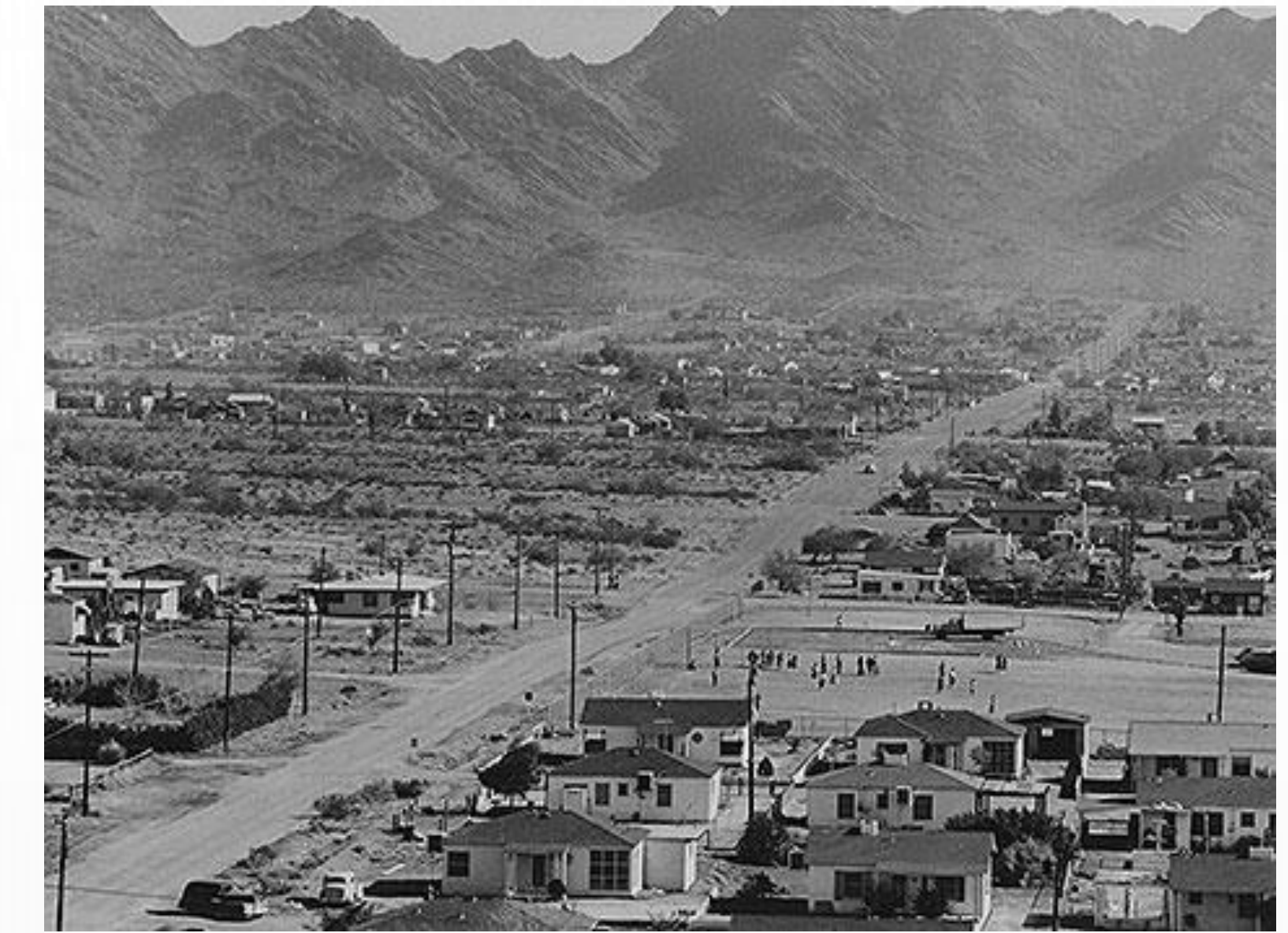




# Urbanization: The Enemy to the Environment



## Abstract

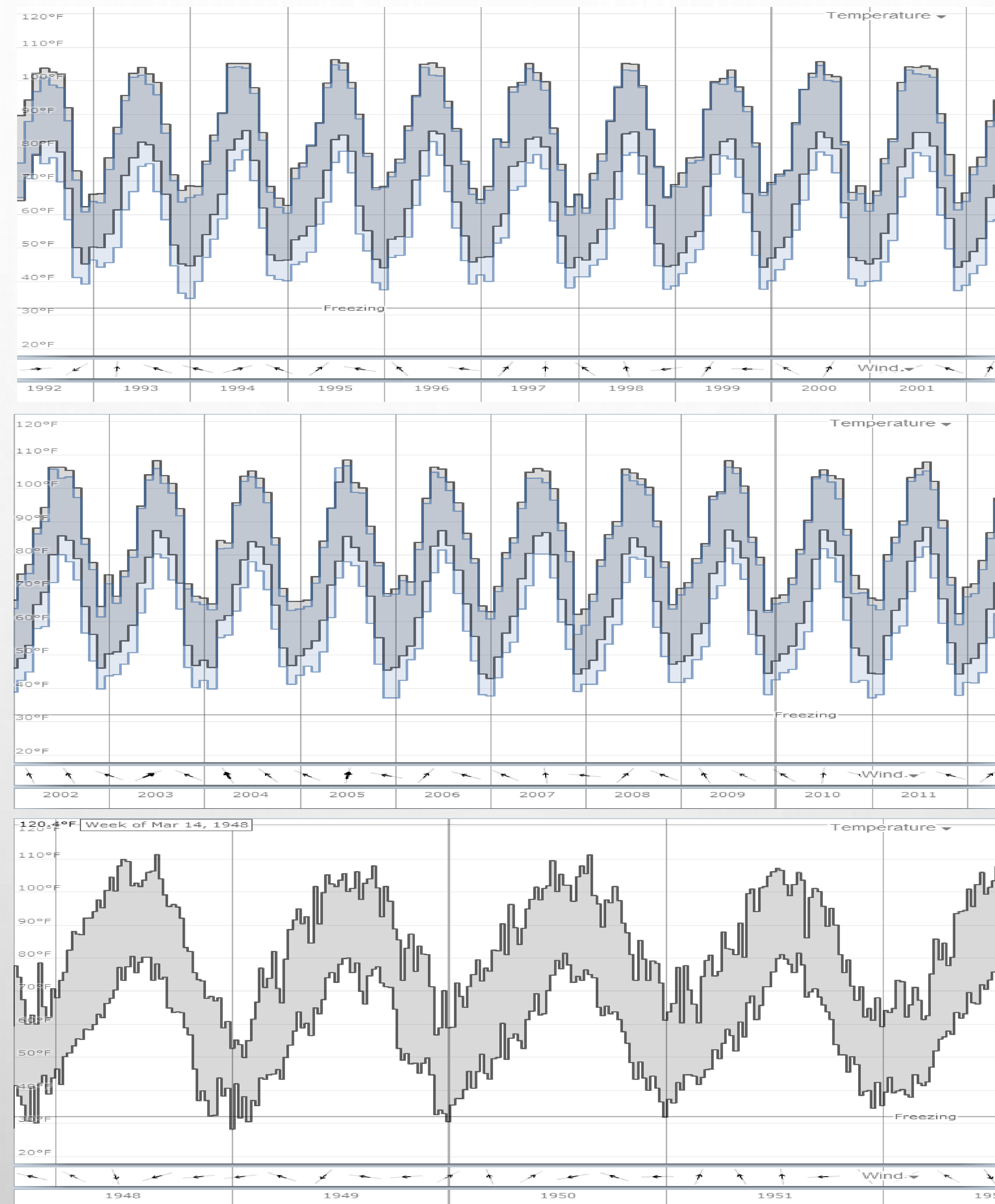
Within the city, the high temperatures are a nuisance for the population. However, within rural areas away from the industrialized estates and cement structures, the temperatures reduce. Urbanized areas have higher temperatures while the rural, non-urbanized areas are an oasis of cooler temperatures.

## Methods

-The data was gathered from Weatherspark in which temperatures from the center of Phoenix, Arizona was compared to the rural Gila River Reservation in Sacaton.  
 -The data was then sorted by year but unfortunately, Sacaton weather database went back to 1991 and the Phoenix weather database went to 1940 (which only allowed a 20 year comparison period).

## Culture At A Thought

Going back to culture is essential in learning the changes over time in an area. Our elders are vessels of knowledge, they have experienced more than our generation and are the wisest. On the Gila River Reservation, the native people had an input to the results of my research:  
 -"Our future generation will find away to get rid of our problem." (Alyssa Quiva,54)  
 -"Long years ago, we had the ability to experience cool temperatures in the winter but growing a city changed this." (Henry Mendoza,66)



(Graphs gathered from WeatherSparkBeta, Data represents Sacaton, Arizona and Phoenix, Arizona temperatures in yearly increments. The compared data is from 1992-2012. The separated, historical data of Phoenix is from 1948-1952. In blue is Sacaton, Arizona temperatures and in gray is Phoenix, Arizona temperatures.)

## Conclusions

-The data represented constant high temperatures in Phoenix (in gray), and lower high temperature in Sacaton (in blue). The constant gap was a 5 degree average.  
 -When observing the lower temperatures, Sacaton was able to have temperatures nearly 10 degrees lower than Phoenix which was a significant constant in the data.  
 -I concluded that urbanization in Phoenix compared to the rural Gila River Reservation (nearly 37 miles away), shows a significant difference in low temperatures (10 degree constant) as well as lower high temperatures (5 degree constant).  
 -To further observe these differences in lower temperature, I observed the earliest data of Phoenix, Arizona(1948). The high temperatures stayed at the same average but the lower temperatures were significantly different (Phoenix was able to reach the freezing point in past years).  
 -Urbanization affects an area's lower temperatures significantly and keeps a constant gap between high temperatures. During the day, the temperatures are similar, but at night, the artificial land absorbs heat and disables the ability for low temperatures that rural areas can reach.

## Acknowledgements

I would like to thank the Native American Science and Engineering Program, Desert Vista High School, the Gila River Community, the University of Arizona, and the American Indian Science and Engineering Society.

