



# **Air Monitoring in Mexicali, Mexico. The evolution of Air Pollution Monitoring in a Border City.**

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# Region

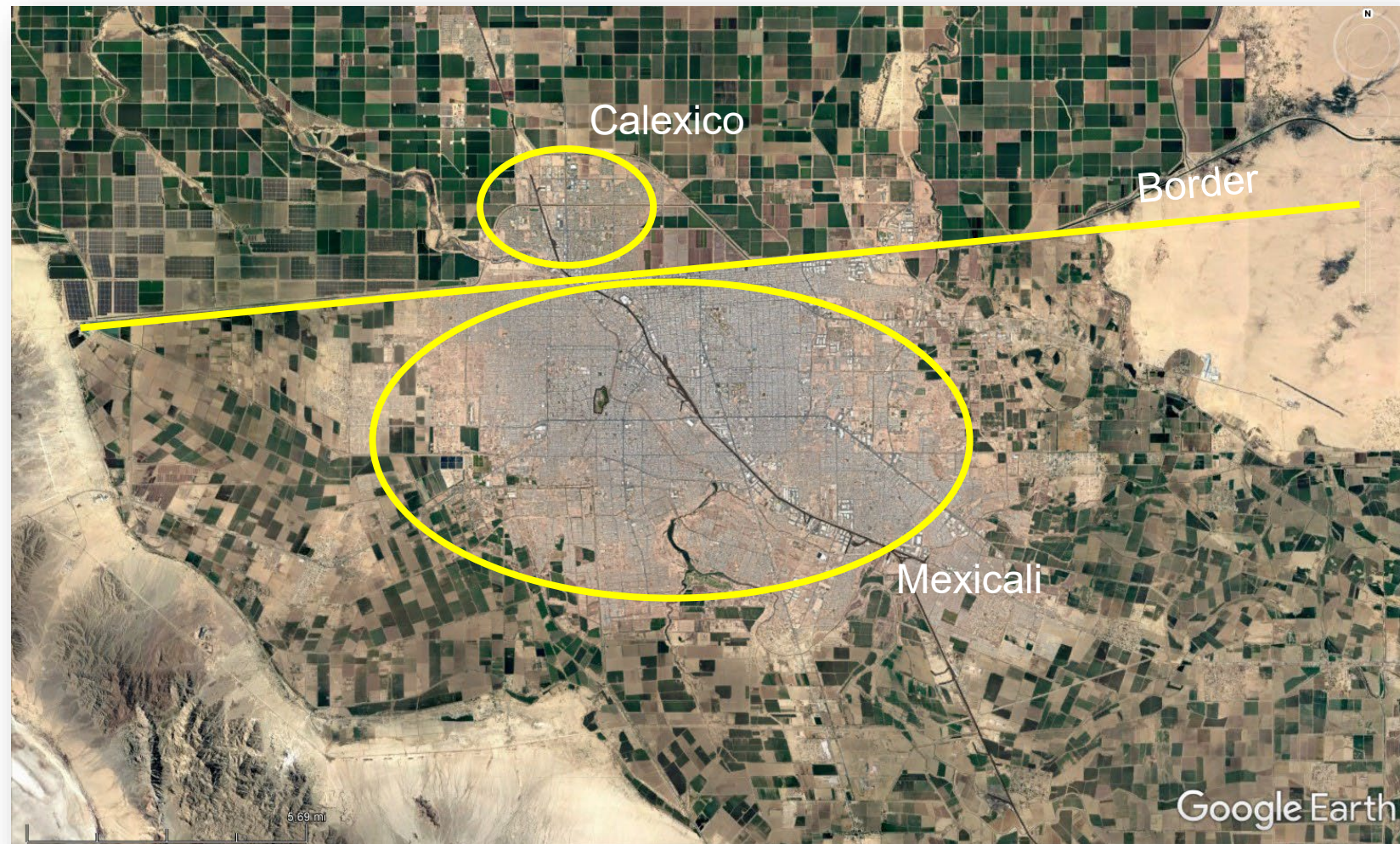


# Region

Calexico and Mexicali 1902

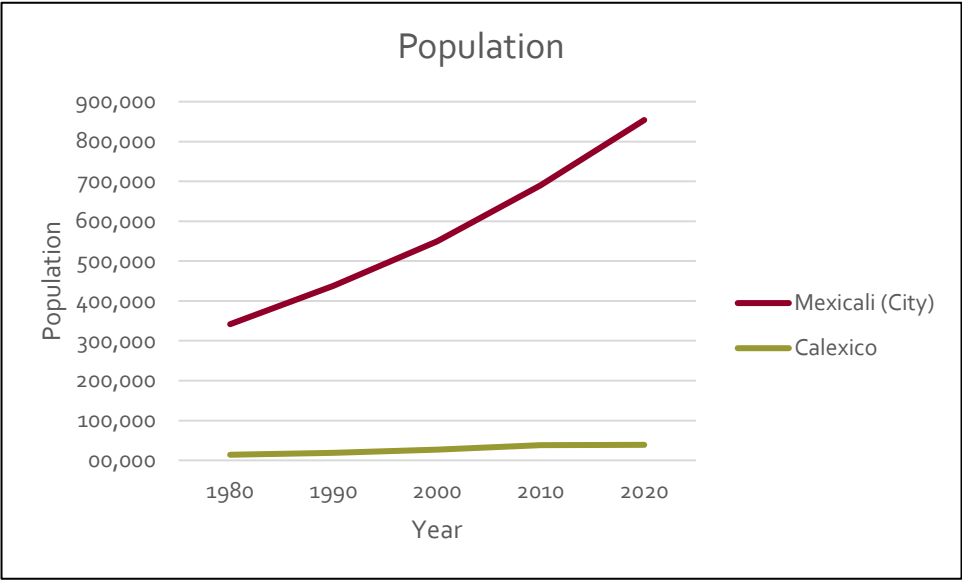


# Region



# Population

Population		
	Mexicali (City)	Calexico
1980	341,559	14,412
1990	438,377	18,633
2000	549,873	27,109
2010	689,775	38,572
2020	854,186	38,633



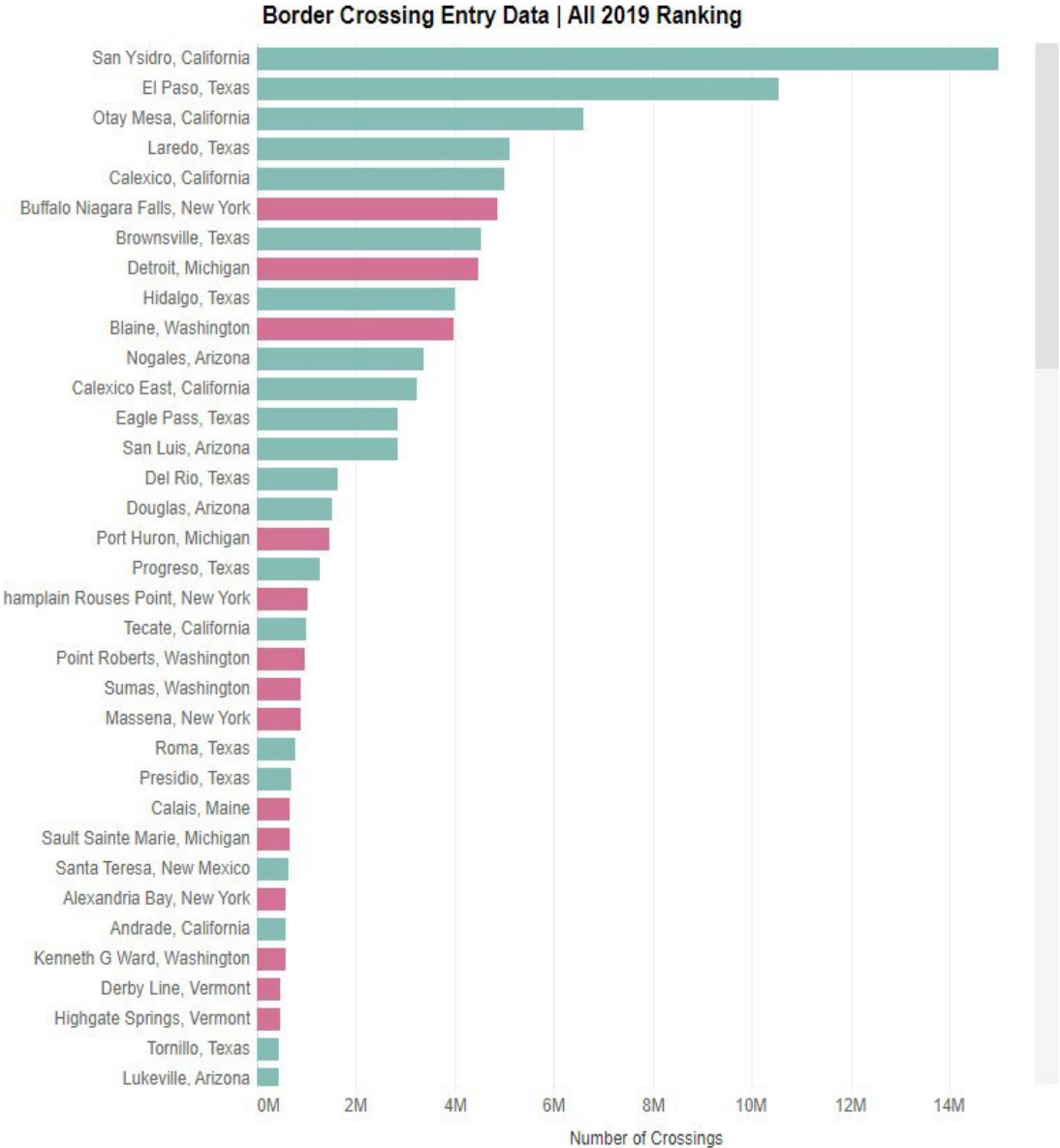
# Climate

- Dry, Arid Desert.
- 23° C Average from October to May.
- 45° C Average from June to September (Shade)
- 52° C is the highest recorded temp on July 1995.
- 132 mm of total annual rain.



# Border Crossing

Personal Vehicles 2019  
 Calexico: 4,984,781  
 Calexico East: 3,239,218



# Programs in the border region

- La Paz Agreement 1983.
- Programa Integral Ambiental Fronterizo, 1992
- Border XXI, 1996
- Border 2012, 2003
- Border 2020, 2012
- Border 2025, 2021





# Studies

- The Potential Air Quality Impact of Geothermal Power Production in The Imperial Valley, 1979.
- Imperial Valley/Mexicali Cross Border PM10 Transport Study, 1993.
- Mexico/USEPA, California – Mexico Border Air Monitoring Program, 1996.
- Municipal Air Quality Station, 2015.
- Mexicali PM2.5 and Meteorological Monitoring, 2016.
- Redspira, 2018.

# Imperial Valley/Mexicali Cross Border PM10 Transport Study, 1993.

## Causes of NAAQS Exceedances.

- PM10 Sequential Filter Samplers
- PM10 Portable Survey Samplers (Battery Powered)
- High-Vol TSP Samplers
- PM10 High-Vol Samplers
- Dichotomous Samplers
- Beta-Attenuation PM10 Monitor (BAM)
- Meteorological measurements

# High-Vol TSP Sampler



# PM10 High-Vol Samplers



# Dichotomous Samplers



# Beta-Attenuation PM10 Monitor (BAM)

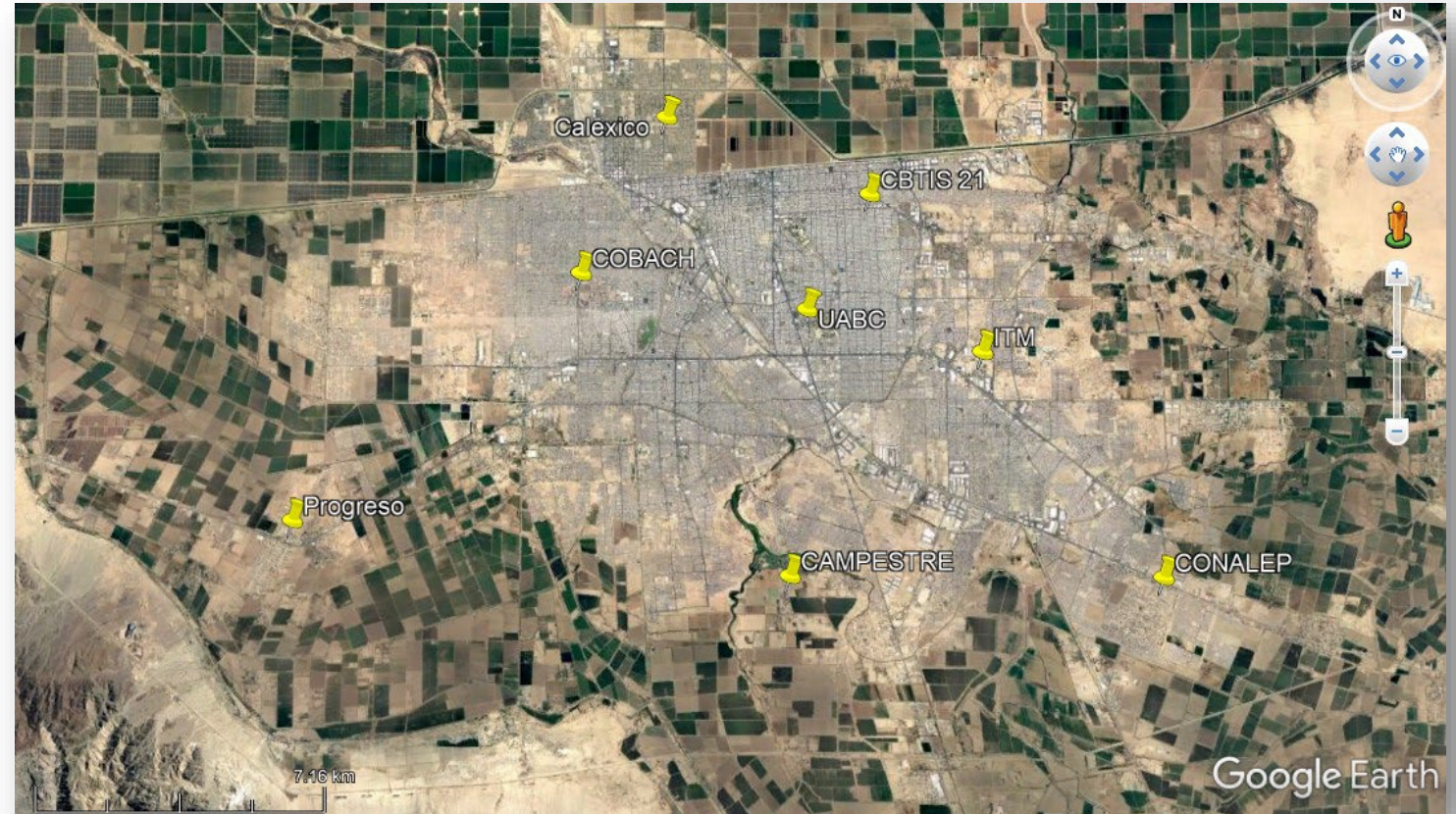


# Mexico/USEPA, California – Mexico Border Air Monitoring Program, 1996.

- The network was established to assess air quality in the border region.
- (Tijuana and Mexicali)
- (Rosarito and Tecate)
- 4 Full sites
- 2 Particulate-only sites

# Mexicali

- ITM (Nov 96)
- UABC (Feb 97)
- CBTIS #21 (Mar 97)
- COBACH (May 97)
- Campestre (2003)
- CONALEP (Dec 96)
- Progreso (Jan 97)

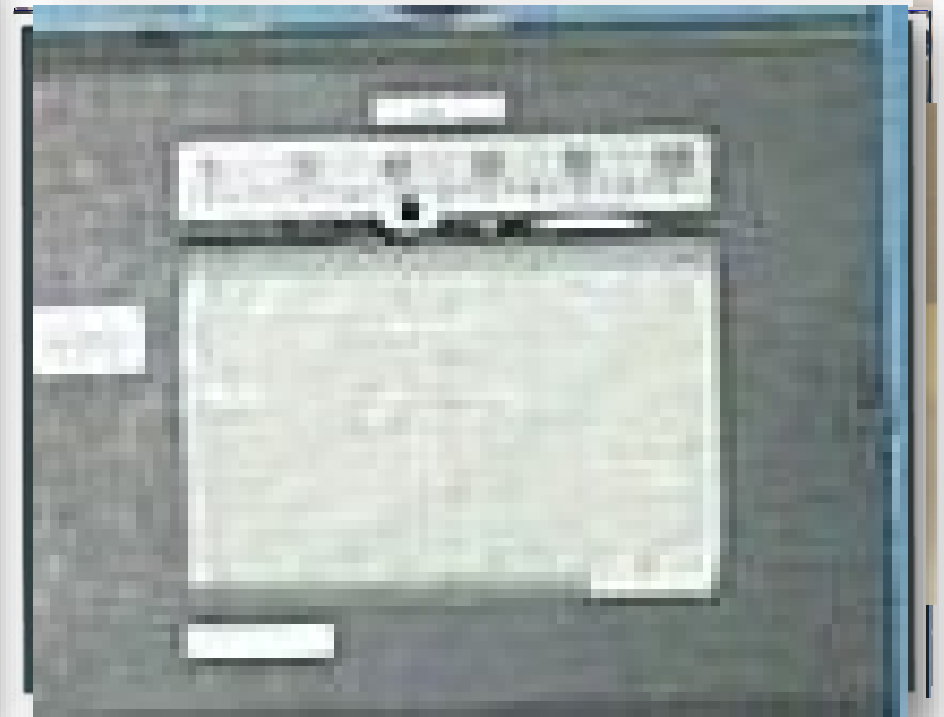




# Mexico/USEPA, California – Mexico Border Air Monitoring Program, 1996.

- Gas analyzers (CO, O<sub>3</sub>, NO<sub>x</sub>, SO<sub>2</sub>)
- High-Vol Particles Samplers (TSP and PM<sub>10</sub>)
- BAM PM<sub>2.5</sub> and PM<sub>10</sub> samplers.
- Toxic Samplers.
- Meteorological Parameters (WS, WD, AT, DT)
- Calibration Equipment
- Dataloggers
- Chart Recorders

# Gas analyzers (CO, O3, NOx, SO2)



# BAM Samplers



# Toxic Samplers



# High-Vol Particles Samplers (TSP and PM10)



# Meteorological Parameters (WS, WD, AT, DT)



# Municipal Air Quality Station, 2015.

- Establish automated processes for control and supervision of emissions.
- Gas analyzers (CO, O3, NO, NO2, NOx, SO2)
- BAM PM2.5 and PM10
- Meteorological Parameters (WS, WD, AT, DT)
- Calibration Equipment
- Data loggers

# Municipal Air Quality Station, 2015.

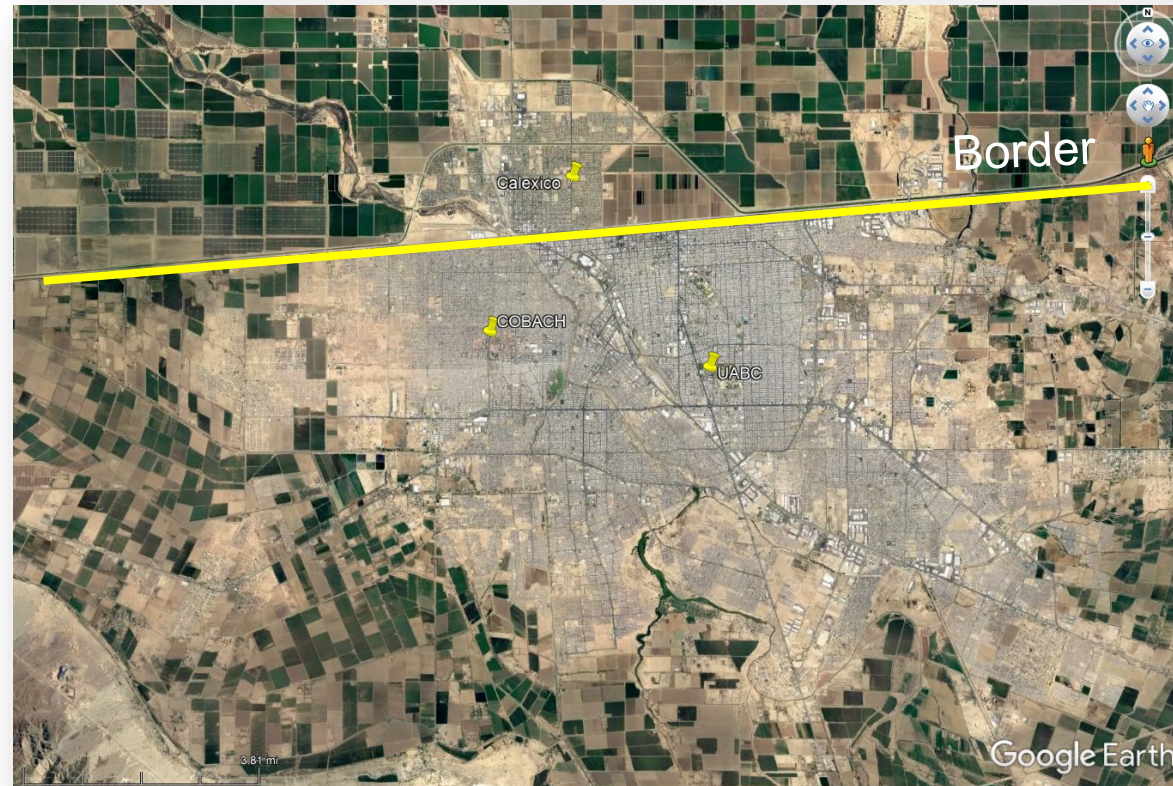




# Mexicali PM2.5 and Meteorological Monitoring, 2016.

- Collect ambient air particulate matter PM2.5 (Mass and Speciation) and meteorological parameters at two stations.
- Met One BAM 1020 (PM2.5)
- URG 3000N
- Met One SASS
- RM Young Ultrasonic Anemometer 81000

# Mexicali PM2.5 and Meteorological Monitoring, 2016.



# Mexicali PM2.5 and Meteorological Monitoring, 2016.

- Met One BAM 1020 (PM2.5)



# Mexicali PM2.5 and Meteorological Monitoring, 2016.

- URG 3000N
- Met One SASS



# Mexicali PM2.5 and Meteorological Monitoring, 2016.

- Young Ultrasonic Sensor 81000.



# Mexicali PM2.5 and Meteorological Monitoring, 2016.

- Automatic Data Submittal to AQS and AirNow

Current Date: 8/11/2022 7:41 PM  
Site Name: UABC 002\_0012  
Parameter: PM252\_LC 88101  
Monthly Report  
December 2021  
Avg Interval: 1 hour  
Units: USM8  
Method: 170

Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Summary	
01	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
02	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
03	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
04	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
05	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
06	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
07	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
08	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
09	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
10	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
11	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
12	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
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15	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
16	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
17	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
18	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
19	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
20	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
21	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
22	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
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30	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
31	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
196	175	200	140	120	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
Avg	38	17	38	42	32	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38

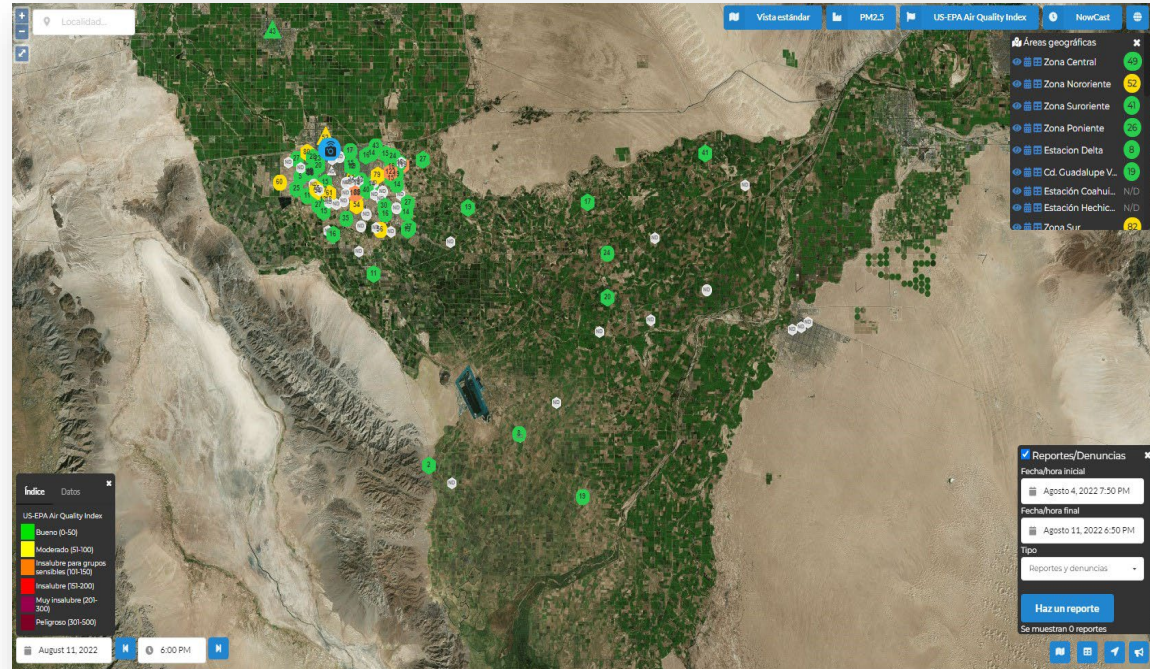


# Red Colaborativa de Monitoreo Ambiental REDSPIRA, 2018

- Offers an alternative to regulatory equipment with Low Cost samplers.
- Monitoring Network
- Web page and Apps
- Education and Awareness
- Panoramic Camera

# Red Colaborativa de Monitoreo Ambiental REDSPIRA, 2018

- Monitoring Network
- Web page and Apps





# Actual

## Offers near Real Time Data Access

Sistema Nacional de Información de la Calidad del Aire, SINAICA

Indice AIRE Y SALUD  
Ver recomendaciones  
Jueves, 11 de agosto de 2022

Buena	Aceptable	Mala
Baja	Moderada	Alta
Muy Mala	Extrem. Alta	Sin datos
Muy Alto	Extrem. Alto	

Estaciones: Aguascalientes, Baja California - Estatal, Baja California - Municipal, Campeche, Chiapas, Chihuahua - Ciudad Juárez, Chihuahua - Municipal, Chihuahua - UAQ, Chihuahua - Estatal, Ciudad de México, Coahuila

Contaminación del aire de Mexicali  
Mapa de la calidad del aire en tiempo real.

Para Residentes de California  
California Debt Relief

Mapa de la calidad del aire en tiempo real. Muestra estaciones de monitoreo con valores como 42, 74, 38, 26, 24.

GOBIERNO DE MEXICALI

¿Que buscas el día de hoy?

Inicio Gobierno Municipio Transparencia Trámites Contacto mi.Cuenta Recomendaciones

Calidad de Aire en Mexicali  
Lecturas CENTRO CIVICO  
el 15/08/2022 a los 10:00 horas

PARÁMETRO	INDICE	HRS PROMEDIO	CATEGORÍA	RECOMENDACIÓN
PM25	102	24	Insalubre para grupos sensibles	Las personas con enfermedades cardíacas o pulmonares, adultos mayores, niños y niñas deben reducir los esfuerzos prolongados o intensos al aire libre.
PM10	104	24	Insalubre para grupos sensibles	Las personas con enfermedades cardíacas o pulmonares, adultos mayores, niños y niñas deben reducir los esfuerzos prolongados o intensos al aire libre.
O3	23	1	Buena	
NO2	0	1	Buena	
CO	2	8	Buena	
SO2	0	1	Buena	

Los parámetros de Calidad del Aire aquí registrados son los que mayormente afectan la salud

US EPA Air Quality Index

Reportes/Denuncias

Fecha/hora Inicial: Agosto 4, 2022 7:30 PM  
Fecha/hora Final: Agosto 11, 2022 6:30 PM

Tipo: Reportes y denuncias

Haz un reporte

Se muestran 0 reportes

# Evolution of Technology for measuring and presenting data

- Large – Small Equipment
  - Manual – Automated
    - Analog – Digital
- Near Real Time Data Access

- Thank you!

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