

# DIURNAL VARIATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHs), ELEMENTAL AND ORGANIC CARBON IN A SOURCE AND A RECEPTOR SITE OF MEXICO CITY

Diana Guzman-Torres<sup>1</sup>, Arantzazu Eiguren-Fernandez<sup>2</sup>, Maricela Maubert<sup>1</sup>, Pablo Cicero-Fernandez<sup>3</sup> and Antonio H. Miguel<sup>2\*</sup>

<sup>1</sup>Autonomous Metropolitan University (UAM), Mexico City; <sup>2</sup>Southern California Particle Center and Supersite, Institute of the Environment, University of California, Los Angeles; <sup>3</sup>Department of Environmental Health Sciences, University of California, Los Angeles.

## Major objectives

1. Characterize the diurnal and nocturnal variations of PAHs, OC, and EC levels in PM<sub>10</sub> at a **source** and a **receptor** site in Mexico City (D.F.)
2. Evaluate the effect of meteorology on their measured levels; look for evidence of secondary organic aerosol (SOA) formation

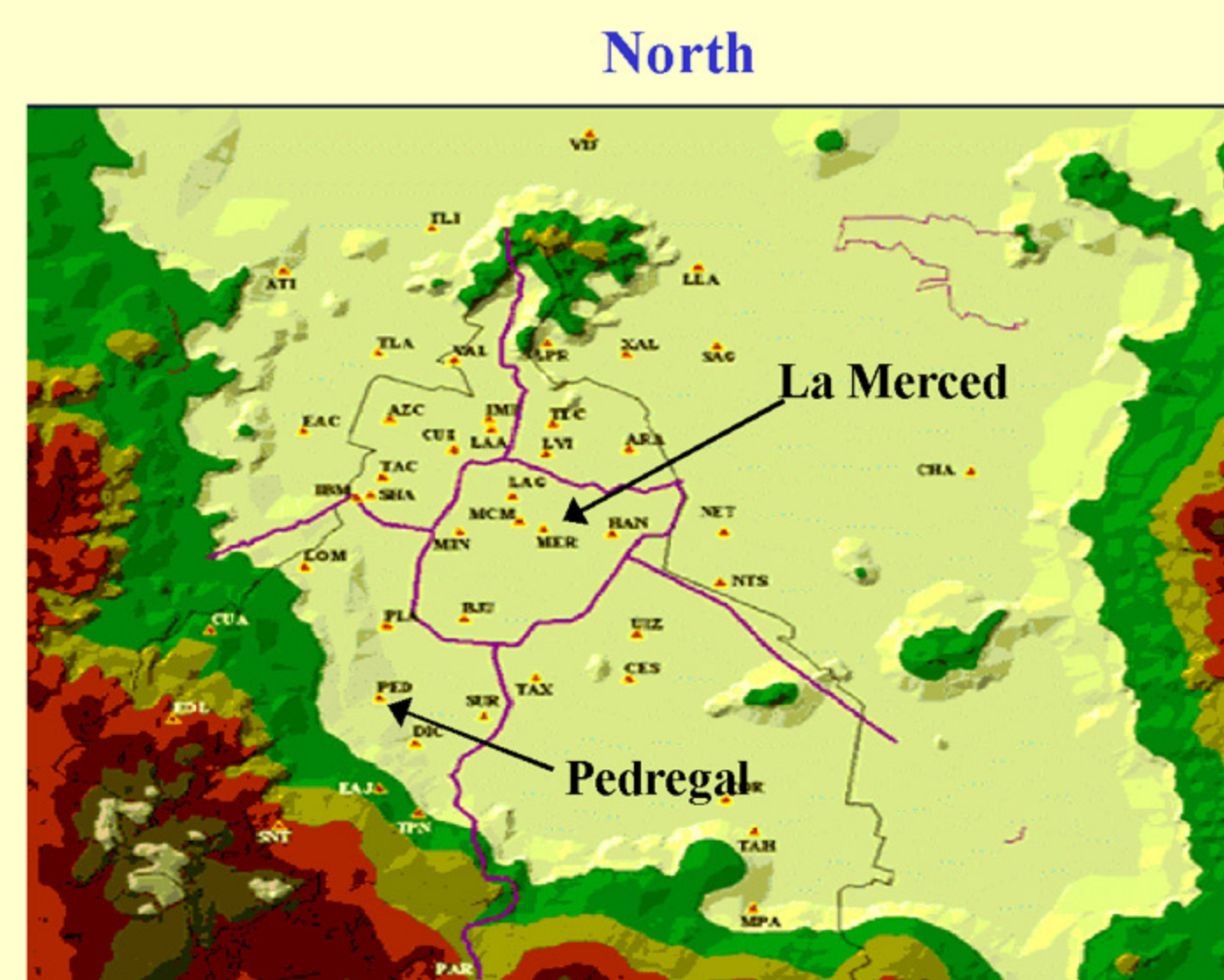
## Study sites

**La Merced:** Downtown Mexico City (**source area**)

**Pedregal:** ca. 15 km downwind (**receptor area** during day time)

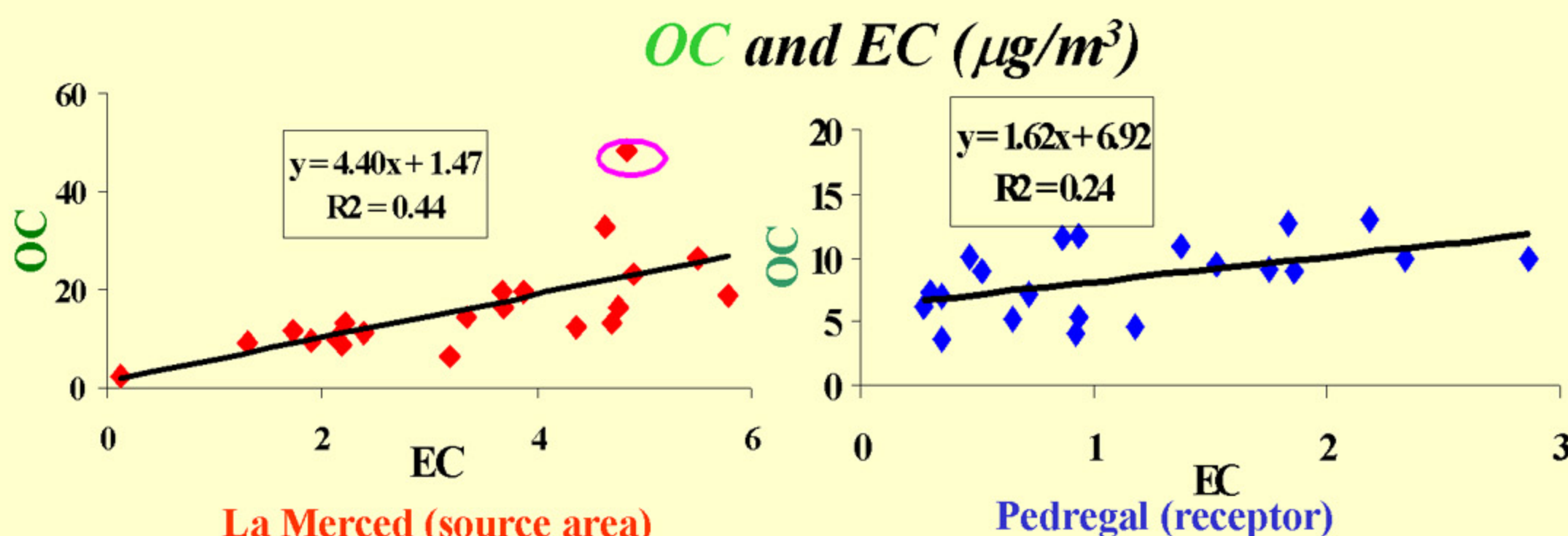
## Sampling schedule and chemical analyses

- ◆ PM<sub>10</sub> High Vol (Sierra Anderson, model 1200); March 17-24, 2003 at La Merced; March 24-31, 2003 at Pedregal; double QZ fiber filters.
- ◆ Three time bins: 5:00-13:00hr, 13:00-21:00hr, and 21:00-5:00hr
- ◆ PAHs by GC/MS, EC and OC by NIOSH TOT method (Sunset Lab.)

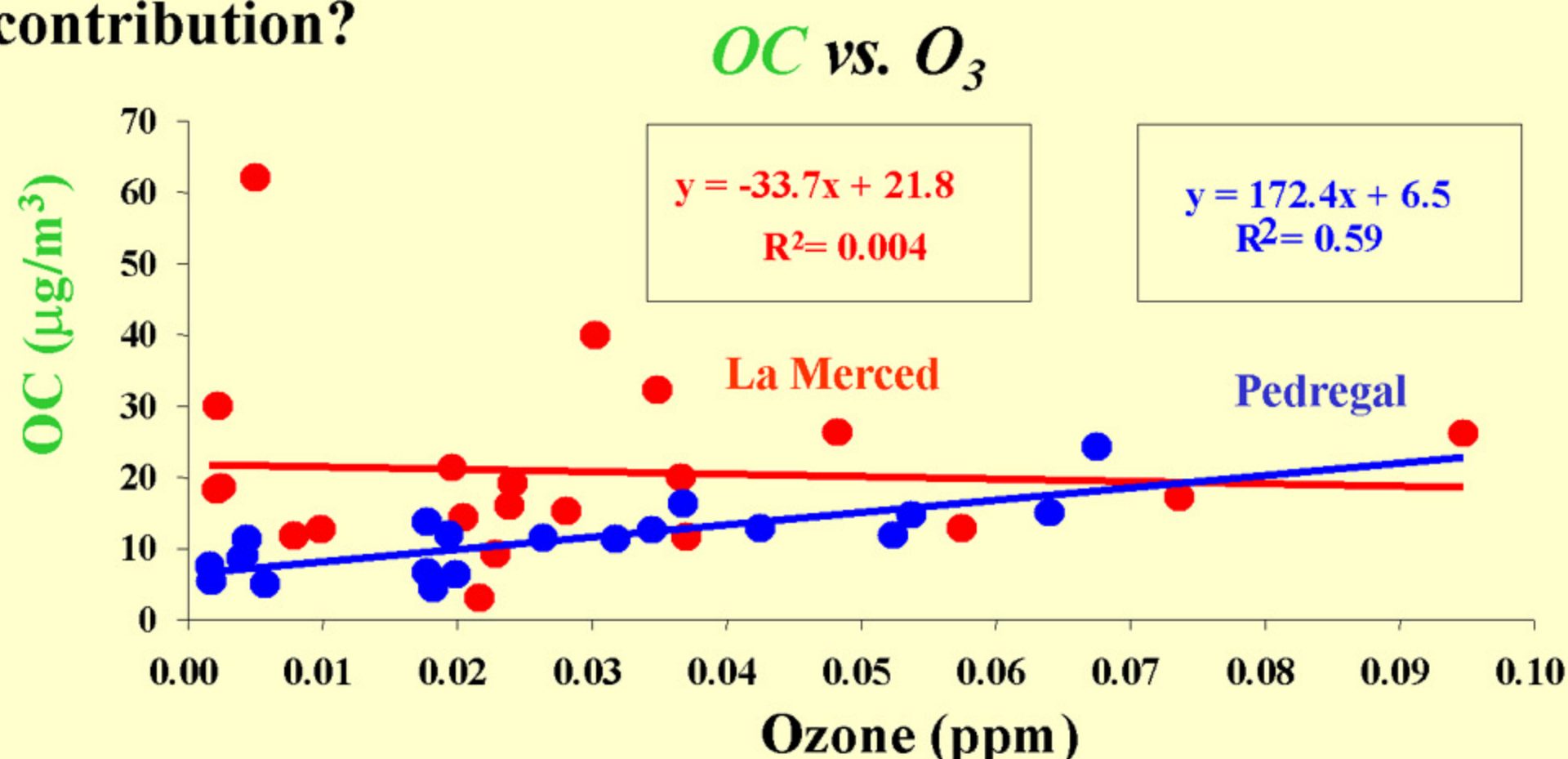


The Metropolitan area of Mexico City (D.F.), showing the study sites of La Merced and Pedregal

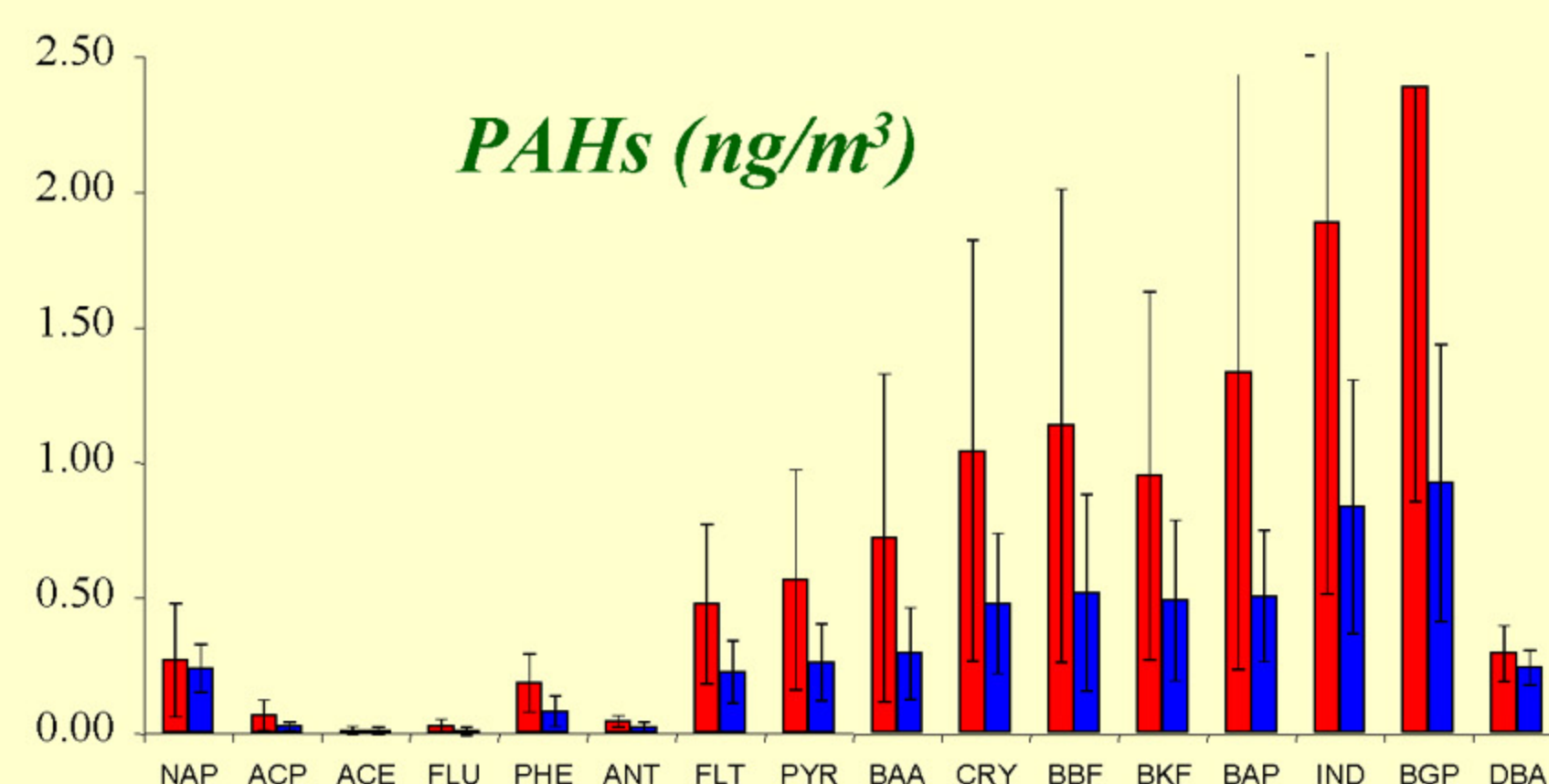
## Results and conclusions



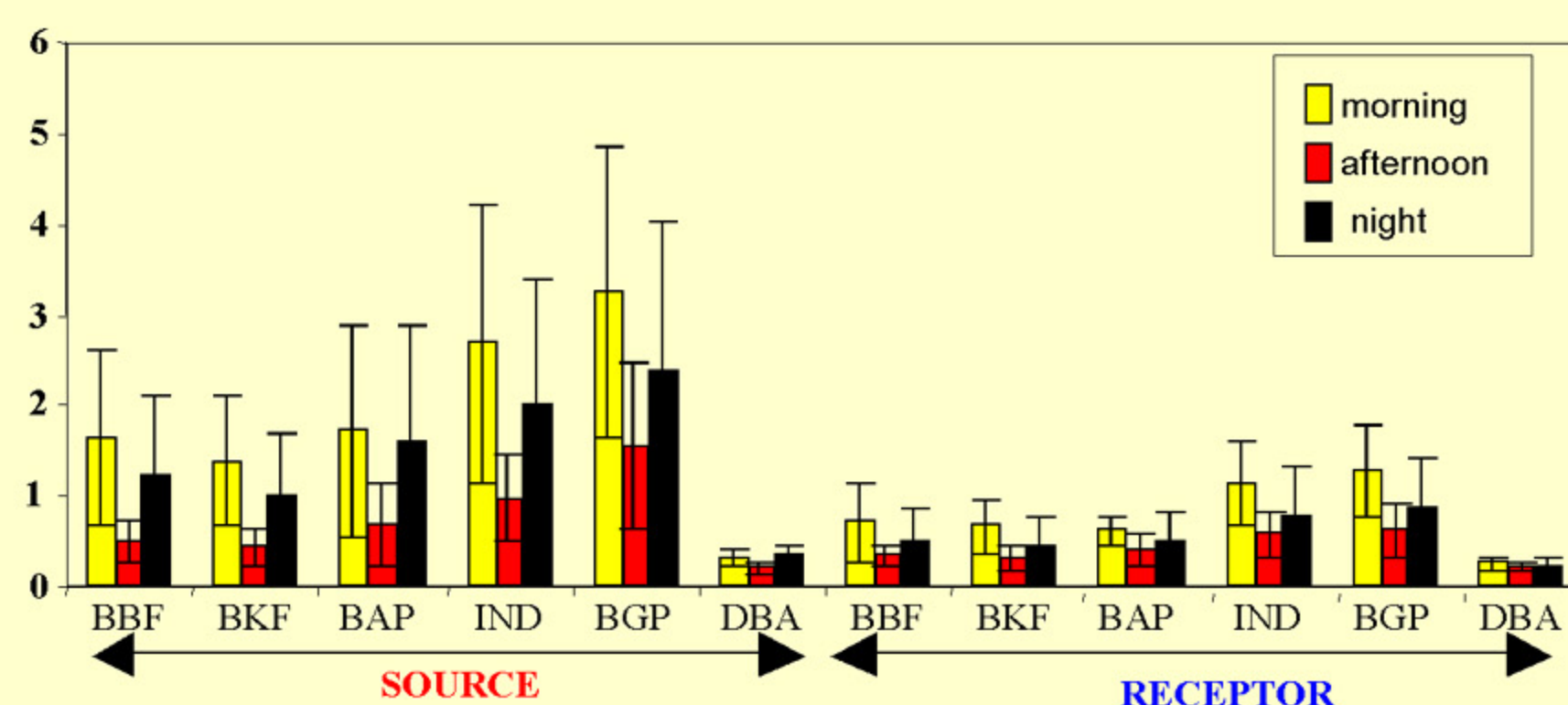
- ◆ Pedregal (**receptor**): Smaller slope (mixed aerosol), higher intercept: SOA formation during transport/and or local bioaerosol contribution?



- ◆ Good correlation for Pedregal (**receptor**) suggest SOA formation.



- ◆ Average conc. two times higher at **La Merced**
- ◆ High BGP suggest significant LDV contribution
- ◆ Pattern follows sub-cooled liquid vapor pressure



- ◆ Highest conc. during morning period (rush hour!); surface inversion help increase during night period

## Acknowledgments

The authors thank the staff of RAMA (D.F.) for their equipment support, transportation logistics, ozone and met data, and help during the sampling campaign. Without their support, this study would not have happened when it did! This work was supported by the Fogarty Program (Dr. John R. Froines, Director) as part of a "sandwich program" between UCLA and UAM.