

**Dr. Ronald Daanen, Geophysical Institute, University of Alaska Fairbanks,  
Fairbanks, Alaska**

**Professional Preparation**

1988-1991 Horticultural education; 't Vanck, Nijmegen  
1994 BA Environmental Engineering; Van Hall Instituut, Groningen  
1997 MA Agricultural Engineering; Wageningen University, Wageningen  
2004 PhD Water Resource Science; University of Minnesota, Minneapolis

**Appointments**

2005-present Post Doctoral fellow with the Geophysical Institute, University of Alaska Fairbanks.  
2004-2005 Post Doctoral Fellow in the Department of Geological Engineering University of Alaska Fairbanks.  
1997-2004 Research Assistant in the Department of Biosystems and Agricultural Engineering, University of Minnesota.

**Areas of specialization**

Freezing soils, Non-sorted circles, Snow pack dynamics, Snow and frozen ground modeling, numerical modeling, meteorological- soil- and snow data acquisition, Environmental sciences, Nature conservation, Waste water purification, Helophyte filters, Agricultural hydrology and Drainage design, Super computing, Heat transport, Arctic tundra, Cold climate Hydrology, Cryosphere.

**Teaching experiences and interest**

Graduate student guidance (2006-2007)  
Instructor for the STEP program (2007)  
Taught the course Moisture and Heat Transfer in Unsaturated Soils (2006).  
Supervised an undergraduate student performing laboratory experiments (2006).  
Supervising two summer interns at the Arctic Region Supercomputing Center (2005).  
Hydrology lab, modeling frost boil ecosystems in the arctic tundra (2005).  
Volunteer teacher assistant at University Park elementary (2005).  
Vadose zone hydrology field course 2000 and 2002.  
Hydrology and landscapes.  
Hydrology of porous media.  
Hydrological model development.  
Permafrost and vadose zone hydrology.  
Snow hydrology.  
Interaction between air and permafrost climate.

**Professional Experiences**

I worked closely together with Biocomplexity research group on along the North American Arctic transect. (<http://www.geobotany.uaf.edu/cryoturbation/>)  
I lead multiple expeditions to the North Slope of Alaska in summer and winter.  
I developed scientific models on a high performance computing platform.  
I designed an automated drainage and irrigation system for the Alaskan Peatland Experiment. (<http://apex.msu.edu/>)

I developed the model and supervised the visualization development of the project describing small scale patterned ground in the arctic tundra. (<http://snowy.arsc.alaska.edu/WIT3D>)

### **Most relevant publications**

Daanen, R.P., J.L. Nieber, 2008. Liquid water model for Snow. *Cold Regions Engineering* (in press).

Daanen, R. P., D. Misra, H. Epstein, D. A. Walker, and V. E. Romanovsky. 2008. Simulation of non-sorted circle development in arctic tundra ecosystems. *Journal of Geophysical Research-Biogeosciences* (in review).

Daanen, R.P., D. Misra, 2007. Modeling Patterned Ground in the Arctic Tundra., *Vadose Zone Journal* 6, 694-704 doi:10.2136/vzj2006.0173.

Misra, D. and Daanen, R.P. 2005. Visualizing Frost Boils, in: *Challenges in Science and Engineering*, News reported by L. Nettelton, November Issue.

Daanen, R.P. Modeling liquid water flow in snow. PhD thesis, University of Minnesota, April 2004.

Daanen, R.P., 1997. Water flow and heat transport under frost and thaw conditions at an arable field soil with snow cover near Sjökkulla, Finland. MSc-thesis, Sub-department Water Resources, Wageningen University, 86 p.

### **Other publications**

Cohen D., M. Person, R. Daanen, S. Locke, D. Dahlstromn, V. Zabielski, T. C. Winter, D. O. Rosenburry, H. Wright, E. Ito, J. L. Nieber, and W. J. Jr. Gutowski 2006. Groundwater supported evapotranspiration within glaciated watersheds under conditions of climate change, *J. Hydrol.*, 320, 484–500.

### **Abstracts**

Person M., D. Cohen, R. Daanen, J. Nieber, T. Winter, D. Rosenberry, 2003. Aquifer-supported evapotranspiration under conditions of climate change *Geophysical Research Abstracts*, Vol. 5, 01221.

Daanen, R.P. and J.L. Nieber, 1998. Processes of flow and transport in a seasonal snowpack and the underlying seasonally frozen soil, International Conference on Snow Hydrology, The Integration of Physical, Chemical, and Biological Systems Janet Hardy, Mary Albert, and Philip Marsh, Editors, Eastern Snow Conference. US Army Corps of Engineers, Cold Regions Research and Engineering laboratory.

### **Professional Presentations**

Daanen, R.P., D. Misra, H Epstein, and D.A. Walker 2007. Preferential Ice Accumulation due to Differential Soil Surface Insulation in Non-sorted Circle Environments, ASABE, Minneapolis Minnesota.

Donald (Skip) Walker<sup>1</sup>, Howard Epstein<sup>2</sup>, Vladimir Romanovsky<sup>1</sup>, Chien-Lu Ping<sup>1</sup>, Martha Raynolds<sup>1</sup>, Anja Kade<sup>1</sup>, Ronnie Daanen<sup>1</sup>, 2007. The North American Arctic Transect: An Interdisciplinary Study of Permafrost and Patterned Ground Across the Arctic Climate Gradient, Arctic AAAS Anchorage, 24-26 Sep.

Daanen, R.P., D.A. Walker, H.A. Epstein, R. Peterson, D. Nicolsky, A. Kelley, D. Misra 2006. Modeling Physical and Biological Processes in Patterned-Ground Ecosystems along the NAAT, AGU Fall Meeting, San Francisco, California.

Daanen, R.P., D. Misra, H.A. Epstein and D.A. Walker, 2006. Modeling Hydrology-Vegetation Complexity in Non-Sorted -Circle Ecosystems AAAS, Fairbanks Alaska.

Daanen, R.P. D. Misra, A. Kade and H. Epstein, 2006. The Effect of Vegetation on Simulated Differential Ice Accumulation in Non-Sorted Circles Ecosystems, ASABE, Portland Oregon.

Walker, D.A. R.P. Daanen, H.E. Epstein, G. Gonzalez, W. Gould, A. Kade, A. Kelley, W. Krantz, G.M. Michaelson, C. Munger, D. Nicolsky, , R. Peterson, C.L. Ping, M.K. Raynolds, V.E. Romanovsky, Y. Shur, C. Tarnocai, G. Tipenko, I. Timling, C. Vonlanthen, 2005. The North American Arctic Transect: studies of patterned-ground ecosystems across the full Arctic bioclimate gradient, AGU Fall Meeting, San Francisco, California.

### **Posters**

Daanen, R.P., V.E Romanovsky, S.S. Marchenko, D. Nickolky, D.O. Sergeev, and D.A. Walker, 2006. Soil climate and vegetation along the North American Arctic Transect. AAAS, Fairbanks Alaska.

Daanen, R.P., D.M. Misra, and H.E. Epstein, 2005. Modeling the Hydrology and the Effect of Climate Warming on the Non-Sorted Circle Ecosystem in the Arctic Tundra. AGU Fall Meeting, San Francisco, California.

Daanen, R.P. and D. Misra, 2005. Modeling Patterned Ground Dynamics in the Arctic Tundra, International conference of Agricultural Engineers, Tampa Florida.

Daanen, R.P. and D. Misra, 2005. Modeling frost boil hydrology, WERC seminar, Fairbanks, Alaska.

Nieber, J.L. and R.P. Daanen, 2003. Septic system drainage, Indiana pollution control agency, Indianapolis, Indiana.

Daanen, R.P, 2002. Liquid water flow in snow, Eastern Snow Conference, Ottawa, Canada.

Daanen, R.P. and J.L. Nieber, 1998. Processes of flow and transport in a seasonal snowpack and the underlying seasonally frozen soil. Eastern Snow Conference, Hanover, New Hampshire.

Daanen, R.P. and J.L. Nieber, 1998. Tracer transport in snow, Conference Water 98, Minneapolis, Minnesota.

### **Special achievements**

Organized and lead expeditions to the North Slope, Alaska (2005 and twice in 2006). Expedition to Ellef Rigness, Prince Patrick, Banks Island in Northern Canada with the biocomplexity research group (April and August 2006).

Expedition to Prince Patrick Island with the biocomplexity research group (2004).

Expedition to Banks Island with the biocomplexity research group (2003).

Head of ward 15 in the Commonwealth Terrace Cooperative Housing, University of Minnesota (2001-2002)

Chairperson of the Grounds Committee at the Commonwealth Terrace Cooperative Housing, University of Minnesota, (2002-2003).

Data acquisition (Campbell Scientific equipment) (1998-present).

Speak three languages fluently (Dutch, German and English).

9<sup>th</sup> place in the International Ice Art Championship.

### **Current and previous collaborations**

Vladimir Romanovsky, University of Alaska Fairbanks

Donald (Skip) Walker, University of Alaska Fairbanks

John Nieber, University of Minnesota

Debasmita Misra, University of Alaska Fairbanks

Merit Turetsky, Michigan State University

David McGuire, University of Alaska Fairbanks

Ina Timling, University of Alaska Fairbanks

Mark Person, Indiana University

Denis Cohen, Yale University

Donald Rosenberry, U.S. Geological Survey

### **Synergetic activities**

Member, American Geophysical Union, (2005-present)

Member, US Permafrost association (2006-present)

### **F. Collaborations & other affiliations**

i)

Vladimir Romanovsky, University of Alaska Fairbanks

Donald (Skip) Walker, University of Alaska Fairbanks

John Walsh, University of Alaska Fairbanks

Jens Hesselbjerg Christensen, DMI, DK

Martin Stendal DMI, DK

Martin Drews DMI, DK

Debasmita Misra, University of Alaska Fairbanks  
Merit Turetsky, Michigan State University  
Jenifer Harden, US Geological Survey  
David McGuire, University of Alaska Fairbanks  
Mark Person, Indiana University  
Denis Cohen, Iowa State University  
Donald Rosenberry, U.S. Geological Survey

**ii) Graduate advisors**

John Nieber, University of Minnesota  
Jos van Dam, Wageningen University  
Tuomo Karvonen, Technical university of Finland

**iii) Thesis advisor**

Bhaskar Sahoo (ms)