

## **Cross-border Transport of Fine Particulate Matter into Texas from Agricultural Burning**

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### **Brief Description:**

South Texas, a semi-arid region, comprises of several urban areas that are impacted by smoke episodes associated with agricultural burns in Mexico and Central America. These haze events typically occur over the South Texas area during early spring months of April and May. These events were investigated using backward trajectory analysis, potential source contribution function (PSCF) model and a multivariate receptor model, UNMIX, to evaluate the long-range transport of pollutants to identify major source regions and categories affecting the study region. Backward trajectory and PSCF analysis indicated that the air parcels from Mexico and Central America significantly dominated synoptic flows arriving over South Texas cities. This result was consistent with the result of remote sensing analysis using NASA's Moderate resolution Imaging Spectroradiometer (MODIS) data. Fine particulate matter (PM<sub>2.5</sub>) species data sampled by Texas Commission on Environmental Quality (TCEQ) in Corpus Christi, Texas were analyzed using UNMIX to apportion sources of PM<sub>2.5</sub>. Six possible source categories were identified including sulfate from industrial sources, mobile emissions, soil and dust, agricultural burns, sea spray and nitrate from multiple sources. During the April and May events, agricultural burns dominated source profile contributing to the haze events in Corpus Christi, Texas.