

Patrick J. Wright

Inversion Labs, LLC

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Curriculum Vitae

EDUCATION

M.S. Geosciences, University of Montana **Dec 2015**

Advisor: Dr. Joel Harper, UM Group for Quantitative Study of Snow and Ice

Thesis: *"Temporal Evolution of Basal Water Pressure and Ice Velocity Along a 50 km Flow Line Transect of Western Greenland"*

M.S. Atmospheric Science, University of Houston **May 2012**

Advisor: Dr. Barry Lefer

Thesis: *"Comparison of MODIS snow albedo to field measurements in central Greenland"*

B.S. Geology, B.S. Environmental Science, University of Oregon **June 2005**

Honors thesis: *"Evidence for shear in accreted terranes of eastern Oregon"*

EXPERIENCE

Synoptic Data **June 2018 – present**

Data scientist. Software development supporting the Synoptic Data API service.

Inversion Labs, LLC **Jan 2016 – present**

Founder and co-owner. Data analysis, graphic visualization, software development.

Design-build-installation for environmental monitoring systems.

Jackson Hole Mountain Guides **Jan 2016 – Mar 2018**

Avalanche course instructor (AIARE).

Jackson Hole Ski Patrol **Nov 2016 – Apr 2017**

Ski patroller, avalanche lab technician.

Summit Research Station, Greenland **Apr – Nov 2012**

Science technician (ICECAPS). Operation/maintenance of atmospheric instrumentation including: cloud radar, LiDAR, microwave radiometer, infrared interferometer, SODAR, twice daily weather balloon launches, and snow crystal microphotography.

T.M. McCoy & Co., Consulting Geologists **2006 – 2007**

Wellsite geology and mudlogging for oil and gas drilling in Wyoming and Colorado.

SOFTWARE

- OS: Linux, Mac, Windows
- Languages: Python, R, Matlab, Bash, HTML/CSS, JavaScript
- Analysis: NumPy, Pandas, Scikit-learn, Statsmodels
- Visualization: Matplotlib, Bokeh, Plotly, D3.js, Jupyter Notebook
- Version control: Git, Github, Bitbucket
- Cloud services: AWS, Heroku
- Database: MySQL (MariaDB), SQLite

TECHNICAL

- Solar power system design and installation for remote, unattended sites
- Differential GPS installation, maintenance, and data processing (Trimble receivers, GAMIT-GLOBK-TRACK processing)
- Meteorological station design and installation

CERTIFICATIONS

- Wilderness First Responder (WMI/NOLS, 2006, re-certified 2018)
- Outdoor Emergency Care Technician (JHSP, 2017)
- Pro I Avalanche certification (AAI, 2018)
- AIARE Avalanche Course Instructor (2016)

BOARD POSITIONS & PROFESSIONAL MEMBERSHIP

- Member, **Teton County Natural Resources Technical Advisory Board (NRTAB)**, 2012 – 2018. Six-member board advising Teton County Commissioners (Jackson, WY) on natural resource science as related to policy and planning.
- Proposal review panel member, **NASA Citizen Science for Earth Systems (CSES)**, Nov. 2016 (Washington, D.C.). Specialty area: snow science and albedo measurements.
- Professional member, **American Avalanche Association**

PUBLICATIONS (* indicates peer-reviewed articles)

Wright, P. (2019), Assessing Impacts to Air Quality from Vehicle Emissions in Teton County, WY, *Final Report for the Teton Conservation District*, Jackson, WY.

Wright, P. (2019), Brake Emissions at the Base of Teton Pass, WY, *White Paper for the Teton Conservation District*, Jackson, WY.

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.

- Wright, P. J.**, B. Comey, and M. Comey (2018), Thresholds in Wind Speed, Air Temperature and Relative Humidity Controlling Slab Formation, *Proceedings of the 2018 International Snow Science Workshop*, Innsbruck, Austria.
- * Hills, B. H., J. T. Harper, T. W. Meierbachtol, J. V. Johnson, N. F. Humphrey, and **P. J. Wright** (2018), Processes influencing heat transfer in the near-surface ice of Greenland's ablation zone, *The Cryosphere*, 12, 3215-3227, doi:10.5194/tc-12-3215-2018.
- Wright, P.** and T. Carman (2018), New data visualization tool for the Bridger-Teton Avalanche Center, *The Avalanche Review*, Vol. 36.4, 8.
- Comey, B. (figures by **Inversion Labs**) (2018), Season progression for the Bridger-Teton forecast area, *The Avalanche Review*, Vol. 36.4, 37.
- Wright, P.** (2017), December 2016 deep slab avalanche cycle in northwest Wyoming: Analysis using historical loading thresholds, *The Avalanche Review*, Vol. 35.4, 40-41.
- Wright, P. J.**, B. Comey, C. McCollister, and M. Rheam (2016), Deep slab instability: Loading, temperature, and settlement rate thresholds related to failure - Part II, *Proceedings of the 2016 International Snow Science Workshop*, Breckenridge, CO, USA.
- Wright, P. J.**, B. Comey, C. McCollister, and M. Rheam (2016), Estimation of new snow density using 42 seasons of meteorological data from Jackson Hole Mountain Resort, Wyoming, *Proceedings of the 2016 International Snow Science Workshop*, Breckenridge, CO, USA.
- * **Wright, P. J.**, J. T. Harper, N. F. Humphrey, and T. W. Meierbachtol (2016), Measured basal water pressure variability of the western Greenland Ice Sheet: Implications for hydraulic potential, *Journal of Geophysical Research – Earth Surface*, 121, doi:10.1002/2016JF003819.
- * Meierbachtol, T. W., J. T. Harper, N. F. Humphrey and **P. J. Wright** (2016), Mechanical forcing of water pressure in a hydraulically isolated reach beneath Western Greenland's ablation zone, *Annals of Glaciology*, 57(72), 62-70, doi:10.1017/aog.2016.5.
- * **Wright, P.**, M. Bergin, J. Dibb, B. Lefer, F. Domine, T. Carman, C. Carmagnola, M. Dumont, Z. Courville, C. Schaaf, and Z. Wang (2014), Comparing MODIS daily snow albedo to spectral albedo field measurements in Central Greenland, *Remote Sensing of Environment*, 140, 118-129, doi:10.1016/j.rse.2013.08.044.
- * Carmagnola, C. M., F. Domine, M. Dumont, **P. Wright**, B. Strellis, M. Bergin, J. Dibb, G. Picard, Q. Libois, L. Arnaud, and S. Morin (2013), Snow spectral albedo at Summit, Greenland: comparison between in situ measurements and numerical simulations using measured physical and chemical properties of the snowpack, *The Cryosphere*, 7, 1139-1160, doi:10.5194/tc-7-1139-2013.

PRESENTATIONS

Wright, P. J. (2018), Teton December Drought Layer (DDL): A Science Perspective, *Wyoming Snow and Avalanche Workshop*, Jackson, WY, Oct. 2018 (*oral presentation*).

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, *2018 International Snow Science Workshop*, Innsbruck, Austria, Oct. 2018 (*poster*).

Wright, P. J., B. Comey, and M. Comey (2018), Thresholds in Wind Speed, Air Temperature and Relative Humidity Controlling Slab Formation, *2018 International Snow Science Workshop*, Innsbruck, Austria, Oct. 2018 (*poster*).

Wright, P. J., B. Comey, C. McCollister, and M. Rheam, Deep slab instability: Loading, temperature, and settlement rate thresholds related to failure - Part II, *2016 International Snow Science Workshop*, Breckenridge, CO, USA, Oct. 2016 (*poster*).

Wright, P. J., B. Comey, C. McCollister, and M. Rheam, Estimation of new snow density using 42 seasons of meteorological data from Jackson Hole Mountain Resort, Wyoming, *2016 International Snow Science Workshop*, Breckenridge, CO, USA, Oct. 2016 (*poster*).

Wright, P. J., J. T. Harper, N. F. Humphrey, and T. W. Meierbachtol, Constraints on the magnitude and variability of basal water pressure, western Greenland Ice Sheet margin, *International Symposium on Hydrology of Glaciers and Ice Sheets*, Höfn, Iceland, June 2015 (*poster*).

Meierbachtol, T. W., J. T. Harper, N. F. Humphrey, and **P. J. Wright**, In situ constraints on the relationship between basal water flux, water pressure, and ice velocity from borehole experiments in western Greenland, *International Symposium on Hydrology of Glaciers and Ice Sheets*, Höfn, Iceland, June 2015 (*oral presentation*).

Dumont, M., C. M. Carmagnola, F. Domine, **P. Wright**, M. Bergin, J. Dibb, L. Arnaud, G. Picard, N. Champollion, Q. Libois and S. Morin, Modeled and measured albedo of surface snow over central Greenland, *EGU 2012*, Vienna, Austria, April 2012 (*poster*).

Wright, P., M. H. Bergin, J. E. Dibb, F. Domine, C. Carmagnola, Z. Courville, I. N. Sokolik, and B. L. Lefer, Understanding the factors that control snow albedo over central Greenland, *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, Dec. 2011 (*poster*).

Strellis, B., M. Bergin, I. Sokolik, J. Dibb, P. Sheridan, J. Ogren, and **P. Wright**, The Influence of Light Absorbing Aerosols on the Radiation Balance Over Central Greenland, *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, Dec. 2011 (*oral presentation*).

Wright, P., C. Carmagnola, F. Domine, J. Dibb, and M. Bergin, Spectral albedo and snow specific surface area at Summit, Greenland 2011, *3rd workshop on Air-Ice Chemical Interactions (AICI)*, Columbia University, New York, NY, June 2011 (*poster*).