

**Air Quality Analysis by Remote Sensing and GIS in the Monterrey, Mexico Metropolitan Area  
DEVELOP National Program at Wise DEVELOP and Monterrey, Mexico  
Earthzine/DEVELOP Virtual Poster Session, Fall 2011**

**Video Transcript**

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**EXT.SCENE. INTRODUCTION.**

Intro template created by BlueFxVideo. Intro Music “News at the Top of the Hour” by Patriotic Fathers.

**EXT.SCENE. NEWS TEAM PHOTOS.**

***Voice Over: Kaitlyn Collins***

“The NASA Develop GEO program has conducted Air Quality Research over Monterrey, Mexico since 2010. Two teams are working together on this project, one from Wise Virginia, the other from Monterrey, Mexico.

The Air Quality teams are working in collaboration with government officials in Mexico as well as their science advisors, Dr. Mejia from Monterrey Tech and Dr. Richard Ferrare from NASA Langley Research Center.”

**EXT. SCENE. DAY. WISE DEVELOP NEWS TABLE.**

**Kaitlyn and Jiaxun report news-style to the camera.**

**SHOT - MEDIUM PAN TO KAITLYN AND JIAXUN SITTING AT THE NEWS TABLE**

***Jiaxun Chai:*** Hello everyone. You are watching NASA DEVELOP NEWS. I am Jiaxun Chai in Wise, Virginia.

***Kaitlyn Collins:*** And my name is Kaitlyn Collins. Our story tonight is the increasing concern for poor air quality in the Monterrey, Mexico Metropolitan Area.

**EXT. SCENE. DAY. KAITLYN AT NEWS TABLE.**

**SHOT – MEDIUM PAN TO KAITLYN SITTING AT NEWS TABLE. IMAGES OF MEXICO SHOWN.**

***Kaitlyn Collins:*** Monterrey is the capital city of Nuevo León, the northeastern state of Mexico bordering the United States. The Monterrey Metropolitan Area is one of the most industrialized cities in Mexico, and currently faces air pollution problems caused by several geographic and man-made factors. Poor air quality can cause a number of respiratory and cardiovascular diseases.

**EXT. SCENE. DAY. VIDEO OF MONTERREY MEXICO.**

***Voice Over: Jiaxun Chai***

“Monterrey is known for their very high industrial activity. The city is surrounded by mountains and receives little rainfall throughout the year. Because of the dry climate, the effects of pollutants intensify, contributing with the smog that is produced from the emissions that come from factories, vehicles, and natural causes. This, combined with poor industrial practices, the overall population, high automobile mileage per capita, and unenforced vehicle emission standards, creates a highly suitable environment for poor air quality. There is also a need for improved understanding on the public’s health impacts due to air pollution.”

**EXT. SCENE. DAY. JIAXUN AT NEWS TABLE.**

**SHOT – MEDIUM PAN TO JIAXUN SITTING AT NEWS TABLE.**

***Jiaxun Chai:*** Based on health data, remote sensing images, geographic observation, and environmental modeling, this study aimed to find the potential relationship between the concentration of particulate matter (PM) and environmental and social factors. This relationship was also considered with the respiratory disease rate in the MMA.

***Jiaxun Chai:*** We go to our field reporters in Monterrey, Mexico.

**EXT. SCENE. DAY – NASA DEVELOP OFFICE IN MONTERREY TECH, MONTERREY, MEXICO.**

**SHOT – MEDIUM PAN TO SAMUEL, JUAN, AND ORLANDA SITTING AT THE NEWS TABLE.**

**Samuel Dieck, Juan Álvarez, and Orlanda Vasquez are sitting around a table in the DEVELOP office facing the video camera.**

***Orlanda Vasquez:*** Thank you Jiaxun. Hello everyone my name is Orlanda Vasquez.

***Juan Álvarez:*** My name is Juan Alvarez.

***Samuel Dieck:*** And my name is Samuel Dieck. We are students from Monterrey Tech who are a part of the NASA DEVELOP GEO program.

***Orlanda Vasquez:*** Monterrey has a dry climate which tends to intensify the effects of the pollutants and also contributes with the smog that is produced from the emissions that come from the factories, vehicles and natural causes that intensify the pollutants in the air and affect the air quality of Monterrey, Mexico.

***Samuel Dieck:*** PM<sub>10</sub> concentrations, wind speeds, wind directions, surface temperature, relative humidity and precipitation data from January 2006 to May 2011 were collected from Integrated Environmental Monitoring System (SIMA) at seven monitoring stations in and around Monterrey, Mexico.

**Juan Álvarez:** One useful software program used for this project was the HYbrid Single-Particle Lagrangian Integrated Trajectory, model, also known as HYSPLIT. Backward trajectories were developed using HYSPLIT Model for the 7 SIMA stations for a 24 hour and 72 hour time period on 14th day of each month from January 2010 to May 2011 to visualize the direction and movement of pollutants to these stations. This is also very useful to identify the locations from which the pollutants are coming to the SIMA Stations.

#### **SHOT – PM10 CONCENTRATION GRAPH**

**Orlanda Vasquez:** As a part of this research and previous research, the rain season is during the summer months whereas the dryer season is during the winter months. With this knowledge, it was also discovered that particulate matter is more concentrated during the winter months rather than in the summer months.

#### **SHOT - HYSPLIT IMAGES.**

**Samuel Dieck:** Pollutants, primarily PM<sub>10</sub>, are also greatly affected by the wind speed. When wind speed is high, the concentrations of PM are low and vice versa. Wind direction also has an effect on the pollution concentrations. It was discovered that when the wind direction was from the South and West, the concentrations of PM increased. This discovery led to the development of a theory that it was possible that Monterrey could be receiving pollutants from other southern cities in Mexico. Through obtaining data and running HYSPLIT Trajectory simulations, the team confirmed that there was a slight relationship between other polluted cities in Mexico.

**Juan Álvarez:** The 2010-2011 data and previous research will advance the study of public health and air quality in Monterrey, Mexico to help the public concerns of air quality. This data will also increase awareness on the poor air quality inside the Metropolitan Monterrey Area as well as better prepare the inhabitants on how to reduce this pollution.

#### **SHOT – MEXICO TEAM AROUND NEWS TABLE.**

**Mexico team together:** “This is Wise DEVELOP Signing Off. Thank you for watching!”

#### **EXT.SCENE. INTRODUCTION.**

##### **SHOT – KAITLYN AND JIAXUN IN NEWS ROOM.**

**Jiaxun Chai:** Thank you for watching our NASA DEVELOP News.

**Kaitlyn Collins:** This is Wise Air Quality Team. Thank you, and goodnight.

#### **EXT.SCENE. CONCLUSION.**

**News template created by BlueFxVideo, End Music “Local News Details” by Patriotic Fathers.**

**Credits.**