

NASA Langley Research Center

Western US Disasters

Earthzine Video Script

Introduction:

(Google Earth zoom with NASA Earth Sciences Division and DEVELOP logo)

>> [Jessie Larson]: Hi, I'm Jessie Larson, the team lead for Western US Disasters. I am a Masters Candidate at Hampton University studying Biology-Environmental Science.

>> [Christopher Atkinson]: My name is Christopher Atkinson. I am a home-educated senior in high school. I intend to pursue my career in Broadcast Meteorology.

>> [Daniel Desmond]: Hi, my name is Daniel Desmond I am a Computer Science major at Christopher Newport University.

>> [Christina Welch]: Hi, I am Christina Welch and I recently graduated from the University of West Florida with a degree in Environmental Science.

Background:

>> [Daniel Desmond]: Wildfires in the US have burned 7.72 million acres in 2012 due to excessive heat plaguing the Western States. At the time of this filming, many of these fires continued to destroy an excessive amount of property due to the hot the dry weather conditions throughout northern California and southern Oregon. Though all of these states have been affected by wildfires, Oregon has had the highest acreage burned since 2000.

Study Areas:

>> [Christopher Atkinson]: Our project is focused on two major fires in counties of Oregon in the late Summer of 2012 both started by lightning. As shown here, the Long Draw Fire in Malheur County started on July 8, 2012. It burned through grass and sagebrush as it spread.

>> [Daniel Desmond]: This fire became Oregon's largest fire sine 1865 as it destroyed 550,000 acres of land. The Barry Point Fire in Lake County, shown here, burns 93,000 acres of timber, grass and understory after ignition on August 6, 2012.

Goals and Partners:

>> [Christina Welch]: The two primary goals of our project were to assess which agencies in the western United Sates are using NASA's EOS for fire management and to hand-off our products and methodologies to our project partners.

Our first project partner is the U.S. Fish and Wildlife Service's Klamath Basin Wildlife Refuge located in Northern California. Using NOAA's HYSPLIT model combined with MODIS satellite

imagery we tracked the smoke pollution from the Barry Point Fire to find areas of high smoke concentration from the Barry Point Fire in August.

Our second project partner is the Oregon Department of Forestry, with whom which we created burn severity, risk assessment and NDVI maps. For both of our partners, we created a tutorial allowing them to replicate methodologies in the future.

Methodology:

>> [Jessie Larson]: From NOAA CLASS, we obtained VIIRS data and using a script tool, we processed it in ArcMap for the first time. We can now calculate various indices using this data which will replace MODIS in the near future. This sensor is still in early stages, but we are hoping to develop methodologies on the expansions of applications to fire and air quality monitoring.

>> [Christina Welch]: We used NOAA's HYSPLIT model combined with a CALIPSO curtain to analyze the smoke plume trajectories and height from the Barry Point Fire. The aerosols seen here in yellow and orange most likely represent smoke.

Results:

>> [Jessie Larson]: Here you see an overview of NDVI looking at the vegetation greenness at the entire state of Oregon using VIIRS Imagery bands 1 and 2 from July 11th and September 5th, before and after both fires. We also used Landsat 7 data, to create Burn Ratios looking at mid-fire and post-fire, looking at burn severity.

We also created fire risk maps using three parameters: proximity to roads, slope of the region, and also LANDFIRE fuel load data. These three parameters were fuzzy overlaid to create our final risk map showing risk in high red.

>> [Christina Welch]: This trajectory frequency analysis, made with NOAA's HYSPLIT model, ran multiple trajectories for every day of the fire during August. We then compared this data with MODIS images to analyze wind direction over the entire span of the Barry Point Fire in order to locate areas consistently affected by the smoke.

Conclusions/Future Work:

>> [Daniel Desmond]: The results from this term's project will be aiding both the Oregon Forestry Department and Klamath Basin Wildlife Refuge and will be continued in the Spring.

We hope to expand our methodologies to other counties in Oregon, as requested by the Oregon Department of Forestry, as well as other Western States who experienced explosive wildfires.

It is our intent for the underutilized sensor, VIIRS to be implemented into more methodologies for future DEVELOP projects and ultimately incorporated into the decision making processes of project partners.

Ending:

(Required DEVELOP ending)

>> [Daniel Desmond]: We would like to thank the following individuals for their assistance with this project.

(Special Thanks Screen scrolling)