

Using NASA data to Characterize the Role of Gas Phase and Particulate Pollutants on Human Health in the Rio Grande Valley Region of Texas

Amit U. Raysoni, Ph.D., M.P.H.
Assistant Professor – Air Quality,
School of Earth, Environmental, and Marine Sciences,
The University of Texas Rio Grande Valley
Brownsville, Edinburg, Harlingen, South Padre Islands

Session X: Satellite Data for Dust Storms

ASU/NASA HAQAST5, Phoenix, AZ

January 03-04, 2019

The University of Texas
Rio Grande Valley



Ocelot recognizes no Man-Made Boundaries



..Neither does Air Pollution recognize Man-Made Jurisdictions.....



Environmental Health Perspectives. 108(7):A308-15, 2000 Jul. © Jeffrey Scott

The Uniqueness of U.S.-Mexico Border Region

- As per the La Paz Agreement of 1983, the US-Mexico border region is defined as the area of land being 100 kilometers (62.5 miles) north and south of the international boundary.
- It stretches approximately 2000 miles from the southern tip of TX to CA.
- The population for this stretch of land is estimated to be approximately 15 million inhabitants.



2 sovereign nations

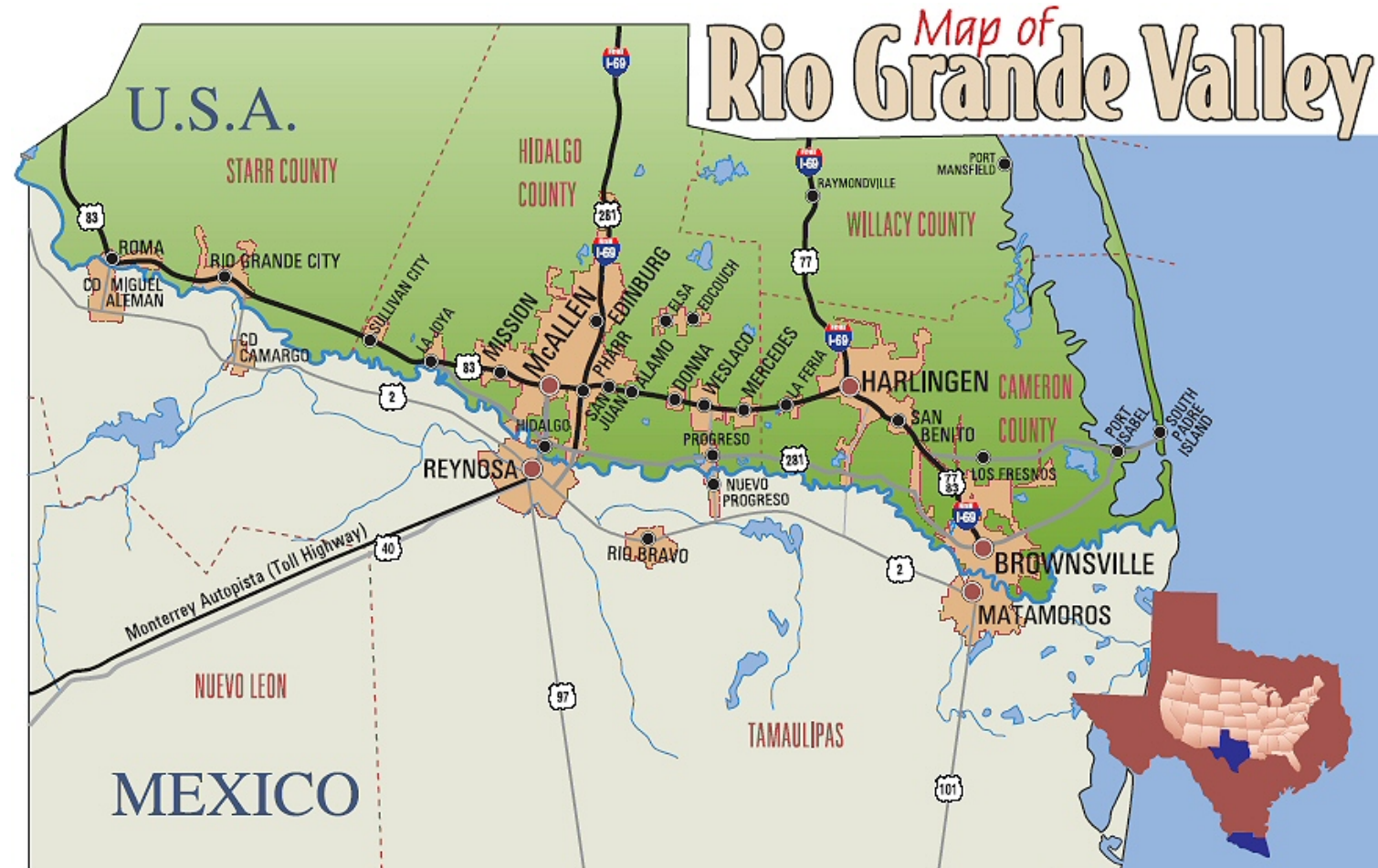
4 states in the United States and 6 states in México

A total of 44 counties in the U.S. and 80 municipalities in México

15 pairs of sister cities

The Rio Grande Valley Region of Texas

- The Rio Grande Valley is an area located in the southernmost tip of South Texas.
- It lies along the **northern** bank of the Rio Grande, which separates Mexico from the United States.
- The four-county region consists of Hidalgo, Cameron, Willacy, and Starr counties.



Air Quality Issues in the RGV Region

- Busy Port of Entries – High Traffic Emissions
- Agricultural Emissions – Sugarcane Stubble Burning
- Fugitive Emissions from across the border
- Proposed LNG Export Terminals



Texas Commission of Environmental Quality (TCEQ) Central Ambient Monitoring Stations (CAMS)

- CAMS 43: Mission
- CAMS 80: Brownsville
- CAMS 323: Isa Blanca Park
- CAMS 1023: Harlingen Teege
- CAMS 1046: Edinburg East

Methods to characterize air pollution in this region

- Combination of both ground based monitoring and satellite data.
 - Moderate Resolution Imaging Spectroradiometer (MODIS) (Aqua/Terra) corrected reflectance and aerosol index
 - Atmospheric Infrared Sounder (AIRS) carbon monoxide (CO) (total column) and sulfur dioxide (SO₂) (day and night)
 - Ozone Monitoring Instrument (OMI) aerosol optical depth, absorbing aerosol optical depth and aerosol index
- CAMS data – Could be used but difficulty characterizing spatial variability of the various pollutant concentrations.

Conclusions

- Air Quality Data from NASA and other such federal agencies have the potential to help characterize air pollution problems in this underserved region.
- This is a work in progress and more details and results would be available in the near future.
- Great collaboration possibilities.

Acknowledgments

American Meteorological Society (AMS) for travel support.

UTRGV for other trip related expenses.

The contents of this presentation are solely the responsibility of the author and do not represent the official views of the U.S. Government, State of Texas, and UTRGV.

Thank you !