

Dr. Steve W. Lyon

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Educational Experience

- Docent Stockholm University (Stockholm, Sweden) Jun. 2011
Physical Geography with emphasis on Hydrology
- PhD Cornell University (Ithaca, New York, USA) Mar. 2006
Department of Biological and Environmental Engineering
Dissertation: Incorporating the spatial structure of shallow water tables into hydrology
- MS Cornell University (Ithaca, New York, USA) Jan. 2003
Department of Biological and Environmental Engineering
Thesis: Using a topographic index to distribute variable source area runoff predicted with the SCS-curve number equation
- BS Purdue University (West Lafayette, Indiana, USA) May 2001
Department of Agricultural and Biological Engineering
Major Focus in Environmental and Natural Resources Engineering, Minor in Mathematics

Professional Experience

- Senior Lecturer in Hydrology (Universitetslektor) Jan. 2010 to Present
Department of Physical Geography and Quaternary Geology, Stockholm University
- Postdoctoral Research Associate (Forskare) Jan. 2008 to Dec. 2009
Bert Bolin Centre for Climate Research (BBCC), Stockholm University
- Postdoctoral Research Associate Apr. 2006 to Jan. 2008
Surface Water Hydrology Group, Dept. of Hydrology and Water Resources, Univ. of Arizona
- Graduate Research and Teaching Assistant Sep. 2001 to Apr. 2006
Soil and Water Lab, Dept. of Biological and Environmental Engineering, Cornell University
- Undergraduate Research Assistant May 2000 to Sep. 2001
U.S. Department of Agriculture, National Soil Erosion Research Lab
- Undergraduate Teaching Assistant Sep. 1999 to Apr. 2000
Dept. of Agricultural and Biological Engineering and College of Engineering, Purdue University

Relevant Computer and Language Skills

Programming Languages

MATLAB, Visual BASIC, FORTRAN, C, HTML, Avenue

Software and Platforms

GIS (ArcView, ArcGIS, GRASS, PCRaster, Saga), AutoCAD, UNIX, Windows

Languages

Fluent in English (native language), basic Swedish

Professional Activities and Involvement

Referee commissions for international journals

Number following journal title is the approximate number of commissions per year:

Water Resources Research (4), Journal of Hydrology (4), Hydrological Processes (3), Hydrology and Earth Systems Science (3), International Journal of GIS (2)

Less than 1 commission per year:

Journal of Hydrometeorology, Hydrological Sciences Journal, Ecohydrology, Water Management, Plant and Soil, Journal of Environmental Quality, Journal of Environmental Management, Journal of Irrigation and Drainage Engineering, Journal of Climate, Journal of Spatial Hydrology, Annals of Glaciology, Journal of Stochastic Environmental Research & Risk Assessment

International Proposal Reviewer

Service in proposal reviewer capacity for National Science Foundation (US), Natural Environmental Research Council (UK), Fonds National de la Recherche (Luxembourg)

Professional memberships

American Geophysical Union, European Geosciences Union, American Society of Agricultural and Biological Engineers, Alpha Epsilon (Agricultural Engineering Honorary), Tau Beta Pi (Engineering Honorary), Gamma Sigma Delta (Agricultural Honorary), Engineer in Training

Awards and Fellowships

Ivar Bendixsons stipendiefond för docenter (2012), BBCC Poster awards in Innovation and Cross-cutting Research (2010), Stiftelsen Oscar af Ugglas travel grant (2009), NSF-IGERT Grant: Vespucci Summer School for SDI and Spatial Grid (2005), American Scandinavian Foundation Fellow (2004-2005), NSF-IGERT Equipment Grant in Biogeochemistry and Environmental Biocomplexity (2003), Annie's Homegrown Environmental Studies Scholarship (2002), International Erosion Control Association's Thrill of Achievement Scholar (2000)

Organizer of the INK Professor Seminar Series within Physical Geography and Quaternary Geology at Stockholm University.

Representative for Stockholm University on The Swedish Hydrological Council (SHR)

Group Member and proposal contributor to Nordic Network PERMA-NordNet, B. Etzelmuller (PI), 900k Nkr. From Nordforsk

Conferences and Workshops

Sessions Convened

AGU session H47: From pores to catchments: Coupling hydrologic concepts and models across multiple scales. December, 2010. San Francisco, CA, USA. Co-convener with R. Mohtar, J. Ascough

EGU session HS4.4: Observational hydrology: Snap-shot sampling of streams and catchments. May 3, 2010. Vienna, Austria. Co-convener with J. O. Skøien, R. Woods

AGU session H23: Catchment Processes and Heterogeneity at Multiple Scales – Benchmarking Observations, Conceptualization and Prediction. December, 2008. San Francisco, CA, USA. Co-convener with D. Tetzlaff, K. McGuire, H. Laudon, S. Carey, J. McNamara

EGU session HS10.18: Linking catchment hydrological and biogeochemical processes across spatial scales. April 15, 2008. Vienna, Austria. Co-convener with H. Laudon

Workshops Organized

NCAR Junior Faculty Forum: Coupling Terrestrial and Atmospheric Water Dynamics. July 9-11, 2007. Boulder, Colorado. Co-organized with F. Dominguez and D. Gochis

Recently Attended Conferences/Workshops/Symposia/Meetings

American Geophysical Union Fall Meeting, San Francisco, California (2005-2010)
European Geosciences Union General Assembly, Vienna, Austria (2005, 2008-2010, 2012)
NEO workshop on Wetlands and Ecohydrology, Costa Navarino, Peloponnesos, Greece (2011)
Annual Krycklan Symposium, Umeå, Sweden (2008, 2011)
Spatio-temporal patterns in the carbon balance of northern high latitude regions, Stockholm, Sweden (2010)
Synthesizing International Understanding of Changes in the Arctic Hydrological System Arctic, HYDRA Workshop, Stockholm, Sweden (2009)
BBCC Annual Meeting Stockholm, Sweden (2008, 2009)
State of the art of catchment-scale residence time: conceptualization, modeling and analysis, IAEA Workshop, Vienna, Austria (2009)
Spatial Statistics in Watercourses SLU Workshop, Uppsala, Sweden (2008)
Diagnostics in Hydrology PUB Workshop, Tucson, Arizona (2007)
Soil and Water Conservation Society Annual Meeting (2003, 2006)

Research Grants and Funds Administered

Water resources effects of land-water management in Tanzania, Africa, S.W. Lyon (PI), Jarsjö, Lindborg, Dahlke, Holmgren, Swedish International Development Agency (SIDA) (2.4M SEK) 2012-2014.
Improved streamflow and flood monitoring using remotely sensed LiDAR data, S.W. Lyon (PI), H. Laudon (SLU-Umeå), M. Nathansson, The Swedish Research Council – Vetenskapsrådet (VR) (2.2M SEK) 2012-2014.
Cross-scale modeling of coupled hydrological-permafrost interactions and carbon transport in a changing climate, S.W. Lyon (PI), A. Frampton, G. Svensson, M. Mörth, C. Humborg, BBCC Postdoctoral Funding (1.0M SEK) 2012-2013.
The role of the NAO in isotopic snowpack variability across scales in Scandinavia, S.W. Lyon, C. Sturm, V. Thiébaud, H. Dahlke, BBCC small funds (25k SEK) 2011.
Ecohydrological monitoring network development within the Navarino Environmental Observatory (NEO), S.W. Lyon and M.T. Walter (Cornell University), SU international collaboration incentive (50k SEK) 2011.
Modeling permafrost spatial distributions and thawing rates in arctic/sub-arctic Sweden using recession flow analysis, S.W. Lyon (PI) and G. Destouni (co-PI), Funded by Sveriges geologiska undersökning, SGU (1.14M SEK) 2010-2012.
Investigating the scale dependency of hydrologic processes through the combination of innovative tracer techniques and landscape similarity analysis, S.W. Lyon (PI) and Laurent Pfister (Centre de Recherche Public – Gabriel Lippmann, Luxembourg), Fonds National de la Recherche Luxembourg, Mobility-In (25k SEK) 2010.
Coupling terrestrial and atmospheric water dynamics to improve predictability in a changing environment, S.W. Lyon, F. Dominguez (UofA), D. Gochis (NCAR), NCAR-ECSA Junior Faculty Forum Program (\$30k) 2007.
How do hillslope- to catchment-scale flow paths develop in response to an extreme drought followed by record precipitation?, P.A. Troch (PI) (UofA); P. Brooks (co-PI) (UofA); S.W. Lyon (senior personnel), NSF Small Grants for Exploratory Research (SGER) Program (\$26k) 2007.

Administered Funds

Abiskoajokken Hydrologic Development, Administered \$15k, VR, 2008
Santa Catalina Field Site Development, Administered \$320k, University of Arizona, 2006-2007
Valles Caldera Field Site Development, Administered \$250k SAHRA, 2006-2007

Publications

Peer-Reviewed Journals

- (31) Nathanson, M., Kean, J.W., Grabs, T.J., Seibert, J., Laudon, H., and Lyon, S.W. (2012), Modeling rating curves using remotely sensed LiDAR data. *Hydrological Processes*, *in press*.
- (30) Dahlke, H.E., Easton, Z.M., Lyon, S.W., Walter, M.T., Destouni, G., and Steenhuis, T.S. (2011), Dissecting the variable source area concept - Subsurface flow pathways and water mixing processes in a hillslope, *Journal of Hydrology*, 420-421, 125-141. doi:10.1016/j.jhydrol.2011.11.052.
- (29) Lyon, S.W. and C. Teutschbein (2011), Problem-based learning and assessment in hydrology courses: Can non-traditional assessment better reflect intended learning outcomes?, *Journal of Natural Resources and Life Sciences Education*, 40, 199-205, doi:10.4195/jnrlse.2011.0016g.
- (28) Frampton, A., S. Painter, S.W. Lyon, and G. Destouni (2011), Non-isothermal, three-phase simulations of near-surface flows in a model permafrost system under seasonal variability and climate change, *Journal of Hydrology*, 403(3-4), 352-359, doi:10.1016/j.jhydrol.2011.04.010.
- (27) Lyon, S.W., T. Grabs, H. Laudon, J. Seibert, and K. Bishop (2011), Variability of groundwater levels and total organic carbon (TOC) in the riparian zone of a boreal, *JGR-Biogeosciences*, 116, G01020, doi:10.1029/2010JG001452.
- (26) Volkmann, T., S.W. Lyon, H. Gupta, and P.A. Troch (2010), Multi-criteria design of rain gauge networks for flash flood prediction in semi-arid catchments with complex terrain, *Water Resources Research*, 46, W11554, doi:10.1029/2010WR009145.
- (25) Koutsouris, A.J., J. Jarsjö, G. Destouni, and S.W. Lyon (2010), Hydro-climatic trends and water resource management implications based on multi-scale data in the Lake Victoria region, Kenya, *Environmental Research Letters*, 5, doi:10.1088/1748-9326/5/3/034005.
- (24) Lyon, S.W., G. Destouni, R. Giesler, C. Humborg, M. Mörth (2010), The relationship between subsurface hydrology and dissolved carbon fluxes for a sub-arctic catchment, *Hydrology and Earth Systems Sciences*, 14, 941-950, doi:10.5194/hess-14-941-2010.
- (23) McDonnell, J., K. McGuire, P. Aggarwal, K. Beven, D. Biondi, G. Destouni, S. Dunn, A. James, J. Kirchner, P. Kraft, S. Lyon, P. Maloszewski, B. Newman, L. Pfister, A. Rinaldo, A. Rodhe, T. Sayama, J. Seibert, K. Solomon, C. Soulsby, M. Stewart, D. Tetzlaff, C. Tobin, P. Troch, M. Weiler, A. Western, A. Wörman, S. Wrede (2010), How old is the water? Open questions in catchment transit time conceptualization, modelling and analysis, *Hydrological Processes*, 24(12), 1745-1754, doi:10.1002/hyp.7796.
- (22) Harpold, A.A., S.W. Lyon, P.A. Troch, and T.S. Steenhuis (2010), Effects of preferential hydrological pathways in a glaciated watershed in the Northeastern USA, *Vadose Zone Journal*, 9(2), 397-414, doi:10.2136/vzj2009.0107.
- (21) Lyon, S.W., H. Laudon, J. Seibert, M. Mörth, D. Tetzlaff, and K. Bishop (2010), Controls on snowmelt water mean transit times in northern boreal catchments, *Hydrological Processes*, 24(12), 1672-1684, doi:10.1002/hyp.7577.
- (20) Lyon, S.W. and P.A. Troch (2010), Development and application of a catchment similarity index for subsurface flow, *Water Resources Research*, 46, 3, doi:10.1029/2009WR008500.
- (19) Lyon, S.W. and G. Destouni (2010), Changes in catchment-scale recession flow properties in response to permafrost thawing in the Yukon River Basin, *International Journal of Climatology*, 30, 14, 2138-2145.

- (18) Lyon, S.W., R. Sørensen, J. Stendahl, and J. Seibert (2010), Using landscape characteristics to define an adjusted distance metric for improving kriging interpolations, *International Journal of Geographic Information Science*, 24(5), 723-740, doi:10.1080/13658810903062487.
- (17) Dahlke, H.E., Z.M. Easton, D.R. Fuka, S.W. Lyon, and T.S. Steenhuis (2009), Modelling variable source area dynamics in a CEAP watershed, *Ecohydrology*, 2, 337-249, doi: 10.1002/eco.58.
- (16) Broxton, P.D., P.A. Troch, and S.W. Lyon (2009), On the role of aspect to quantify water transit times in small mountainous catchments, *Water Resources Research*, 45, W08427, doi:10.1029/2008WR007438.
- (15) Griffiths, P.G., C.S. Magirl, R.H. Webb, E. Pytlak, Troch, P.A., and S.W. Lyon (2009), Spatial precipitation frequency of an extreme event: the July 2006 mesoscale convective complexes and floods in southeastern Arizona, *Water Resources Research*, 45, W07419, doi: 10.1029/2008WR007380.
- (14) Lyon, S.W., G. Destouni, R. Giesler, C. Humborg, M. Mörth, J. Seibert, J. Karlsson, and P.A. Troch (2009), Estimation of permafrost thawing rates in a sub-arctic catchment using recession flow analysis, *Hydrology and Earth Systems Sciences*, 13, 595-604, doi:10.5194/hess-13-595-2009.
- (13) Lyon, S.W., S.L.E. Desilets, and P.A. Troch (2009), A tale of two isotopes: Differences in hydrograph separation for a runoff event when using δD vs. $\delta^{18}O$, *Hydrological Processes*, 23(4), 2095-2101, doi:10.1002/hyp.7326.
- (12) Lyon, S.W., J. Seibert, A.J. Lembo, T.S. Steenhuis, and M.T. Walter (2008), Incorporating landscape characteristics in a distance metric for interpolating between observations of stream water chemistry, *Hydrology and Earth Systems Science*, 12, 1229-1239, doi:10.5194/hess-12-1229-2008.
- (11) Lyon, S.W., P.A. Troch, P.D. Broxton, N.P. Molotch, P.D. Brooks (2008), Monitoring the timing of snow melt and the initiation of streamflow using a distributed network of temperature/light sensors, *Ecohydrology*, 1(3), 215-224.
- (10) Lyon, S.W., F. Dominguez, D. Gochis, N.A. Brunzell, C.L. Castro, F.K. Chow, Y. Fan, D. Fuka, Y. Hong, P.A. Kucera, S.W. Nesbitt, N. Salzmann, J. Schmidli, P.K. Snyder, A.J. Teuling, T.E. Twine, S. Levis, J.D. Lundquist, G.D. Salvucci, A.M. Sealy, and M.T. Walter (2008), Coupling terrestrial and atmospheric water dynamics to improve prediction in a changing environment, *Bulletin of the American Meteorological Society*, 89(9), 1275-1279.
- (9) Lyon, S.W., S.L.E. Desilets, and P.A. Troch (2008), Characterizing the response of a catchment to an extreme rainfall event using hydrometric and isotopic data, *Water Resources Research*, 44, W06413, doi:10.1029/2007WR006259.
- (8) Lyon, S.W. and P.A. Troch (2007), Hillslope subsurface flow similarity: Real-world tests of the hillslope Péclet number, *Water Resources Research*, 43, W07450, doi:10.1029/2006WR005323.
- (7) Magirl, C.S., R.H. Webb, M. Schaffner, S.W. Lyon, P.G. Griffiths, C. Showmaker, C.L. Unkrich, S. Yatheendradas, P.A. Troch, E. Pytlak, D.C. Goodrich, S.L.E. Desilets, A. Youberg, and P.A. Pearthree (2007), Hydrogeomorphic response to an extreme precipitation event in southern Arizona, *EOS*, 88(17).
- (6) Lyon, S.W., A.J. Lembo, T.S. Steenhuis, and M.T. Walter (2006), Internet mapping tools make scientific applications easy, *EOS*, 87(38).

- (5) Lyon, S.W., M.R. McHale, M.T. Walter, and T.S. Steenhuis (2006), The impact of runoff-generation mechanisms on the location of critical source areas, *Journal of the American Water Resources Association*, 42(3), 793-804.
- (4) Lyon, S.W., J. Seibert, A.J. Lembo, M.T. Walter, and T.S. Steenhuis (2006), Geostatistical investigation into the temporal evolution of spatial structure in a shallow water table, *Hydrology and Earth System Sciences*, 10, 113-125, doi:10.5194/hess-10-113-2006.
- (3) Agnew, L.J., S.W. Lyon, P. Gérard-Marchant, V.B. Collins, A.J. Lembo, T.S. Steenhuis, and M.T. Walter (2006), Identifying hydrologically sensitive areas: Bridging the gap between science and application, *Journal of Environmental Management*, 78, 63-76.
- (2) Lyon, S.W., A.J. Lembo, M.T. Walter, and T.S. Steenhuis (2006), Defining probability of saturation with indicator kriging on hard and soft data, *Advances in Water Resources*, 29(2), 181-193.
- (1) Lyon, S.W., M.T. Walter, P. Gérard-Marchant, and T.S. Steenhuis (2004), Using a topographic index to distribute variable source area runoff predicted with the SCS-curve number equation, *Hydrological Processes*, 18(15), 2757-2771.

Presentations

- 16 Oral presentations delivered
- 10 Poster presentations delivered
- 58 Total Oral/Poster presentation contributions

Invited Abstracts for International Conferences

- Lyon, S.W., Y. Sjöberg, E.J. Jantze, and G. Destouni (2011), Estimating permafrost changes via storage-discharge dynamics, AGU Annual Meeting, San Francisco, CA, Dec. 2011. (Presented by Lyon)
- Frampton, A., S. Painter, S.W. Lyon, Y. Sjöberg, G. Destouni (2011) Transient modeling of permafrost dynamics in a changing climate, AGU Annual Meeting, San Francisco, CA, Dec. 2011. (Presented by Frampton)
- Lyon, S.W., G. Destouni, M. Mörth, C. Humborg, and R. Giesler (2009), Evaluating the influence of changes to hydrologic flow pathways on carbon cycling in a sub-arctic catchment, AGU Annual Meeting, San Francisco, CA, Dec. 2009. (Presented by Lyon)
- Troch, P.A., T. Volkmann, S.W. Lyon, H. Gupta (2009), Where to measure point rainfall during extreme flash flood events in mountainous catchments? *EGU General Assembly*. Abstract EGU2009-5634. Vienna, Austria April 20-24, 2009. (Presented by Lyon)
- Lyon S.W. (2008) Spatial Hydrology: Linking landscape to hydrological response, Part of the workshop: Spatial Statistics in Watercourses, Swedish University of Agricultural Sciences, Uppsala, Sweden. January 31, 2008. (Presented by Lyon)
- Brooks, P., J. Kostzewski, P. Troch, S.W. Lyon, M. Litvak, F. Liu, E. Vivoni, N. McDowell, J. McConnell, E. Small (2008), A predictive framework for coupling hydrology, biogeochemistry, and ecology, *EGU General Assembly*. Abstract EGU2008-A-09502. Vienna, Austria April 14-18, 2008. (Presented by Brooks)