

A vibrant sunset over a body of water. The sky is filled with horizontal bands of color, ranging from deep red and orange near the horizon to a lighter, hazy orange at the top. The water in the foreground is dark, reflecting the colors of the sky. In the distance, there are silhouettes of hills or mountains. The overall scene is peaceful and scenic.

# Aerospace Lidar Capabilities

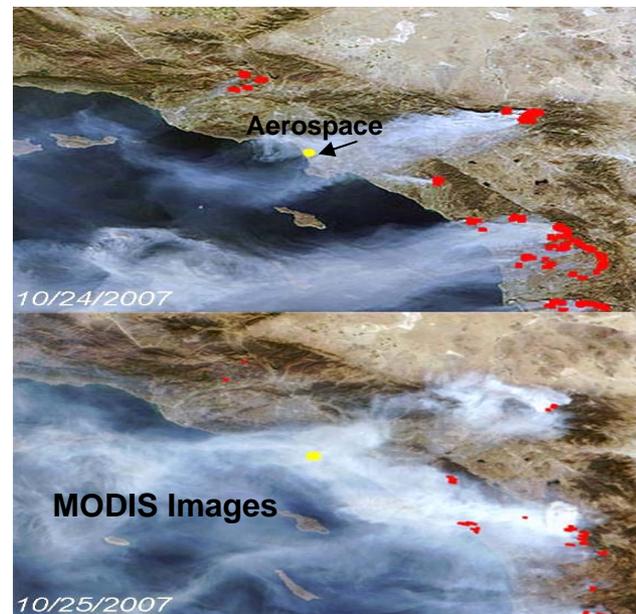
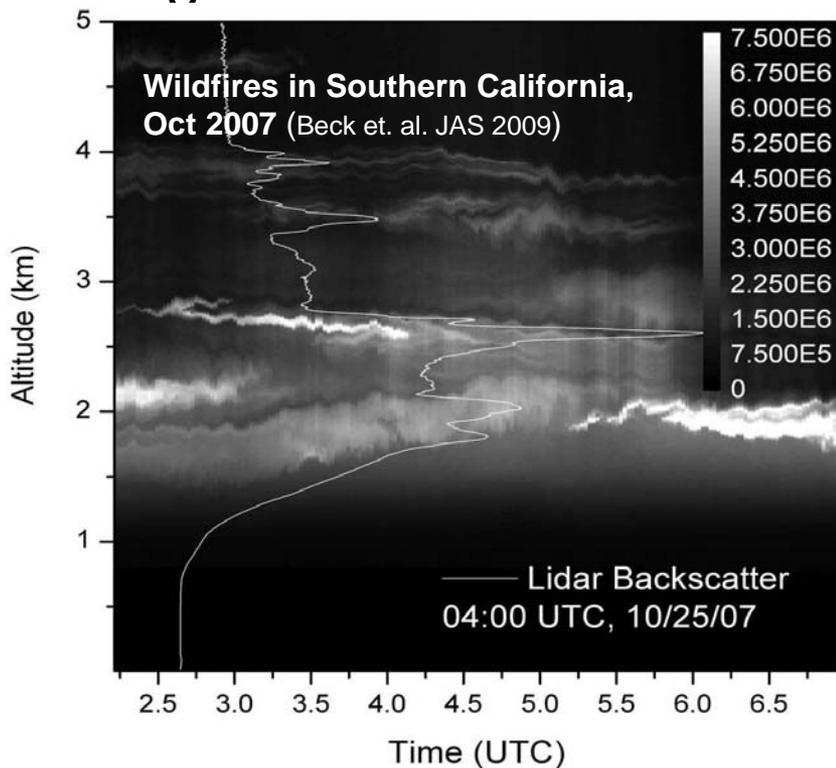
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# Aerospace Lidar Observations of Smoke and Aerosols in Los Angeles Basin



UV lidar for measuring AOT



Sun Photometer for measuring AOT



# Motivation for the aerosol lidar work

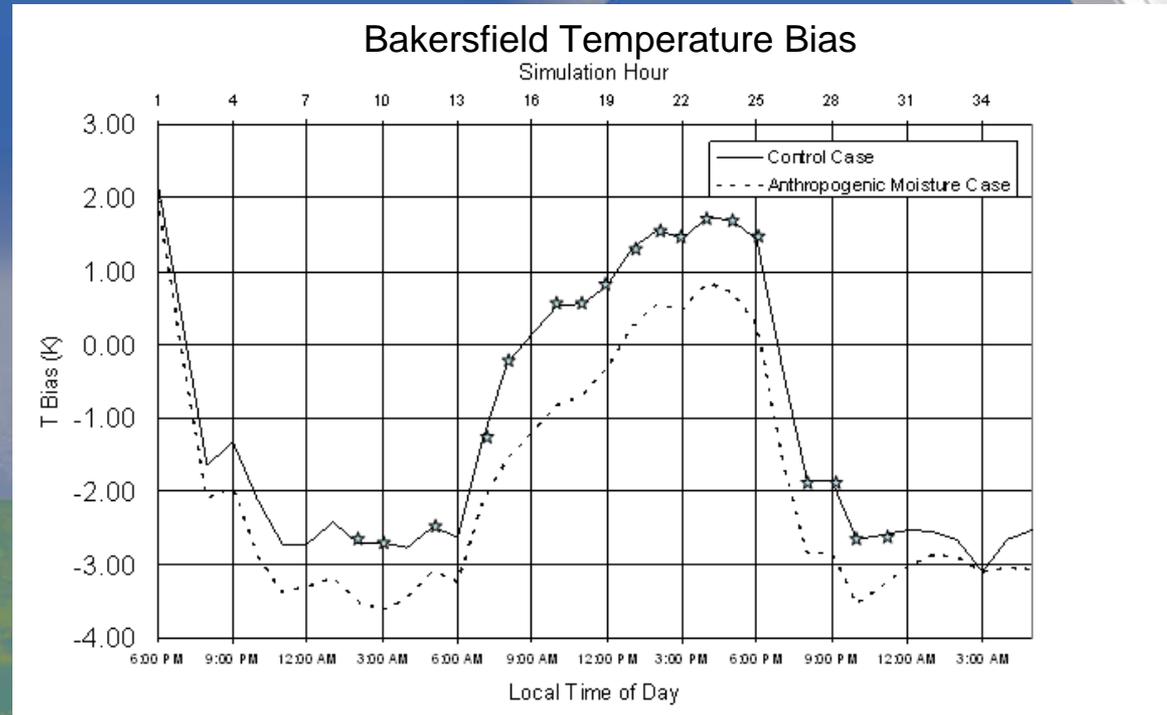
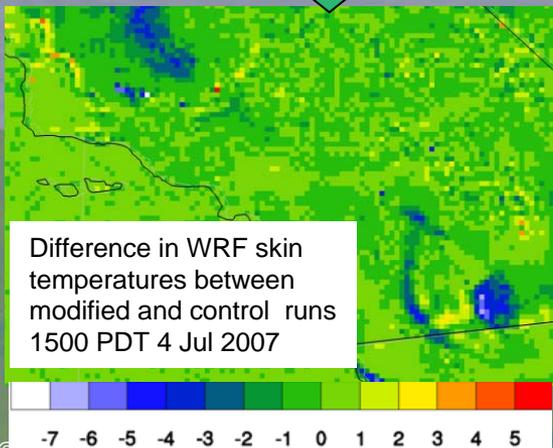
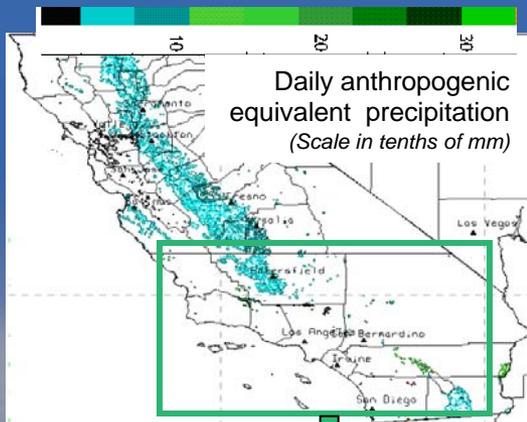
- Improve understanding of factors affecting smoke and pollution transport in LA Basin
  - *Effects of land/sea interface*
  - *Orographic and topographic effects*
- Correlation between Aerosol Optical Density and Particulate Matter levels at the ground
- Improve satellite aerosol retrievals over western US, especially marine/land boundaries, desert areas
- Improve lidar AOT retrievals
- Develop capabilities to support NPOESS cal/val activities
- Improved understanding of tropospheric dynamics in LA Basin



# EFFECT OF ANTHROPOGENIC MOISTURE ON SHORT RANGE FORECASTS FOR THE LA BASIN

MM5 and WRF overestimated peak summer daytime temperatures

We developed a method to incorporate anthropogenic moisture into WRF and demonstrated the impact on temperature and moisture forecasts



Shelter temperature bias for control (solid) and anthropogenic moisture (dashed) cases vs. forecast hour for Bakersfield. Points with stars indicate that the difference between the two cases was statistically significant at the 95% level