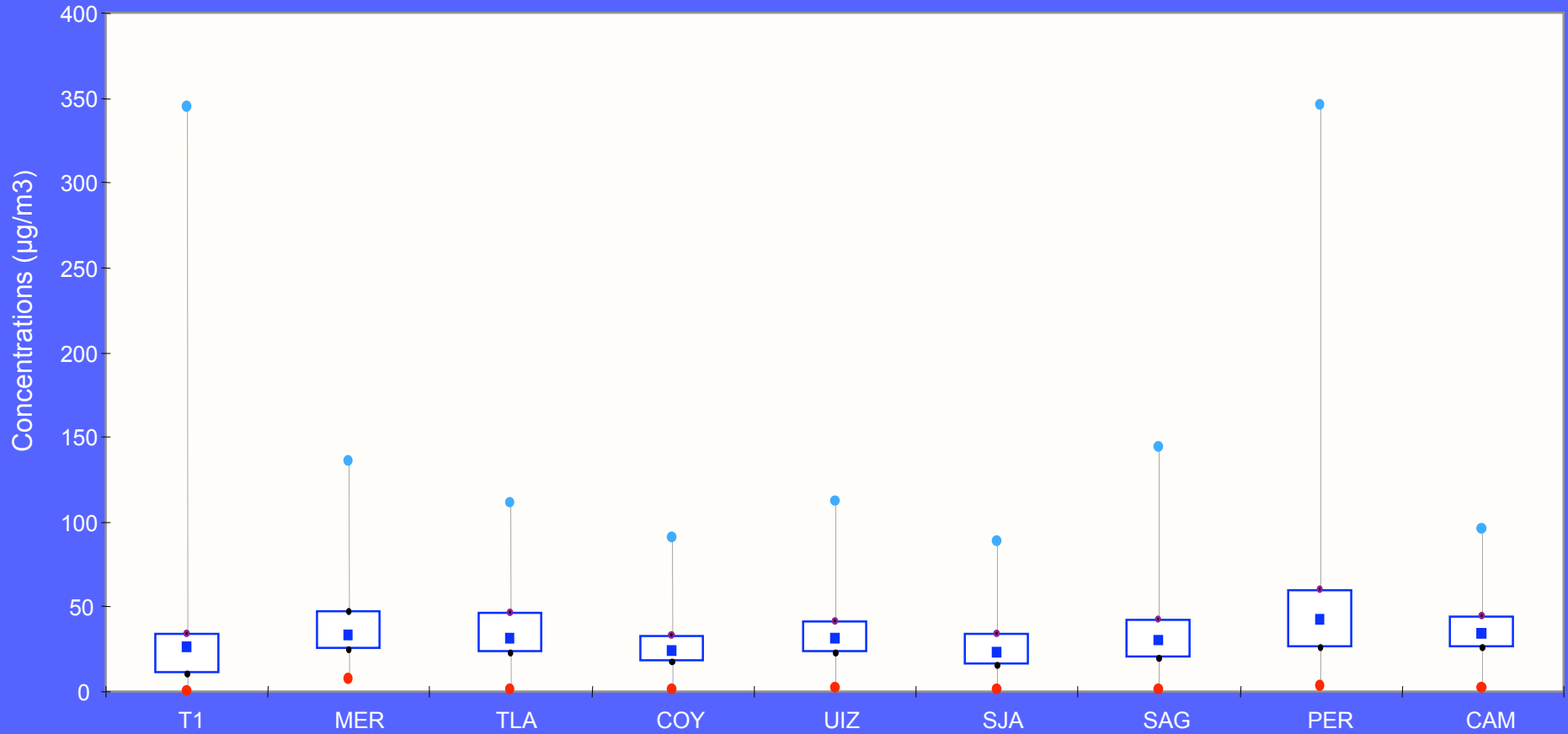
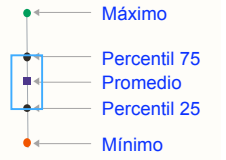
PM10, hourly average



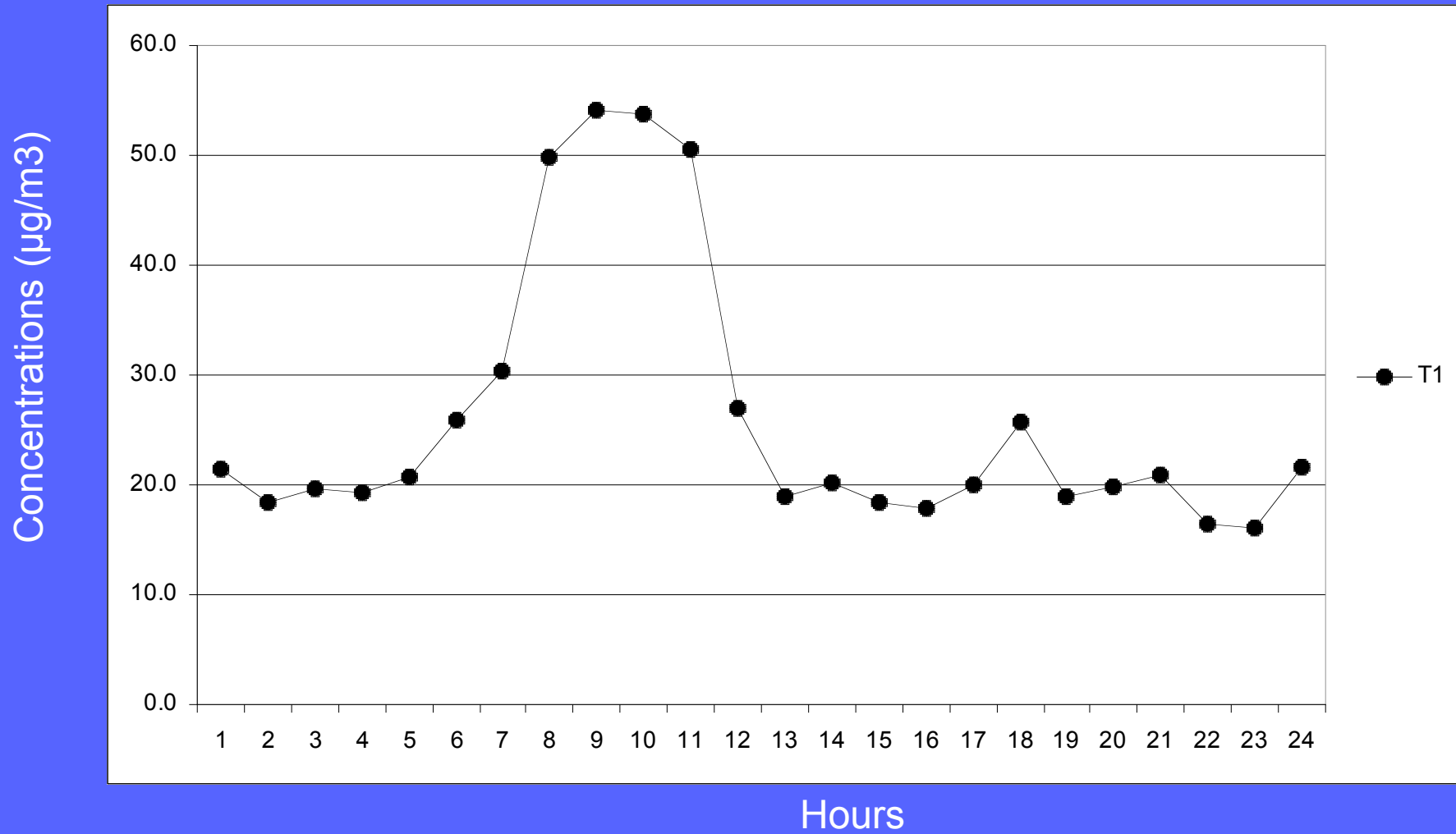
PM10. Time series, hourly concentrations



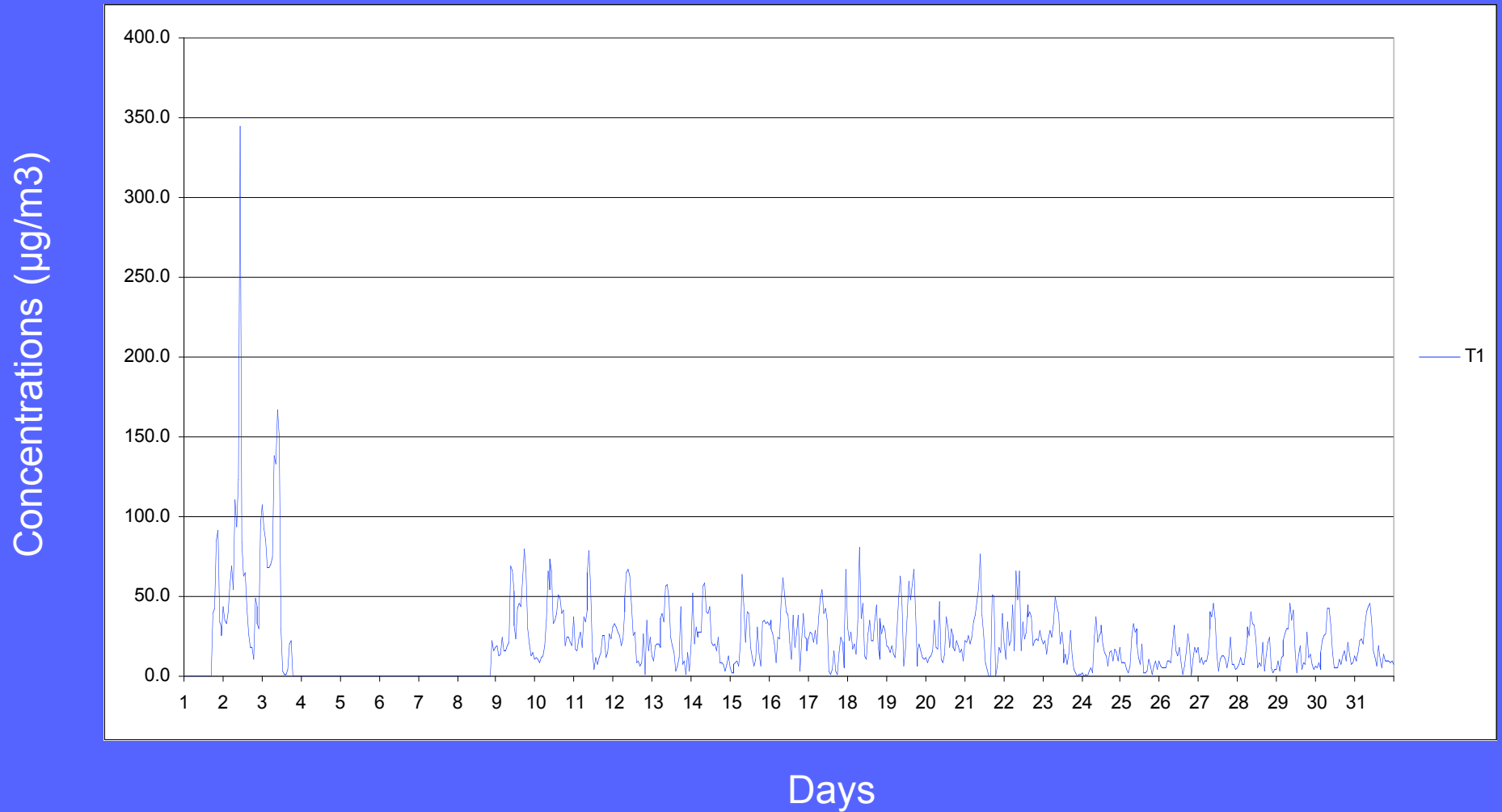
PM25. One hour average Box Plot



PM25. Hourly average



PM25. Time series, hourly concentrations



Conclusions

1. Ozone average concentrations measured at the boundary sites are higher than those found in the urban monitoring stations of SIMAT.
2. There are not significant differences in relation to CO measurements between the boundary sites and the SIMAT monitoring stations.
3. Atizapan airport, Avila Camacho and Corena sites presented NO₂ concentrations similar to the SIMAT monitoring stations.
4. Despite the fact that the average SO₂ concentrations presented similar values in all the sites, there were recorded concentrations higher than 100 ppb in all the boundary sites located at the north side of the MCMA.
5. The highest PM10 average concentration was recorded in Colegio Aleman and was due to the influence of a local source, soil movements of a nearby mall construction.

MCGMA BOUNDARY MEASUREMENTS DURING THE MILAGRO CAMPAIGN

October, 2006



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