

# Growing Pains: Tucson, AZ and the Urban Heat Island Effect

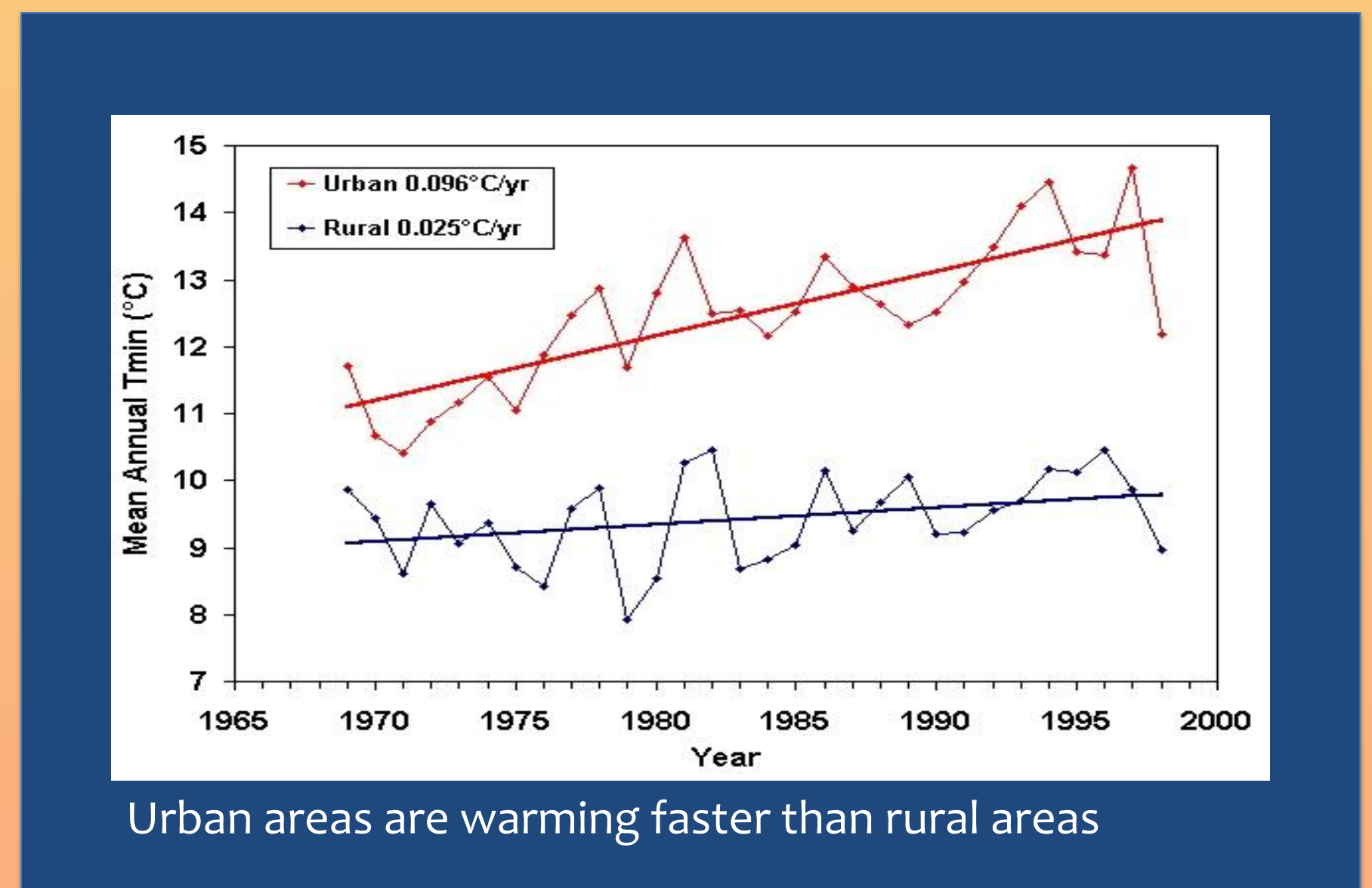
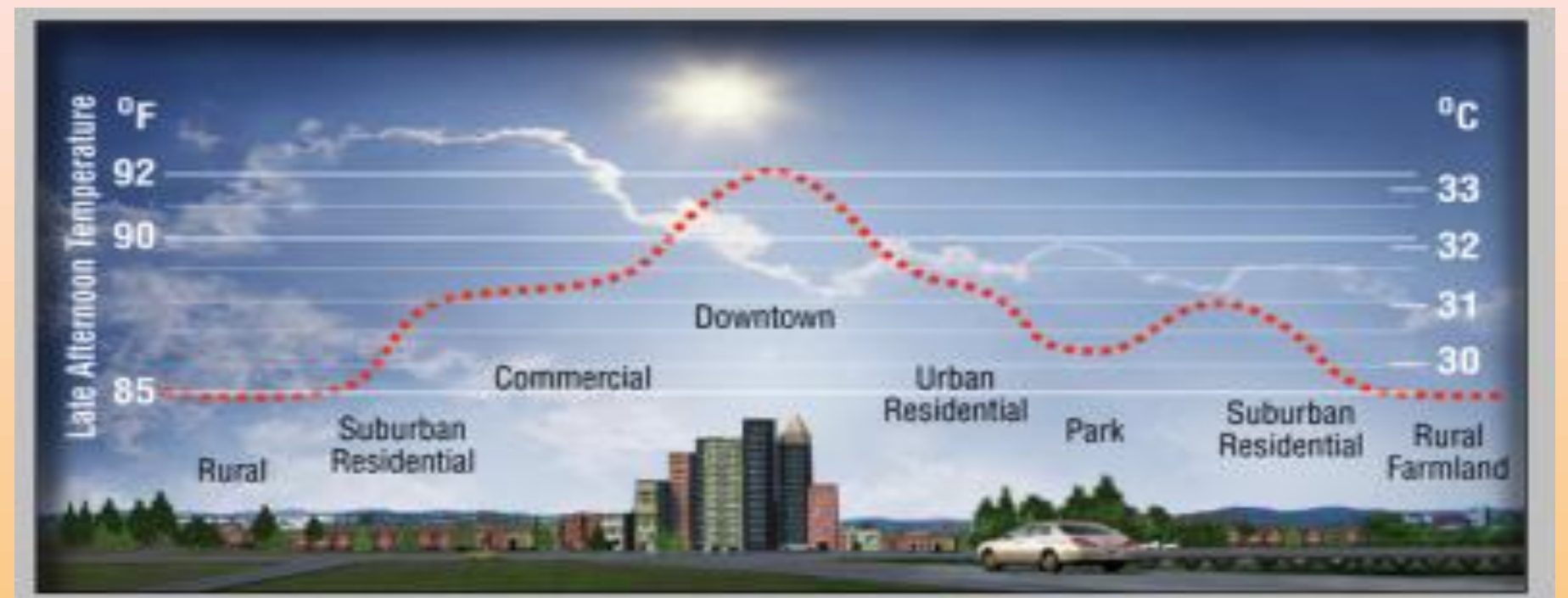


The Power of Perspective

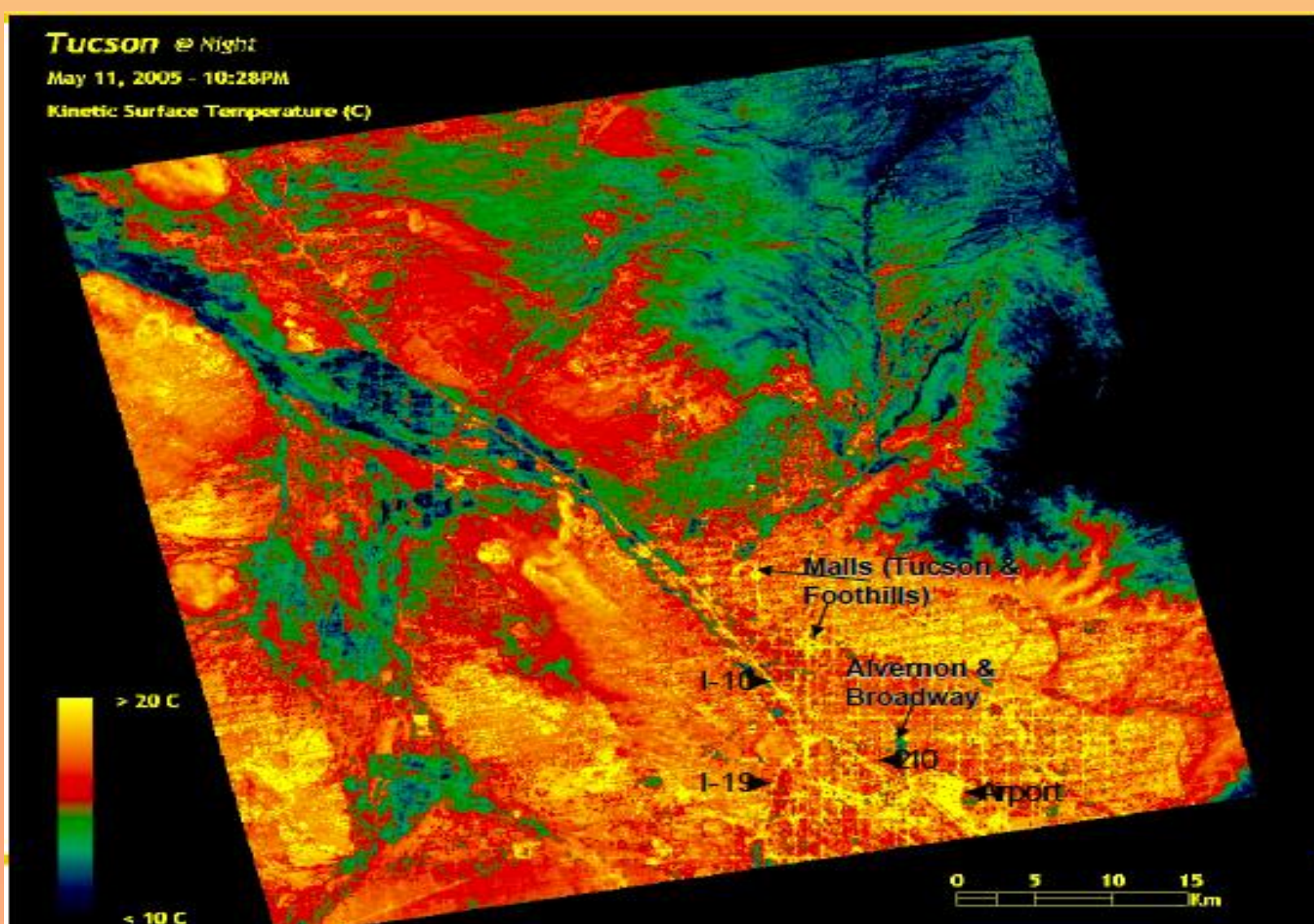
Artist's view of a U.S. Landsat satellite. Credits: NASA.

Tom Gillespie, Teenage Parent (TAP) High School  
Tucson AZ, Earth Camp for Educators 2012

As urban areas develop, changes occur in their landscape. Buildings, roads, and other infrastructure replace open land and vegetation. Surfaces that were once permeable and moist become impermeable and dry. These changes cause urban regions to become warmer than their rural surroundings, forming an "island" of higher temperatures in the landscape.



Urban areas are warming faster than rural areas



Tucson's urban temperatures are about 5.5°F warmer than they were in the last century, with more than 3.5°F of the warming occurring in the last 30 years.

Temperature scale: Yellow – Hottest, Blue – Coolest

## Urban Heat Islands create several problems:

- **An increase in energy** use for cooling, raising electric bills and contributing to air pollution, climate change, and foreign oil dependence.
- **Dangerous environments** for young children and the elderly. Higher temperatures in cities contribute to a rise in heat-related deaths.
  - In 1998, Europe had over 11,000 heat related deaths
  - In 2003, Paris had 15,000 heat related deaths
  - From 1992-2009, there were 1,485 heat related deaths in Arizona. 642 of those deaths were in Pima County.

- **Increased air pollution.** Higher air temperatures encourage the formation of smog from nitrous oxide and other emissions from cars, factories, and power plants. Smog contributes to respiratory problems, heart attacks and other health issues.

