



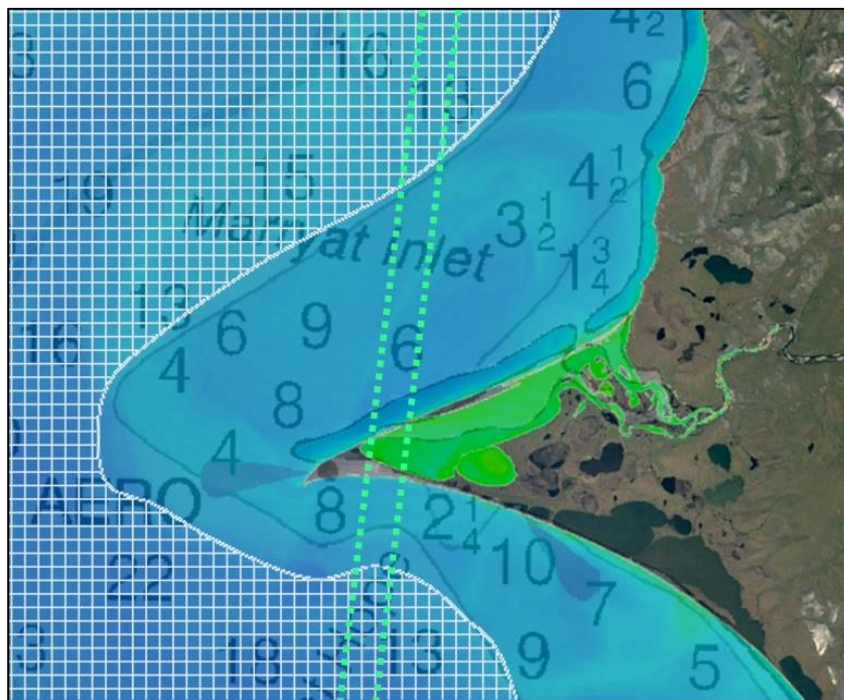
OREGONVIEW REMOTE SENSING ACTIVITIES 2015 - 2016



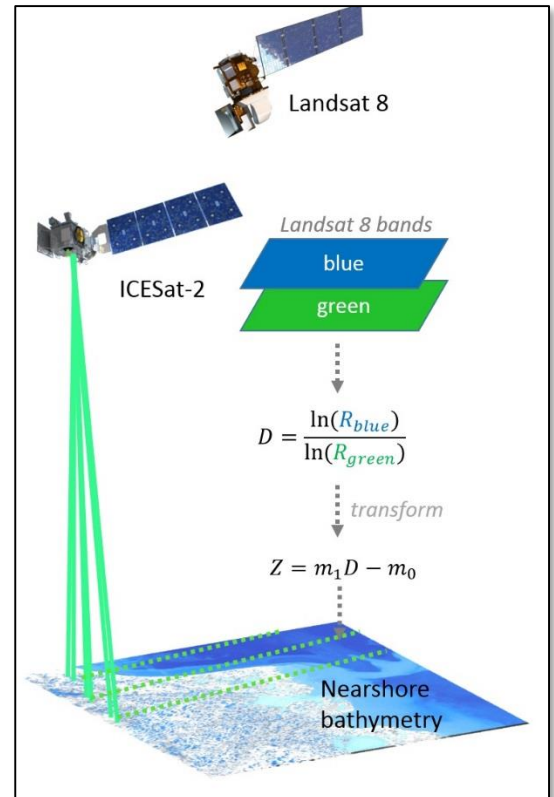
BATHYMETRY RETRIEVAL FROM LANDSAT 8 IMAGERY FOR COASTAL CHARACTERIZATION

There is a current lack of bathymetric data in a number of nearshore coastal and inland water body areas around the nation and the world. Filling these bathymetric data voids will facilitate inundation modeling, nautical charting, benthic habitat mapping, storm vulnerability analysis, and a host of related coastal science and management applications.

In 2015-2016, OregonView worked to help address this challenge by investigating the potential for data-fusion based approaches to shallow bathymetric mapping that leverage both active and passive satellite remote sensing data. GIS procedures for retrieving bathymetry from Landsat 8 (L8) imagery, obtained from USGS Earth Explorer (<http://earthexplorer.usgs.gov/>), were used to generate a bathymetric data set in Keweenaw Bay, Lake Superior. In this OregonView-sponsored project, researchers investigated the ability to synergistically fuse the L8-derived bathymetry with data from NASA's Multiple Altimeter Beam Experimental Lidar (MABEL), an airborne emulator for the photon-counting lidar on the upcoming Ice, Cloud, and land Elevation Satellite-2 (ICESat-2) (Forfinski-Sarkozi and Parrish, 2016). The procedures showed promise for bathymetric mapping in the Keweenaw Bay project site, and may be extended to other project areas in future work.



Simulation of fusion-based bathymetric data product for Point Hope and Marryat Inlet, AK, overlaid on a NOAA nautical chart.



Landsat and ICESat-2 ATLAS fusion-based approach to bathymetric mapping investigated by OregonView researchers using existing MABEL data and Landsat 8 imagery.

Through the involvement of both graduate and undergraduate students at Oregon State University, this project contributes directly to the USGS objective to "promote research and remote sensing experience at the university undergraduate and graduate level to increase numbers and visibility of graduating students with employment skills in remote sensing."

OregonView 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 OREGON

The mission of OregonView is to enhance the beneficial use of remotely sensed data and derived geospatial products in Oregon through:

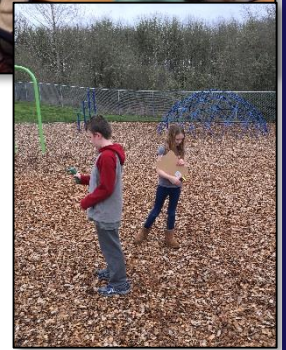
- Partnerships extending across the government, commercial and academic sectors
- Applications research
- Education and outreach

A number of OregonView's current and planned activities focus on education and outreach. Two middle school remote sensing workshops were provided by OregonView in the 2015-2016 academic year, and more are planned for the current year.

Research activities led by OregonView, including the work on bathymetry retrieval, will be used to develop new procedures and tools for working with remotely-sensed data, which will be disseminated through the OregonView websites and shared with partners throughout the state. Additionally, the procedures developed in this research will be incorporated into workshops and training course exercises.



Above: OregonView PI, Chris Parrish, teaching a middle school remote sensing workshop. Right: middle school students learning about thermal remote sensing and acquisition of reference data using infrared thermometers.



OREGONVIEW CONSORTIUM MEMBERSHIP

The OregonView consortium membership comprises leaders in the remote sensing and geospatial information communities within Oregon and extends across the government, commercial and academic sectors. Member organizations include: Oregon Department of Parks & Recreation, USGS Forest & Rangeland Ecosystem Science Center, Oregon Framework Implementation Team (FIT), Oregon Geospatial Enterprise Office (GEO), GeoTerra, Portland State University (PSU), and Oregon State University (OSU) College of Engineering, College of Forestry, and College of Earth, Ocean, and Atmospheric Sciences.



Federal consortium members identified above do not receive funding from AmericaView.

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Major funding for the AmericaView Consortium is provided by the U.S. Geological Survey through Grant Number G14AP00002.