

CURRICULUM VITAE

Dr. CHRISTINA LEE TAGUE

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EDUCATION

<u>Institution</u>	<u>Years</u>		<u>Major Field</u>
	<u>Attended</u>	<u>Degree</u>	
University of Toronto, Canada	1995-99	Ph.D.	Geography
University of Toronto, Canada	1992-94	M.S.	Geography
University of Waterloo, Canada	1985-89	B.Eng.	Systems Design Engineering.

Title of Dissertation

Modeling seasonal hydrologic response to forest harvesting and road construction: The role of drainage organization, Advisor Dr. Larry Band

RESEARCH INTERESTS

Eco-hydrologic modeling: development and application, uncertainty analysis; land use and climate change impacts on terrestrial ecosystems and biogeochemical cycling, watershed analysis; use of scientific research in decision-making

ACADEMIC POSITIONS AND RANKS HELD

<u>Institution</u>	<u>Rank</u>	<u>Dates</u>	<u>Major Subject</u>
San Diego State University	Assistant Professor	2000 to present	Geography
UCAR	Post-Doc	1999 to 2000	Geography
University of Toronto	Teaching Assistant	1994 to 1998	Geography

TEACHING

Undergraduate Courses

Watershed Analysis (Geog. 483) Course website

(http://geography.sdsu.edu/People/Pages/tague/tague_web/geog496.html), Water at the Earth's Surface (Hydrology) (Geog. 496), Introduction to Physical Geography (Geog. 101), Environmental Science (Env. Sci. 100)

Graduate Courses

Seminar in Environmental Modelling (Geog. 710), Geographic Research Design (Geog. 700)

Graduate Student Advising

- Deborah Berlin (in progress) 'A Comparison of RHESSys Estimates with Flux Tower Measurements of Net Ecosystem Productivity in Southern California Chaparral', M.A.
- Katie Comer (2002) 'Habitat suitability model for nesting sea turtles on Guantanamo Bay Military Base, Cuba', M.A.
- Janet Choate (Fall 2004) 'Hydrologic and carbon cycling recovery following harvesting: Differences between high and low elevations watersheds in the H.J.Andrews Experimental Forest', M.A.
- Luc Classens (in progress) 'Hydro-ecological linkages in urbanizing watersheds: A process-based assessment of land-use change impact on nitrogen export', PhD.
- Mike Farrell (Fall 2004) 'Geologic control of regional patterns of stream temperature in the McKenzie Basin, Oregon', M.A. - continuing as PhD student.
- Tim Fox (2001) 'Integrating fire behavior modeling and geographic information systems: An assessment of fire hazard classification in Sequoia and Kings Canyon National Parks'. M.A.
- Kristen O'Grady (Fall 2004) 'Interactions between hydrology and nitrogen export in urbanizing watersheds in humid and semi-arid environments: A modeling comparison study', M.A.
- Lauren Seaby (in progress) 'Modeling the hydro-ecological sensitivity of a semi-arid chaparral dominated watershed to projected regional climate change', M.A.
- Nancy Winarz (Spring 2005) 'Modeling metal concentrations in Chollas Creek, an urban San Diego watershed', M.A.

HONORS AND AWARDS

- 2001 Selected for a full-page box in highlighting "young researchers in physical geography". *Physical Geography: Science and Systems of the Human Environment*. Strahler and Strahler (2001)
- 2002 Invited to participate in the 'Director's Program for Visiting Scientists' at the Institute for Ecosystem Studies, Millbrook, New York.
- 2002 USDA Forest Service, Pacific Northwest Research Station, Science Finding Award (2002) – with Dr. Gordon Grant \$10,000.
- 2003 Invited speaker at the Cary Conference, Institute for Ecosystem Studies, April, 2003.

RESEARCH GRANTS

Current and Previous Funding

Fire, Land cover and climate change: Impacts on river flows in semiarid shrubland watersheds, Funding Agency: NASA. (Co-Investigator with: A. Hope, SDSU), Amount \$460,000, 08/01/02-present.

Hydro-ecological organization and dynamics in urbanizing watersheds, Funding Agency: NSF. (sub-contract: L.Band, University of North Carolina), Amount \$150,000, 01/15/01-05/31/04.

Modeling terrestrial contributions to dissolved organic matter in streams: Preliminary model development and testing. Funding Agency: San Diego State University (Research, Scholarship and Creative Activity Award), Amount: \$4100, 08/01/02-08/01/03

Modeling land use change impacts on watershed nitrate contributions to streamflow: Database development and application of the RHESSys model to Southern California watersheds
Funding Agency: San Diego State University (Grant-In-Aid), Amount: \$8,000, 01/01/01-01/01/02.

Hydro-geologic controls on stream temperatures and fine sediment transport in headwater catchments in relation to forest management activities, Willamette Basin
Funding Agency: National Council for Air and Stream Improvement, Inc. (Lead PI, Co-Investigator G. Grant, U.S. Forest Service), Amount: \$60,000, 06/15/02-01/01/04.

FIBR Planning: Microbiological Networks - Hydrologic, Biogeochemical, and Microbial Interactions within Linked Terrestrial-Aquatic Biological Systems
Funding Agency: National Science Foundation, (Co-Investigator with: Judith Meyer, Geoffrey Poole, Steven Thomas, Laura Leff), Amount \$50,000, 3/02/04-3/02/05

Santa Margarita Creek hydrologic and hydraulic studies, Funding Agency: The Nature Conservancy, (Co-Investigator with Molly Pohl), Amount \$26,000, 07/15/05-31/05/06

Doctoral Student Research Fellowships (PhD students)

Doctoral Dissertation Research: Hydro-ecological Linkages in Urbanizing Watersheds-A Process-based Assessment of Land-use Change Impact on Nitrogen Export, NSF Dissertation Improvement Grant for Luc Claessens, \$12,000, 02/15/03-Present.

Hydro-Ecological Linkages in Urbanizing Watersheds: A Process-Based Assessment of Land-use Change Impact on Nitrogen Export for Luc Claessens, NASA Earth Systems Science Doctoral Fellowship , \$24,000 per year, 06/01/02-06/01/04

PUBLICATIONS

Articles in Refereed Journals

Tague, C. and Band, L. (2004) "RHESSys: Regional Hydro-ecologic simulation system: An object-oriented approach to spatially distributed modeling of carbon, water and nutrient cycling", *Earth Interactions*, 8:19, 1-42.

Tague, C., McMichael, C., Hope, A., Choate, J., Clark, R. (2004) "Application of the RHESSys model to a California semi-arid shrubland watershed", *Journal of American Water Resources*, 40(3), 575-589.

Tague, C. and Grant, G. (2004) "A geological framework for interpreting the low flow regimes of Cascade streams, Willamette River Basin, Oregon", *Water Resources Research*, 40, W04303, doi:10.1029/2003WR002629.

- Tague, C. L., Band, L.E. (2001) "Evaluating Explicit and Implicit Routing for Catchment Scale Models of Forest Hydrology", *Hydrologic Processes*, 15, 1415-1439.
- Tague, C.L. and Band, L.E. (2001) "Simulating the impact of road construction and forest harvesting on hydrologic response using RHESys", *Earth Surface Processes and Landforms*, 26(2), 135-151.
- Comer, K. Tague, C.L., Alberts, A. (accepted) "A comparison of Habitat Suitability Index Model Building Approaches for Nesting Sea Turtles on the U.S. Naval Station, Guantanamo Bay, Cuba", *Chelonian Conservation and Biology*.
- Band, L.E., Tague, C.L., Groffman, P. (2001) "Forest ecosystem processes at the watershed scale: Hydrological and ecological controls of nitrogen export", *Hydrologic Processes*, 15, 2013-2028.
- Benda, L., Poff, L.N, Tague, C., Palmer, M.A., Pizzuto, J., Bockstael, Cooper, S., Stanley, E., Moglen, G. (2002) "Avoiding train wrecks in the use of science in environmental problem solving", *Bioscience*, 52(12), 1127-1136.
- Band, L.E., Tague, C.L., Brun, S.E., Tenenbaum, D.E., Fernandes, R.A., (2000). "Modeling watersheds as spatial object hierarchies: Structure and Dynamics", *Transactions in GIS*, 181-196.
- Mitchell, S. W., Csillag, F., Tague, C. (2005), "Impacts of spatial model definition on prediction uncertainty of spatial environmental models: grassland productivity in Grasslands National Park Canada, *Transactions in GIS*, 9(3), doi:10.1111/j.1467-9671.2005.00225.x
- Walko, R.L., Band, L.E., Baron, J., Kittel, T.G., Kittel, F., Lammers, R., Lee, T., Ojima, D., Pielke, R.A., Taylor, C., Tague, C., Tremback, C.J., Vidale, P.L. (2000) "Coupled Atmosphere-Biophysics-Hydrology Models for Environmental Modeling", *Journal of Applied Meteorology*, 39, 931-944.
- Hartman, M., Baron, J., Lammers, R., Cline, B., Band, L., Tague, C. (1999) "Simulations of snow distribution and hydrology in a mountain basin", *Water Resources Research*, 35(5), 1587-1603.
- Tenebaum, D., Band, L., , Kenworthy, S. and Tague, C. (accepted) "Analysis of Soil Moisture Patterns in Forested and Suburban Catchments Using High-Resolution Photogrammetric and LIDAR Digital Elevation Datasets, *Hydrological Processes*.

Articles currently submitted to refereed Journals

- Tague, C., Farrell, M., Grant, G. (submitted) "Hydrogeologic controls on summer stream temperatures in the McKenzie River basin, Oregon", *Hydrological Processes*
- Tague, C., and Pohl, M. (submitted) "GIS-based hydrological modeling for urban and environmental planning", *Annals of Association of American Geographers*.
- Kenworthy, S. Band, L. Tague, C. and Groffman, G. (submitted) Spatial dynamics of soil moisture at the plot to small catchment scales: Implications for nitrogen cycling and export, *Water Resources Research*.
- Zierl, B., Bugmann, H.. and Tague, C. (submitted) „Evaluation of water and carbon fluxes in the ecohydrological model RHESys“, *Agriculture and Forest Meteorology*

Book Chapters / Sections

- Tague, C., Band, L. Franklin, J. (accepted) "Terrestrial Ecosystems (patch dynamics, disturbance

- regimes e.g. fire, drought, soil development, agricultural and forestry management and water resources”, *Encyclopedia of Hydrologic Science*, Anderson, M. (eds), Wiley, Bristol, UK.
- Tague, C. (in press) “Heterogeneity in hydrologic processes: A terrestrial hydrologic modeling perspective”, Lovett, G. M., Jones, C. G., Turner, M. G. and Weathers, K. C. (eds), *Ecosystem Function in Heterogeneous Landscapes*. Springer-Verlag, NY.
- Band, L.E., and Tague, C. (2005) “Feedbacks and Coupling between Water, Carbon and Nutrient Cycling at the Hillslope Scale”, Bronstert, A., Carrera, J., Kabat, P., and Lütkemeier, S. (eds.) *Coupled Models for the Hydrological Cycle- Integrating Atmosphere, Biosphere, and Pedosphere*, Springer.
- Biggs, B., J.B. Robinson, C. Tague, M. Walsh. (1999) “Tools for Linking Choices and Consequences” M. Healey (ed). *Sustainability Issues and Choices in the Lower Fraser Basin: Resolving the Dissonance*. Institute for Resources and the Environments, Westwater Research, Vancouver, Canada: 237-262.
- Lammers, R., Band, L., and Tague, C., (1997) “Scaling behaviour in watershed processes”, in P.vanGardingen, G.Foody and P. Curran (eds.) *Scaling –up*. Cambridge University Press.

Articles in Refereed Proceedings

- Hope, A., Tague, C., McMichael, C., Anaya, M., Choate, J., (2003) *Uncertainty in modelling streamflow in semiarid shrublands: implications for predicting the effects of landcover change*, Proceedings of the 2nd International Symposium on Integrated Water Resource Management, Stellenbosch, South Africa, 22-24 January 2003.
- Mitchel, S., Cscillag, F. Tague, C. (2002) Advantages of open-source GIS to improve spatial environmental modelling Proceedings of the *Open source GIS - GRASS users conference2002* - Trento, Italy, 11-13 September 2002
- Swinarski, R, Tague, C., Barahs, G. (2005) Vector quantization and rough set method in modeling of spatial geographical systems, Proceedings of the 2005 World Congress in Applied Computing Las Vegas, Nevada, USA, June 20-23, 2005

Presentations at Professional Conferences

- Tague, C.L., Farrell, M., Grant, G.E., Jefferson, A., Choate, J. (2004) Predicting Contrasting Responses to a Warmer Climate for Groundwater and Shallow Subsurface Dominated Systems in the Oregon Cascades, American Geophysical Union 85(47), December 6-10, San Francisco.
- Tague, C.L. (2003) Heterogeneity in hydrology, Cary Conference on Ecosystem Function in Heterogeneous Landscapes, Institute for Ecosystem Studies, April 29-May1, Millbrook N.Y.
- Tague, C.L., Grant, G.E., Farrell, M., Lewis, S. (2003) A Geomorphic Framework for Identifying Controls on Seasonal Discharge and Stream Temperature Regimes at Multiple Scales Within the Willamette Basin.”, American Geophysical Union 84(6), December 6-10, San Francisco.
- Tague, C.L. (2002) Modeling Spatial and Temporal Patterns in Climate-Vegetation-Hydrologic Interactions in Fire-Dominated Semi-arid Shrublands, American Geophysical Union,

- December 6-10, San Francisco.
- Tague, C.L., (2002) Simulating the Impact of Road Construction and Forest Harvesting on Hydrologic Response, Invited presentation at 2003 American Institute of Hydrology, October 2002.
- Tague, C.L. (2002) Representing urban environments using RHESSys ver5.8, RHESSys modelling workshop, University of Montana, July 2002.
- Tague, C.L., Band, L.E (2001) Modeling Interactions Between Hydrology and Nitrogen Cycling Processes in Forested Headwater Catchments: Sensitivity to the Magnitude and Spatial Pattern of Soil Parameters, American Geophysical Union Fall Meeting, San Francisco, December 2001.
- Tague, C.L. Creed, I.E. (2001) Scaling Hillslope Processes to First and Higher Order Drainage Basins The Need for a Modeling Framework That Is Adaptive to Changing Controls on Hydrological Processes Invited presentation at 2001 Chapman Conference on State-of-the-Art Hillslope Hydrology, Sun River, Oregon, October, 2001
- Tague, C.L., Grant, G.E. (2001) Is Geology Destiny?: The interaction among geology, geomorphology and hydrologic regime in the McKenzie River Basin Oregon, USA”, International Association of Geomorphologists, Tokyo, August, 2001.
- Band, L.E., Tague, C.L., Groffman, P., Kenworthy, S., Tenenbaum, D.. (2004) Geomorphic controls of catchment scale linkages between hydrologic and nitrogen cycling, American Geophysical Union, 85(47), December 6-10, San Francisco.
- Band, L.E., Kenworthy, S., Tague, C.L., Tenenbaum, D., Groffman, P. (2003) Spatial Dynamics of Soil Moisture at Hillslope and Small Catchment Scales, American Geophysical Union, 84(6), December 6-10, San Francisco.
- Band, L.E., Tenenbaum, D., Tague, C.L., Kenworthy, S., Law, N., Cadenasso, M., Pickett, S. (2002) Multiresolution Morphology and Metabolism of the Metropolis, American Geophysical Union, December 6-10, San Francisco.
- Band, L.E., Tague, C.L., Kenworthy, S., Law, N., (2003) Coupling water, carbon and nitrogen cycling with variable source area dynamics in forested and urbanizing catchments, American Geophysical Union, May 28-31, Washington.
- Choate, J., Tague, C., Hope, A., Bruce, R., Ploessel, L., Anaya, M. (2003) Combined Analysis Using River Flow and Leaf Area Index in an Evaluation of a Spatially-Distributed Hydro-Ecologic Model for Semi-Arid Shrubland Watersheds, American Geophysical Union 84(6), December 6-10, San Francisco.
- Choate, J., Tague, C., (2003) Modeling forest recovery sensitivity to carbon allocation strategies in the Western Oregon Cascades California Geographical Society Spring 2003 conference. (2nd place graduate student award)
- Choate, J., Tague, C. (2003) Modeling spatial patterns of soil moisture after forest harvesting under variable climate in the Western Oregon Cascades ESRI International Users Conference, 2003 (requested for display in the ESRI Pacific Northwest regional office)
- Creed, I.E., Tague, C.L., Clark, R., Wolniewicz, M., Zsigovics, G., Krezek, C. (2002) Modeling Hydrologic Processes in Boreal Watersheds: The Proof is in the Pattern, American Geophysical Union, December 6-10, San Francisco.
- Claessens, L., Tague, C., Band, L., Grofman, P., Kenworthy, S. (2004) Hydro-Ecological

- Linkages in Urbanizing Watersheds: The Role of Small Streams in Controlling Nitrogen Export, American Geophysical Union, December 6-10, San Francisco.
- Claessens, L., Tague, C. (2004) Hydro-ecological linkages in urbanizing watersheds: A process based assessment of land-use change on nitrogen cycling, American Association of Geographers, New Orleans.
- Farrell, M. J., Tague, C.L, Grant, G.E., Jefferson, A. , Lewis, S. (2004) The Impact of Geologic Heterogeneity on Stream Temperatures in the McKenzie River, Oregon: Implications for Climate Change and Land Use, 85(17), Jt. Assem. Suppl., Abstract H23B-06
- Grant, G.E., Tague, C.L. (2002) “The source of the river: Geologic controls of the hydrologic regime, Willamette River, Oregon, Geological Society of America, Cordilleran Section - 98th Annual Meeting (May 13–15, 2002) Corvallis, Oregon
- Laundrum, L.L. ,Tague, C. L. Baron, J.S. (2002). Modeling hydrologic and biogeochemical processes in Loch Vale Watershed using the Regional Hydroecological Simulation System (RHESSyS), Geological Society of America, South-Central Section - 36th Annual Meeting (April 11-12, 2002), Alpine, Texas, USA.
- Landrum, L.L., Baron, J.S., Tague, C.L. (2002) Effects of projected climate change on ecosystem and hydrologic properties in the Big Thompson Watershed, Colorado: Model results from the Regional HydroEcological Simulation System (RHESSys), American Geophysical Union, December 6-10, San Francisco.
- Webster, K.L., I.F. Creed, C.L. Tague, H. Van Miegroet, N.S. Nicholas. (2001).”Establishing links between deposition, transformation and export of nitrogen in a forested catchment in the southern Appalachians”. N2001 The Second International Nitrogen Conference, October 14-18, Potomac, MY.
- Webster, K.L., I.F. Creed, C.L. Tague. (2001). “Modeling N Export from the Noland Divide Watershed: The importance of Climate on Nitrate-N Production and Transport”. Gordon Research Conference on Forested Catchments: Hydrological, Geochemical, and Biological Processes, July 22-27. Andover,NH.

Professional Reports

- Pohl, M., Tague, C. (2002) “Torrey Pines Reserve Extension Watershed Hydrology Modeling”, Report submitted to the California Department of Parks and Recreation, May, 2002.
- Tague, C., Grant, G., Farrell, M., Lewis, S., Kast, P. (2002) “Hydrogeologic controls on stream temperatures and fine sediment transport in headwater catchments in relation to forest management activities, Willamette basin”, Report submitted to National Council for Air and Stream Improvement, December, 2002, 25pp

Membership in Professional Organizations

Association of American Geographers, American Geophysical Union, Ecological Society of America