



COLORADO

Colorado Water Conservation Board

Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Taryn Finnessey, Climate Change Risk Management Specialist

DATE: November 15-16, 2017 Board Meeting

AGENDA ITEM: 7a. 2018 Projects Bill
Non-Reimbursable Project Investments
(8) Colorado Mesonet Project - Continuation

Introduction

Weather and climate monitoring in Colorado currently exists as a patchwork of networks operated by multiple federal, state, local and private entities, rather than a single mesonet or spatially coherent network of weather stations reporting in near real-time via major data portals. Since each network was built for a specific purpose, there is no spatial coherency to where stations are located. Each network is valuable for specific applications. Collectively, the data are critical for long term climate monitoring, agriculture, fire weather, flood warning, water supply forecasting and drought monitoring.

The Colorado Regional Climate Reference Network, recently gifted to CSU from the National Weather Service, represents a federal investment in hardware of nearly \$1,000,000 and is an excellent high-quality network for tracking indicators of climate change. It has no funding source whatsoever, but could fill critical monitoring gaps and improve evapotranspiration monitoring. Grant funds will allow effective enhancements to the CoAgMET network, improved delivery of data and new products for water use planning and climate change monitoring. They will improve real-time monitoring capabilities to improve severe weather warnings and emergency management applications.

This project builds on recent work in order to improve both the quality of the data, the accessibility and the usability of meteorological data collected by the Colorado Agricultural Meteorological Network -- CoAgMET (Colorado's MesoNet). CoAgMET is rapidly maturing as Colorado's MesoNet -- providing high quality weather data targeted for use in water planning, management, conservation and education. Now that most stations in the network are transmitting data every 5 minutes and the network covers and reasonably represents the weather conditions of the majority of state, its weather surveillance capabilities have even more value and broader applications. With current network expansion and upgrades currently underway (improved monitoring and display of evaporative demand and soil moisture), and a refurbished website for data display and delivery in process, we have the opportunity to provide real time current conditions in historically perspective to a wide audience of planners and decision makers.

This proposed project emphasizes expanded CoAgMET data collection as well as improved data products and services based on user input and outreach to wider audiences including the clean energy innovation sector. Importantly, this grant funding will be used to qualify for federal matching funds through the National Mesonet to support critical operations and maintenance needs.

Staff Recommendation

Staff recommends the Board request the General Assembly to appropriate \$150,000 from the Construction Fund to the Department of Natural Resources for use by the CWCB for the continuation of the Colorado Mesonet Project.





The Colorado Climate Center runs the Colorado Agricultural Meteorological (CoAgMet) network consisting of 75 stations statewide tracking agricultural weather, climate and drought. The Center also manages the Colorado Regional Climate Reference Network (CO-RCRN) which consists of 17 high-quality precipitation and temperature monitoring stations located in pristine environments. These sites, started by NOAA, were intended to monitor the climate over long periods of time in areas free of urbanization and with datasets free of station moves, changes in observation time and other factors that create inhomogeneity in climate datasets. Current base funding for these networks does not allow for them to be run at high quality levels and still develop products to enhance the data. CO-RCRN needs multiple station visits per year to add and remove fluids from rain gauges. The CoAgMet network, in order to be run as a reliable mesonet for real-time weather monitoring, drought monitoring, and calculations of consumptive use needs close attention paid to quality control and making sure all sensors are functioning properly. If they aren't, a technician should be deployed as soon as possible to resolve issues (particularly during the growing season). Due to budget and staff constraints, products cannot be developed while providing the close attention needed for quality data.

July 2015, CoAgMet received the first funding from the state to begin moving towards a multipurpose state "Mesonet" focusing on agricultural and water resources as well as long-term climate monitoring and short term real-time weather tracking to aid weather prediction, emergency management and other diverse uses. With this funding, we have been able to identify products and tools greatly needed to enhance data, areas needed for expansion and stations needed for upgrading to newer technology in order to provide beneficial real-time weather data.

In order to continue expanding and improving the Colorado Mesonet data and products, and track long term climate conditions that could impact our water resources, continuation of the state funding is needed. With this funding we will be able to develop climate summaries for the best long-term stations for climate monitoring, develop a new Colorado Mesonet data access and display web portal and develop daily growing season water balance graphics for drought tracking and water conservation. We will expand on soil moisture monitoring at stations to help with drought tracking. We will also start upgrading the CO-RCRN stations to measure and report variables for reference ET calculations and complete data comparisons using the CO-RCRN stations, CoAgMet stations and NWS Coop stations.

Grant funds will allow effective enhancements to the CoAgMet network, improved delivery of data and new products for water use planning and climate change monitoring. They will improve real-time monitoring capabilities to improve severe weather warnings and emergency management applications. **Importantly, this grant funding will be used to qualify for federal matching funds through the National Mesonet to support critical operations and maintenance needs.**

P R O J E C T D E T A I L S	
Project Cost:	\$150,000
NRI Funding Request:	\$150,000
Funding Source:	Construction Fund
Project Type:	Data Collection/Maint.
Type of Grantee:	State Government

L O C A T I O N	
Benefits:	Statewide
Water Source:	Various
Drainage Basin:	All Basins