National Scale Rainfall Map Based on Linearly Interpolated Data from Automated Weather Stations and Rain Gauges

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In response to the slew of disasters that devastates the Philippines on a regular basis, the national government put in place a program to address this problem. The Nationwide Operational Assessment of Hazards, or Project NOAH, consolidates the diverse scientific research being done and pushes the knowledge gained to the forefront of disaster risk reduction and management. Current activities of the project include installing rain gauges and water level sensors, conducting LIDAR surveys of critical river basins, geo-hazard mapping, and running information education campaigns. Approximately 700 automated weather stations and rain gauges installed in strategic locations in the Philippines hold the groundwork for the rainfall visualization system in the Project NOAH web portal at http://noah.dost.gov.ph. The system uses near real-time data from these stations installed in critical river basins. The sensors record the amount of rainfall in a particular area as point data updated every 10 to 15 minutes. The sensor sends the data to a central server either via GSM network or satellite data transfer for redundancy. The web portal displays the sensors as a placemarks layer on a map. When a placemark is clicked, it displays a graph of the rainfall data for the past 24 hours. The rainfall data is harvested by batch determined by a one-hour time frame. The program uses linear interpolation as the methodology implemented to visually represent a near real-time rainfall map. The algorithm allows very fast processing which is essential in near real-time systems. As more sensors are installed, precision is improved. This visualized dataset enables users to quickly discern where heavy rainfall is concentrated. It has proven invaluable on numerous occasions, such as last August 2013 when intense to torrential rains brought about by the enhanced Southwest Monsoon caused massive flooding in Metro Manila. Coupled with observations from Doppler imagery and water level sensors along the Marikina River, the local officials used this information and determined that the river would overflow in a few hours. It gave them a critical lead time to evacuate residents along the floodplain and no casualties were reported after the event.