Michael S. Town, Ph.D.

CONTACT INFORMATION

Institution	Earth and Space Research
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RESEARCH INTERESTS

Polar meteorology, Antarctica, Greenland, Mountain meteorology, Microclimates, Climate modelling, Field work, Data science, Inclusive climate solutions

EDUCATION INTERESTS

Citizen Science, Equitable education, Project-based learning, Experiential education, Data-based pedagogy, Evidence-based decisions

ACADEMIC EDUCATION

Seattle University, Seattle, Washington USA

Masters in Teaching, (Alpha Sigma Nu), 2011

University of Washington, Seattle, Washington USA
Department of Atmospheric Sciences

Ph.D. Atmospheric Sciences, 2007
Dissertation: "Investigations into the Climate of the South Pole"
Advisors: Stephen G. Warren, Von P. Walden

M.S. Atmospheric Sciences, 2005
Master's thesis: "Spectral and broadband longwave downwelling radiative fluxes, cloud radiative forcing, and fractional cloud cover over the South Pole"
Advisors: Stephen G. Warren, Von P. Walden

University of Michigan, Ann Arbor, Michigan USA

B.Sc. Physics (honors), 1999
Honors thesis: "Regional and Local Variability of Flow Regimes and Source Regions for a Rural Site in Northern Michigan"
Advisor: Mary Anne Carroll

PROFESSIONAL ROLES

Earth and Space Research, Seattle, USA *Research Scientist* **Jul 2023 - Present**

Troll Observing Network (TONe) - Integrated Cloud Observatory (ICO)
In collaboration with international partners (U. Leeds and Norwegian Polar Institute), designed and deployed a state-of-the-art cloud observatory on an escarpment in Dronning Maud Land, Antarctica. Town designed and deployed a surface temperature network to characterize escarpment microclimates. Continued analysis and collaboration towards understanding moisture and energy fluxes in East Antarctica, and their representation in models of intermediate and high

complexity. Unifying logistics and operations science objectives with globally relevant weather and climate science objectives. Initiated Citizen Science analysis of TONe-ICO data through ESR intern program.

Ice core aging project (ICAP)
In collaboration with scientists at University of Colorado INSTAAR, developing understanding of how stable water isotope records age in storage due to local, cold-room influences. Designed and executed simulations to compare with radial analysis of ice core pucks stored in the same facility for a range of times (1-50 years).

ICECAPS-MELT
Understand the influence of clouds, the surface energy budgets, and evolving snow properties on melt events in the 'dry zone' of the Greenland Ice Sheet through a combination of in situ data and a firn modeling of intermediate complexity. Planned snow science field measurements, supported field work, and analyzed data in South Eastern Greenland. Leading Northeastern Masters in Data Science students in machine-learning-based investigation of drivers of outcomes in snow (e.g., energy fluxes and melt).

ML/AI Prediction of Arctic Sea Ice Growth
Co-led Northeastern Masters in Data Science students in development of in-house ML/AI tools to predict Autumn sea ice growth in the Chukchi and Bering Seas in collaboration with Julian Schanze and Jesse Anderson (of ESR).

Mount Baker Climate Laboratory (MBCL)
Developed and currently administrating a Citizen Science effort where professionals and citizens co-create socially-relevant, regional, open-source science. MBCL measures air and soil temperatures on the southern ascent of Mount Baker, WA to understand the hydrology and lapse rates of this mountain climate. This work runs in part through hackweeks, Earth and Space Research Summer Institute ($ESR - SI$) operates in parternship with the Lakeside School Outdoor Program. It is currently philanthropically funded by the San Diego Foundation. (https://esr-mbcl.github.io/MBCL/)

Earth and Space Research - Summer Institute
Developed and annually administer an authentic geoscience research experience offered to secondary and undergraduate students in an equity-minded educational setting. Mentored early- and mid-career researchers in youth education and mentorship.

Lyte Probe Development
Continuing development of Lyte Probe functionality and uses including: revised positioning algorithm further reducing location uncertainty. Comparison of Lyte Probe to radar and snow pit profiles in collaboration with the Alfred Wegener Institut and the Norges Vassdrags og Energidirektorat (NVE, Norwegian Water Resources and Energy Directorate). Investigation of retrievals of density and thermal conductivity from direct Lyte Probe measurements. Continued prototyping and deployment of the Lyte Probe in polar environments (Antarctica and Greenland).

Reflective Earth **Nov 2023 - Jan 2025**
Developing state-of-the-art techniques to monitor equitable, sustainable reflective cooling interventions. Interfacing with local governments, non-profits, and academic institutions in pursuit of equitable geoengineering solutions to human-induced climate change.

Earth and Space Research, Seattle, USA *Vice President* **Nov 2024 - Present**

Non-profit strategic realignment
Recruited strategic advisor (early 2024) to help diversify our funding portfolio. Worked with leadership and strategic advisor to refine and implement recommendations. Results include:

increased educational programming, new logo, website revamp, improved network in local and regional Climate Solutions communities. Currently leading effort to develop sustained funding outside of Federal sources (e.g., philanthropic, NGO, international governmental).

Geophysical Institute, Bjerknes Centre for Climate Research, Bergen, Norway

Research Scientist **Dec 2021 - Aug 2023**

SNOWISO
Investigated improved understanding of water isotope records from air temperature to stable water isotopes in near-surface snow. Analyzed data from near-surface polar snow. Developed forward model of near-surface snow processes. Advised UiB graduate students.

Lyte Probe
Deployed and tested novel, light, ski-pole snow hardness probe developed by Adventure Data. Developed new positioning algorithm reducing location uncertainty 10x. Currently comparing Lyte Probe results to radar and snow pit profiles in collaboration with the Alfred Wegener Institut and the Norges Vassdrags og Energidirektorat (NVE, Norwegian Water Resources and Energy Directorate)

Mt. Baker Climate Laboratory (MBCL)
Maintained iButton temperature array network on the south side of Mt. Baker, Washington USA through the Lakeside Summer Research Institute (*LSRI*), and the Lakeside School Outdoor Program. Analyzed and presented data from this temperature network in regional settings. Advised high school students in geoscience research.

Nisqually Land Trust Climate Project (NLTCP)
Planned and negotiated temperature array network in cooperation with the Nisqually Land Trust for monitoring of Nisqually Tribe land. Developed an educational program that would incorporate tribal youth involvement in monitoring climate of tribal lands.

UiO/UiB Snow and Isotope Workshop *18 April 2023*
Organized a bridge-building workshop at the University of Bergen for snow hydrology, cloud physics, and stable water isotope experts. Participants were members of the University of Oslo and University of Bergen geoscience communities.

Lecturer at iceFinse 2023 *11-14 March 2023*
Developed and deployed engaging hands-on and theoretical snow properties (e.g., strength, hardness, density) curriculum for international undergraduate and masters students in a remote setting (Finse, Norway).

Earth and Space Research,
Seattle, USA

Affiliate Research Scientist **Nov 2022 - Jun 2023**

Department of Geosciences,
University of Oslo, Oslo, NORWAY

Guest Researcher **August 2022 - August 2023**

Department of Earth and Space Sciences,
University of Washington, Seattle, Washington USA

Affiliate Assistant Professor **April 2022 - Present**

Ballard Data Science, Seattle, Washington USA

Owner/Operator, Lead Data Scientist **Sept 2021 - Nov 2024**

Northwest Avalanche Center Consulting
Advising and consulting with the Northwest Avalanche Center on operational incorporation of the SNOWPACK model forced with WRF data into avalanche forecasts.

Climate advocacy consulting
Advised environmental professional in climate advocacy debate with high profile climate skeptic.

COVID19 prevention and mitigation
Using health and safety guidelines published by CDC, made quantitative assessments of workplaces and a school for adequate ventilation. Designed and assessed air handling solutions for these sites.

Lakeside School, Seattle, Washington USA

Science Faculty **Aug 2013 - Jun 2021**
Summer School Faculty **Jun 2018 - Jul 2022**

Physics and Honors Physics *Aug 2013 - Jun 2021*
Developed project-based curricula for algebra-based Physics courses that incorporates diversity/equity/inclusion, data science, and climate science.

Specific projects:

Analyzing acceleration data from the Phoenix Mars Lander to understand Force.

Monitoring and modeling the flight of Stomp Rockets to understand energy.

Studying the impacts of oppression and stereotype-threat on the historically marginalized in the field of science through media (e.g. *Think Black*, *Hidden Figures*) discussion, and reflection.

Using energy conservation to model the surface temperature of the Earth through simple radiative transfer.

Engineering *Aug 2015 - Jun 2021*
Developed a new course centered around the engineering design process with specific focus on service and design empathy. Community partners included: Skate Like a Girl, Seattle Audobon Society, Northwest Avalanche Center, Lakeside School Service Learning Program, and Lakeside School Outdoor Program.

Specific projects:

Design and build skateboards for at risk youth in Seattle Area.

Avalanche science and safety practices in the Washington Cascades, including field work (day and overnight), data analysis, and equipment design/implementation.

Engineering and Geosciences in the Washington Cascades, including analysis of Northwest Avalanche Center forecasts and weather data from Mt. Baker, Washington.

Lakeside Summer Research Institute (LSRI) in partnership with ESR *Jun 2017 - Jul 2022*
Developed a summertime, geoscience-focused data science internship for high school students. Students engage in authentic geoscience research using cutting edge tools like Python and physical models of intermediate complexity (e.g., SNOWPACK). Curated data sets and external partner-

ships to support the authentic science experience. This is a unique, ongoing partnership between an educational and a research institution.

Specific projects:

The Mt. Baker Climate Laboratory - MBCL. Routine deployment and analysis of temperature data from the southern aspect of Mt. Baker in partnership with the Lakeside School Outdoor Program.

The Northwest Avalanche Center Forecast Consistency Project - NFCP. Students analyze the consistency of NWAC avalanche forecasts and report patterns to the NWAC forecasters and observers.

The Seattle Microclimate Project - SMP. Students analyze weather station data from around Seattle, including on the school's roof, to understand urban microclimates.

Faculty Mentorship *Aug 2015 - Jun 2021*
Teacher mentor to early-career teachers, or teachers new to the Lakeside community. Performed non-evaluative observations. Provided feedback on lessons, assessments, curriculum, and classroom climate.

Professional Community
Planned, funded, and executed a school-wide assembly featuring Dr. Clyde Ford, author of *Think Black*. The experience included a breakout session with Dr. Ford for African-American identifying students and faculty.

Developed and implemented 3-minute teacher observation club at Lakeside School.

Instrumental in implementing proactive course selection advising to mitigate impact of stereotype threat on historically marginalized students.

Performed three year study on student performance based on self-identified gender in Honors Physics.

Assessed student performance from 2014-2019 at Lakeside School using anti-racist analysis and compositing techniques.

Participated in the hiring of six faculty.

Developed Engineering/Theater maker space in close collaboration with multiple stake-holders.

Participated in a national teaching fellowship organization (Knowles Teaching Initiative) (three national meetings/year), 2013-2016.

Developed, led, and funded a regional teacher observation network in the Pacific Northwest (Observation Northwest, 2011-2017).

Outdoor trip leader *2016-2022*
Co-lead two 6-day canoe trips in the Ross Lake National Park with 10 students. Student to leader ratio 5:1.

Planned and lead over a dozen day-trip snow science experiences (travel, data collection) in Cascade mountains. Student to leader ratio 8:1.

Planned and lead two overnight snow science experiences (travel, data collection) in Cascade mountains. Student to leader ratio 8:1.

Technology, Engineering, and Communications High School, Burien, Washington USA

Engineering teacher and Robotics coach **Aug 2012 - Jun 2013**

Introduction to Engineering and Design *Aug 2013 - Jun 2021*
Developed project-based curriculum that incorporates diversity/equity/inclusion, data science, and design in an engineering class.

Specific projects:

Comfort design: design and assessment of a soundproofing solution.

Useful design: skateboard design and build unit in which students use design empathy and the engineering design process to make skateboards from scratch.

Sustainable Design and Engineering
Developed a new course centered around climate science and the engineering design process.

Specific projects:

Climate action: Reviewed the IPCC AR5 WG1 report for the US State Department. Our primary recommendations were directly quoted to the IPCC review committee.

Useful design: Project-based learning effort in which students independently investigated an environmental question or solved an environmental problem under mentorship from a local professional.

FIRST Robotics Coach
Co-led a team in the 'Frisbee Challenge' of 2012-2013.

Student Mentorship
Co-leader of after-school club in which we offered atheltic activities and adult-male mentorship to all students.

Professional Community
Developed, led, and funded a regional teacher observation network in the Pacific Northwest (Observation Northwest, 2011-2017)

Developed and implemented 3-minute teacher observation club at TEC High School.

University Preparatory Academy, Seattle, Washington USA

Science Faculty **Aug 2011 - Jun 2012**

9th Grade Physics
Executed and augmented a project-based curriculum in the traditional Physics canon.

Senior Physics
Executed and augmented a project-based curriculum in the traditional algebra-based Physics canon. Developed new projects science-investigation project with community partners (e.g. local P-patch).

Professional Community
Developed and implemented 3-minute teacher observation club at University Preparatory Academy.

Organized race-awareness discussion for faculty: White People: what are they all about?

Laboratoire de Glaciologie et Géophysique de l'Environnement (LGGE), Grenoble, France

Research Associate **Dec 2008 - Dec 2009**

Polar Model Evaluation
Evaluated a polar mesoscale model (Model Atmospherique Regional, MAR) over the East Antarctic interior using in situ observations and Kalman-filter spectral analysis.

Stable boundary layer investigations
Analyzed summertime meteorological measurements for Dome C, Antarctica. Planned boundary layer measurements for 2009-2010 field season at Dome C, Antarctica.

University of Washington,
Department of Atmospheric Science, Seattle, Washington USA

Research Associate **Aug 2007 - Nov 2008**

Stable boundary layers and surface energy budget at the South Pole
Used the South Pole as a laboratory for understanding stable boundary layers. Curated routine meteorology and radiation measurements. Simulated subsurface energy fluxes.

Post-depositional processes in near-surface polar snow
Used the surface energy budget of the South Pole to understand potential impacts of large energy fluxes and temperature gradients in the near-surface snow on the stable water isotope climate signal.

University of Washington,
Department of Atmospheric Science, Seattle, Washington USA

Graduate Student **May 2000 - Aug 2007**

The surface energy budget at the South Pole
Examined the surface energy budget using curated routine meteorology and radiation measurements. Simulated subsurface energy fluxes. Made major contributions to "Collaborative Research: Longwave radiation processes and surface energy budget on the Antarctic Plateau", Award: 0540087.

Clouds and longwave radiative transfer over the South Pole
Analyzed spectral infrared measurements of the sky and snow surface to understand longwave radiation over East Antarctica. Developed accurate cloud climatology for the South Pole. Evaluated satellite performance over the South Pole.

Winterover technician and field team leader at the South Pole *Dec 2000 - Nov 2001*
Winterover field team leader for the South Pole Atmospheric Radiation and Cloud Lidar Experiment (SPARCLE). Ran and maintained passive and active remote sensing of atmosphere, clouds, and surface properties. Performed tethered balloon and kite soundings of the near-surface atmosphere. Performed other duties as necessary.

University of Michigan, Department of Atmospheric, Oceanic, and Space Science (AOSS), Ann Arbor, MI USA

Research Assistant **Jun 1998 - Aug 1999**

Global Monitoring Laboratory Technician *Sep 1998 - Aug 1999*
Maintained measurements of CO and O_3 at the AOSS site in Ann Arbor, MI. Mentored other undergraduate students. Calibrated and CO and O_3 measurements from the PROPHET Experiment.

Field work in rural Michigan *Jun 1998 - Aug 1998*
Deployed and maintained field measurements of CO and O_3 at the University of Michigan Biological Station as part of the PHotochemistry, Emissions, and Transport (PROPHET) Experiment.

Publications

Rozmiarek, K.S., L.J. Dietrich, B.H. Vaughn, **M.S. Town**, B.R. Markle, V. Morris, H.C. Steen-Larsen, X. Fettweis, C.A. Brashear, H. Bennett, T.R. Jones, 2025. Atmosphere to surface profiles of water-vapor isotopes and meteorological conditions over the northeast Greenland ice sheet, Journal of Geophysical Research: Atmospheres 130 (6), e2024JD042719

Town, M.S., H.C. Steen-Larsen, S. Wahl, A.K. Faber, M. Behrens, T.R. Jones, A. Sveinbjornsdottir, 2024. Post-depositional modification on seasonal-to-interannual timescales alters the deuterium-excess signals in summer snow layers in Greenland. The Cryosphere 18 (8), 3653-3683

Dietrich, L.J., H.C. Steen-Larsen, S. Wahl, T.R. Jones, **M.S. Town**, M. Werner, 2023. Snow-atmosphere humidity exchange at the ice sheet surface alters annual mean climate signals in ice core records Geophysical Research Letters 50 (20), e2023GL104249

Rowe, P.M., V.P. Walden, R.E. Brandt, **M.S. Town**, S.R. Hudson, and S. Neshyba, 2022: Evaluation of Temperature-Dependent Complex Refractive Indices of Supercooled Liquid Water Using Downwelling Radiance and In-Situ Cloud Measurements at South Pole. J. Geophys. Res.: Atmospheres, 127, e2021JD035182. https://doi.org/10.1029/2021JD035182.

Town, M.S., 2018: Avalanche Science and Safety Practices in a High School Classroom. The Avalanche Review, 37.1, pp. 14-17.

Warren, S.G., and **M.S. Town**, 2011: Antarctica. Encyclopedia of Climate and Weather 2nd Ed., Oxford Univ. Press.

Froyland, H. K., N. Untersteiner, **M.S. Town**, S.G. Warren, 2010: Evaporation from Arctic sea ice in summer during the International Geophysics Year, 1957-1958. J. Geophys. Res., 115, D15104,doi:10.1029/2009JD012769.

Genthon, C., **M.S. Town**, D. Six, V. Favier, S. Argentini, A. Pellegrini, 2010: Meteorological atmospheric boundary layer measurements and ECMWF analyses during summer at Dome C, Antarctica. J. Geophys. Res., 115, D05104, doi:0.1029/2009JD012741.

Rabier, F. A. Bouchard, E. Brun, A. Doerenbecher, S. Guedj, V. Guidard, F. Karbou, V.-H. Peuch, L. El Amraoui, D. Puech, C. Genthon, G. Picard, **M.S. Town**, A. Hertzog, F. Vial, P. Cocquerez, S.A. Cohn, T. Hock, J. Fox, H. Cole, D. Parsons, J. Powers, K. Romberg, J. VanAndel, T. Deshler, J. Mercer, J.S. Haase, L. Avallone, L. Kalnajs, C.R. Mechoso, A. Tangborn, A. Pellegrini, Y. Frenot, J.-N. Thépaut, A. McNally, G. Balsamo, P. Steinle, 2010. The CONCORDIASI project in Antarctica. Bulletin of the American Meteorological Society 91 (1), 69-86.

Town, M.S., 2009: Training Scientists to Manage. Science, 326, DOI: 10.1126/science.326.5956.1062-a.

Town, M.S., and V.P. Walden, 2009, Surface energy budget over the South Pole and turbulent heat fluxes as a function of an empirical bulk Richardson number. Journal of Geophysical Research Vol. 114, No. D22, 0148-0227

Town, M.S., S.G. Warren, V.P. Walden, and E.D. Waddington, 2008: Effect of atmospheric water vapor on modification of stable isotopes in near-surface snow on ice sheets. J. Geophys. Res., 113, D24303, doi:10.1029/2008JD009852.

Town, M.S., E.D. Waddington, V.P. Walden, S.G. Warren, 2008: Temperatures, heating rates, and vapor pressures in the near-surface snow of East Antarctica. J. Glaciol., 54, 487-498.

Hagler, G., M. Bergin, E. Smith, **M.S. Town**, and J. Dibb, 2008: Local anthropogenic impact on particulate elemental carbon concentrations at Summit, Greenland. Atmos. Chem. Phys., 8, 2485-2491.

Town, M.S., V.P. Walden, S.G. Warren, 2007: Cloud cover climatology over the South Pole from visual observations, satellite retrievals, and surface based infrared measurements. J. Climate, 20, pp. 544-559.

Town, M.S., V.P. Walden, S.G. Warren, 2005: Spectral and broadband longwave downwelling radiative fluxes, cloud radiative forcing and fractional cloud cover over the South Pole. J. Climate, 18, pp. 4235-4252.

Walden, V.P., **M.S. Town**, B. Halter, and J.W.V. Storey, 2005: First Measurements of the Infrared Sky Brightness at Dome C, Antarctica. Publications of the Astronomical Society of the Pacific, 117 (829), pp. 300-308.

Hudson, S.R., **M.S. Town**, V.P. Walden, S.G. Warren, 2004: Temperature, humidity, and pressure response of radiosondes at low temperatures. J. Atmos. and Oce. Technol., 21 (5), pp. 825-836.

Cooper, O.R., J.L. Moody, T.D. Thornberry, **M.S. Town**, M.A. Carroll, 2001: PROPHET 1998 meteorological overview and air-mass classification. J. Geophys. Res.-Atmos., 106 (D20), pp. 24289-24299.

Pippin, M., S. Bertman, T. Thornberry, **M.S. Town**, M.A. Carroll, S. Sillman, 2001: Seasonal variations of PAN, PPN, and O-3 at the upper Midwest PROPHET site. J. Geophys. Res.-Atmos., 106 (D20), pp. 24451-24463.

Data Sets

M. S. Town; F. Wang; C. Mehring; D. Parry; L. Searl; G. Dron-Smith; G. Block; A. Albrecht; T. Anand; C. Bashore; M. Borowski; E. Bowen; A. E. Bradford; R. Bridge; L. J. Carpenter; J. Chen; A. Concepcion; M. Dauber; N. Dudley; S. Dull; B. Eleveld; J. Fitzgerald; X. Fries; S. Gale; T. Ganapathy; P. Gates; A.-L. Hollander; D. Howard; S. Howard; D. Kolenski; M. Lamble; M. Lamble; N. Lisin; K. D. Mankoff; J. Mapes; C. Martinez; P. Meader Yetter; S. Milne; M. Nelson; L. O'Donnell; C. Osborne; K. Park; W. Patrick; J. Porter; J. Purcell; R. Ricker; A. Romero; I. Schuler; M. Schuler; J. Scott; M. Shelton; J. Spencer; C. M. Stevens; T. Susskind; S. Swaner; B. Takayama; A. Tan; G. Theobald; M. Toll; S. Traverse; A. Walker; C. Whitt; S. Wineland; S. Yee; D. Young; A. Yu; I. Yuan; Z. Zong (2025): Distributed near-surface air and soil temperatures from the southern aspect of Mount Baker, USA from 2018–2024 [dataset bundled publication]. PANGAEA, https://doi.org/10.1594/PANGAEA.984453

Hudson, S., E. O'Connor, M. Bratrein, R.R. Neely, **M.S. Town**, V.P. Walden (2025). Categorize data from Troll Station. ACTRIS Cloud remote sensing data centre unit (CLU). https://hdl.handle.net/21.12132/1.ab83f46d29dc4469

Rozmiarek, K.; L. Dietrich; B. Vaughn; **M. S. Town**; B. Markle; V. Morris; H. C. Steen-Larsen; X. Fettweis; C. Brashear; H. Bennett; T. Jones (2025): Atmosphere to Surface Profiles of Water Vapor Isotopes and Meteorological Conditions over the Northeast Greenland Ice Sheet Data Product for 2022 Field Campaign. Arctic Data Center. https://doi.org/10.18739/A2QR4NS5C

Steen-Larsen, H. C.; Á.E. Sveinbjörnsdottir; R. Ólafsdóttir; M. Behrens; A.-K. Faber; J. Freitag; A. Hoffmann; M. Hörhold; E. Kahle; S. Kipfstuhl; M. V. Madsen; H. Meyer; **M.S. Town**; D. Vladimirova; S. Wahl; T. Zolles; A. Zuhr (2024): Snow Profiles of stable water isotopes at the EastGRIP deep drilling site, summer seasons 2017–2019 [dataset].
PANGAEA, https://doi.org/10.1594/PANGAEA.963834

Town, M.S., Steen-Larsen, H.C.; Wahl, S.; Faber, A.K. (2023): Water isotopologues of near-surface polar snow from short (1-m) snow cores, extracted from the EastGRIP site on Greenland Ice Sheet during summers 2017-2019 with age-depth model [dataset publication series].
PANGAEA, https://doi.org/10.1594/PANGAEA.958540
timeIndex meanAccModel [dataset], https://doi.org/10.1594/PANGAEA.959352
timeIndex manualConstModel [dataset], https://doi.org/10.1594/PANGAEA.959354
depthIndex meanAccModel [dataset], https://doi.org/10.1594/PANGAEA.958681
depthIndex manualConstModel [dataset], https://doi.org/10.1594/PANGAEA.959353

Behrens, M.; M. Hörhold; **M.S. Town**; A. Zuhr; A. Hoffmann; A.-K. Faber; D. Vladimirova; E. Kahle; H. Meyer; J. Freitag; M. V. Madsen; S. Kipfstuhl; S. Wahl; T. Zolles; H. C. Steen-Larsen (2023): Snow Profiles of stable water isotopes at the EastGRIP deep drilling site, summer seasons 2016–2019 [dataset]. PANGAEA, https://doi.org/10.1594/PANGAEA.957431

Recent External Funding

Subcontract: ICECAPS-MELT $355,853; *Sept 2023 - Present*
Source: US National Science Foundation via Washington State University
Duties: Develop snow science field program supporting novel polar cloud and energy budget platform. Analyze field data, run and develop firn models of intermediate complexity.

Grant: Mount Baker Climate Laboratory $50,000; *Jul 2024 - Present*
Source: The San Diego Foundation
Duties: Deploy, collect, analyze micrometeorological sensor network. Advise interns. Manage stakeholder collaborations. Publish data. Secure follow-on funding.

Tuition: Earth and Space Research - Summer Institute $25,000; *Jul 2024 - Present*
Source: Earth and Space Research
Duties: Develop and administrate geophysical youth mentorship program. Develop educational and youth safety training materials. Hire and train mentors. Run day-to-day classroom.

Contract: NPI - TONe-ICO Installation $55,146; *Nov 2024 - Apr 2025*
Source: Norwegian Polar Institute
Duties: Helped plan and deploy the Integrate Cloud Observatory. Developed initial surface-based micrometeorological program to understand East Antarctic nunatak microclimates. Presented first observations at international conferences. Initiated Citizen Science analysis of TONe-ICO data.

Contract: Verification of Solar Radiation Management Interventions $228,515; *Nov 2023 - Jan 2025*
Source: Reflective Earth
Duties: Develop satellite-based tools to verify surface-based solar radiation management interventions such as coating of pavement with reflective paint. Communicate tool functionality and results to stakeholders.

Selected Presentations and Conference Service

Delivered by M. Town

Session chair at the 2025 Busan Assembly on Cryosphere, Oceanography, and Meteorology (BACO): JCM01 Coupling Between the Atmosphere and Snow/Ice Surfaces: Observations and Modelling.

Town, M.S., A. Sledd, V.P. Walden, H. Guy, R.R. Neely, M.D. Shupe, M. Gallagher, C.M. Stevens, C.J. Cox. Exploration of heat transfer methods in polar snow using the Community Firn Model, 2025 BACO Assembly, Busan, Korea.

Hudson S.R., R.R. Neely, **M.S. Town**, VP Walden, M Bratrein. Observations of Polar Clouds and Boundary Layer Processes from the Integrated Cloud Observatory at Troll Station, Antarctica, 2025 BACO Assembly, Busan, Korea.

Town, M.S., A. Sledd, V.P. Walden, H. Guy, R.R. Neely, M.D. Shupe, M. Gallagher, C.M. Stevens, C.J. Cox. Temperatures, Energy Fluxes, and Melt Episodes in Near-surface Snow at Summit Station, Greenland, 2025 AMS Denver Summit.

Hudson S.R., RR Neely, **M.S. Town**, VP Walden, M Bratrein. First Observations of Polar Clouds and Boundary Layer Processes from the Integrated Cloud Observatory at Troll Station, Antarctica, 2025 AMS Denver Summit.

Town, M.S., C Mehring, L Searl, D Parry, 2023. Citizen Science: Near-surface atmospheric and surface soil temperatures from the southern aspect of Mt. Baker, WA (July 2018-July 2023) deployed by a high school outdoor progam. AGU Fall Meeting Abstracts 2023 (2127), H43E-2127.

Town, M.S., C. Mehring, L. Searl, D. Parry, T. Anand. Air temperature and snow extent from iButton temperature measurements on the southern aspect of Mt. Baker, WA USA. Northwest Science Association, Cal Poly, Humboldt, CA, USA, 16 May 2022.

Town, M.S., I. Gorodetskaya, H. Gallee, S.G. Warren, V.P. Walden, E.D. Waddington. The surface energy budget at South Pole, Antarctica, from observations and a regional model. Risk Management Solutions, London, May 2021. (Invited Talk).

Town, M.S., Student performance based on race and gender at Lakeside School from 2014-2019. Lakeside School, March 2021.

Town, M.S., Gleaming your own Cube: How to make a skateboard. CO Corvallis Maker Fair, Oregon State University, April 9, 2016. (Invited Interactive Presentation).

Town, M.S., Integrating Arts into STEM Education: Providing a Visceral Experience. CO Corvallis Maker Fair, Oregon State University, April 8, 2016. (Invited Talk).

Town, M.S., Current Issues in Climate Change. Lakeside School, Seattle, WA USA, May 2014.

Town, M.S., I. Gorodetskaya, H. Gallee, S.G. Warren, V.P. Walden, E.D. Waddington. The surface energy budget at South Pole, Antarctica, from observations and a regional model. University of New South Wales, Sydney, Australia, 25 May 2009. (Invited Talk).

Town, M.S., S.G. Warren, V.P. Walden, E.D. Waddington. Effect of atmospheric water vapor on water stable isotopes in near-surface snow on ice sheets. Niels Bohr Institute, Copenhagen, Denmark, 21 February 2008. (Invited talk).

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France, 12 February 2008. (Invited talk).

Town, M.S., V.P. Walden, S.G. Warren. Energy transfer processes affecting isotopic fractionation in the near- surface snow on the Antarctic Plateau. International Union of Geodesy and Geophysics, Perugia, Italy, 2- 13 July 2007. (Talk).

Town, M.S., V.P. Walden, S.G. Warren. Energy transfer processes over the Antarctic Plateau. American Geophysical Union Fall Assembly, San Francisco CA, 11-15 December 2006. (Talk).

Town, M.S. A summary of: Adaptation and mitigation: Responses to climate change. The NCCR Climate summer school Swiss Climate Research. Program on Climate Change Summer Institute, Leavenworth WA, 22 September 2006. (Talk).

Town, M.S., V.P. Walden, S.G. Warren. Cloud cover climatology for the South Pole from surface-based infrared radiation measurements. Graduate Climate Conference, Pack Forest, April 2006. (Poster).

Town, M.S., V.P. Walden, S.G. Warren. Cloud cover from ground-based infrared measurements at the South Pole. Cloud Climatology Workshop 2005, Madison Wisconsin, 5-6 April 2005. (Talk).

Town, M.S., V.P. Walden, S.G. Warren. Cloud cover climatology for the South Pole from surface-based infrared radiation measurements. 8 th Conference on Polar Meteorology, American Meteorological Society, San Diego CA, 9-13 January 2005. (Extended Abstract and Poster).

Town, M.S., V.P. Walden. Uncertainty analysis of data from the Polar Atmospheric Emitted Radiance Interferometer (PAERI) during the South Pole Atmospheric Radiation and Cloud Lidar Experiment (SPARCLE). International Radiation Symposium, International Radiation Commission, Busan Korea, 23- 28 August, 2004. (Extended Abstract and Poster).

Computer Skills

- Operating Systems: Linux/Unix, Windows, MacOS,
- Languages: Python, Matlab, some Unix shell scripts, some SQLite
- Packages: Pandas, Scikit-Learn, LaTeX, DB Browser, common Linux/Windows/MacOS database, spreadsheet, and presentation software
- Models: LBLRTM, SNOWPACK, MAR, finite-element heat transfer modeling

Other Skills

- Wilderness First Aid (2016-present)
- Wilderness First Aid Instructor (2019-2024)
- Nordic ski patrol for Mount Tahoma Ski Trails (2016-2024)
- Avalanche Recreation Level 1 (2016), Level 2 (2018), Rescue Course (2019)
- Languages spoken: Spanish (conversational); Norwegian (Kafenorsk)

Honors and Awards

- Explorers Club (US National Fellow, 2025-present)
- Knowles Teacher Initiative (Senior Fellow, 2016-present)
- Knowles Teacher Initiative (Fellow, 2011-2016)
- Alpha Sigma Nu (ΣN) Honors Society (2011)
- Antarctic Service Medal (2001).
- Member of Sigma Pi Sigma (National Physics Honors Society, 1999)
- Research Undergraduate Experience Fellowship (1998)
- Member of Golden Key National Honor Society (1998)
- Dean's List (1995-1998)

Current Professional Societies and Service

- American Avalanche Association

- American Geophysical Union
- American Meteorological Society
- Explorers Club
- International Commission on Polar Meteorology (ICPM)
- Knowles Teacher Initiative

References

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