



Near real time observational data collection for SPRUCE experiment- PakBus protocol for slow satellite connections

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Climate change studies are one of the most important aspects of modern science and related experiments are getting bigger and more complex. One such experiment is the Spruce and Peatland Responses Under Climatic and Environmental Change experiment (SPRUCE, <http://mnspruce.ornl.gov>) conducted in northern Minnesota, 40 km north of Grand Rapids, in the USDA Forest Service Marcell Experimental Forest (MEF). The SPRUCE experimental mission is to assess ecosystem-level biological responses of vulnerable, high carbon terrestrial ecosystems to a range of climate warming manipulations and an elevated CO₂ atmosphere. This manipulation experiment generates a lot of observational data and requires a reliable onsite data collection system, dependable methods to transfer data to a robust scientific facility, and real-time monitoring capabilities. This publication shares our experience of establishing near real time data collection and monitoring system via a satellite link using PakBus protocol.