Integrated Weather Condition Monitoring System

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ABSTRACT

Integrated Weather Condition Monitoring System (IWCMS) is a prototype circuit design embedded with a system model that focuses attention on gathering weather data such as wind speed, wind direction, atmospheric pressure, air temperature, dew point, rainfall amount and humidity. The model will perform basic weather assessment, weather data distribution and center coordination. IWCMS will gather data through custom sensors which are then verified by National Oceanic and Atmospheric Administration (NOAA). Real time verification were done through the use of digital and analog weather sensors which are primarily controlled by programmed microcontroller circuit using Arduino based platform. These microcontrollers are hosted by a single data logger consisting of a workstation that runs through fast Ethernet services where all the necessary weather details are recorded. These actual weather data together with the data gathered from NOAA are analyzed and evaluated based on standards. Using Arduino platform, cumulus and Java software with the corresponding Graphical User Interface (GUI), and the developed android application, all analyzed data usage used to be the source of public warning information. Warnings were sent through remote access using Internet Protocol (IP) services like twitter and facebook, and a real time internet broadcast with appropriate GUI's., an analog TV broadcast (composite PAL) output was also an option. And lastly, these data can be transported to National Oceanic and Atmospheric Administration- Citizen Weather Observer Program (NOAA CWOP) using a secured line for verification and recording. Any changes and similarities in the weather data gathered will be accurately calculated and assessed by the provided standards for Short Range Forecasting (SRF). Incoming weather disturbances (isolated or widespread) such as tropical storms, Low Pressure Areas (LPA), localized thunderstorms, rain showers, hail and others can be foreseen with a reasonable accuracy. Through this study, the

public are provided with accurate weather forecast and warning in advance, specifically in the province of Cavite, which can now be utilized in order to exercise emergency risk reduction measures through the system information dissemination that will somehow, avoid sacrificing lives, loss of crucial time and reduction of government resources.