I. SYSTEM CONSTRAINTS

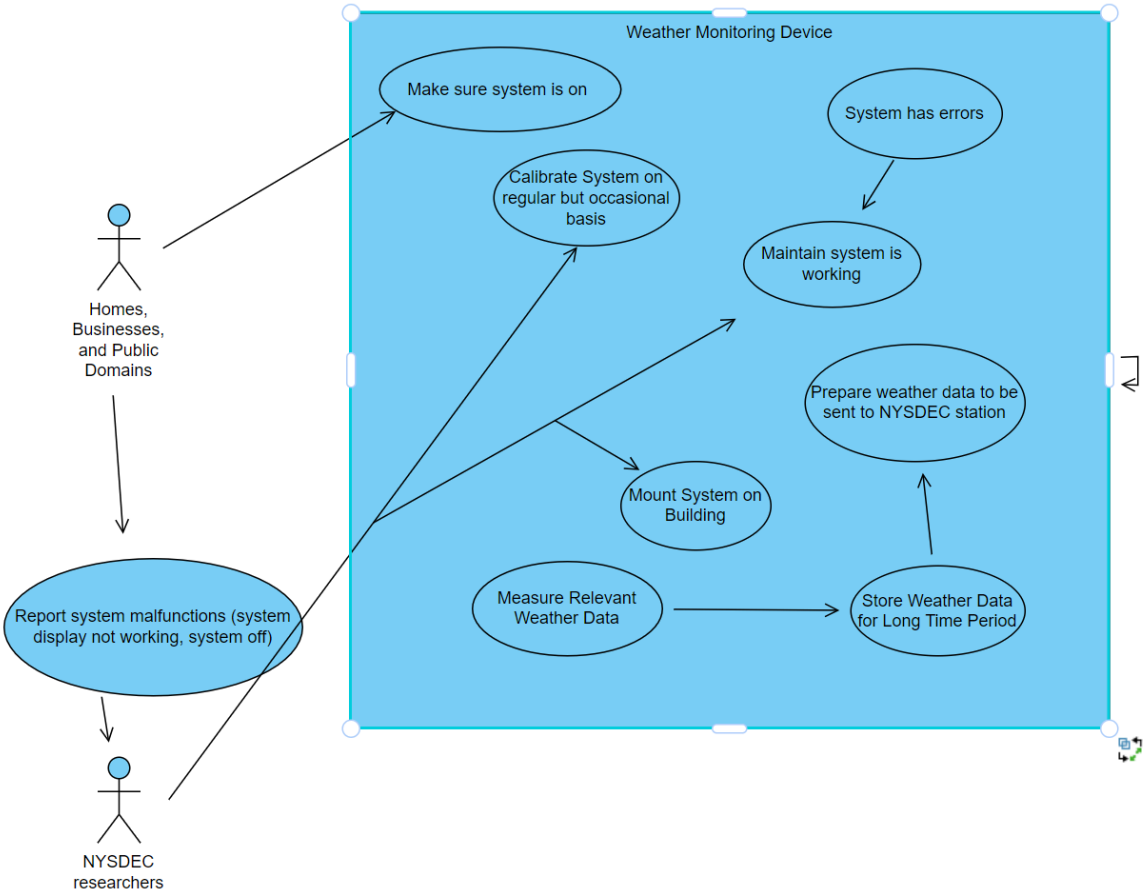
1) **Cost of System**
   Description: Certain types of weather monitoring devices might provide extremely accurate in terms of their methods of collecting and storing data related to aspects of weather like temperature, UV/heat index, humidity, and precipitation and yet be extremely expensive. Since we are given a budget of approximately $50 to be contributed towards implementing the weather monitoring device to measure weather data for the New York State Department of Environmental Conservation, we must choose aspects of the system that are efficient in terms of functionality and yet cost effective.

2) **Time Needed to Create System**
   Description: As designers of the weather monitoring device, we may be inclined to make the system extremely efficient in terms of how it measures different components of weather data and correlation of this data to climate change. However, since we only have a period of approximately 3 to 4 months to create,design, implement, and test the system, we must create a system that has an adequate amount of functionalities and capabilities in data collection while considering the short time span we're given.

3) **Variable Weather Conditions**
   Description: The weather monitoring system is likely going to be placed outside to monitor aspects of weather condition throughout the state. Since New York State has a temperate climate with varying forms of weather per each season, we must design a system that is durable to all forms of weather including partly cloudy or sunny weather or extreme weather featuring torrential rain or snowstorms.

4) **Available Space for System**
   Description: Since we want to make a system that fits in every home or business, the system should be designed to be versatile enough in size to be fitted to homes/businesses that have limited available space and also to be fitted to homes/businesses with lots of available space.

II. USE CASE DIAGRAM



III. REQUIREMENTS DEFINITION

NOTE: The functional and nonfunctional requirements for the system listed gives a total of around 4 - 5 system requirements

FUNCTIONAL REQUIREMENTS

1) **Long Term Data Storage**
   Definition: The system should be created such that it is able to store data related to weather (including information on rainfall, UV/heat index, and temperature) for prolonged periods of time until the point where such data has been sent to the New York State Department of Environmental Conservation for Analysis

2) **Data Transferability and Communication**

Definition: To maximize efficiency, data collected on weather across all systems should be able to be sent to the New York State Department of Environmental Conservation (NYSDEC) for analysis. Subsystems implemented in the system should be able to send stored data from the system to NYSDEC through methods like wireless communication or signal-based data transmission so NYSDEC doesn't have to come to every home/business and manually retrieve data.

3) **Accuracy of Collected Data**
   Definition: System should collect accurate data on aspects of weather like precipitation, humidity, and temperature. To measure this, we may compare the system's measured data to existing "exact" weather data available through local, regional, and national weather centers for different features of weather by use of the percent error formula. To ensure maximum accuracy, this percent error should be no greater than 15%.

NONFUNCTIONAL REQUIREMENTS

1) **User-Friendliness**
   Definition: The system should have a clean user interface that displays current weather data in an easily readable and accessible format. This will make the system more marketable and, in turn, more accessible for many different types of homes/businesses.

2) **System Efficiency and Speed**

Definition: Homes and businesses who have the system installed should be able to readily access the user interface while NYSDEC should be able to accurately obtain weather data from all systems. The system we design should be able to handle multiple tasks like sending weather data, collecting weather data, and displaying such weather data in a clean User Interface at the same time without significant time delay.