



# VERMONTVIEW REMOTE SENSING ACTIVITIES 2015 - 2016

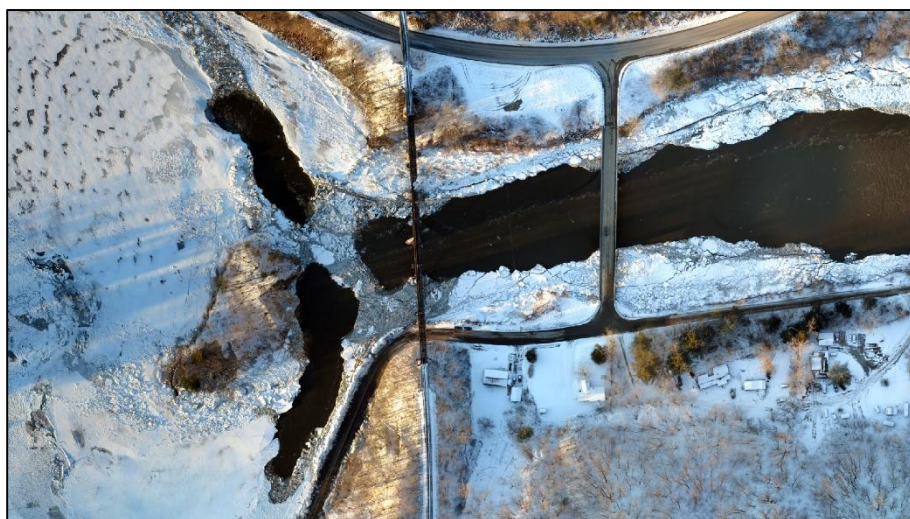


## MAPPING VERMONT'S NATURAL RESOURCES USING DRONES

For decades remotely sensed data such as aerial photographs and satellite imagery have been used to map natural resources in Vermont. The view from above provides a unique means by which we can measure and monitor the natural assets that are valued by Vermont's residents and tourists alike. Unfortunately, imagery from satellites and manned aircraft do not always meet the needs of the user community. Clouds often limit the use of satellite data, and it can be costly to acquire imagery using manned aircraft. VermontView has been using high-tech Unmanned Aircraft Systems (UAS), commonly referred to as drones, to fulfill the need for accurate, detailed, and timely overhead imagery.



*Drone imagery of a wetland in Addison County, VT. The image on the left was acquired on September 22, 2016 and the image on the right was acquired on October 30, 2016. The timing of the image capture facilitated species-level mapping.*



*Drone imagery of an ice jam where the Lamoille River flows into Lake Arrowhead in Georgia, VT captured on February 26, 2016. The ice jam caused flooding on Arrowhead Lake Road.*



*A drone takes to the sky to map wetlands in Addison County.*

Wetlands are one of Vermont's most valued natural assets. They contribute a multitude of ecosystem services ranging from habitat for migrating waterfowl to mitigating nonpoint source pollution. Understanding the species composition of a wetland is an important, but difficult task. VermontView brought together students from the University of Vermont and Middlebury College, using drones to improve the speed, accuracy, and detail of wetland species mapping. With better maps conservation managers can make better decisions.

Drones can be deployed quickly to virtually any location in the state. When unseasonably warm weather and rain came in late February of 2016, VermontView used drones to capture imagery of the ice jams and floods. The information was available immediately after the flights, enabling emergency managers to use the imagery to assess risk, direct response efforts, and document high-water marks. These data are more than pretty pictures; they are highly accurate images that have precise location information allowing them to be integrated with other mapped data in a Geographic Information System (GIS).

VermontView is a member of the AmericaView Consortium, a nationally coordinated network of academic, agency, non-profit, and industry partners and cooperators that share the vision of promoting and supporting the use of remote sensing data and technology within each state.



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## BENEFITS TO VERMONT

Remotely sensed data from satellites and aerial systems are an invaluable resource for Vermont; from helping communities understand the solar potential of the buildings in their town to mapping the damage following a spring flood. VermontView works throughout the state, helping people get the most of these data, educating our workforce on the applications of cutting-edge technology, and providing actionable information to state and local government.



VermontView developed algorithms to map buildings from 3D lidar data in Middlebury, VT to support solar potential estimates.



VermontView interns showcase the drones used for the Vigilant Guard disaster response exercise.



When the Winooski River flooded Route 100 in Middlesex, VT on February 25, 2016 VermontView was there to map the damage.

## VERMONTVIEW CONSORTIUM MEMBERSHIP

The VermontView consortium is dedicated to advancing remote sensing in Vermont through education, outreach, training, networking, and data distribution. Our network brings together institutions of higher education with local, state, and government agencies to solve complex problems using remotely sensed data.



The  
UNIVERSITY  
of VERMONT



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