Use of LiDAR Technology in Remote Sensing of Wetlands

Background

Healthy wetlands are important for proper watershed function. They act as filters for sediment and nutrients, improving the quality of water in our streams and reducing the amount of sediment in our reservoirs. The Kansas Water Plan has a policy called “Enhanced Stream Corridor and Wetland management to Reduce Sedimentation in Reservoirs”. A goal of the policy is to create, protect and restore wetlands by engaging local stakeholders through its Watershed and Restoration Protection Strategies (WRAPS). Unfortunately, information is lacking on the location, condition and function of wetlands in the state. In addition, there is no standardized method for identifying and prioritizing wetlands for restoration, protection or enhancement.

Purpose

The Kansas Water Office received two grants from the Environmental Protection Agency to develop a method to identify wetlands using remote sensing technology. The outcome of the grants will be a standardized method to identify wetland resources. The ability to remotely sense the location, and possibly the condition, of wetlands will allow WRAPS groups to effectively target technical and financial resources to protect them.

Several layers of data are used to determine the most accurate and cost effective means of remote wetland identification, including: the National Wetland Inventory; NRCS SSURGO (Soils) Data; elevation data (NED and LiDAR); land use / land cover data; and the U.S. Army Corps of Engineers Wetland Delineation Model. LiDAR data are an essential tool in this effort because they can be used to more accurately depict the landscape, topographic relief and hydrologic connections, making the identification of wetlands and characterization of their function possible. LiDAR data is currently being used to generate additional datasets to map topographic wetness, and this is proving to be a key for identifying wetlands.

Expected Results

Once the methodology is finalized, WRAPS groups will have a cost effective tool to use in their watershed restoration and protection efforts. The most pressing need for LiDAR data from the perspective of this project is in watersheds above federal reservoirs. The LiDAR Work Group is aware of this application of the data and is working with us to prioritize obtaining the data.

LIDAR is an acronym for Light Detection And Ranging. LiDAR is an aircraft-based remote sensing technology that uses laser pulses of light to measure height or elevation points on the landscape.

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