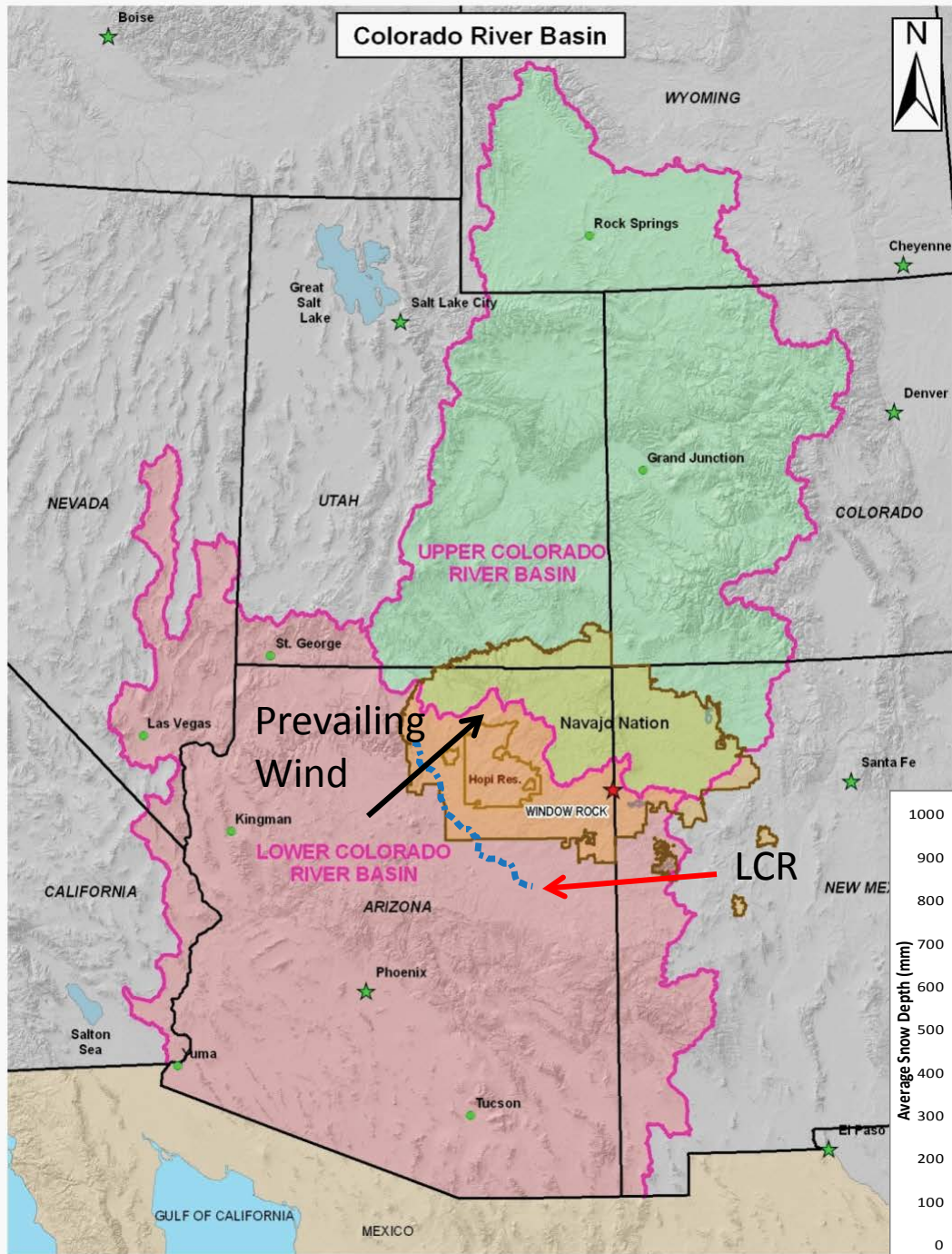
The background of the slide is an aerial photograph of a vast, hazy landscape, likely a plateau or desert region. The sky is a clear, bright blue at the top, transitioning to a pale, hazy blue and white near the horizon. The ground below is a mix of light brown and tan colors, with some darker, more defined shapes that could be mountains or hills, though they are obscured by the haze. The overall atmosphere is one of a wide, open, and somewhat desolate environment.

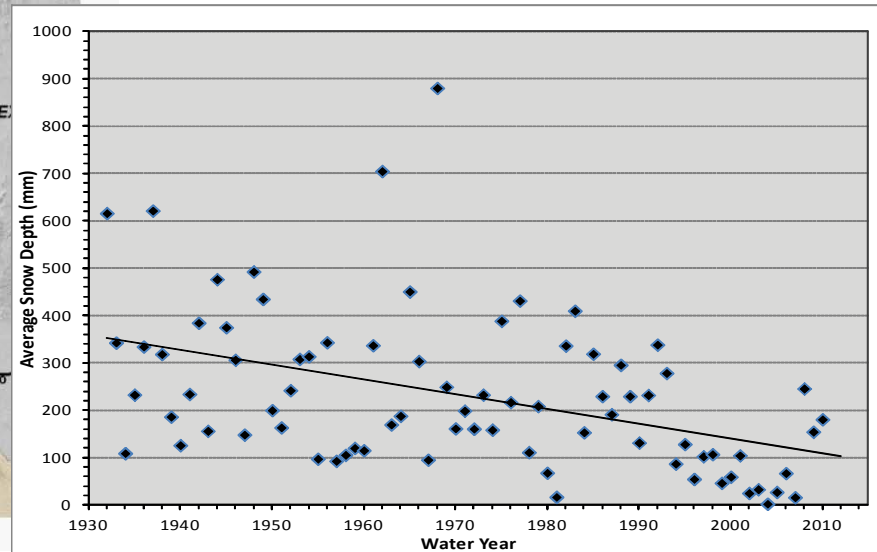
# Characterizing Dust Sources of the southern Colorado Plateau Tribal Land

Margaret Hiza Redsteer,  
USGS Flagstaff Science Center

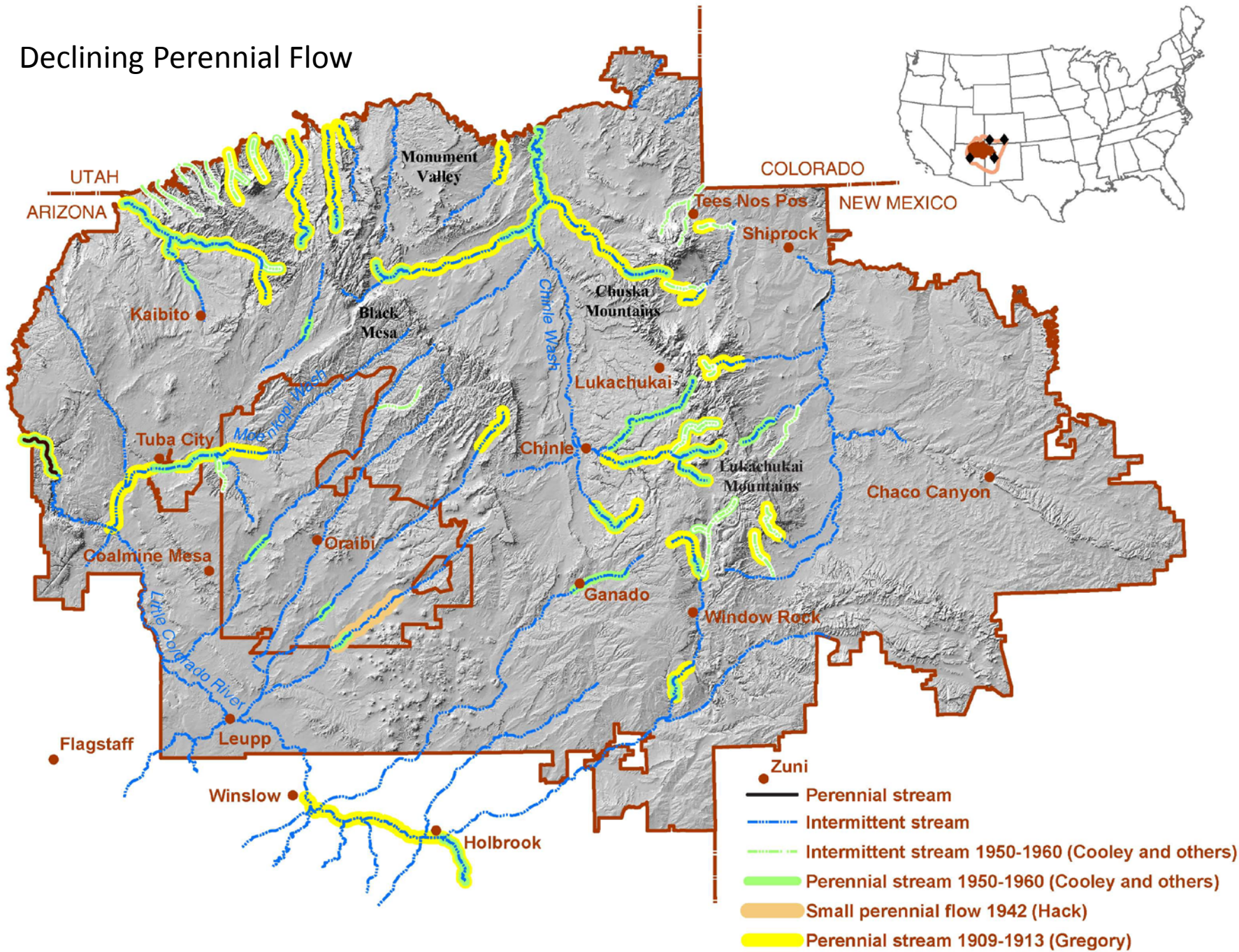


Little Colorado River  
 southern Co Plateau  
 one of many local dust sources  
 Geologic and Climatic conditions  
 important  
 Developing Dust source database to  
 characterize

Decreasing Snowfall  
 NE Arizona  
 over the 20<sup>th</sup> century may increase  
 source availability



# Declining Perennial Flow



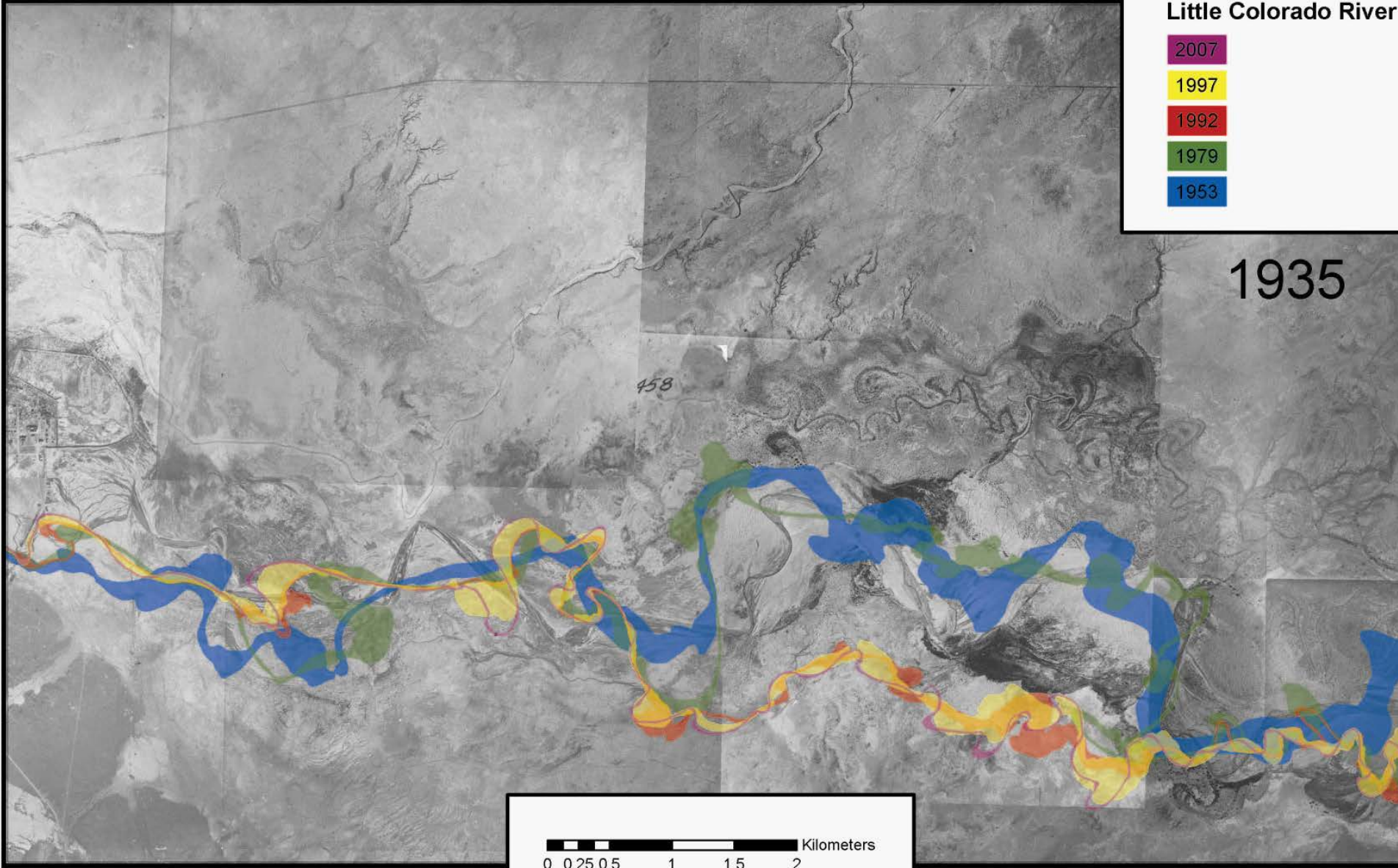
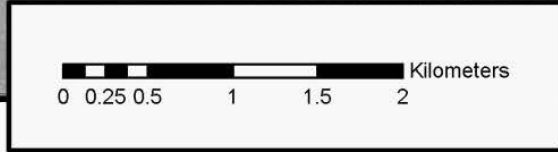
# Changing streamflow dynamics- decreasing channel width

## Little Colorado River

- 2007
- 1997
- 1992
- 1979
- 1953

1935

458



# The Little Colorado River (LCR) basin regional source of windblown dust

- Long-range transport during synoptic weather events.
- May become common as a consequence of increased aridity from climate change
- damage infrastructure, degrade rangeland, reduce visibility
- Affects human health: soil microorganisms, trace metals and metalloids, radioactive elements, silicates, and alkali salts.

# Dust from NE Arizona

UT

CO

AZ

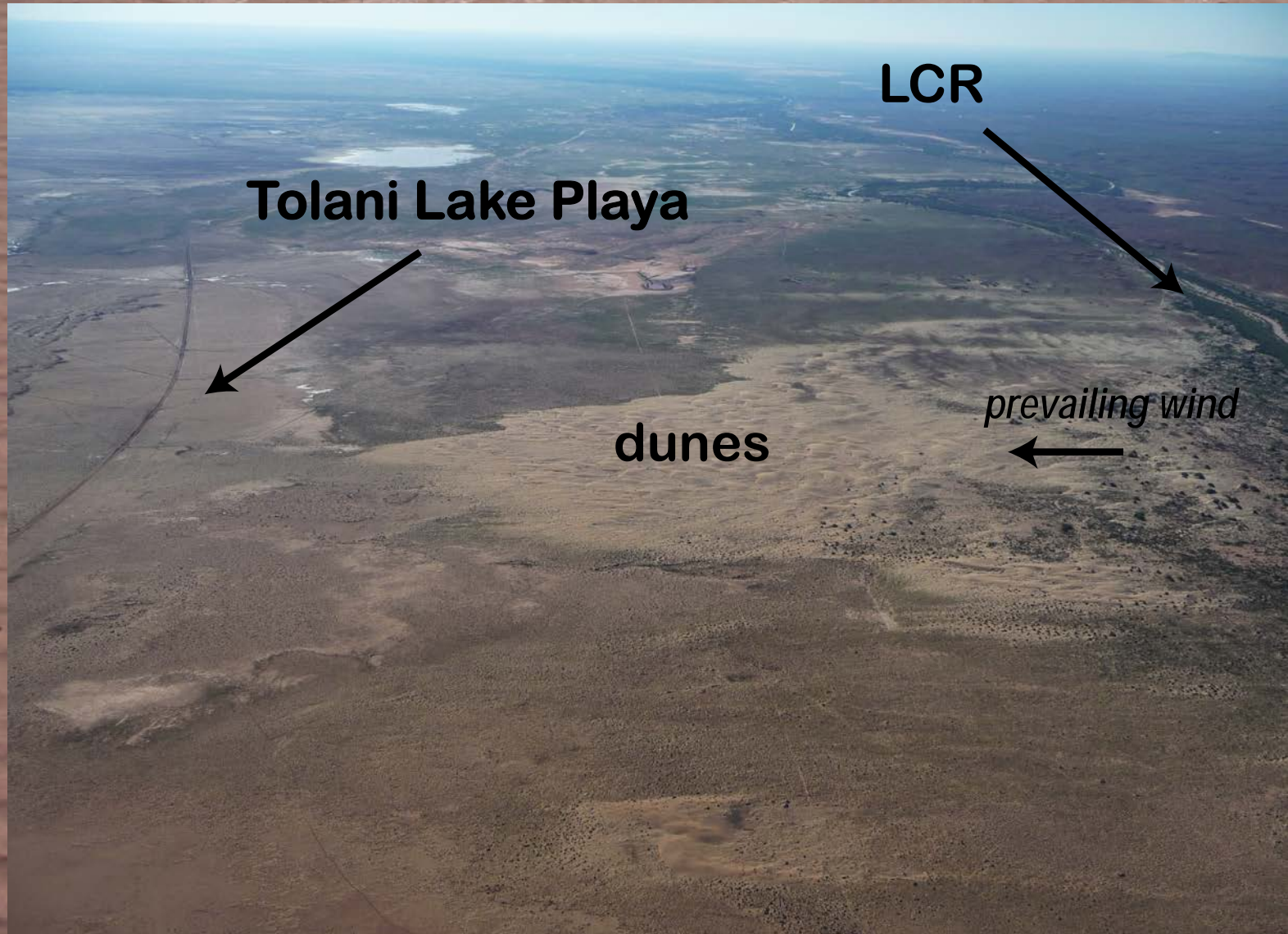
NM



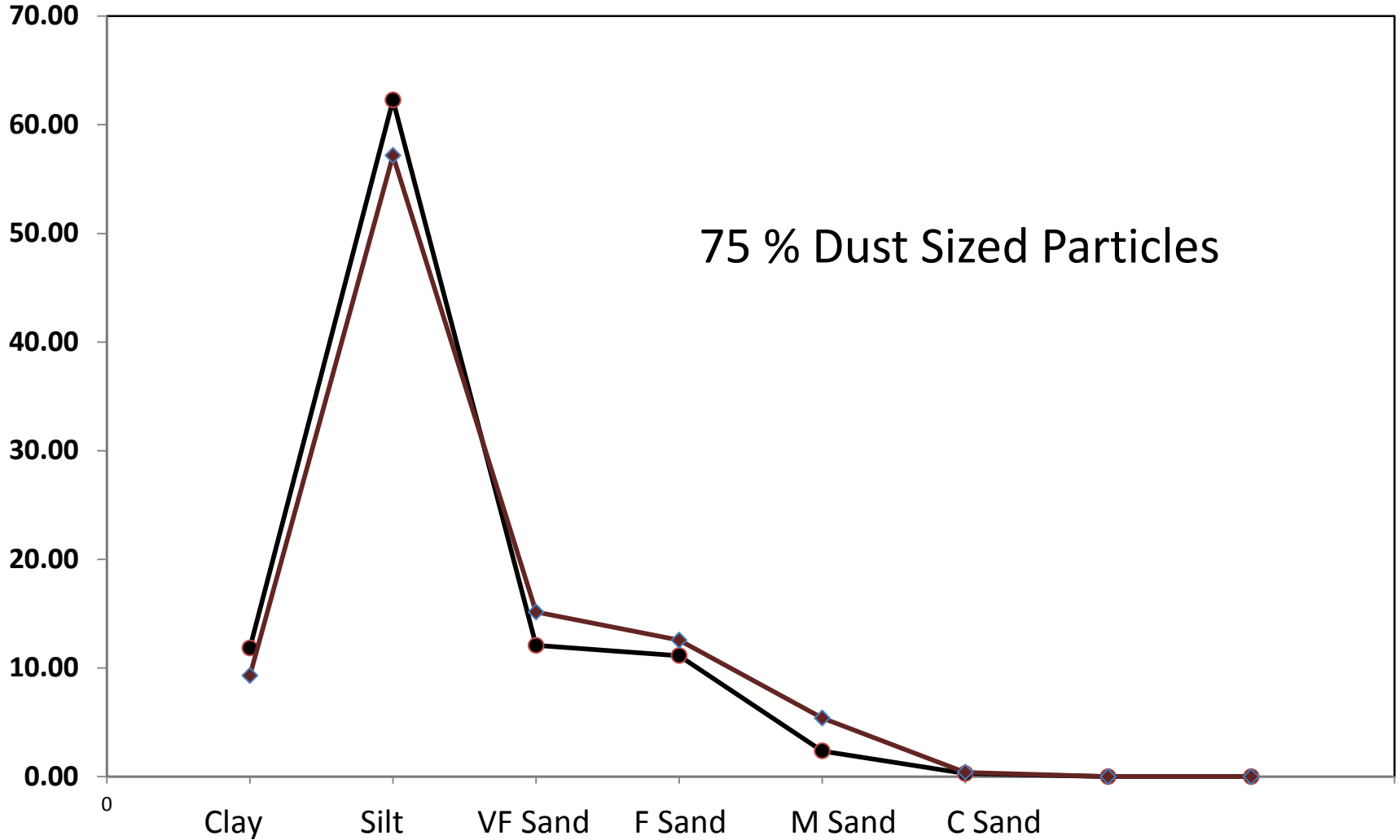
Flagstaff, AZ



# Overbank & Playa Sediments Create New Sources of Windblown Sediment

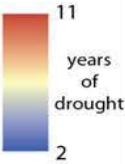
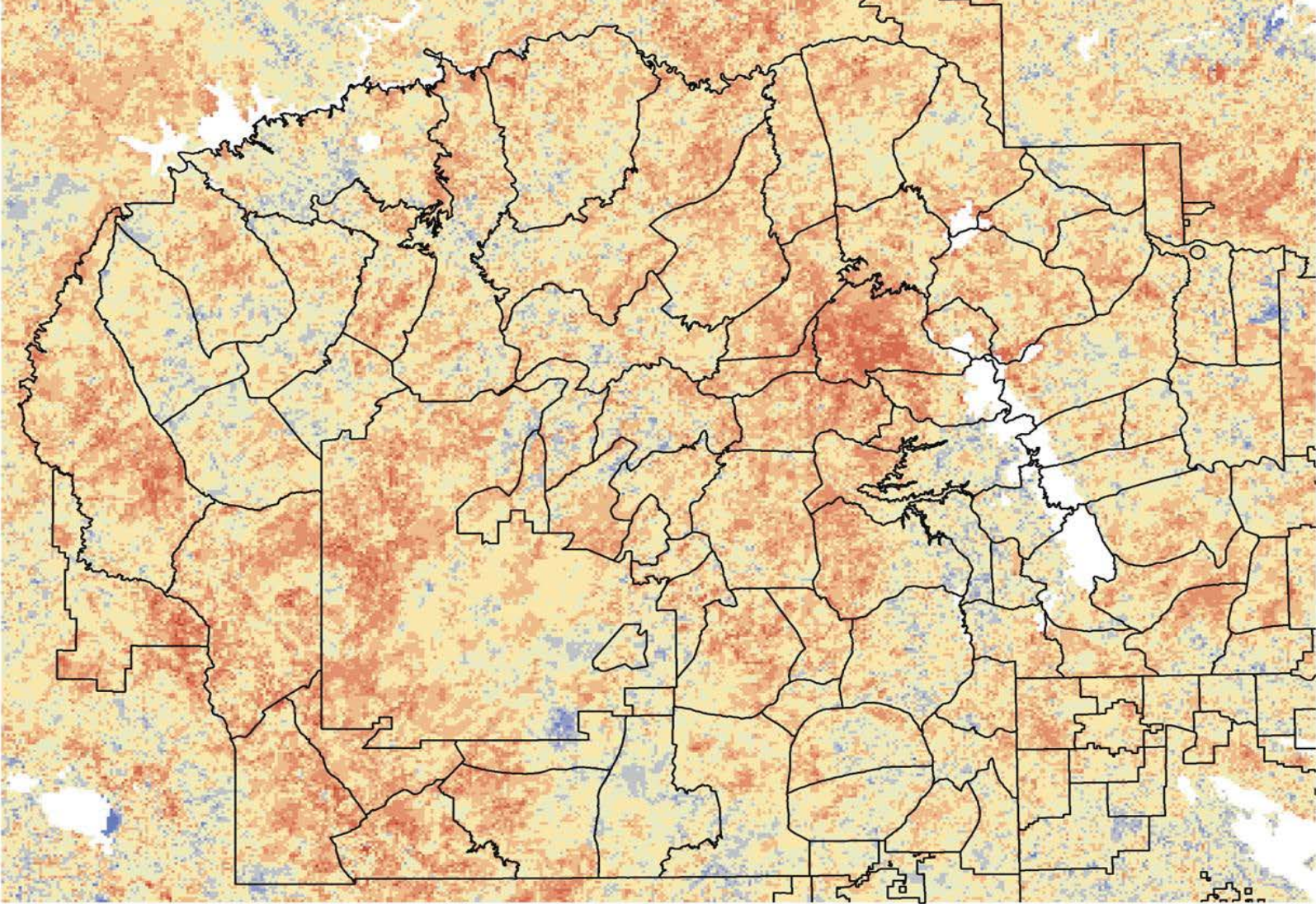


# Playa Grain Size Distribution



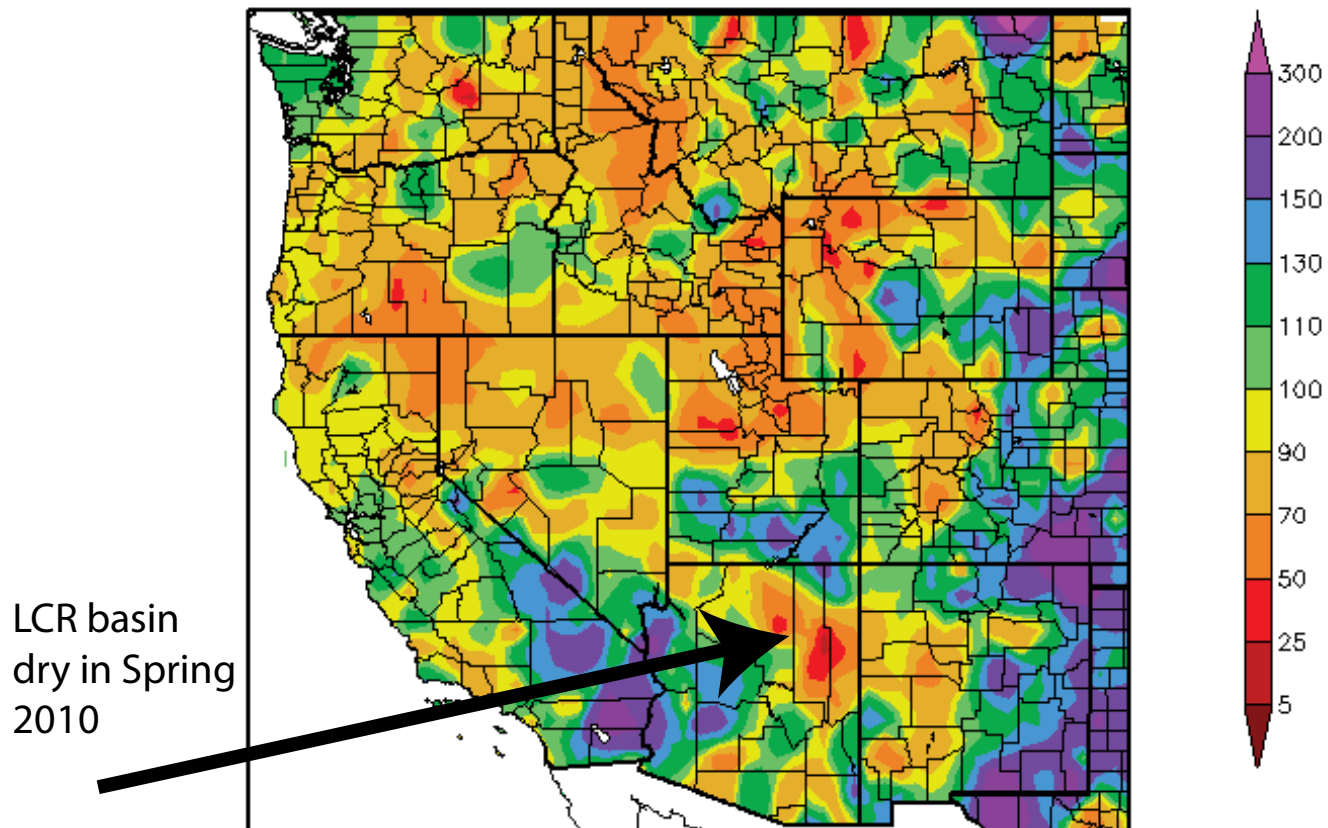


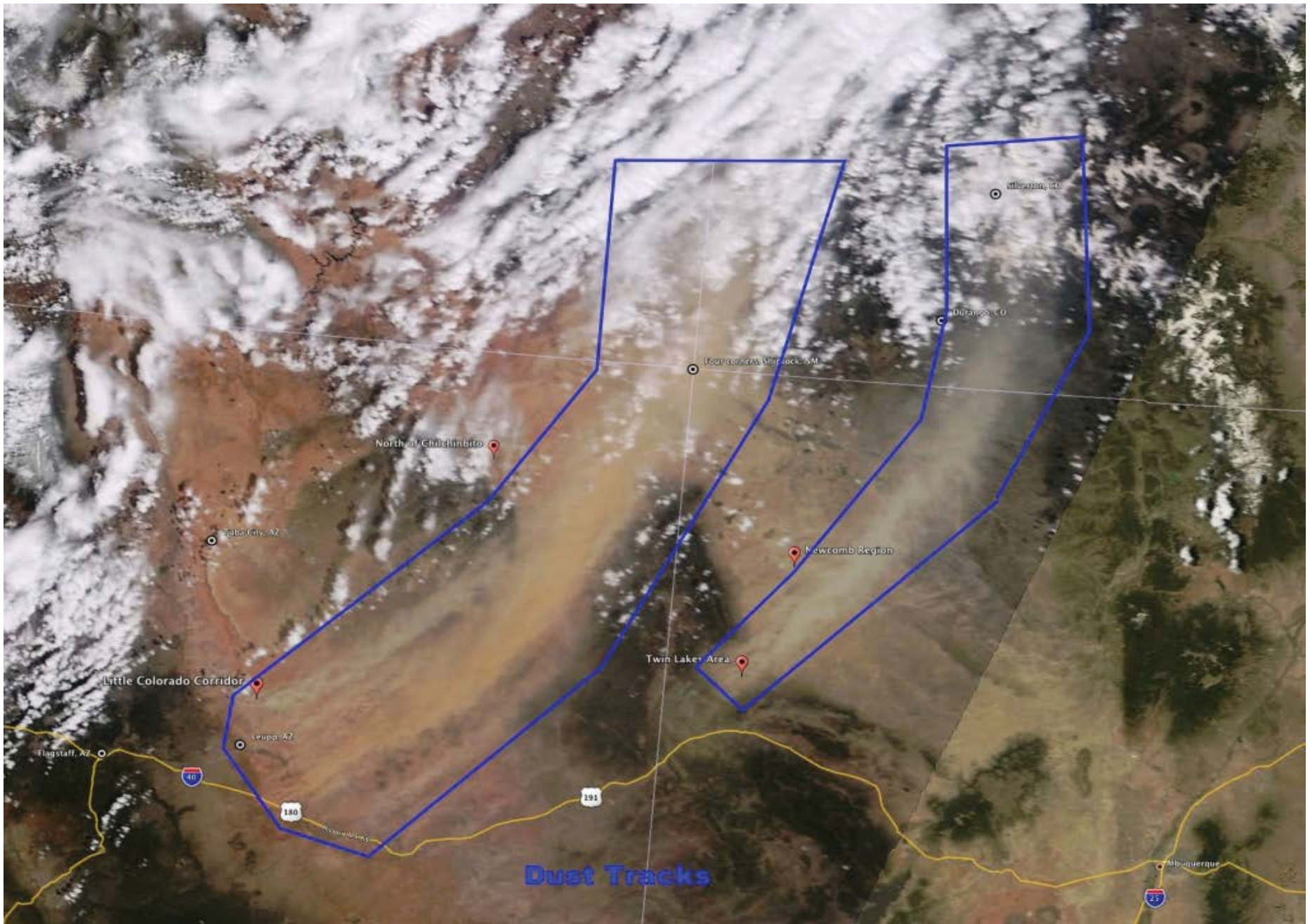
# Cumulative Drought Map of the Navajo Nation 2000-2012



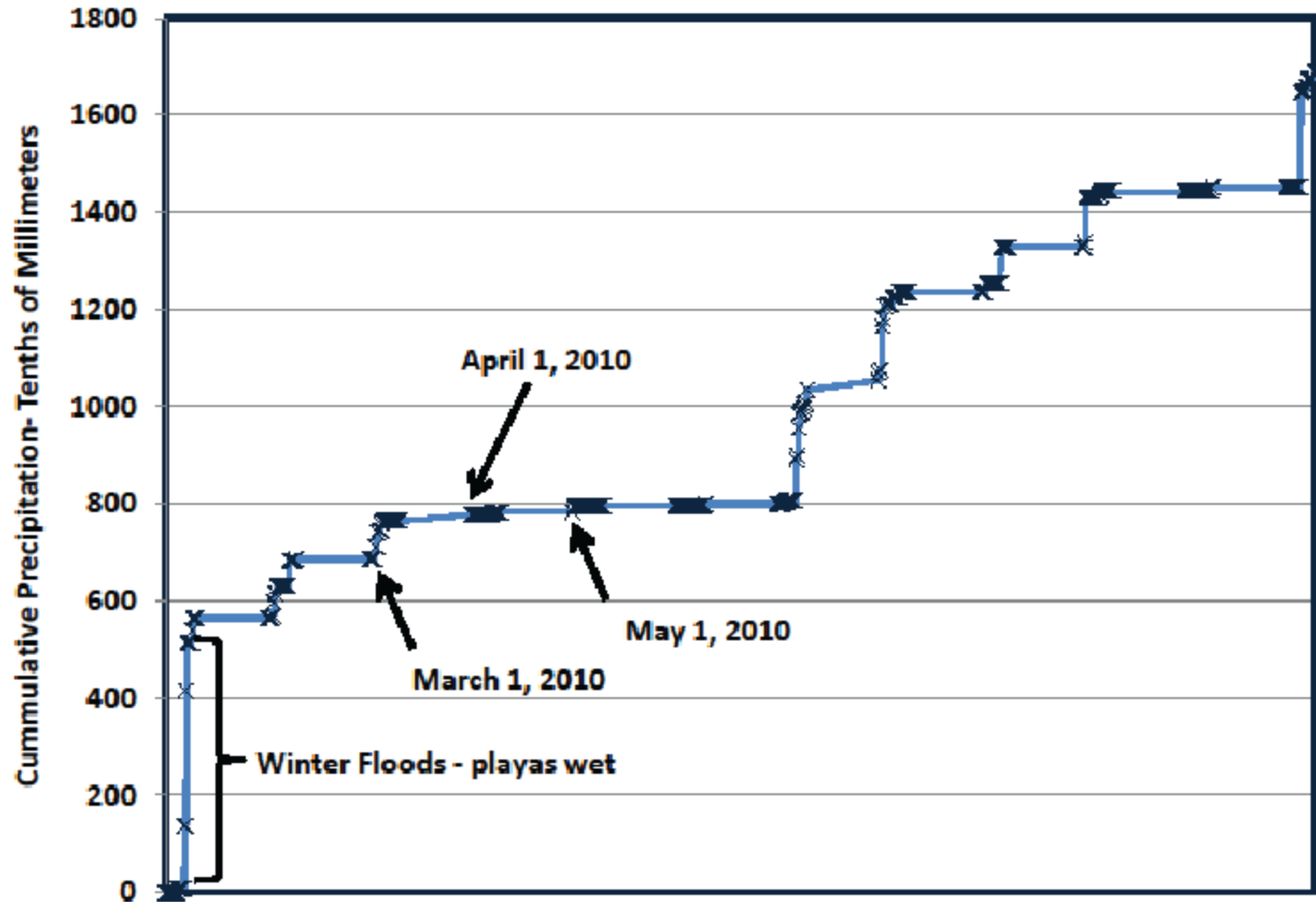
# Dry and Windy Conditions Spring 2010

Percent of Normal Precipitation (%)  
10/1/2009 – 4/4/2010





# Winslow Precipitation Record 2010



# Measured Surface Erosion Features



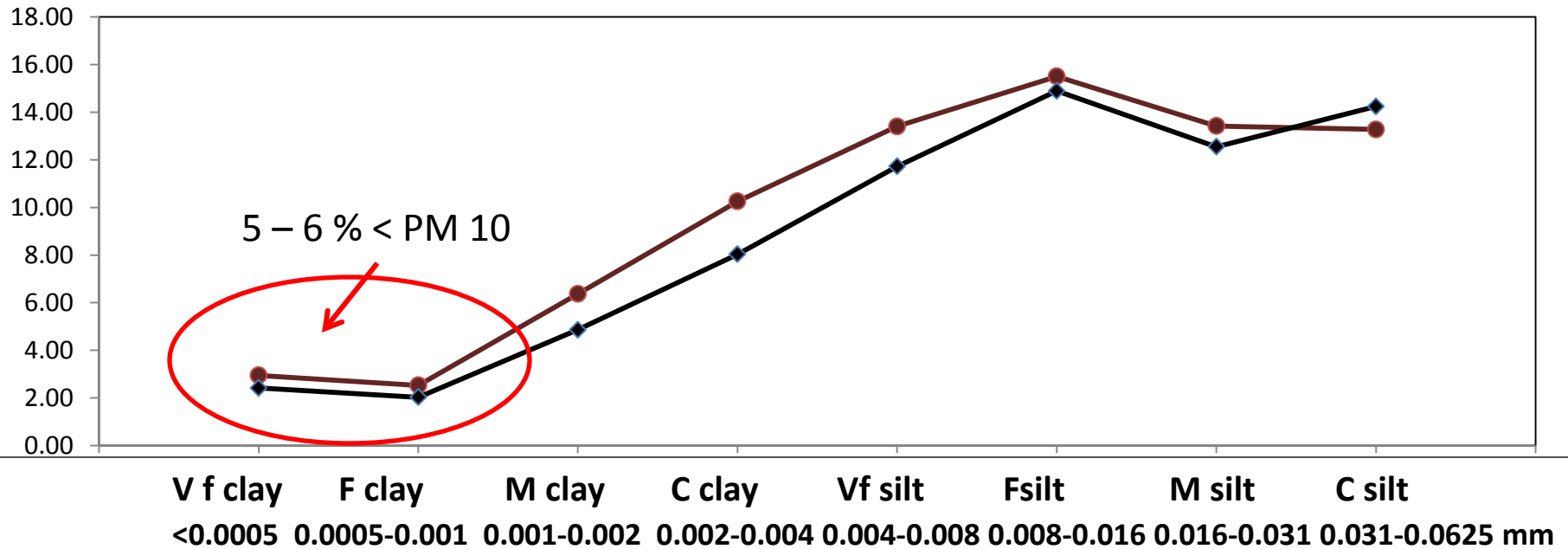
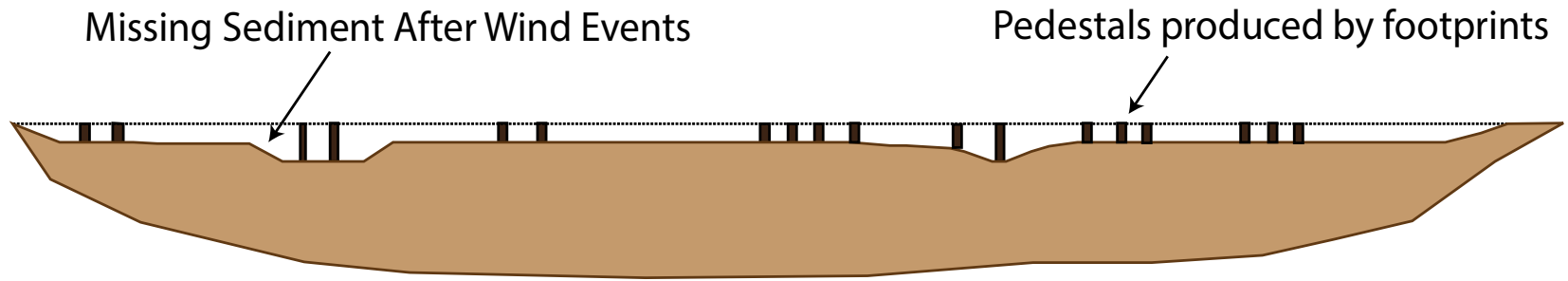
Dinehbito Wash  
Tolani Lake Playa

Transwestern Playa

Image Landsat

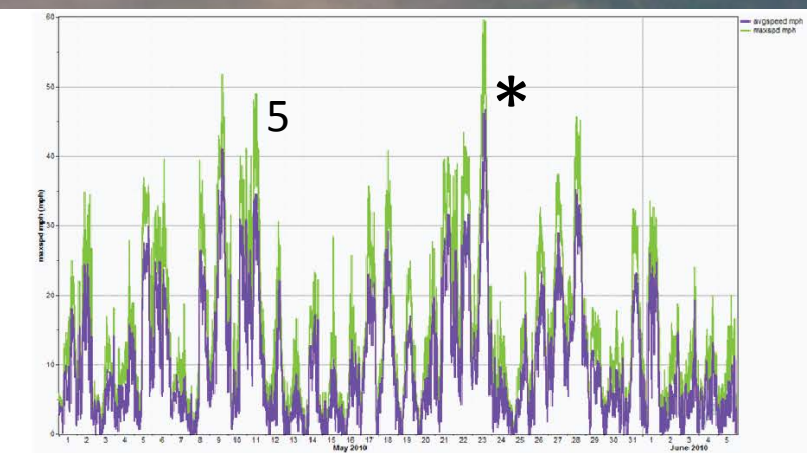
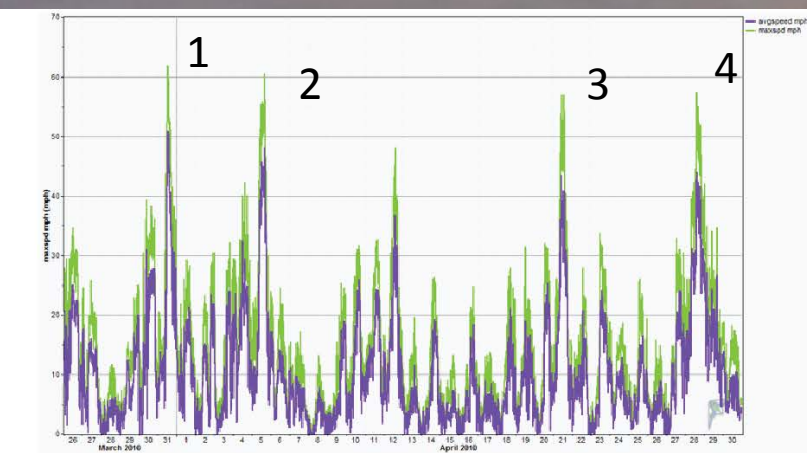
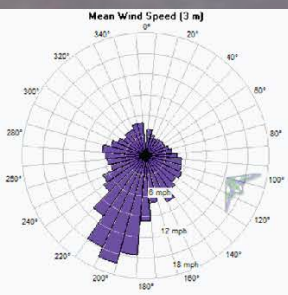
Google

***Simplified model illustrating how volume of sediment lost from playas was estimated for three wind events that occurred in the Spring of 2010.***

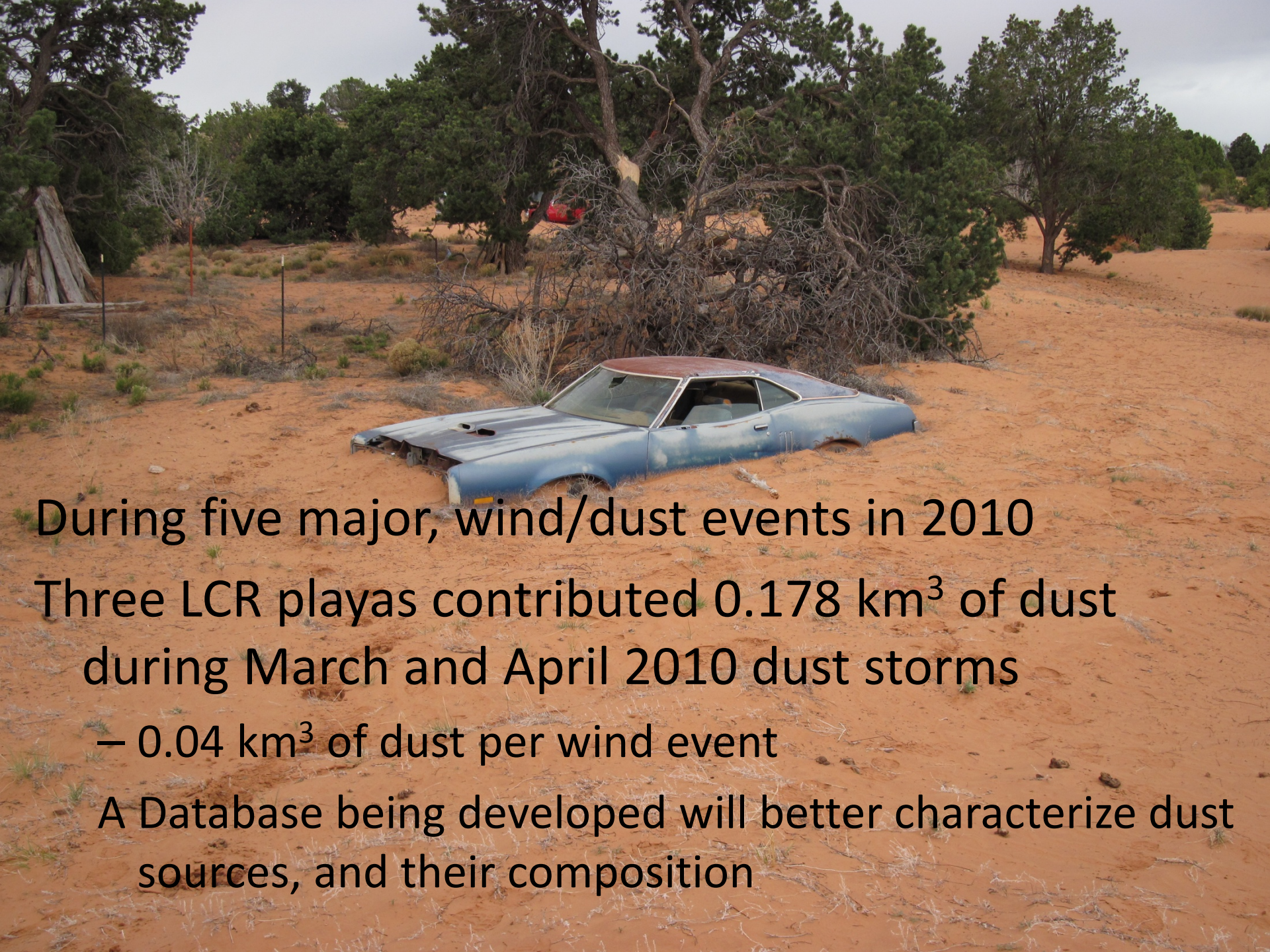




# Estimated volume of dust generated during 5 major wind events in 2010







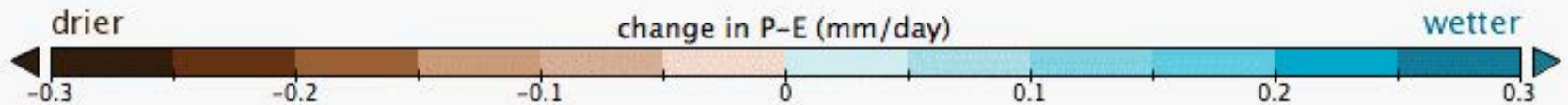
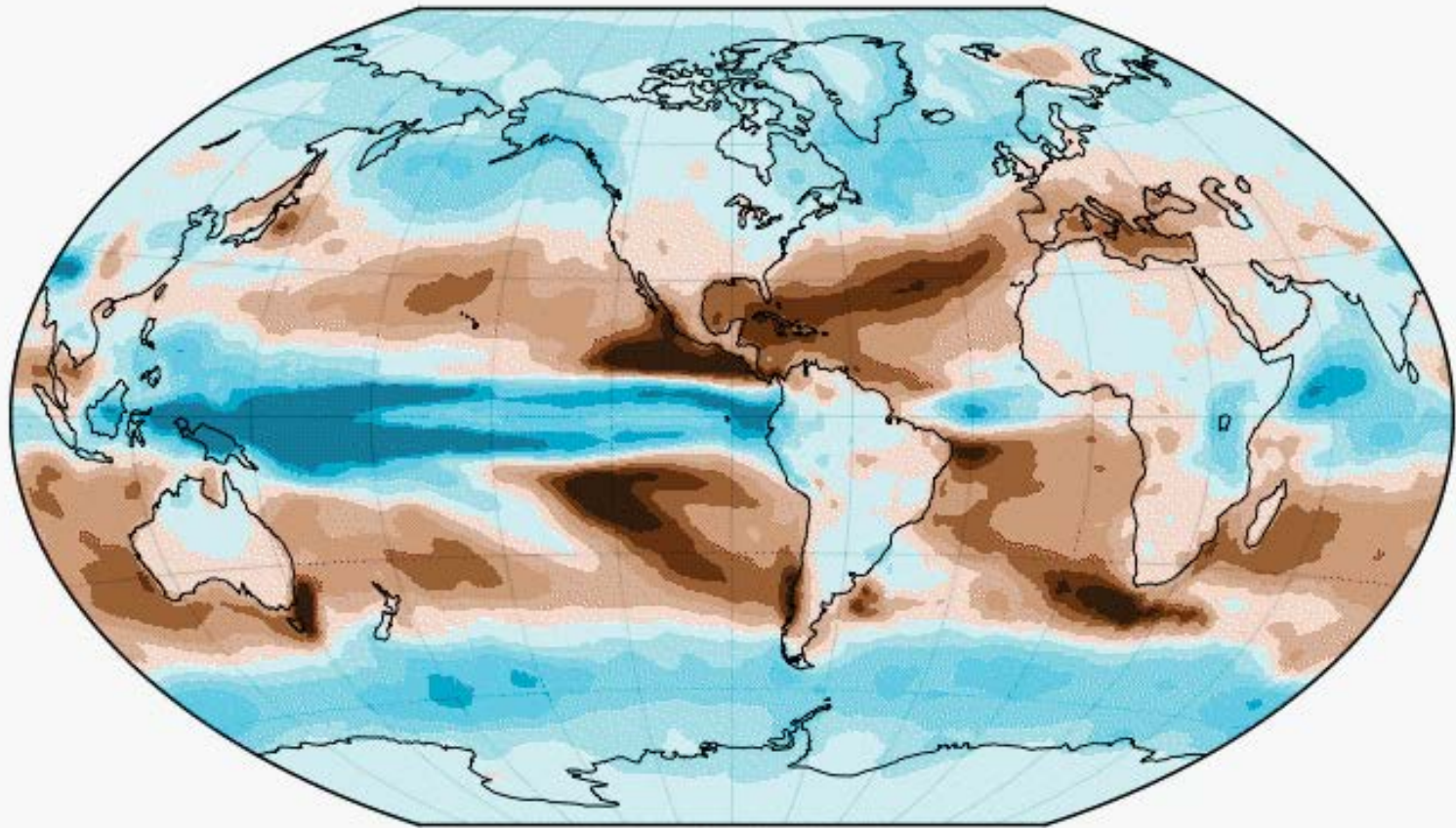
During five major, wind/dust events in 2010

Three LCR playas contributed  $0.178 \text{ km}^3$  of dust during March and April 2010 dust storms

–  $0.04 \text{ km}^3$  of dust per wind event

A Database being developed will better characterize dust sources, and their composition

Change in P-E (2021-2040 minus 1950-2000)



Winkel Tripel projection centered on -90.0°E

Projected shifts by 2030 from an average of 19 climate models from Seagar et al, 2007 (Figure by Naomi Naik)