
Water Tracker
Giao, Leland, Angela

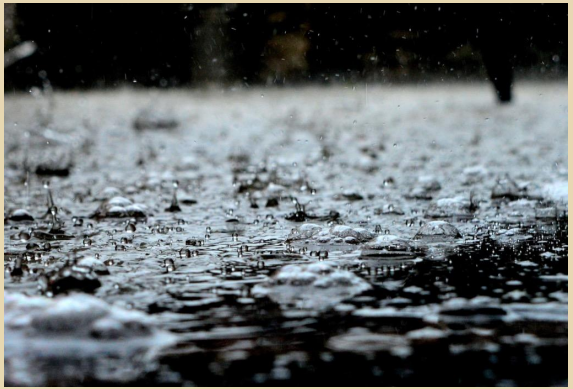
Introduction

What is “Water Tracker”?

We created a program that utilizes the pH and turbidity sensor in order to compile data over time into a visual graph.

Why a pH and turbidity sensor?

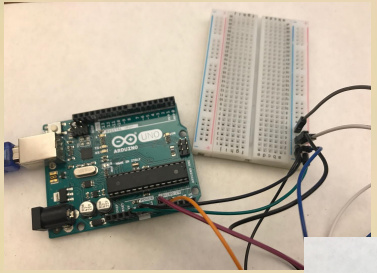
Reduces waste from pH strips and allows scientists to more easily analyze the effects of Global Warming on bodies of water like acid rain. It also makes the process more convenient due to timestamp data files that scientists can easily import into Google Sheets or Excel.



Build Process

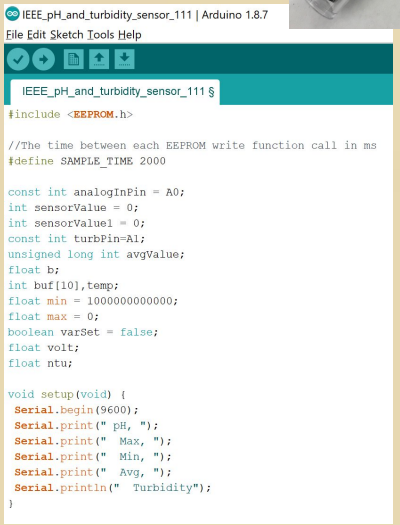
Hardware

- Materials: looked for a pH sensor and turbidity sensor within our budget; obtained the rest of the materials from provided parts.
- Built a working prototype that reads in sensor values.



Software

- Modified code to interpret values (min, max, average) and print in the serial terminal
- Added Coolterm to save data and import into Google Sheets
- Processed data to show real-time graphical interpretation of data



IEEE_pH_and_turbidity_sensor_111 | Arduino 1.8.7

File Edit Sketch Tools Help

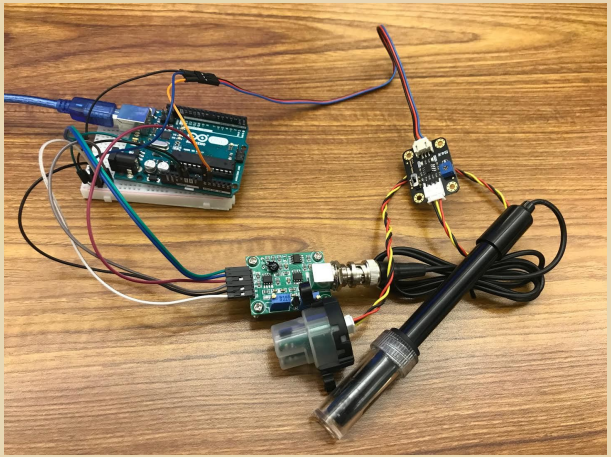
IEEE_pH_and_turbidity_sensor_111 §

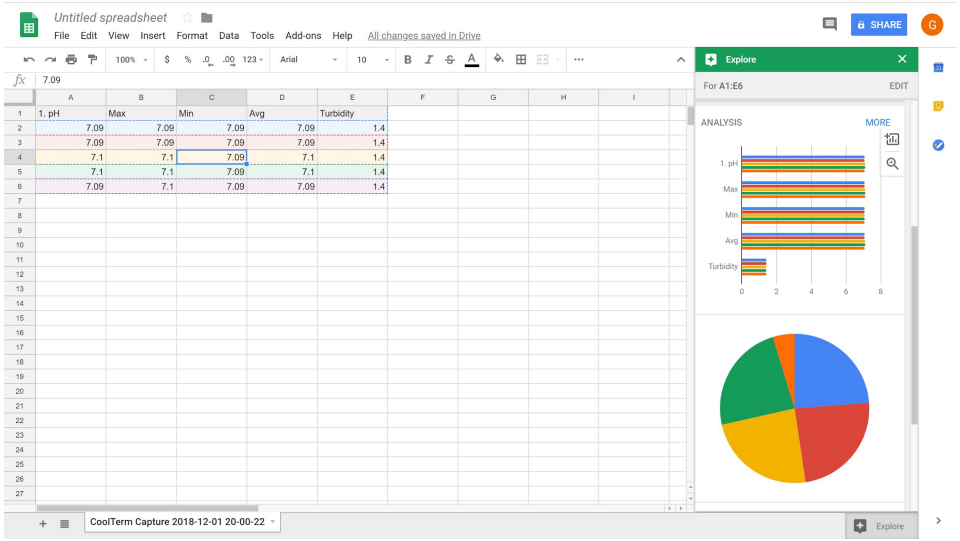
```
#include <EEPROM.h>

//The time between each EEPROM write function call in ms
#define SAMPLE_TIME 2000

const int analogInPin = A0;
int sensorValue = 0;
int sensorValue1 = 0;
const int turbPin=A1;
unsigned long int avgValue;
float b;
int buf[10],temp;
float min = 1000000000000;
float max = 0;
boolean varSet = false;
float volt;
float ntu;

void setup(void) {
 Serial.begin(9600);
 Serial.print(" pH, ");
 Serial.print("  Max, ");
 Serial.print("  Min, ");
 Serial.print("  Avg, ");
 Serial.println("  Turbidity");
}
```

Final Product

-Tools used to visually interpret compiled data:

- CoolTerm
- Processing
- Google Sheets





CoolTerm Capture 2018-12-01 20-00-22 - Notepad

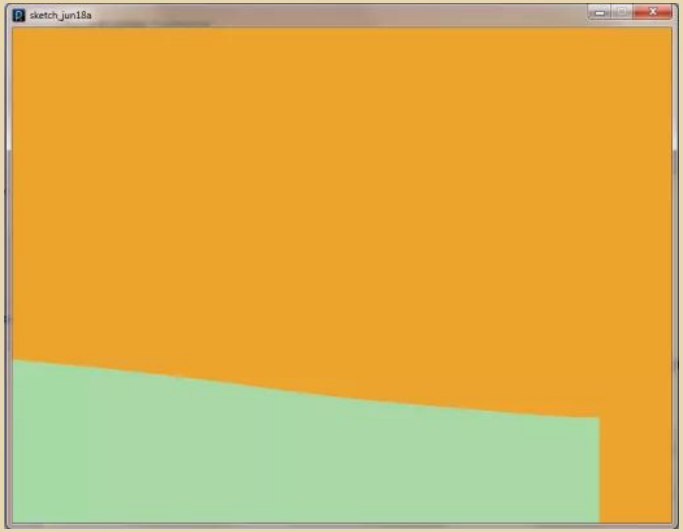
File Edit Format View Help

```
1. pH,    Max,    Min,    Avg,    Turbidity
7.09, 7.09, 7.09, 7.09, 1.40
7.09, 7.09, 7.09, 7.09, 1.40
7.10, 7.10, 7.09, 7.10, 1.40
7.10, 7.10, 7.09, 7.10, 1.40
7.09, 7.10, 7.09, 7.09, 1.40
```

Live Demonstration

Struggles

- The Processing graph has spikes rather than a solid, moving line due to the limitations of the pH sensor
- Converting turbidity to NTU
- Faulty/inaccurate device



Thank You!

Cited Code

Thank you Dillon and Bassel for helping us with this project !!

pH sensor starting code:

https://scidle.com/how-to-use-a-ph-sensor-with-arduino/

Processing starting code:
http://www.dustynrobots.com/academia/teaching/seeing-sensors-how-to-visualize-and-save-arduino-sensed-data/