



# CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

<b>Name(s)</b> <b>Kathryn N. Keeley</b>	<b>Project Number</b> <b>S0817</b>
<b>Project Title</b> <b>The Impact of Humans and Climate on Wildfires in California</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of my science fair project was to determine the driving causes of fires in the state of California, focusing on two issues: humans and climate. I wanted to know if there were correlations between the stress of the rapidly growing population, the potential impact of climate change, and on the number of fires and area burned in wildfires.</p> <p><b>Methods/Materials</b> My investigations involved using data of fires that occurred on state land protected by CalFire. The study covered a 49 year period from 1960-2008. I also used climate data provided by the NCDC, and population data from the Census Bureau. The area I looked at represents over 11 million hectares. First, I made a number of observations from the data I gathered. Then, I formed two hypotheses from what I found: 1.) that both humans and climate affect fire activity and 2.) that the effect of humans and climate varies from one region to the next.</p> <p><b>Results</b> My hypotheses were both supported by my analyses. The effect of population density on fire frequency is very different across the regions; in the North, more people means more fires, in the Sierra Nevada, more people means less fires, and in the South, adding more people doesn't change the number of fires. Also, increasing population means an increased acres burned in northern California and had little effect in the Sierra Nevada and in the South.</p> <p>In northern California had fewer fires in wet years, while southern California had more. Also, fire activity seems to be more strongly correlated with temperatures in the south than in the north.</p> <p><b>Conclusions/Discussion</b> The generalization in the scientific literature and in the media--that fire activity is increasing throughout the West--is not true for all regions. Some areas, such as southern California, are more consistent with this generalization than for much of the state. The patterns I have noted suggest that climate change may affect some regions, but not everywhere, and humans clearly have an important impact that is more strongly felt in some regions than in others. There appears to be a statewide increase in fire activity in the last ten years, but when looked at it on a regional scale, we see that it is not statewide, but largely in southern California. Also, I did observe that there was a statewide peak in temperatures in the '70s and '80s, suggesting climate does have a large impact on wildfires in California.</p>	
<b>Summary Statement</b> I studied, on a regional scale, the effect that humans and climate have on wildfires in California.	
<b>Help Received</b> CalFire, National Park Service, National Climatic Data Center, and Census Bureau all supplied data; Advisor provided feedback, websites, and locations; Mother helped glue	