Portable Method of Detecting Oncoming Fires

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The purpose of this project was to design and build a device that can take data readings of areas at high risk of forest fires and notify residents if it is too dangerous for health to remain. Our prototype collects the humidity, temperature, smoke particles, and CO22 of the air. We used our device to collect data from three distinct areas, a backyard in Suwanee, GA (control), next to a fire pit in Suwanee, GA, and downtown and midtown Atlanta. We connected the Arduino unit to a laptop, which provided the prototype a source of power and acted as a display screen. The laptop contains the program Arduino IDE which we used to collect the data. Using several ANOVA tests, we compared our numbers with online data databases/websites to evaluate the accuracy of our device relative to the tools that are currently used to measure air quality. Out of each of the air quality factors we tested for, humidity was the only one where our data and online sources are significantly different. For example we measured humidity to be approximately 18% in Atlanta but online sources measured it to be 40%. Whereas there was only a 1.35 degrees difference between the 26.35 degrees Celsius we measured and the 25 degrees Celsius we found online. This could have been a result of different times of day when the data was collected or specific location within the area. Our project was successful in collecting live data and fulfilling our engineering goal.

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