High Resolution Weather Tracking: A Micronet

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The majority of weather tracking and observation today is done through commercial and government weather platforms at airports, transportation hubs, and military installations. This system, while effective for today's purposes, focuses on the utilization of expensive, fixed weather stations. It results in forecast maps based on a relatively sparse network of observations. This lack of density allows for significant uncertainty in weather prediction. The goal of this project was to design and deploy a high density, inexpensive, self-powered, and mobile network of weather stations called a micronet. In doing so I can establish a system that is more efficient, accurate, and reliable than the existing one. These mobile platforms measure pressure, humidity, luminosity, temperature, time, wind speed/direction, precipitation, and location, to more accurately characterize the environment around them. In my project, I set up four stations in triangle each enough apart to remain constant. This allowed for the assumption that the weather conditions falling between the stations if measured consistently would be the same. This could be used to build a tessellation system of observation, these stations were networked to a central website to display weather trends using mapping plugins and GPS location. This micronet can be used to make observations and forecasts tailored to local areas and operations where highly accurate, and timely forecasts are needed. For instance, the micronet would be well suited to support a drone parcel delivery service of the future that would require up to the minute, highly accurate observations and forecasts to avoid property loss from local microscale weather events that wouldn't be detected by the existing sparse network of observations.

Awards Won:

American Meteorological Society: Second Award of $1,000