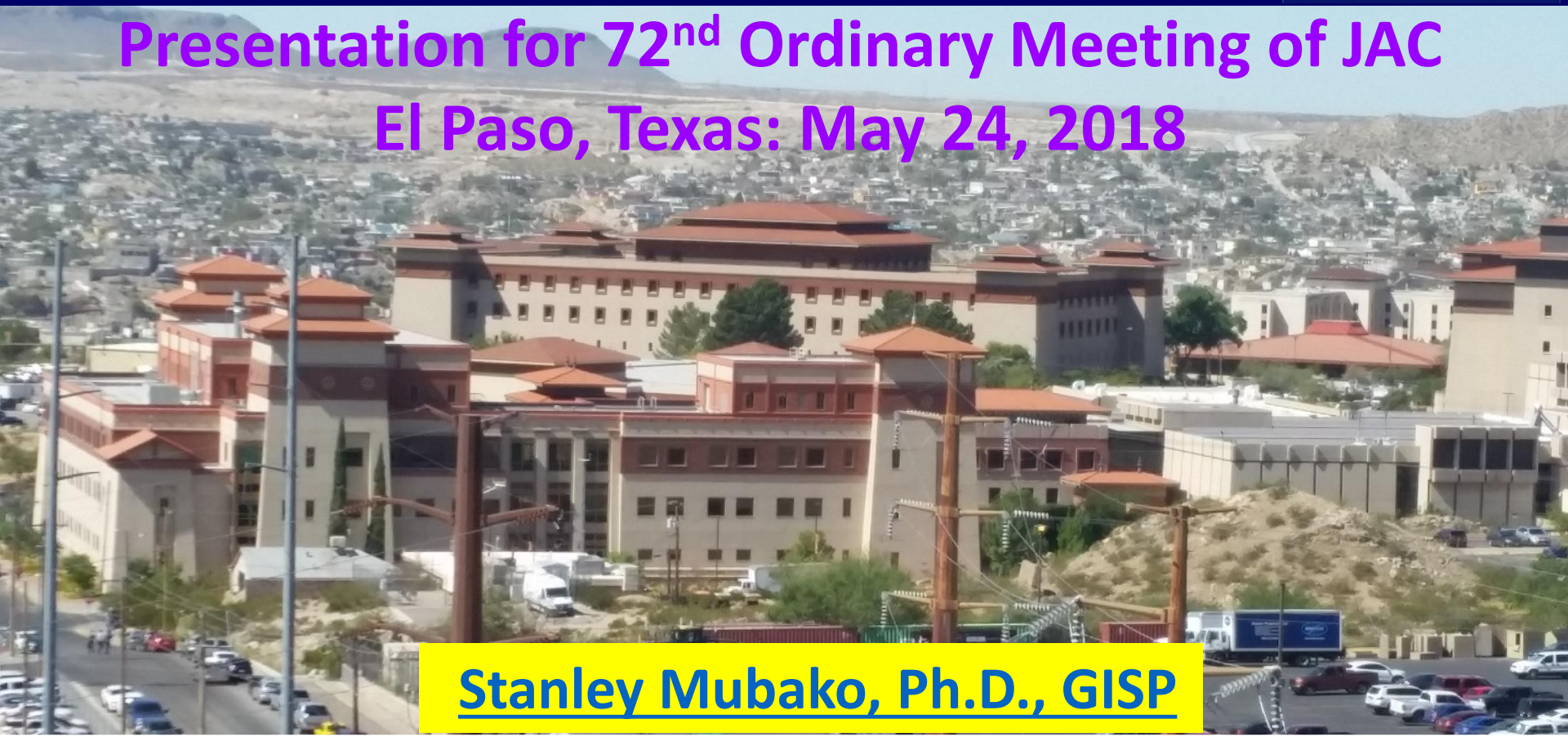


Paso del Norte Collaborative K12 GIS Capacity Building and Research for Environmental Quality Monitoring



Presentation for 72nd Ordinary Meeting of JAC
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Stanley Mubako, Ph.D., GISP

Presentation Overview

- **Background**
- **Project Goal & Objectives**
- **Benefits to Public & Environment**
- **Selected Project Outputs & Outcomes**
- **Brief demonstrations of selected geospatial teaching & research tools for K12 teachers**
- **Concluding remarks**



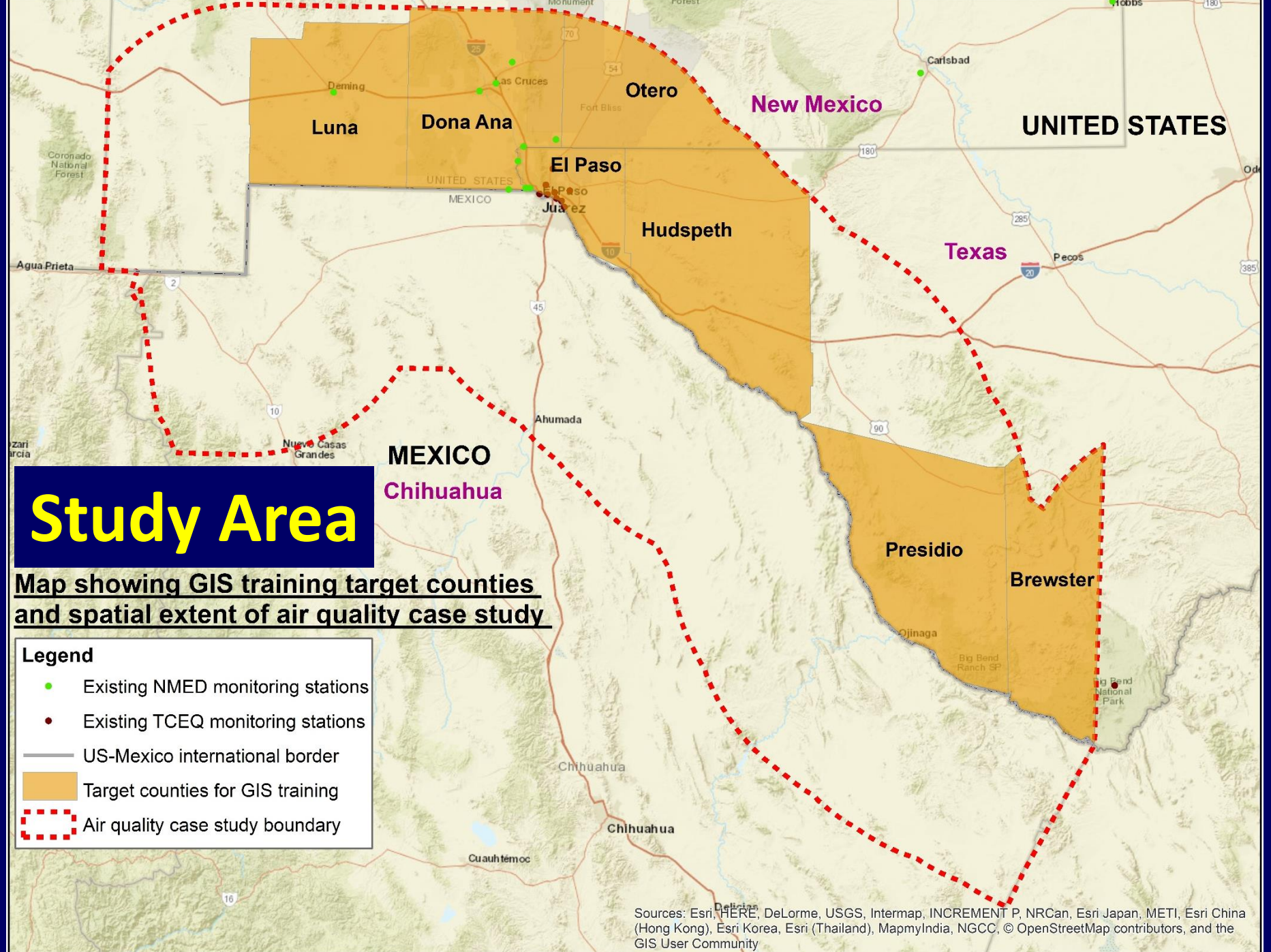
1. Background

Geographic Information System (GIS):

- A computer system for capturing, storing, querying, analyzing, and displaying location-based data
- Paso del Norte region still lagging behind in early adoption of GIS technology:

<https://tinyurl.com/yaws48qj>





Study Area

Map showing GIS training target counties and spatial extent of air quality case study

Legend

- Existing NMED monitoring stations
- Existing TCEQ monitoring stations
- US-Mexico international border
- Target counties for GIS training
- Air quality case study boundary

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

2. Project Goal



- Contribute to air pollution reduction and address other priority environmental issues in the Paso Del Norte region through K12 GIS capacity building and research

3. Project Objectives

- Build GIS capacity in environmental health to promote its short and long-term adoption in the Paso Del Norte region through train-the-trainer workshops for K12 educators
- Help answer research questions related to air quality and other priority environmental issues relevant to the U.S.-Mexico border region
- Implement educational outreach efforts to promote environmental literacy and awareness



4. Benefits to Public & Environment

- GIS-trained teachers who can successfully create technology-enhanced and inquiry-based lessons
- Unlock potential of K12 students to make a difference in local communities through critical thinking & spatial data analysis in environmental problem solving

- Technology integration into & transfer of GIS practical skills to students
- Increased student engagement & preparation for college
- Provide students with an essential skill → more options for future careers



5. Selected Outputs

- 4 GIS training workshops- 100 teachers; 50 schools
- GIS Fair at UTEP
- Training impact evaluation surveys
- Hire UTEP undergraduate Research Assistants
- Web applications for communication
- Research publications



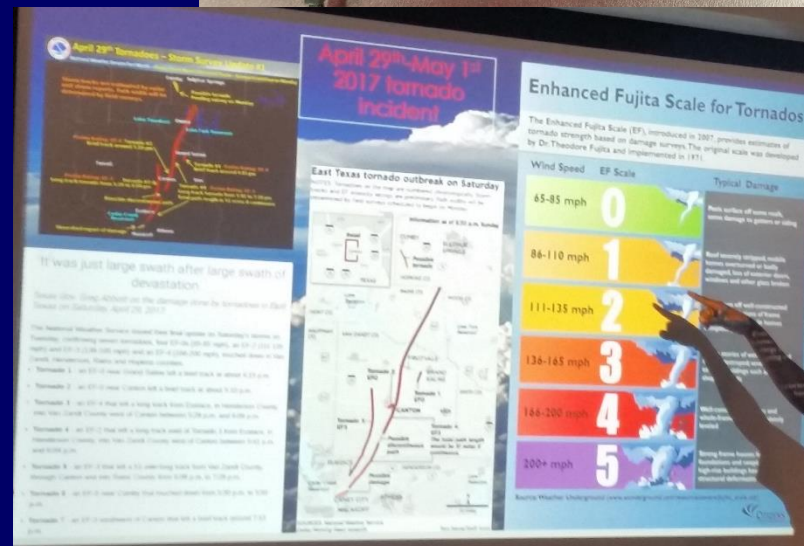
6. Project Outcomes

- Promotes air pollution awareness & other environmental literacy efforts
- More focused monitoring of susceptible populations
- Enhanced environmental health teaching skills of K12 educators
- Engage local communities in solving locally relevant environmental problems

- Improved problem-based learning and teamwork skills for K12 students
- Improves K12 student preparedness to enter STEM disciplines in college
- Promotes GIS technology integration in K12 schools
- Builds research capacity and analytical skills of undergraduate students

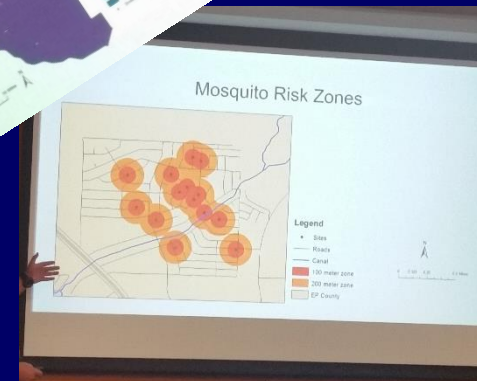
7. Brief live demonstration of selected geospatial teaching & research tools for Teacher Training Workshops

- a. ArcGIS Online
- b. GeoInquiries
- c. Urban Observatory
- d. Change Matters
- e. Landsat Lens
- f. ArcScene
- g. Portable GPS Units
- h. Survey123 for ArcGIS



5. Concluding Remarks

- Overview of K12 GIS capacity building and research project for supporting environmental quality monitoring
- Highlighted selected modern technology-enabled tools that will allow teachers to transfer GIS skills to K12 students in the classroom
- Pipeline project contributes to long term capacity building of K12 students and transfer of skills that are relevant for better environmental quality monitoring in the Paso del Norte Region



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