



The data consortium consists of Denver Regional Council of Governments members and regional partners with an interest in geospatial data and collaboration.

## The Business Intelligence Center and Go Code Colorado

Article submitted by Laura Grey at Confluence Communications. Laura can be reached at 303-562-7051 or [laura@confluence.com](mailto:laura@confluence.com).

Have you ever wondered who works on getting businesses in Colorado access to valuable public data? The Business Intelligence Center within the Colorado Secretary of State's Office supports the advancement of Colorado businesses by streamlining access to public data and providing resources to make that data more useful.

The Business Intelligence Center accomplishes its mission by engaging in:

- **Data curation:** identifying datasets of high value to the business community

Need access to public data? The Business Intelligence Center can help! [Fill out the public data request form](#) and the team will reach out to the entities that store that data.

- **Agency support:** facilitating technical aspects of working with federal, state, county and city agencies to upload datasets to a central location regularly

Work for a federal, state, county or city agency and want help sharing your data? Contact the Business Intelligence Center to work with the team to make the data easy to find and easy to use. (<https://data.colorado.gov>)

- **Data intelligence resources:** creating data workshops and e-learning tools to help users access public data and answer business questions

Check out the tools and request a data workshop [on the website](#).

- **Community engagement:** engaging with technology, data, education, government and business communities to put the power of public data in the hands of Colorado businesses through competitions such as Go Code Colorado

The 2022 cycle of Go Code Colorado starts Feb. 23 and the final event takes place May 26. [Go to the website](#) and sign up for the newsletter or join the Slack channel and stay up-to-date as the competition unfolds.

The Business Intelligence Center has worked with over 30 federal, state, county and city agencies and has published over 350 datasets to the Colorado Information Marketplace since its inception in 2014. Go Code Colorado closes the loop in the Business Intelligence Center's data efforts and has had over 5,000 people attend its events across the state.

Learn more about the Business Intelligence Center by visiting its websites, and contact [bic@sos.state.co.us](mailto:bic@sos.state.co.us) or [info@gocode.colorado.gov](mailto:info@gocode.colorado.gov) with any questions.

<https://bic.coloradosos.gov>  
<https://gocode.colorado.gov>

## Using lidar to digitize vegetation in orienteering maps

Article submitted by Galen A. Moore, freelance mapper and geographic information systems analyst. Galen can be reached at [galen.a.moore@gmail.com](mailto:galen.a.moore@gmail.com).

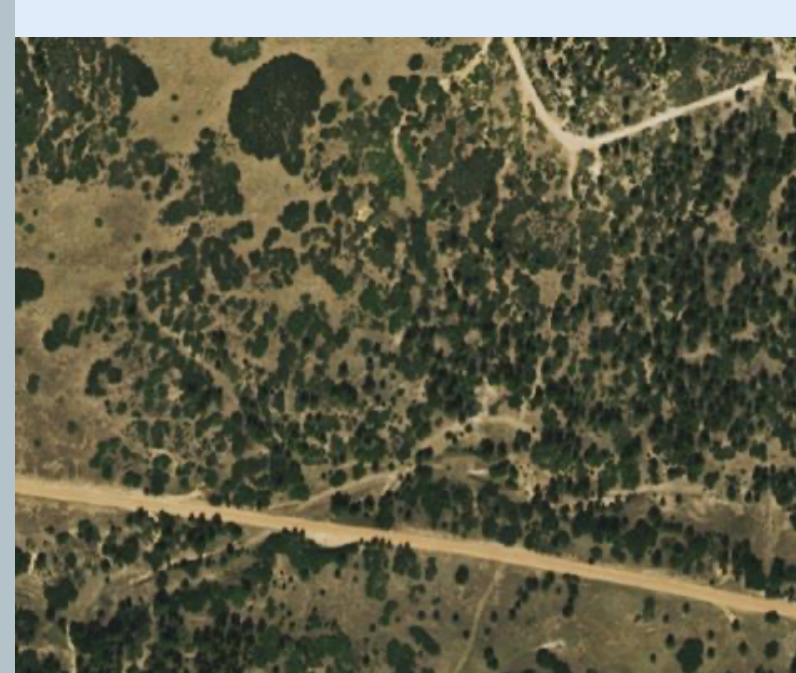
Orienteering is a sport in which competitors use only a specially designed map and a compass to walk or run through a series of control points set on mapped features. The sport provides a unique combination of physical and mental challenges and requires no equipment other than a compass, a map and a pair of rugged shoes.

The maps used in orienteering are specialized topographic maps typically drawn to 1:10,000 scale and prepared according to a comprehensive set of standards published by the International Orienteering Federation. Among the standards are the competing requirements that the map be "clear and legible under competition conditions and sufficiently accurate, complete, and reliable." "Essential information" includes "...anything which impedes progress [including] dense vegetation" (International Orienteering Federation: Internal Specification for Orienteering Maps 2017-2, page 4).

Finding the optimal solution becomes difficult in large areas of dense vegetation through which there are many small (1- to 5-meter) passages, such as in the scrub oak areas common to the Colorado Front Range.

As the study's author, I developed the following methodology using lidar data to create exploratory maps for prospective orienteering competitions on the property of the United States Air Force Academy in Colorado Springs. Scrub oak is difficult to distinguish from other trees and time-consuming to trace by hand at the level of detail required (figure 1). Fortunately, since scrub oak dominates a certain height range, lidar data can be used to identify it.

Figure 1:



Credit: U.S. Department of Agriculture Farm Service Agency

Figure 2:



Solid Green: scrub oak  
White: other trees  
Vertical green bands: low scattered brush

Credit: Image, U.S. Department of Agriculture Farm Service Agency, lidar, Colorado Governor's Office of Information Technology - geographic information systems, digitization, Galen A. Moore

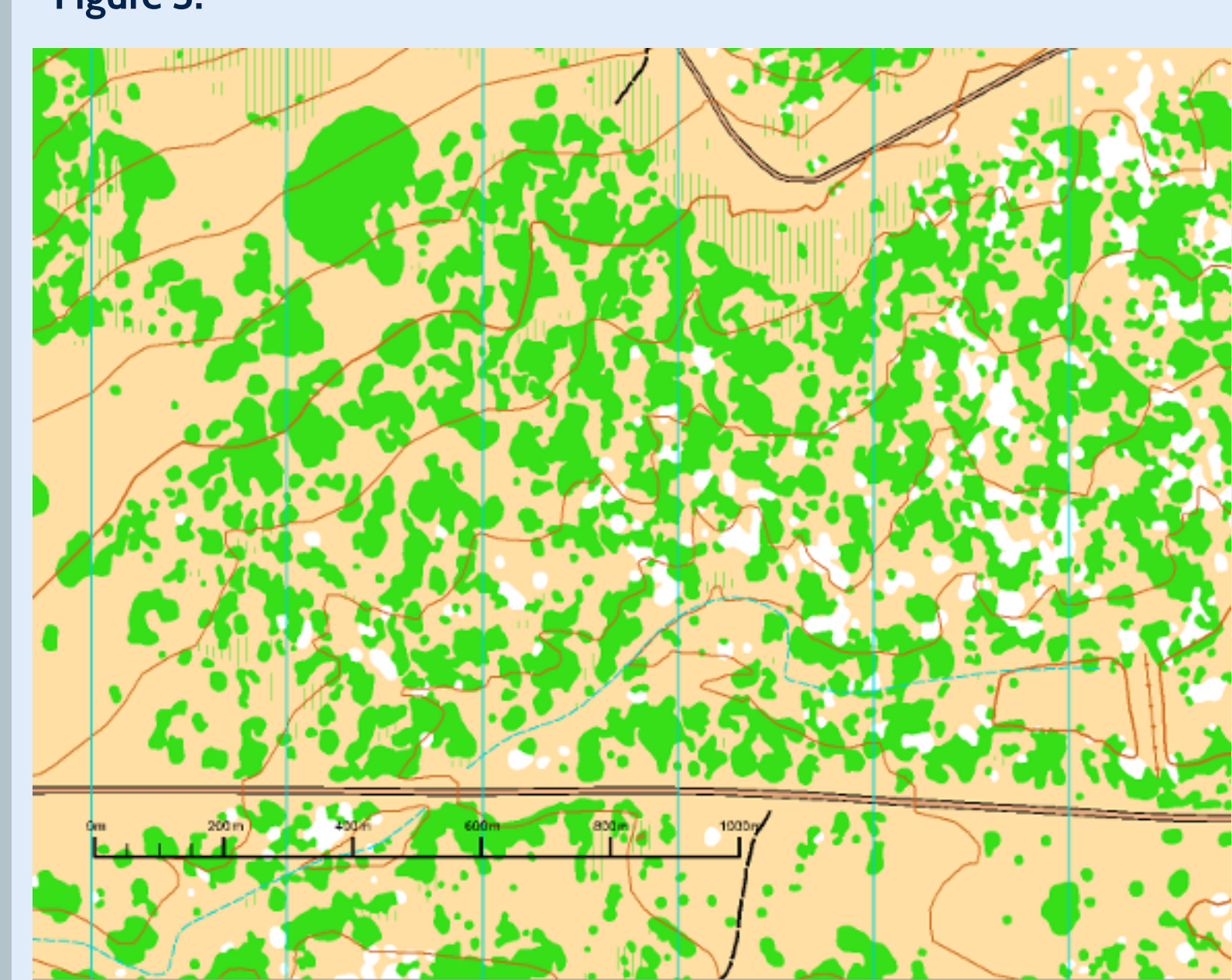
**Step 1:** Generate a normalized digital surface model (also known as a canopy height model) raster bearing the above-ground height of the vegetation (and other features, such as buildings) in the subject area.

**Step 2:** Use the normalized digital surface model and a georeferenced image to determine the height range for scrub oak.

**Step 3:** Convert the normalized digital surface model to a shapefile according to a set of resolution, height and smoothing parameters.

**Step 4:** Add the layer to an orienteering map (figure 3).

Figure 3:



Credit: Galen A. Moore

The example shows that in an environment where a particular class of vegetation of interest is uniquely dominant in a height range, processing lidar data into a shapefile capturing the areas occupied by that vegetation can be an efficient and useful method for presenting that vegetation.

The approach is a special, not a general, solution to the problem. The process requires recalibration for different lidar densities and different vegetation, and works best when the vegetation of interest is in leaf. Lastly, while the approach generates useful maps very quickly, it leaves the subjective problem of balancing generalization, legibility and detail to human judgment.

## DRCOG data acquisition updates

Article submitted by Ashley Summers, GISP PMP, information systems manager at DRCOG. Ashley can be reached at 303-480-6746 or [asummers@drcog.org](mailto:asummers@drcog.org).

### Denver Regional Aerial Photography Project 2022

DRCOG finalized contracts with Sanborn and Nearmap to provide imagery to DRCOG's project partners in 2022 and 2023.

Sanborn will be flying custom imagery of the 6,000-square-mile Denver region. Flights to collect the Front Range will occur between February and April to ensure leaf-off and snow-free imagery. Sanborn will conduct flights to collect imagery of the mountainous area in June and July. DRCOG will deliver imagery to partners in the first quarter of 2023 and will be in the public domain in early 2025.

Nearmap is offering a subscription to DRCOG partners in the Denver metro area that includes access to four imagery captures over the next two years. The data is for internal use only.

If you are not a project partner and would like to be, reach out to me at [asummers@drcog.org](mailto:asummers@drcog.org). Read more about the [imagery projects](#) on the [website](#).

### Regional Lidar Project 2020

DRCOG received a grant from the U.S. Geological Survey in December 2019 to collect quality level 2 lidar in 5,000 square miles of the region and derive contours in most of the Denver metro area. Flights to collect the data were completed in the summer of 2020 and quality control performed by the U.S. Geological Survey was completed in December 2021. DRCOG staff expects the data to be available for download through DRCOG's Regional Data Catalog by March of 2022.

For more information, visit the [website](#).

Do you have an interesting use case for lidar data? [Tell us about it by emailing me at \[asummers@drcog.org\]\(mailto:asummers@drcog.org\)](#).

### Planimetric Data Project 2020

The planimetric data project began in February 2021 and deliveries began in June 2021. Groups 1, 2, 3 and 4 are complete. There are seven deliveries total. The public will have access to the data in the first quarter of 2022 via the DRCOG Regional Data Catalog.

DRCOG staff are collecting building footprints, edge of pavement, parking, sidewalks and ramps, trails, driveways, and impervious surface throughout the Denver metro area. [Check out the map](#).

If you are not a project partner and would like to be, reach out to me at [asummers@drcog.org](mailto:asummers@drcog.org). Read more about the [planimetric data projects](#) on the [website](#) and [download datasets](#) from past projects.

### Regional Land Cover Project 2020

DRCOG was awarded a Colorado Water Conservation Board Water Plan Grant in March 2021, which supplies a 50% match to local contributions for the project. The project kicked off in June 2021 with a presentation from Sanborn and the University of Vermont regarding the "interpretation key," which is an illustrated guide to the classification schema.

The product will be a 9-class, 1-meter resolution land cover dataset that covers the 6,000-square-mile Denver region. Deliverables are expected in the first quarter of 2022 and will be made publicly available on DRCOG's Regional Data Catalog.

If you are not a project partner and would like to be, reach out to me at [asummers@drcog.org](mailto:asummers@drcog.org). You can stay apprised of project happenings on the [website](#).

## Engage with us

- This quarterly newsletter reaches more than 400 people, a higher-than-average open rate, and is written by professionals like you. It is the perfect place to show off your projects, highlight your work and contribute ideas to the GIS community in the Denver region. Newsletter release dates are the 15th of January, April, July and October (or the next business day). Please contact Ashley Summers at 303-480-6746 or [asummers@drcog.org](mailto:asummers@drcog.org) to contribute.
- Did you miss a newsletter or a meeting? [Visit our website](#) for past newsletter issues and Data Consortium meeting materials.

