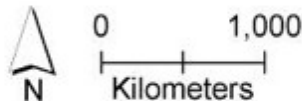


# Estimates of Wet Deposition across North America...

challenges and  
opportunities of  
merging data across  
nations



Alexandra Ponette-González, U. of North Texas  
Kathleen Weathers, Cary Institute of Ecosystem Studies

# Rainfall

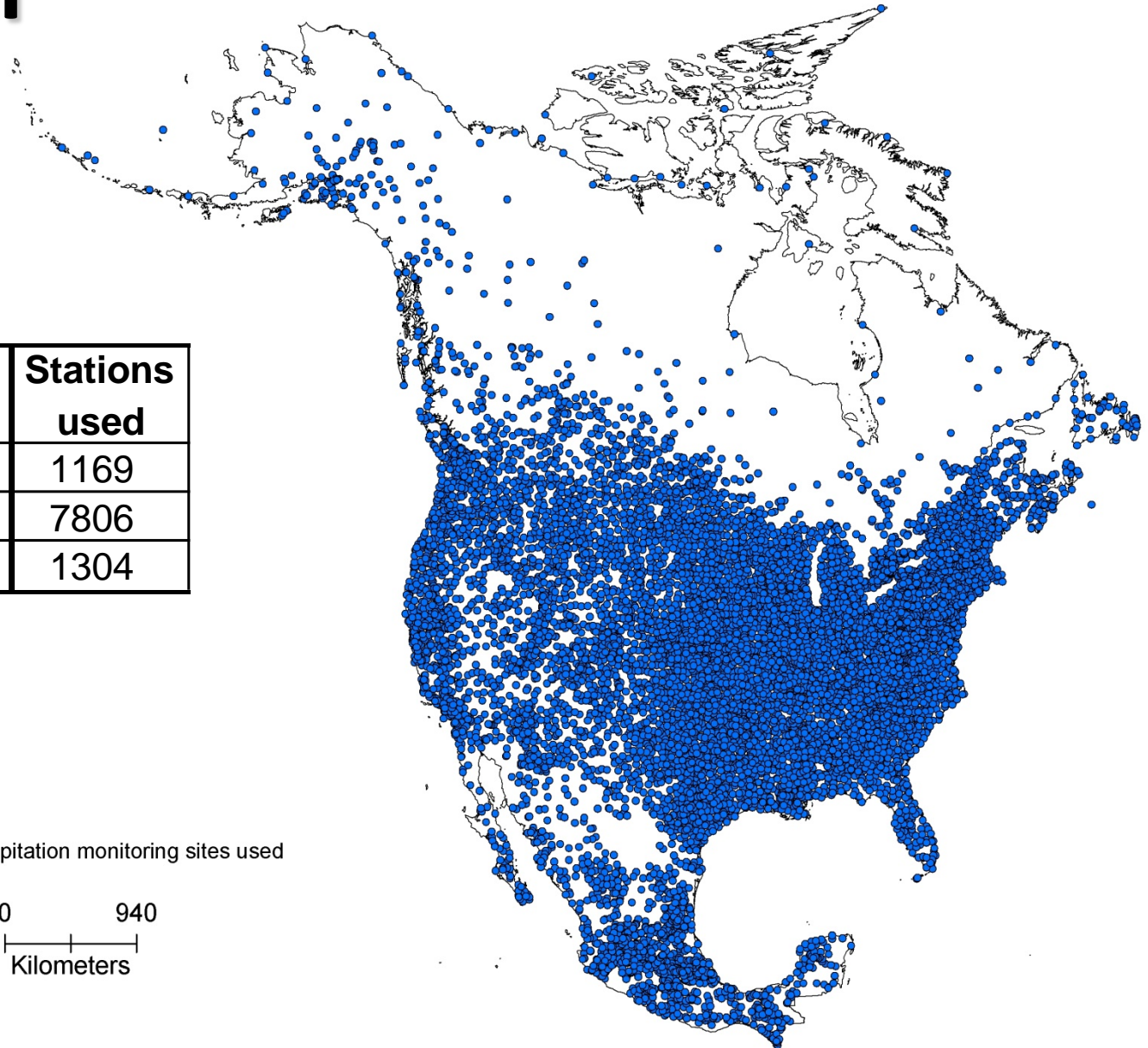
Network	Country	Stations used
MSC	Canada	1169
NCDC	USA	7806
CLICOM	Mexico	1304

## Legend

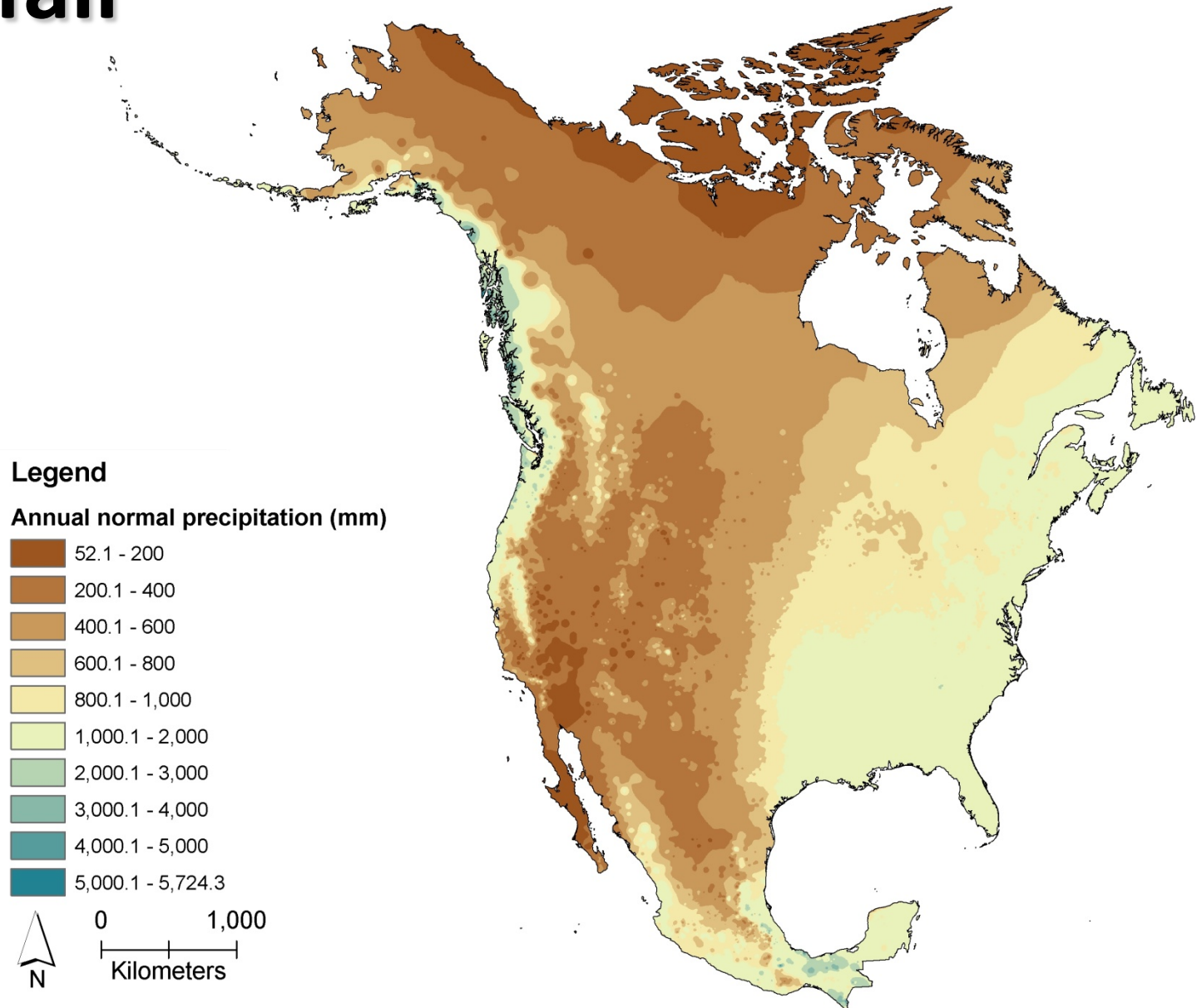
- Precipitation monitoring sites used



0 940  
Kilometers



# Rainfall



Map by A. Elliott 2007

# Rainfall Chemistry

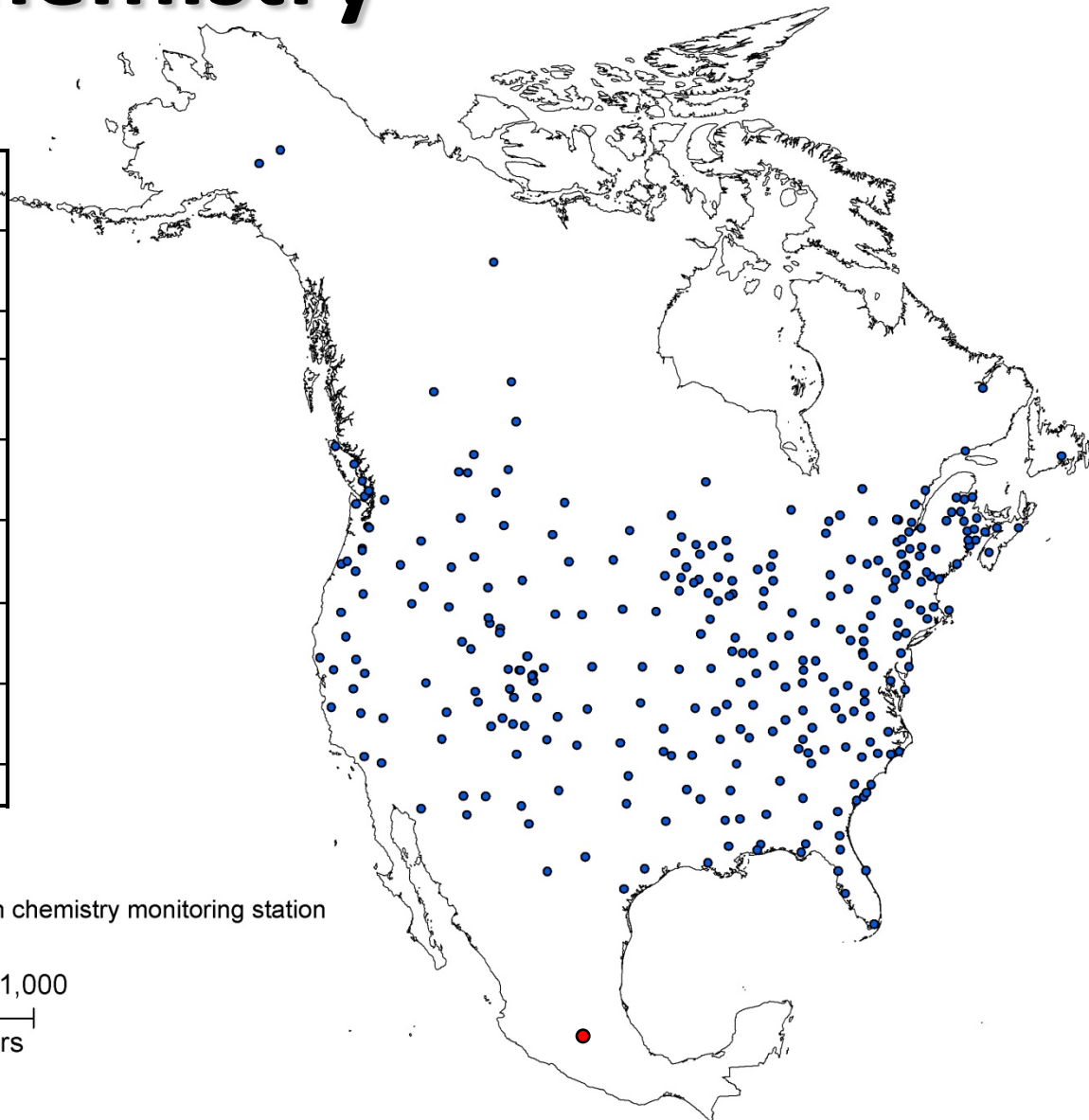
Network	Country	Stations used
BCPCSN	Canada/British Columbia	4
CAPMon	Canada	24
NBPMN	Canada/New Brunswick	13
NEPMoN	Canada/Newfoundland	0
NSPSN	Canada/Nova Scotia	1
PQMPA	Canada/Alberta	7
REPQ	Canada/Quebec	10
NADP	USA	222

## Legend

- Precipitation chemistry monitoring station

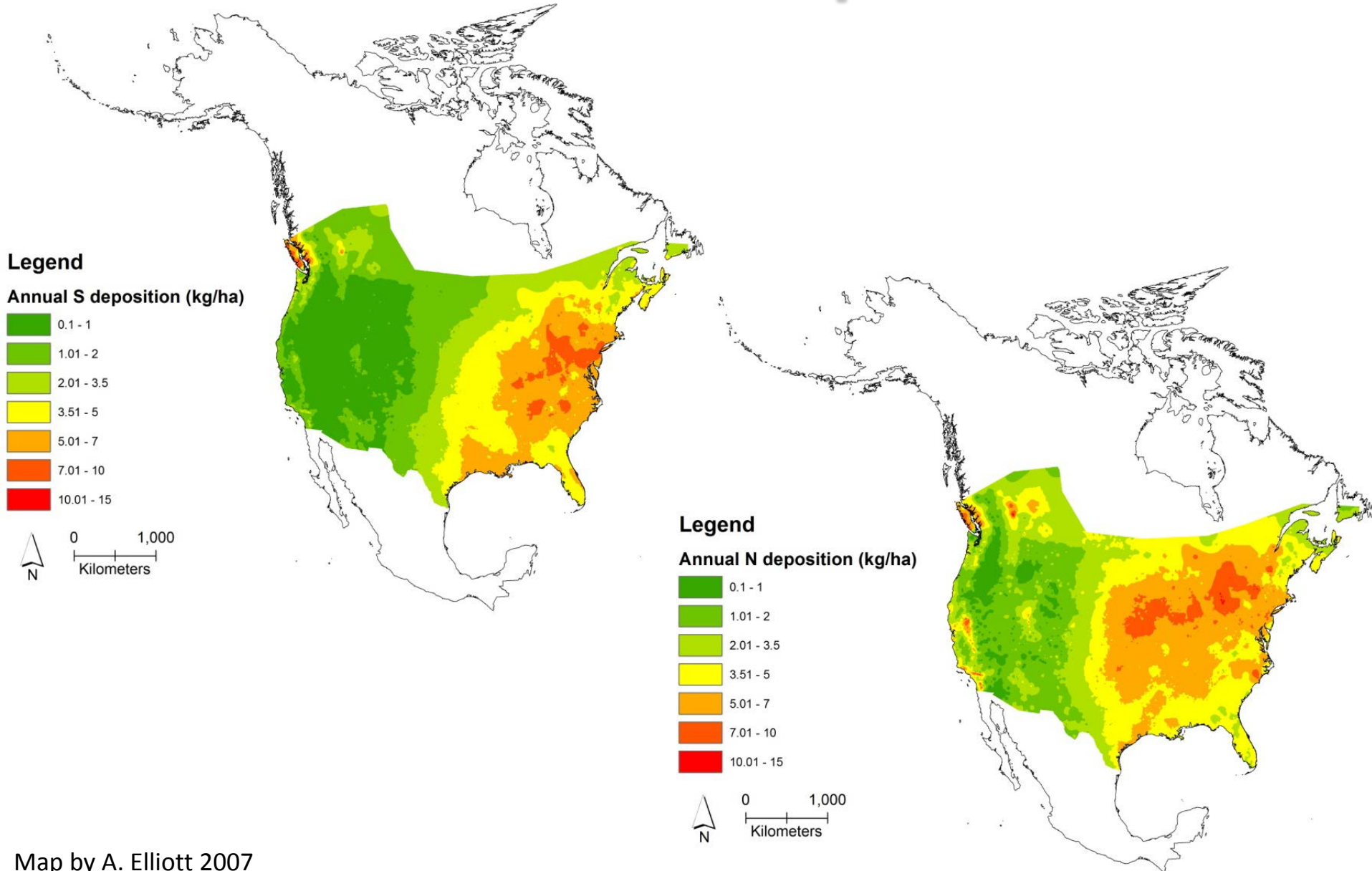


0 1,000  
Kilometers



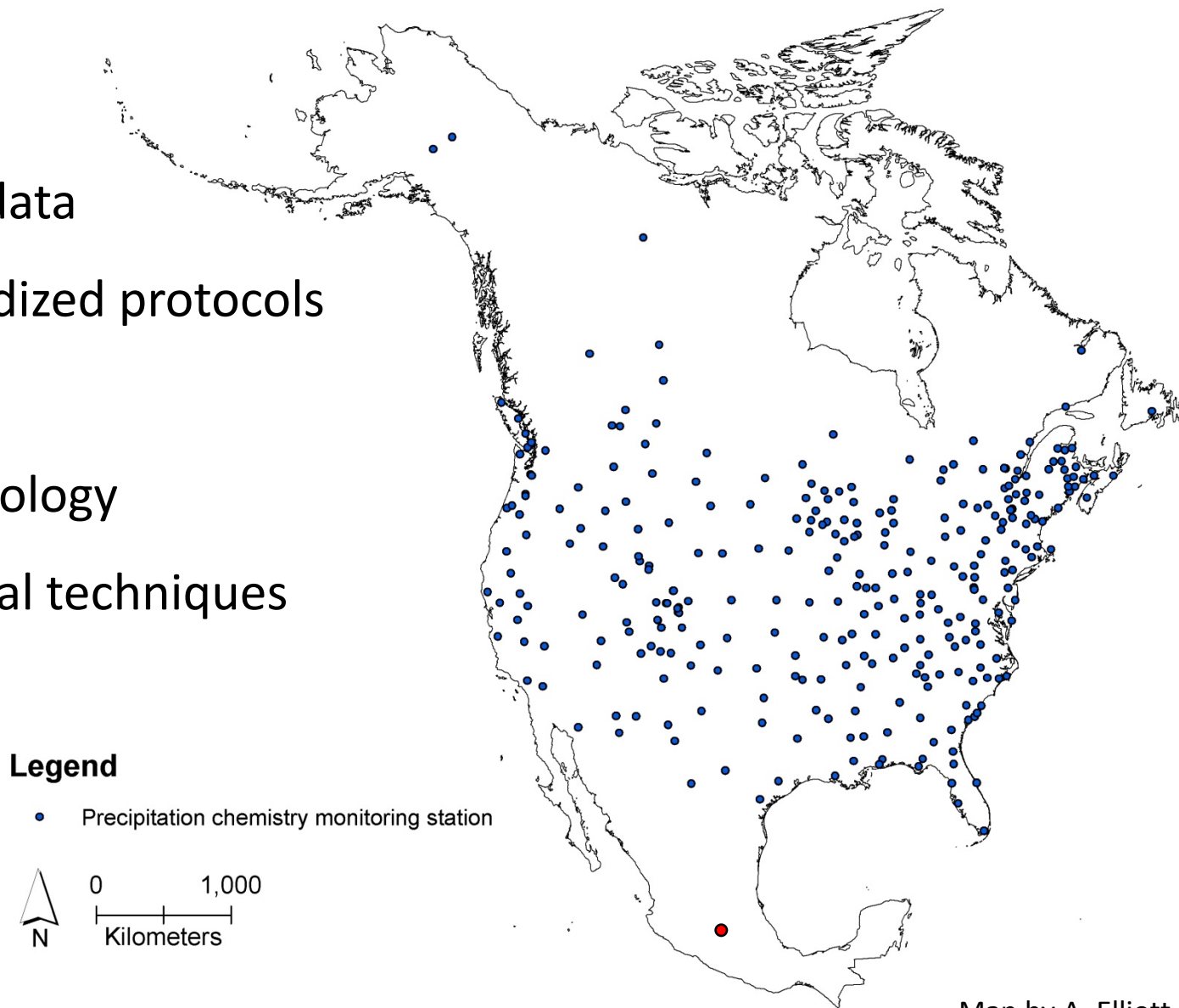


# Annual S & N Wet Deposition



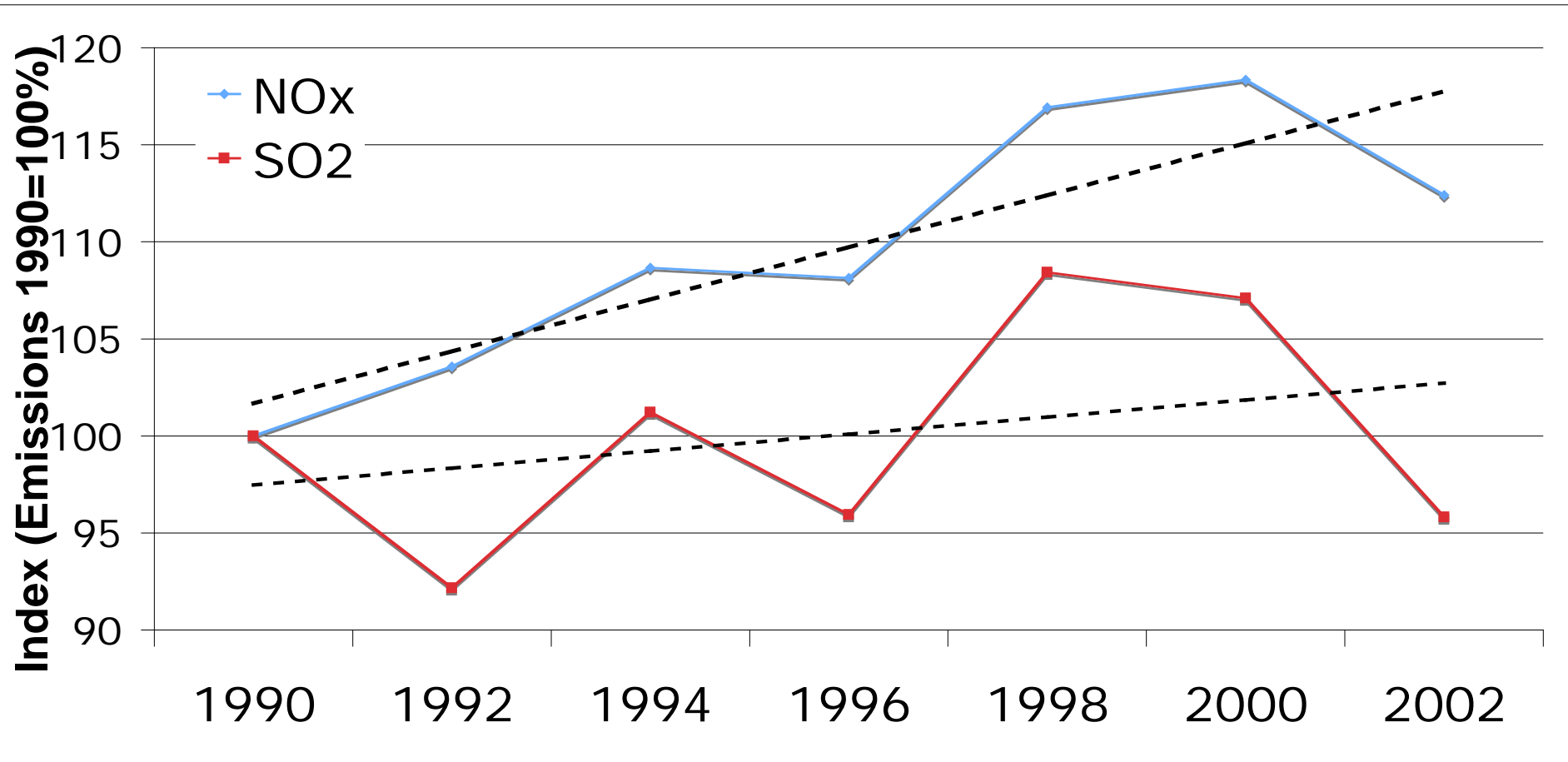
# Mexico's Challenges

1. lack of data
2. standardized protocols
  - scale
  - methodology
  - analytical techniques





# Anthropogenic Emissions

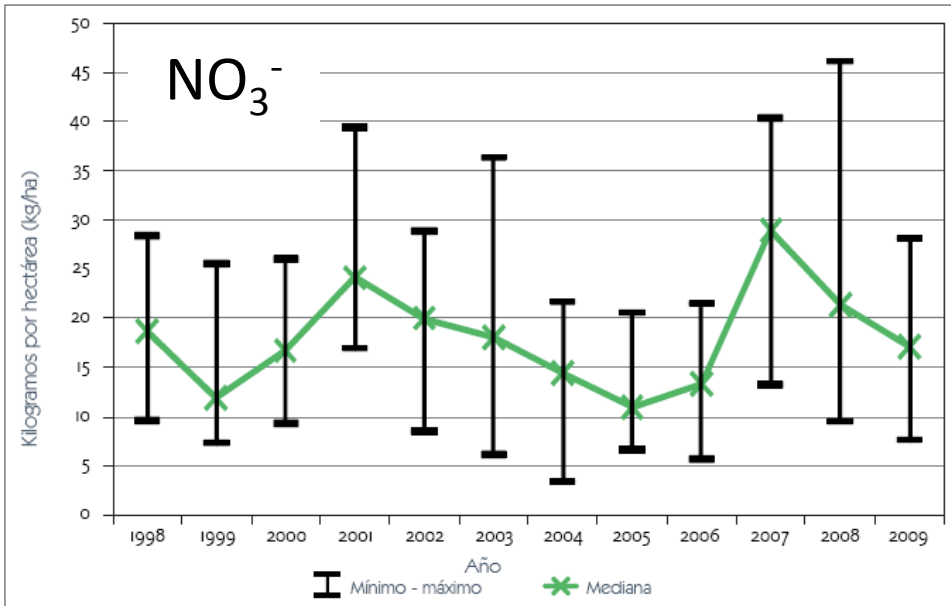
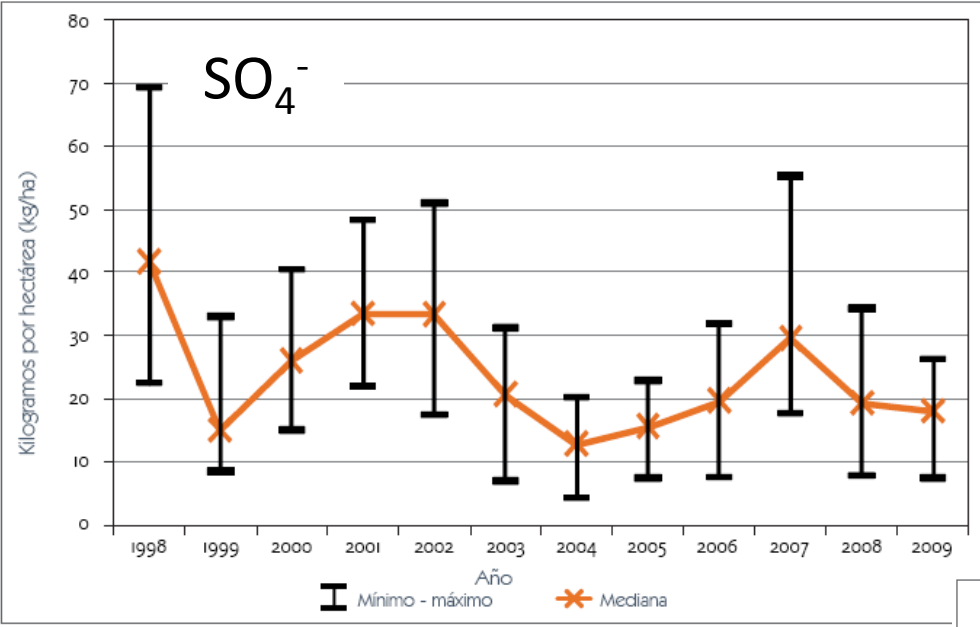




# Deposition?

## Mexico City Metro Area

Wet Season  
Deposition 1998-2009

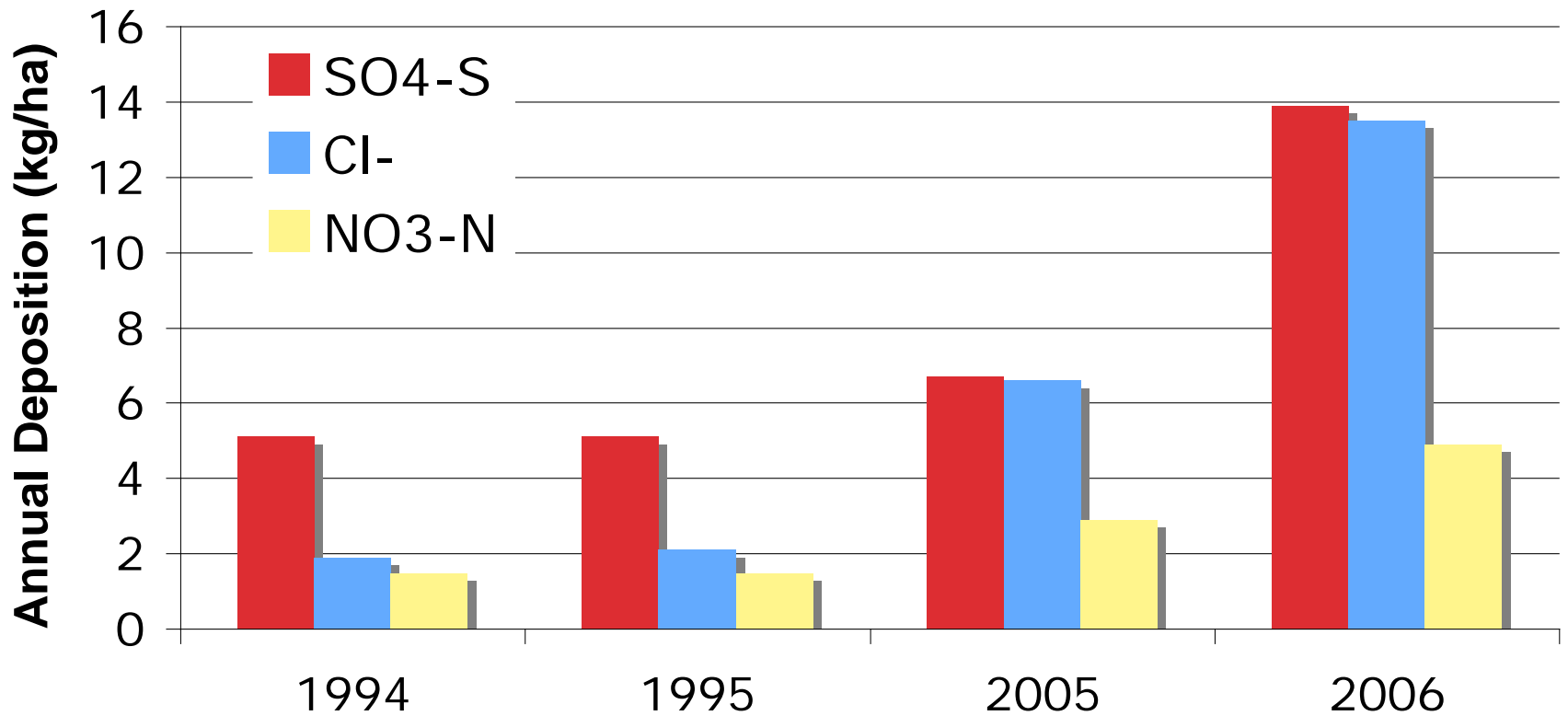






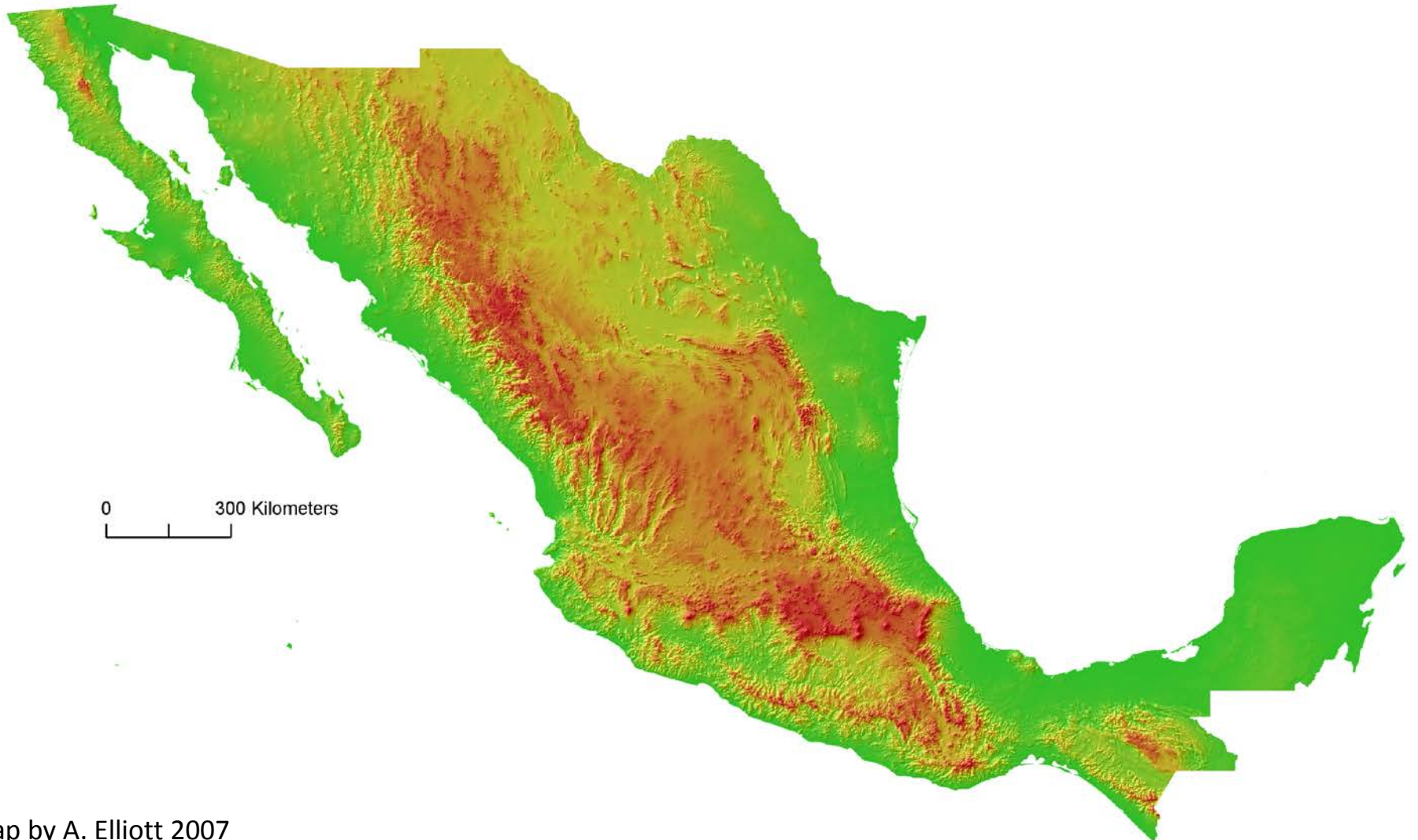
# Deposition?

## Xalapa City Metro Area



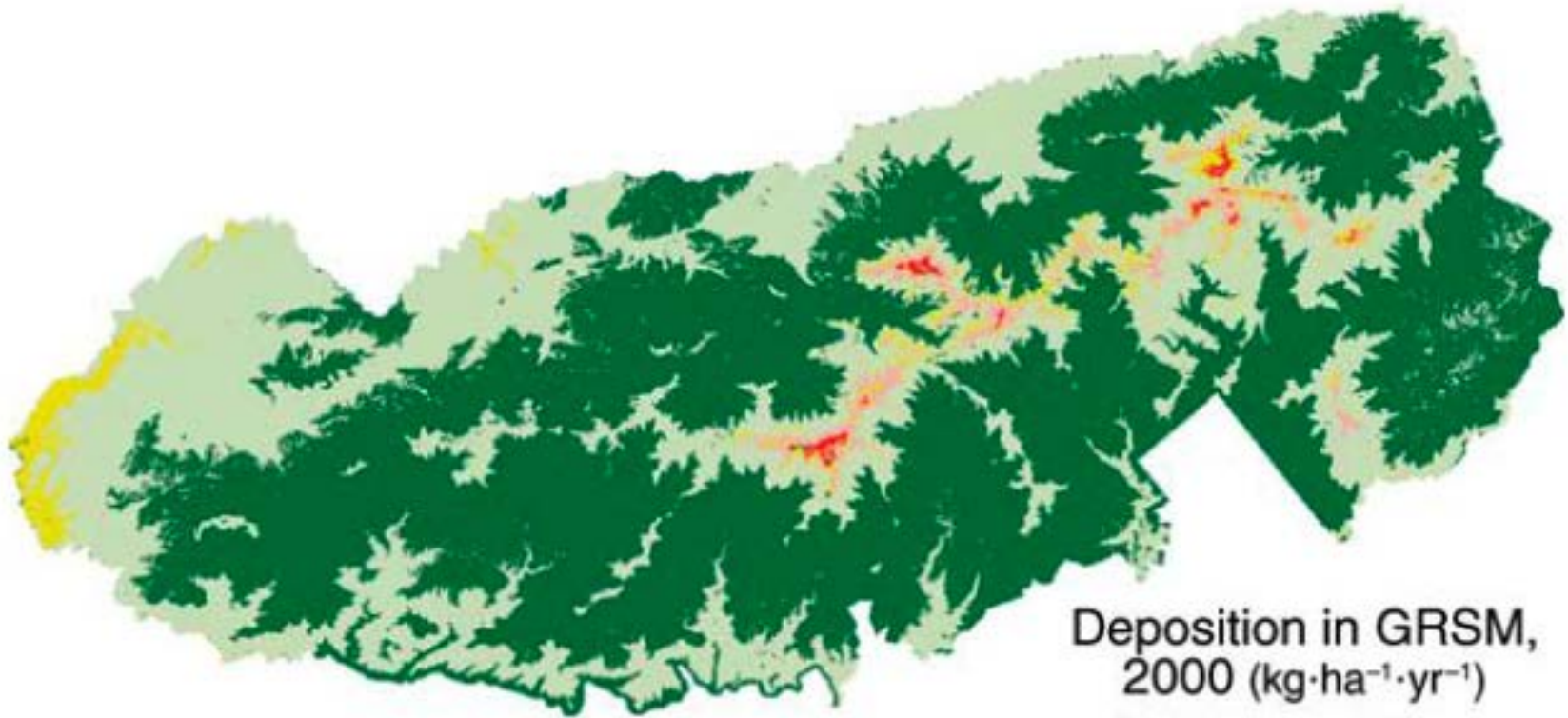
# Topography

(>50% of Mexico is >1000 m elevation)





# Topography Matters



0 5 10 km

Deposition in GRSM,  
2000 ( $\text{kg}\cdot\text{ha}^{-1}\cdot\text{yr}^{-1}$ )

Sulfur		Nitrogen
6.5–13.5		4.8–10.0
13.5–20.2		10.0–15.0
20.2–26.9		15.0–20.0
26.9–33.6		20.0–25.0
33.6–41.5		25.0–30.9

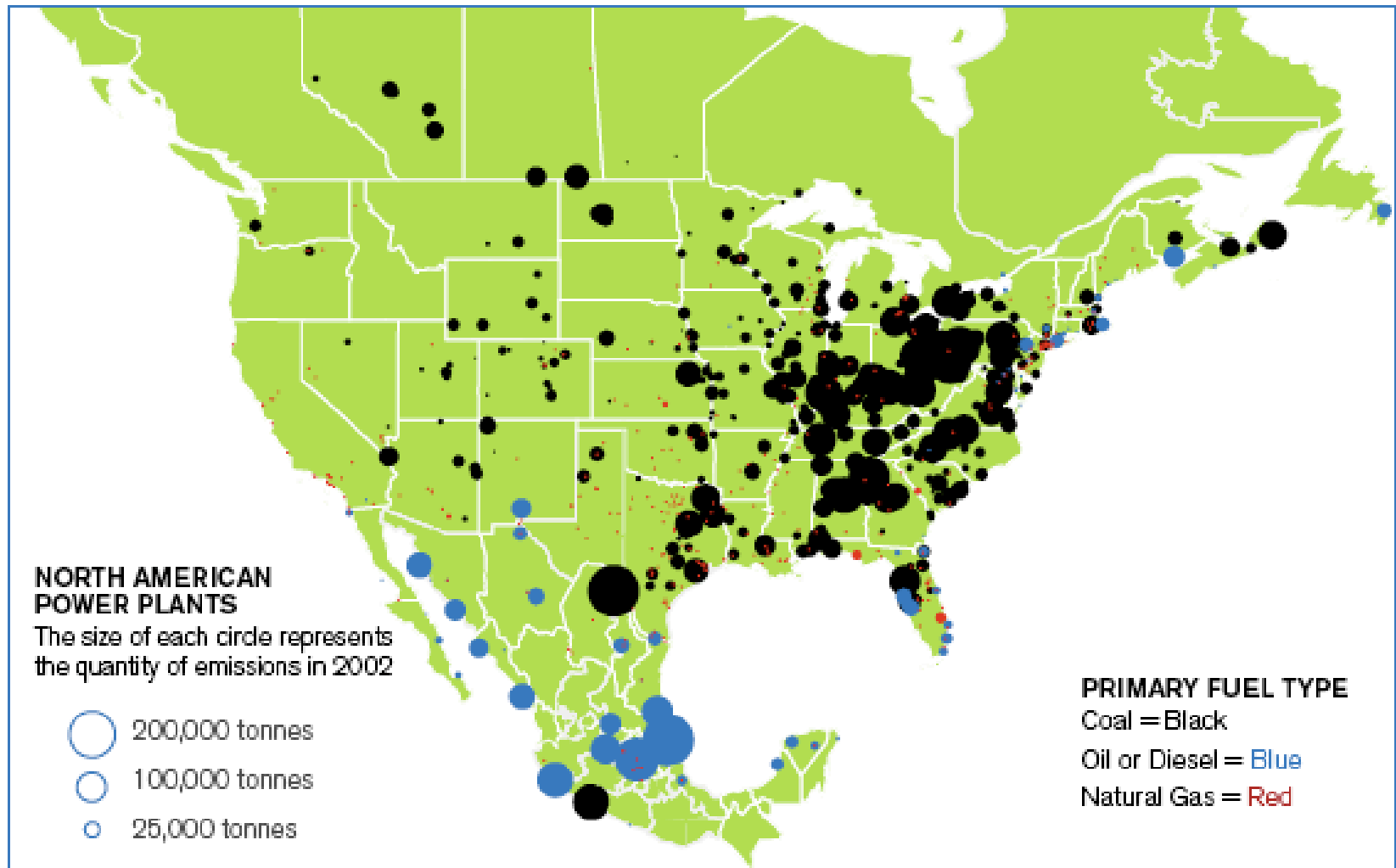
# Rainfall Patterns



# SO<sub>2</sub> Emissions

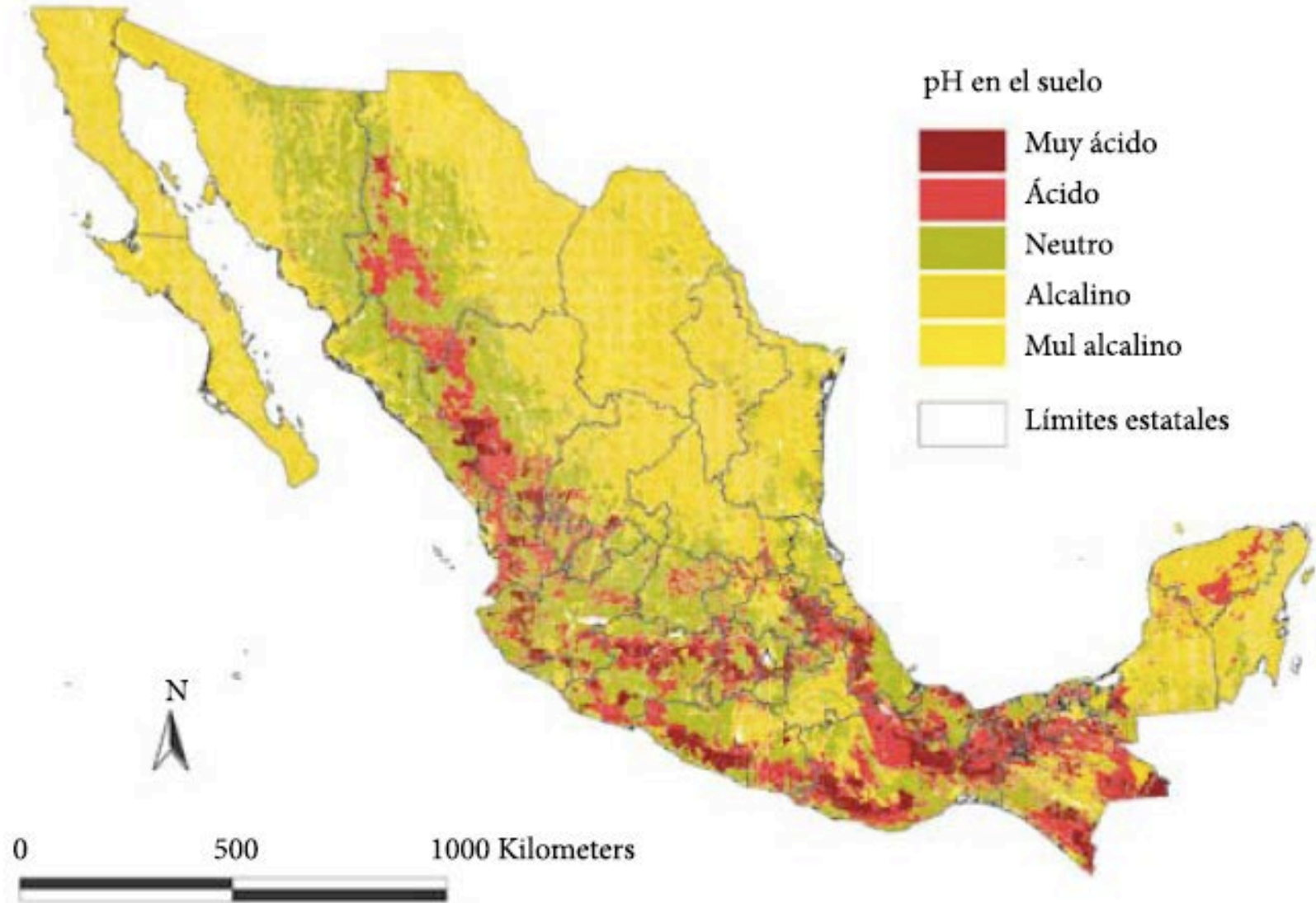
Figure 3.2

GEOGRAPHIC DISTRIBUTION OF POWER PLANT SO<sub>2</sub> EMISSIONS

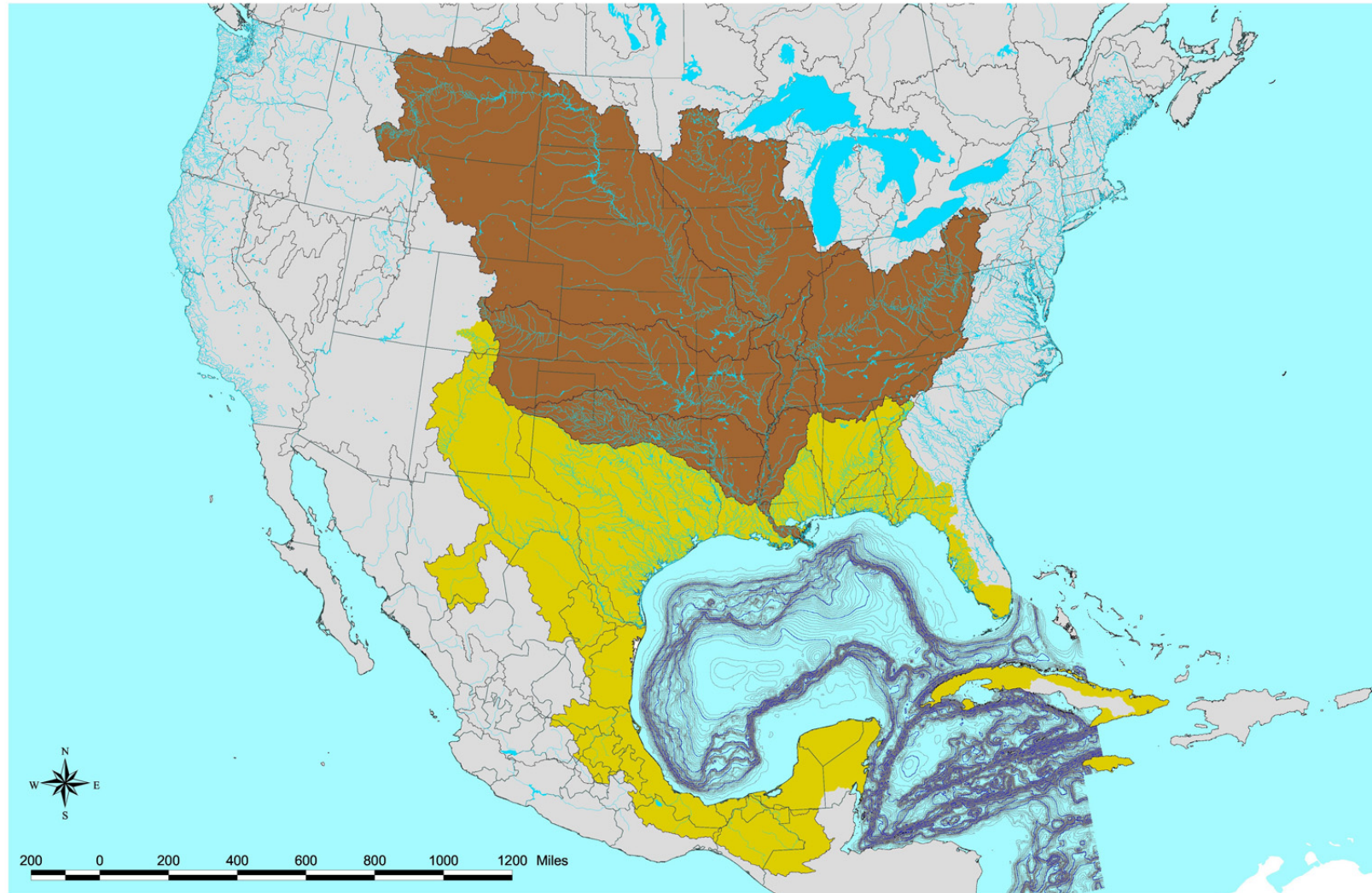




# Soil Acidification



# Connectivity



**Legend**

- Mississippi River Drainage
- Gulf Drainage (Non-Mississippi)
- Non Gulf of Mexico Drainage
- Lakes
- Rivers
- States and Provinces

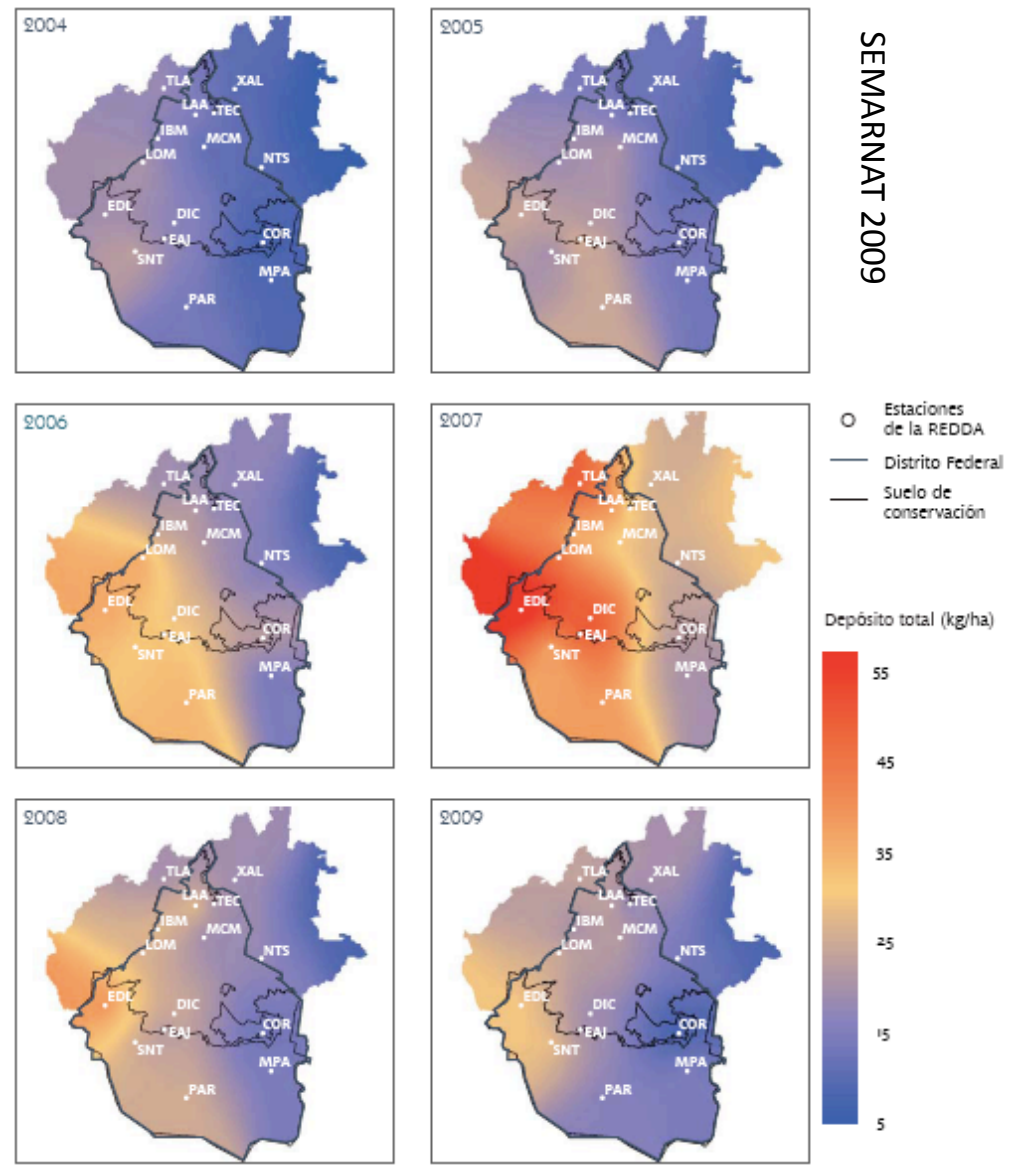
Bathymetric Contours 50 Meters  
Index Contours 500 Meters

**Gulf  
of  
Mexico  
Watershed**



# Mexico's Opportunities

- experience with REDDA, Deposition Monitoring Network in Mexico City Metro Area



<b>Number</b>	16 stations
<b>Measurements</b>	bulk wet & dry deposition
<b>Frequency</b>	weekly (May-Oct); 4 months
<b>Environment</b>	rural, urban, industrial
<b>Duration</b>	1986-present



# Mexico's Opportunities



- PNMA - national scale air quality monitoring since 1980s in urban areas
- urban areas provide good justification

**Questions?**





# Emissions Sources

