

# Douglas M. Hultstrand, MS

Senior Hydrometeorologist

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720.771.5840

## EDUCATION

### Ph.D. Candidate Earth Sciences

Present

Colorado State University  
Fort Collins, CO

### M.S. Watershed Science, Snow Hydrology

August 2006

Colorado State University  
Fort Collins, CO

*Thesis:* "Geostatistical Methods for Estimating Snowmelt Contribution to the Annual Water Balance in an Alpine Watershed"

### B.A. Physical Geography, Hydrology Certificate

May 2003

University of Colorado  
Boulder, CO

## RELATED SKILLS

### *Hydrometeorological Techniques*

- Water Balance
- Discharge Measurements
- Meteorological Measurement & Analysis
- Spatial Modelling
- Water Sampling
- Snow Survey and Sampling Methods
- Data Analysis
- Watershed Modelling
- Snow & Ground Energy Balance Computations
- Storm Analysis
- Dew Point Analysis
- Areal Reduction Factor (ARF) Calculations
- Error Analysis/QC
- Eddy Covariance
- Snowmelt & Snowpack Sublimation Analysis

### *Computer Skills*

- ArcView
- ArcGIS 8.x/9.x
- ArcInfo
- MATLAB
- MS Word
- MS Excel
- MS Access
- MS Power Point
- SPLUS/R
- IDL
- HEC-HMS
- Lecia Software
- PRMS
- GIS Weasel
- ERDAS
- Solar Analyst
- GRASS GIS
- Linux/Unix
- SPAS
- RAOB
- Perl
- GrADS
- IPW Toporad
- DNR Garmin

## WORK EXPERIENCE

### Senior Hydrometeorologist

Windsor, CO

Metstat, Inc.

2006 - Present

- Perform in-depth storm studies of extreme precipitation events using SPAS.
- Conduct data analysis and meteorological support for Hydrometeorological studies.

### Graduate Teaching Assistant

Fort Collins, CO

Colorado State University, Dept. of FRWS

2004 – 2006

- WR 440 - Watershed Problem Analysis
- WR 474/574 - Snow Hydrology

### Graduate Research Assistant

Fort Collins, CO

Colorado State University

2005 – 2006

- Analyzed 16 yrs of meteorologic and hydrologic data for the USFS Rocky Mountain Research Station
- Modelled the spatial and temporal snowmelt runoff in a small alpine watershed.

### **Hydrologic Technician**

USGS Alpine Hydrology Research Group (AHRG)

Lakewood, CO

2002 – 2005

- Performed QA/QC methods on 15 yrs of meteorological data and loaded into MS database.
- Conducted snow sampling, water quality sampling, and discharge sampling.

### **Undergraduate Research Assistant**

Institute of Arctic and Alpine Research (INSTAAR),  
University of Colorado

Boulder, CO

2002 – 2003

- Collected and analyzed alpine hydrologic/meteorologic data on Niwot Ridge, CO.
- Created an IDL program to filter and plot balloon sonde data collected in Summit, Greenland.

### **AWARDS & HONORS**

- Colorado Water Resources Research Institute (CWRI) Grant (\$5,000), 2008-2009
- Graduate Research Funds, 2005
- USGS STAR Award, 2003, 2004, and 2005
- Albert W. Smith Geography Scholarship, 2002
- Dean's List, 1999, 2000, 2001, and 2002
- The National Society of Collegiate Scholars, 2001
- Phi Beta Kappa, 2001

### **PROFESSIONAL SOCIETIES**

- American Geophysical Union (AGU)
- American Meteorological Society (AMS)
- Western Snow Conference (WSC)
- Association of State Dam Safety Officials (ASDSO)

### **PUBLICATIONS & REPORTS**

- **Hultstrand, D.M.**, T.W. Parzybok, E.M. Tomlinson and W.B. Kappel. Advanced Spatial and Temporal Rainfall Analyses for Use in Watershed Models. In *U.S. Geological Survey Scientific Investigations Report: Proceedings of the Third Interagency Conference on Research in the Watersheds*, Estes Park, CO, September 8-11 2008 (in press).
- **Hultstrand, D.M.**, J.D. Stednick, and S.R. Fassnacht. Geostatistical Methods for Estimating Snowmelt Contribution to the annual Water Balance of an Alpine Watershed, Wyoming, USA. *Hydrological Processes*. (in review).
- Tomlinson, E.M., W.B. Kappel, T.W. Parzybok, **D.M. Hultstrand**, and G. Muhlestein, 2008. Site-Specific Probable Maximum Precipitation (PMP) Study for the Florence Drainage Basin, AZ.
- Tomlinson, E.M., W.B. Kappel, T.W. Parzybok, **D.M. Hultstrand**, and G. Muhlestein, 2008. Site-Specific Probable Maximum Precipitation (PMP) Study for the Magma Drainage Basin, AZ.
- Tomlinson, E.M., W.B. Kappel, T.W. Parzybok, **D.M. Hultstrand**, and G. Muhlestein, 2008. Site-Specific Probable Maximum Precipitation (PMP) Study for Blenheim-Gilboa Drainage Basin, NY.
- Tomlinson, E.M., W.B. Kappel, P.J. Diederich, T.W. Parzybok, and **D.M. Hultstrand**, 2008. Nebraska Statewide Probable Maximum Precipitation (PMP) Study.
- Tomlinson, E.M., W.B. Kappel, T.W. Parzybok, **D.M. Hultstrand**, and G. Muhlestein, 2007. Site-Specific Probable Maximum Precipitation (PMP) Study for the Wanahoo Drainage Basin, Nebraska.
- Fassnacht, S.R., **D.M. Hultstrand**, and R.C. Bales, 2007. Physiographic Variables to Describe Basin Scale Snow Water Equivalent. *EOS Trans.*, AGU, Fall Meet. Suppl., 88(52): C21B-0456.

- Ingersoll, George P., Mast, M. Alisa, Nanus, Leora, Handran, Heather H., Manthorne, David J., and **Hultstrand, Douglas M.**, 2007, Rocky Mountain snowpack chemistry at selected sites, 2004: U.S. Geological Survey Open-File Report 2007-1045, 15 p. ([link](#))
- **Hultstrand, D.M.**, S.R. Fassnacht, and J.D. Stednick, 2006. Geostatistical Methods for Estimating Snowmelt Contribution to an Alpine Water Balance. *Proceedings of the Western Snow Conference*, Las Cruces, NM, April 17-20 2006.
- **Hultstrand, D.M.**, 2006. *Geostatistical Methods for Estimating Snowmelt Contribution to the Seasonal Water Balance in an Alpine Watershed*. Master of Science Thesis, Watershed Science Program, Colorado State University, 130 pp. ([link](#))
- Korfmacher, J.L. and **D.M. Hultstrand**, 2006. Glacier Lakes Ecosystem Experiments Site (GLEES) NADP (WY00) hourly meteorological tower data: 1991-2005. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. ([link](#))
- Korfmacher, J.L. and **D.M. Hultstrand**, 2006. Glacier Lakes Ecosystem Experiments Site (GLEES) hourly meteorological tower data: 1989-2005. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. ([link](#))
- Ingersoll, G.P., Mast, M.A., Nanus, Leora, Manthorne, D.J., Handran, H.H., **Hultstrand, D.M.**, and Winterringer, J, 2005. Rocky Mountain Snowpack Chemistry at Selected Sites, 2003: U.S. Geological Survey Open-File Report 2005-1332, 17 p. ([link](#))

## PRESENTATIONS

- 2009, Presentation, Improving Hydrologic Calibration and Validation Analyses with Radar-Estimated Precipitation from the Storm Precipitation Analysis System. Northeast Regional ASDSO, State College, Pennsylvania.
- 2009, Speaker, Incorporating Advanced Spatial and Temporal Rainfall Data into Hydrologic Models. Waterpower XVI, Spokane, Washington.
- 2009, Presentation, Improving Hydrologic Analysis and Applications through the Use of Near Real-Time Storm Precipitation Analysis System (SPAS). Waterpower XVI, Spokane, Washington.
- 2009, Presentation, How six Extreme Pacific Northwest Storms Compare to Historical Storms in HMR 57. Western Regional ASDSO, Couer d'Alene, Idaho.
- 2009, Presentation, Arizona Statewide Probable Maximum Precipitation (PMP), Improving HMR 49. Western Regional ASDSO, Couer d'Alene, Idaho.
- 2009, Speaker, Improving Hydrologic Analysis and Applications through the Use of Quality Controlled Radar Data and the Storm Precipitation Analysis System. National Hydrologic Warning Council, Vail, Colorado.
- 2009, Speaker, Accuracy of Spatial Precipitation Estimates for Hydrologic Modelling. 29<sup>th</sup> Annual American Geophysical Union (AGU) Hydrology Days, Fort Collins, Colorado.
- 2008, Presentation, High-Resolution Storm Rainfall Analysis for Use in Hydrologic Modeling: Storm Precipitation Analysis System (SPAS) and NEXRAD Weather Radar, Hydrovision, Sacramento, CA.
- 2008, Poster, Advanced Spatial and Temporal Rainfall Analysis for Use in Watershed Models, Third Interagency Conference on Research in the Watersheds, Estes Park, CO.
- 2008, Speaker, Estimating Errors Associated with Calculated Sublimation from Seasonally Snow-Covered Environments, Colorado Water Resources Research Institute, Fort Collins, CO.
- 2007, Presentation, Detailed Storm Rainfall Analysis for Hurricane Ivan Flooding in Georgia Using the Storm Precipitation Analysis System (SPAS) and NEXRAD Weather Radar, Hydropower, Knoxville, TN.
- 2006, Speaker, Glacier Lakes Ecosystems Experiments Site (GLEES), Rocky Mountain Research Station (RMRS) Project Review.
- 2006, Thesis Defense, Colorado State University, Fort Collins, Colorado.
- 2006, Poster, Western Snow Conference, Las Cruces, New Mexico.

- 2006, Speaker, Geostatistical Methods for Estimating Snowmelt Contribution to the Annual Water Balance in an Alpine Watershed. 26<sup>th</sup> Annual American Geophysical Union (AGU) Hydrology Days, Fort Collins, Colorado.
- 2005, Speaker, 60<sup>th</sup> Annual Meeting of the Rocky Mountain Hydrologic Research Center (RMHRC), Fort Collins, Colorado.