



CLIMATE DETECTIVES 2021 – 2022



4C Firefighters
Hauptplatz 7

RESEARCH QUESTION

What were the reasons for this devastating forest fire and its large spread? How can we prevent similar events in the future?

SUMMARY OF PROJECT

On the 25th October 2021 the fire was noticed at the foot of the mountain, a total of 115 hectares of forest were affected by the fire. We wanted to know the causes that lead to this devastating fire, if a change in climate was one of them and which weather or climate factors already had changed within the last decades.

We also conducted a combustibility experiment to find out the difference in flammability of dry and damp wood. In the end we did some research to avoid similar happenings in the future to preserve beautiful places like this forest in our region.

Cause for
the large
dimensions

extremely dry air mass on the day of the fire outbreak

location of the fire on a southern slope

affected vegetation

uncontrollable fire spread

Study of the BOKU (University of Natural Resources and Applied Life Sciences) Vienna

Figure 1: Causes for the large dimensions of the fire

MAIN RESULTS

The reasons for the large spread, which was difficult to control, included extremely dry air, the outbreak of the fire on the southern slope which is very steep and difficult to reach and the vegetation, that was already stressed due to the dryness. In the last 30 years, the air temperature has risen very sharply. The temperature difference of then and now is already 7.7 degrees. The diagrams show that there was more rainfall in 2020, but the storms decreased and there was no snowfall. There were also more warmer days in 2020 than 30 years earlier. The comparison with the false color composite, the moisture index and the vegetation index show that it was interestingly very humid at the time of the forest fire. In our combustibility test, we lit dry and damp wood on fire. We found that dry wood burns much faster and better, while moist wood only burns on the surface.



Figure 2: Differences in the flammability of wood

Experiment

- Experiment: flammability (foliage vs needle and dry vs wet) Which burns better?
- Needle and foliage burns the same
- Damp wood: started burning slower, smoked less

ACTIONS TO HELP LESSEN TO THE PROBLEM

Our suggestions for the future are for example: higher penalties on arson, an impose ban on open fires in dry weather and prepare fire departments for similar incidents.

As our government already lifted up some penalties for the causation of wild fires a few months ago, we hope that our forests will be better protected in the future.

Figure 3: