

# Tobey B. Carman

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## EDUCATION

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| <b>MSE</b> | <b>Software Engineering, University of Alaska Fairbanks</b>  |
| Aug 2012   | <ul style="list-style-type: none"><li>▶ Modified a terrestrial ecosystem software model to increase resolution with respect to growing season (C++, Java, MySQL, Python, Linux, Bash).</li><li>▶ Developed visualization and output processing tools for verifying results.</li><li>▶ Ported legacy C++ codebase from Windows to modern compilers and toolchain for running on Linux cluster computers.</li><li>▶ Classes highlights: Data Structures and Algorithms, Software Architecture, Digital Image Processing.</li></ul> |
| <b>BA</b>  | <b>The Colorado College</b>  |
| May 2003   | <ul style="list-style-type: none"><li>▶ Geology</li></ul>  |
| July 2003  | <b>University of Oregon Field Camp</b>   |
|            | <ul style="list-style-type: none"><li>▶ Tien Shan International Geologic Field Camp: Rates and Onset of Cenozoic Uplift in Kyrgystan.</li></ul>  |

## EXPERIENCE

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| <b>Founder &amp; Co-owner</b>                    | <b>Inversion Labs, LLC (<a href="http://www.inversionlabs.com">www.inversionlabs.com</a>)</b>   |
| 2016 – present                                   | <ul style="list-style-type: none"><li>▶ Create and maintain SaaS weather and avalanche data viewer: <a href="http://snowpacktracker.com">http://snowpacktracker.com</a>.</li><li>▶ Worked with avalanche forecast specialists to develop data visualizations specially tailored to the needs of forecasters.</li><li>▶ Designed and conducted baseline air quality survey for Teton County Conservation District, 2017-2018.</li><li>▶ Update and develop additions for VB.Net application originally written for TM McCoy &amp; Co in 2010.</li><li>▶ Standard Tools: Python, Pandas, Numpy, Matplotlib, Bokeh, Git/Github, Bitbucket, Heroku, Bash, Ubuntu Linux.</li><li>▶ Experience with Windows, VB.Net, Microsoft Visual Studio.</li></ul>   |
| <b>Research Assistant,<br/>Software Engineer</b> | <b>Institute of Arctic Biology</b>  |
| Sept 2011 – present                              | <ul style="list-style-type: none"><li>▶ Primary maintainer of: <a href="http://www.github.com/ua-snap/dvm-dos-tem">www.github.com/ua-snap/dvm-dos-tem</a>.</li><li>▶ Designed and built interactive visual calibration system for dvm-dos-tem software model.</li><li>▶ Integrated dvm-dos-tem model with PEcAn framework for inter-model comparison and sensitivity and uncertainty analysis.</li><li>▶ Working with researchers to develop, operate and maintain various ecologic software models (see AIEM project at <a href="http://www.snap.uaf.edu/">www.snap.uaf.edu/</a>).</li><li>▶ Software: Linux and GCC tool chain; Python, Numpy, Pandas, Matplotlib, Git/Github, VirtualBox, LaTeX, HPC user environments: Slurm, R, MPI.</li></ul> |
| <b>Software Developer</b>                        | <b>TM McCoy &amp; Co.</b>   |
| Sept 2010  | <ul style="list-style-type: none"><li>▶ Developed VB.Net application for well site geologist to display mud gas to drilling rig.</li></ul>  |

### Website Designer and Developer

Aug 2006 – 2010

### Founder and Co-owner

Aug 2006 – Aug 2008

### Mudlogger

Nov 2005 – Sept 2008

### Survey Technician

June 2003 – Aug 2005

### TBC Designs

- ▶ Created online stores for Climbing Skins Direct, Halo Hats, and Pinstops.
- ▶ Basic skills: HTML, CSS, PHP, PHP, Javascript, and Google Maps API.

### Climbing Skins Direct

- ▶ Built manufacturing and direct online sales business for skiing equipment.
- ▶ Designed, built, and operated semi-automated manufacturing equipment.
- ▶ Designed, built, and operated e-commerce website.
- ▶ Product design, sales, marketing, brand development.

### TM McCoy & Co.

- ▶ Collected, analyzed, and monitored rock samples and mud gas on exploratory and development drilling rigs.
- ▶ Maintained and serviced gas detection equipment.
- ▶ Created strip logs, worked with wireline loggers, interpreted geology, and worked with company representatives and drilling operators.

### Nelson Engineering

- ▶ Operated Leica Total Station and Leica GPS Equipment

## PRESENTATIONS

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Wright, P. J., **T. Carman**, and B. Comey (2018), Snowpack Tracker: the Development and Application of a Web-based Visualization Tool for Avalanche and Weather Data, Proceedings of the 2018 International Snow Science Workshop, Innsbruck, Austria

**Carman, T.**, E. Euskirchen, *Modifications to a Dynamic Vegetation Model: Simulating Leaf Phenology by Plant Functional Type*, Alaska Cooperative Fish and Wildlife Research Unit (AKCFWRU) Annual Review, Fairbanks, AK, March 2012 (Poster).

**Carman, T.**, Bennett, A.P., *Dynamic Model Coupling*, American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, Dec. 2012 (Abstract and poster).

Wright, P., Bergin, M., Dibb, J., Domine, F., Carmagnola, C., Courville, Z., Lefler, B., Sokolik, I., Strellis, B., **Carman, T.**, Schaaf, C., Wang, Z., *Field validation of MODIS daily snow albedo over central Greenland*, American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, Dec. 2011 (Abstract and poster).

## PUBLICATIONS

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Wright, P. and **T. Carman** (2018), New data visualization tool for the Bridger-Teton Avalanche Center, The Avalanche Review, Vol. 36.4, 8.

\*Euskirchen, E. S. , **T. B. Carman**, and A. D. McGuire. 2014. *Changes in the structure and function of northern Alaskan ecosystems when considering variable leaf-out times across groupings of species in a dynamic vegetation model*. Global Change Biology, Vol. 20, Issue 3, 963-978.

\*Gray, S.T., A. Bennett, W.R. Bolton, A.L. Breen, **T. Carman**, E. Euskirchen, H. Genet, E. Jafarov, J. Jenkins, T. Kurkowski, M. Lindgren, P. Martin, S. McAfee, A.D. McGuire, S. Marchenko, R. Muskett, S. Panda, J. Reynolds, A. Robertson, V. Romanovsky, T.S. Rupp, K. Timm, and Y. Zhang. 2014. *Using integrated ecosystem modeling to improve our understanding of climate change impacts in the Alaska region*. Alaska Park Science. 12(2).

\*Wright, P., Bergin, M., Dibb, J., Lefler, B., Domine, F., **Carman, T.**, Carmagnola, C., Dumont, M., Courville, Z., Schaaf, C., & Wang, Z. 2014. *Comparing MODIS daily snow albedo to spectral albedo field measurements in Central Greenland*. Remote Sensing of Environment, Vol. 140, 118-129.