An Analysis of Wildfire Impacts on Climate Change

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Introduction/ Hypothesis

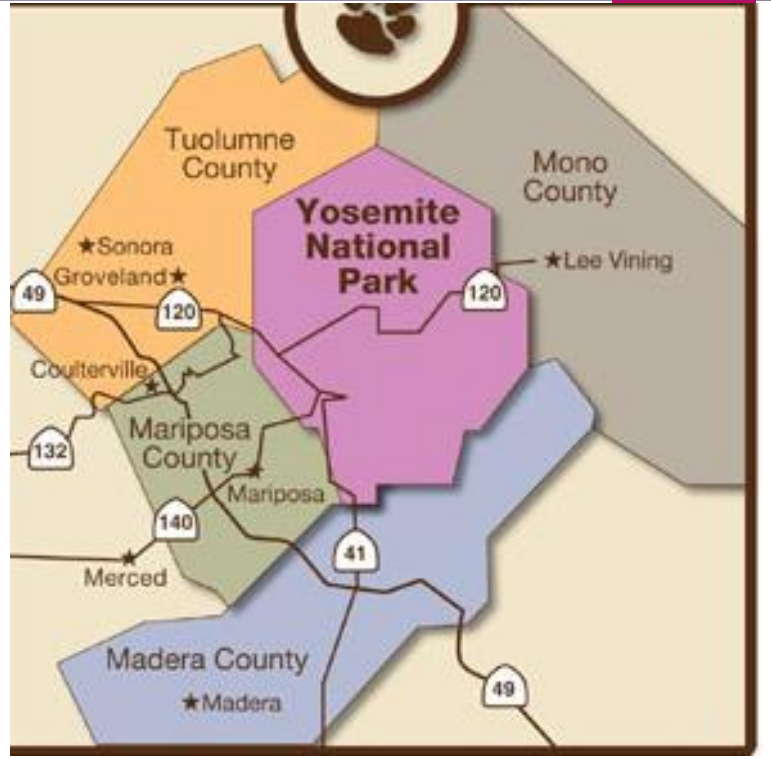
- Yosemite National Park has seen increases in wildfires recently.
- Air Quality will be analyzed, and researcher will focus on comparing particulate matter (PM).
- Differences between PM 2.5 and PM 10.

Rim Wildfire 2013
NASA, 2021

Hypothesis: Due to the increase in wildfires, the researcher hypothesizes that the air quality reports will show an increased percentage of PM over the course of the study period of 2001-2019.

Methodology

- Analyzed quantitative data by comparing the Environmental Protection Agency's (EPA) Air Quality Index (AQI) reports over study period (2001-2019) to justify impacts of wildfires.
- PM data for this project comes from EPA air quality stations. EPA's standard baseline level for PM is 12 micrometers.
- Each county in the study area is more than 50 miles away from a major city or urbanized area.



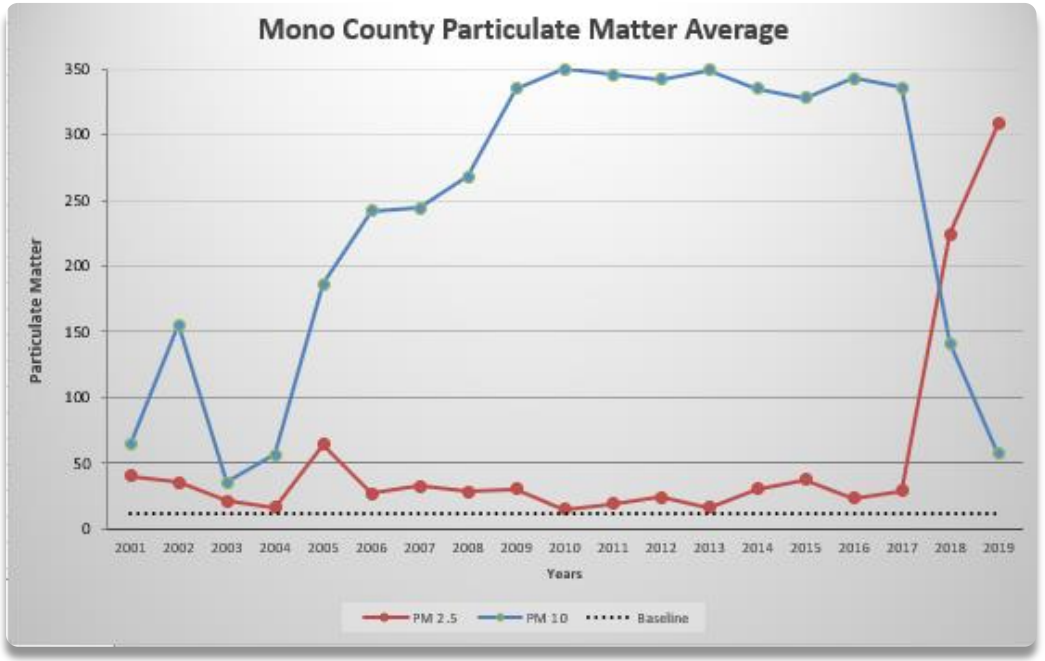
DogTrekker, 2021

Yosemite National Park Service, 2021

Mono County Findings

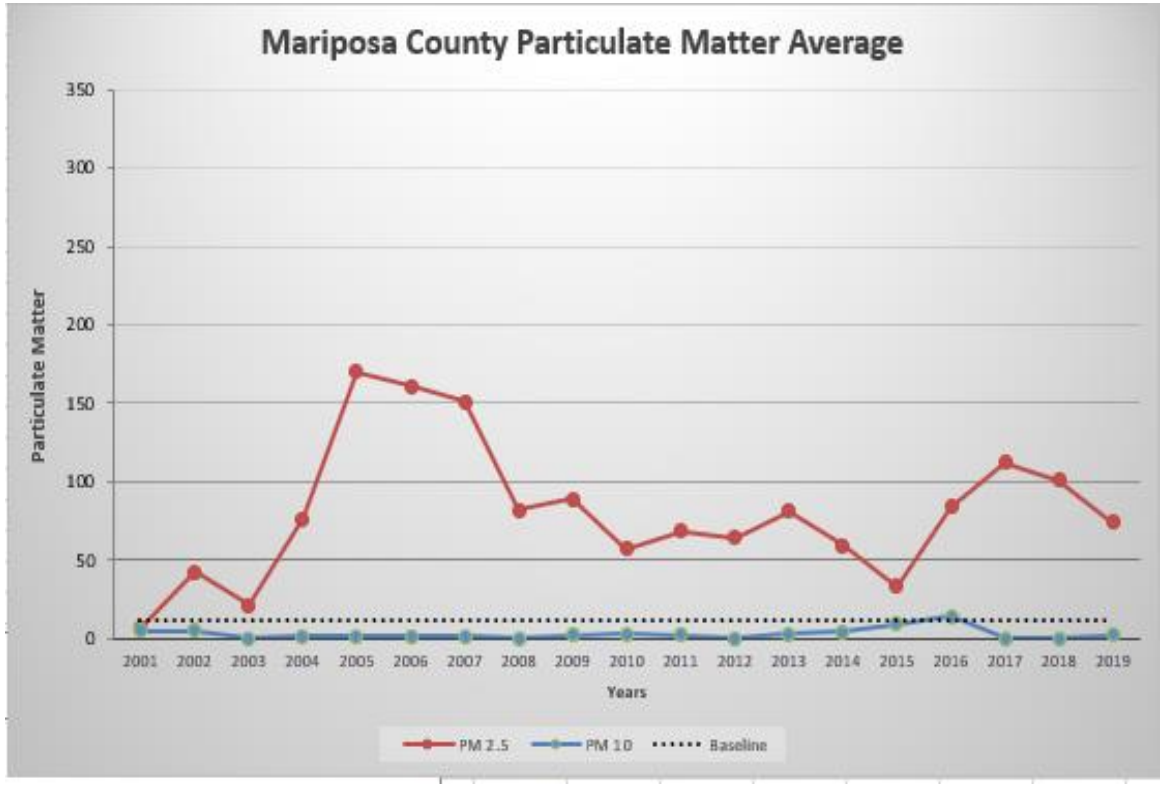
- Mono County experienced significant amounts of PM 2.5 and PM 10 above baseline regulations. During these peaks, the county experienced wildfires such as:
- Slinkard Fire 2017;
- Owens River Fire 2016;
- Indian Fire 2012
- Buckeye Fire 2011.

(Mono County and the Town of Mammoth Lakes Multi-Jurisdictional Hazard Mitigation Plan ,2021*)*.



Mariposa County Findings

- Mariposa County saw significant trends of PM 2.5 over the research period that were above baseline regulations. During these peaks Mariposa County experienced wildfires such as:
- Creek Fire 2001
- Old Highway Fire and The Meadow Fire 2004
- Railroad Fire 2017
- Briceburg Fire 2019

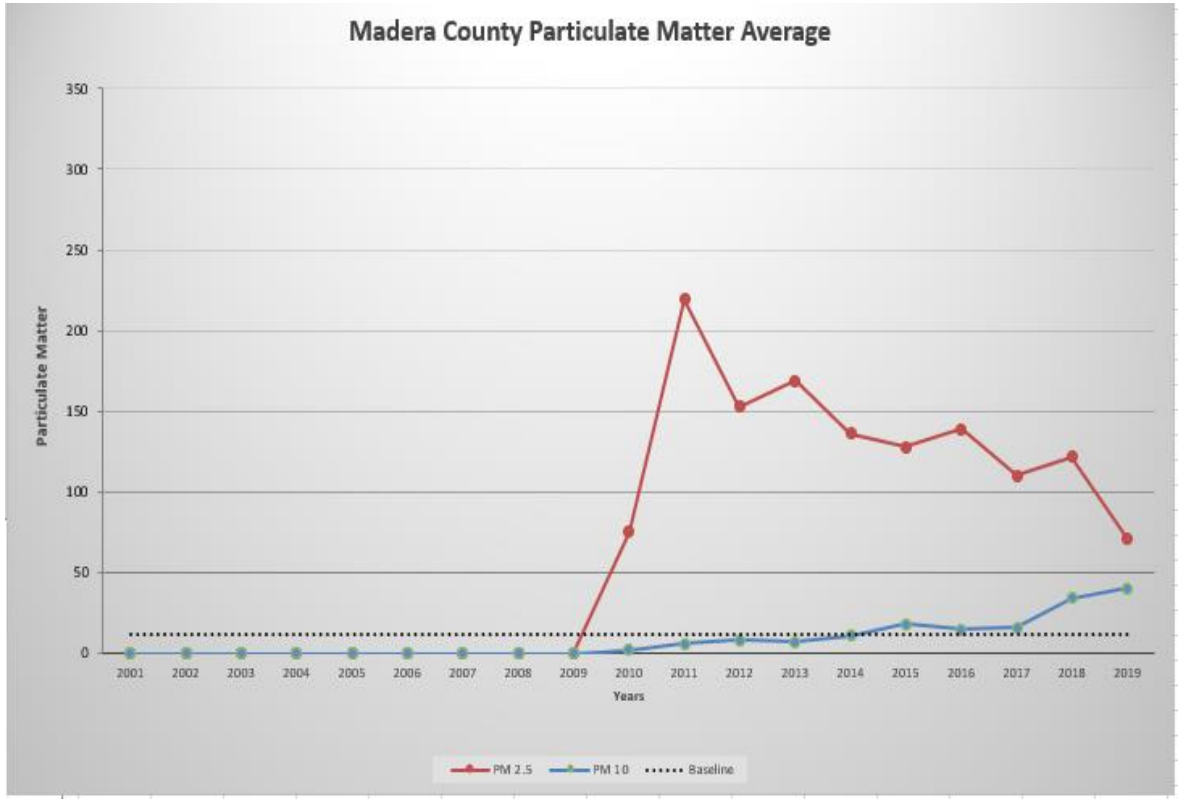


(Mariposa County Local Hazard Mitigation Plan, 2021).

Madera County Findings

- Madera County also experienced peaks in the trend lines of both PM 2.5 and PM 10. PM 2.5 was above baseline regulations. During these peaks Madera County experienced several wildfires such as:
- Quartz Mountain Fire 2017
- Aspen Fire 2013
- French, Junction, and Courtney Fire in 2014

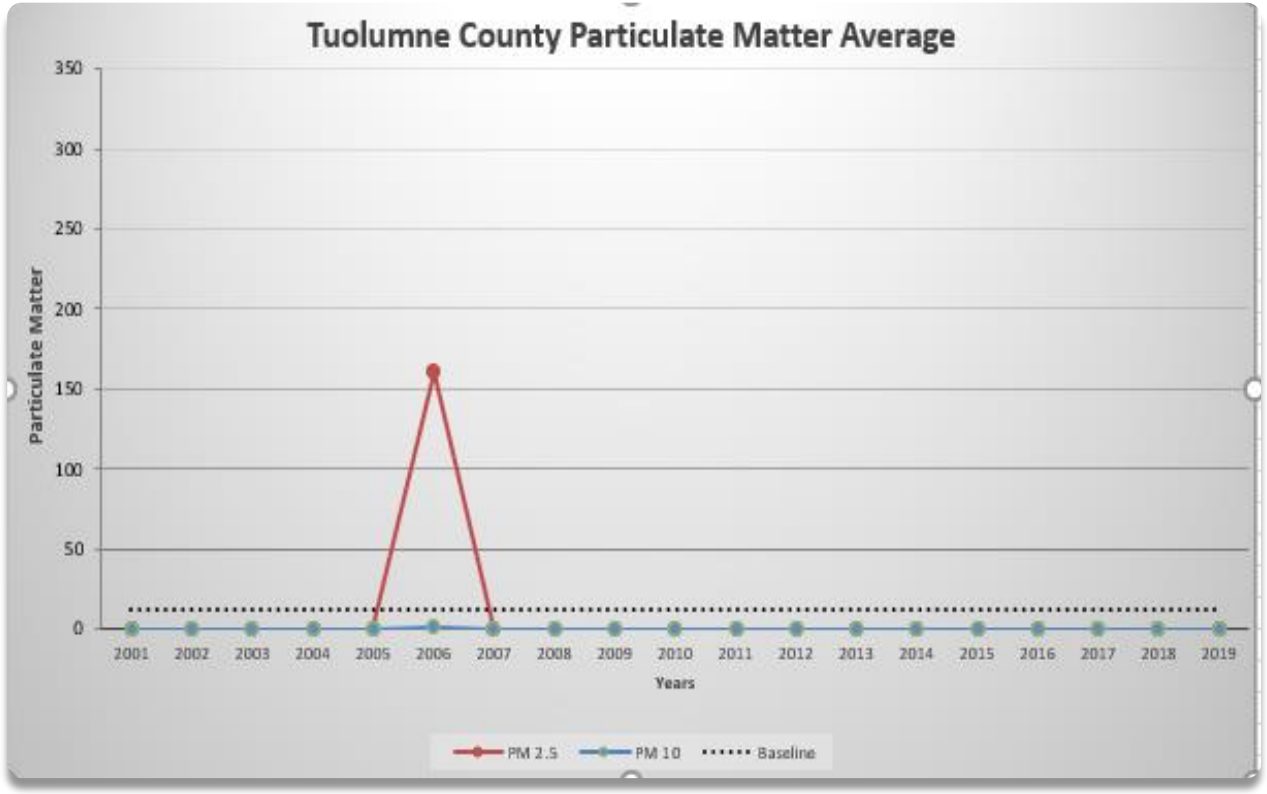
(Madera County Local Hazard Mitigation Plan Update accessed 2021).



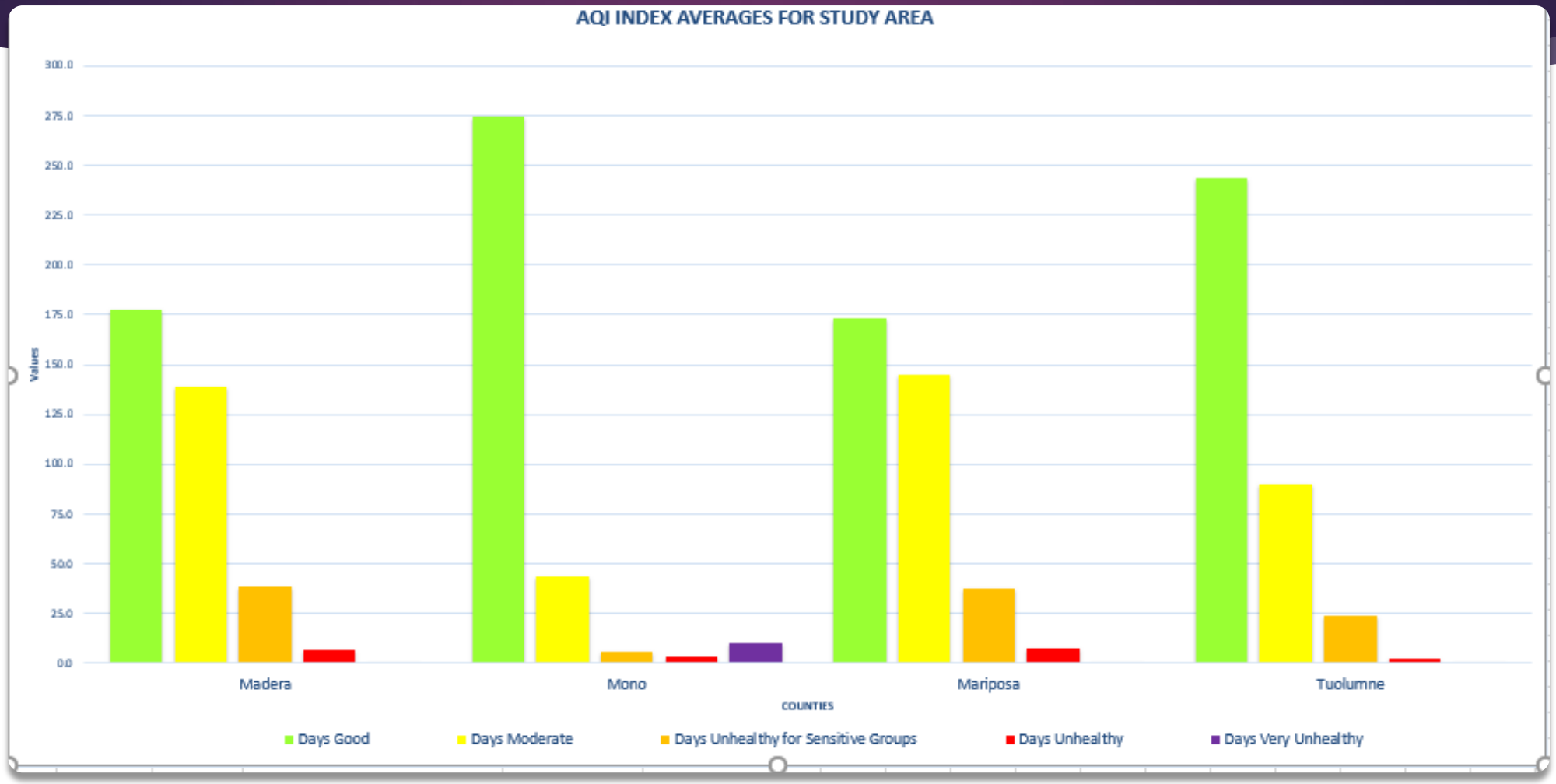
Tuolumne County Findings

- Tuolumne County experienced one peak trend in the year 2006. The peak experienced was in PM 2.5. During 2006, Tuolumne experienced a major wildfire called-
- Pedro Fire 2006

(Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan , 2021)



AQI INDEX AVERAGES FOR STUDY AREA



Particulate Matter rose over the course of the study period.

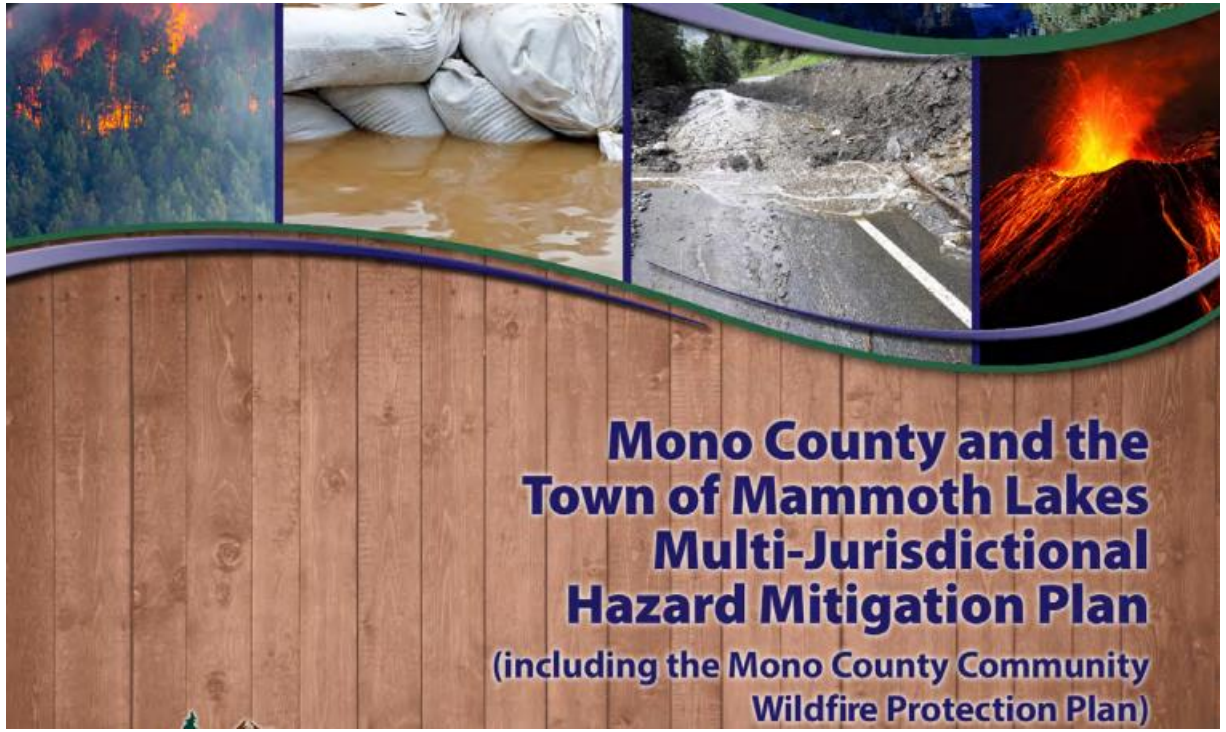
Conclusions/Recommendations

Conclusions:

- PM was found above baseline in all four counties researched.
- This indicates a direct correlation between high percentages of PM and wildfires.

Future Research Recommendations:

- Collecting soil samples from recently burned areas to determine if soils document elevated PM levels.
- Researching a bigger study area (including urbanized areas).



Mono County and the Town of Mammoth Lakes Multi-Jurisdictional Hazard Mitigation Plan ,2021