



# BURN SCARS AND SMOKE

Desert Ridge Middle School, Albuquerque, New Mexico



## REFLECTION

We learned that smoke from California will drift east across the U.S. and rarely across the Pacific Ocean. You can't see smoke or burn scars using the VIIRS satellite Day Night Band, although you can see fires or bright lights. We also learned you can see burn scars from the VIIRS satellite during the day. One additional thing we learned is that you can see how big burn scars are in comparison to the land around them. False Color makes it easier to see the burning areas, smoke, clouds, and vegetation. California has had many wildfires that spread smoke and create burn scars which the satellites images help us to see.

## RESEARCH with supporting VIIRS Satellite Images

July/11/2021.png



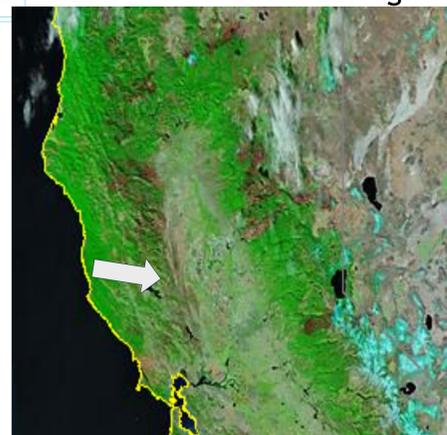
We used the JSTAR Mapper for this picture. We picked this image because it shows California before the fire and northern California is green and has a lot of plant life. It also shows us that smoke travels across the US and it shows burn scars from the fires. That is why we chose this picture.

10-12-2021



We used the VIIRS Today for this image. We chose this image because it shows that smoke and burn scars cannot be seen at night, although we can see smoke/bright lights. You can see fire indicated by small bright spots and city lights at night, but not smoke or burn scars. We used the day night band mode for this picture

10-12-2021 False Color during fire.png



We used VIIRS Today for this picture. We chose this because it is a different mode so it shows where burn scars, vegetation, smoke, and clouds. We used VIIRS Today. This is a burn scar area. You can tell where the fire is by the red area indicated by the arrow. There is smoke leaving this area to the east.

10-12-2021



We used the VIIRS Today for this image. It is more difficult to see the burn scar in true color. It is a bad burn scar that is very dark. It shows the dark vegetation and the smoke. We used the True Color mode for this picture.

## RESULTS and CONCLUSIONS

We were looking at how far smoke travels across the Pacific Ocean from California, if you can see smoke from a satellite and if you can see smoke at night. We expect the smoke to travel 100 miles. We will be looking for these things between the years 2019-2021 June-October. We will need pictures from satellites to show this.

Our before and after pictures show a dry California that often has scattered clouds, has large burn scars that spread North up the West Coast of the US, and most of the time, small puffy clouds. We see that there are clouds that sometimes cover the Pacific Ocean. We think that California is dry or in drought. In the center of California, though, there is a path of vegetation. Later, the burn scars are recovering, but there are some new burn scars. It is still pretty cloudy.

The VIIRS instrument helped us by letting us take pictures of things we couldn't otherwise see. It let us see the size of burn scars, the size of a cloud of smoke, the size of water features, and the size of land. It also shows the scale of these features. It helped us by letting us zoom in to get a better look at the features. It also helped us by letting us download images.

## RESEARCH QUESTION/BACKGROUND

In California, there are destructive fires. These fires are sometimes the result of the droughts that are often occurring in California. The droughts make plants die and dry up and get more flammable. On average, California receives 23.5 inches of rain per year, and below average precipitation can lead to drought. The California fires cause smoke that then travels, with the help of the wind, across land and water. Rain makes smoke from these fires dissipate, cleansing California and all the states that suffer from California's fires from the smoke. The smoke, if the wind is blowing East, the smoke goes across the U.S.

We are identifying burn scars and smoke with the VIIRS tools. We expect to see smoke travel to the east. We are looking from 2019- 2021 June-October. We expect to find that we can see smoke at night. We are also going to look to see if you can see a burn scar from the satellites. We want to know if we can see smoke from the satellite. In order to answer these questions we will need picture's from a satellite showing smoke drifting away from the fire over land. We need an image from the satellite that shows burn scars. We will need satellite imagery that shows smoke at night.

## GROUP MEMBERS

- Bryce Garrett
- Cooper Mickschl
- Peter Luke
- Xander Kim