

RYAN N. ENGSTROM

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PERSONAL

Born: November 18, 1973; Bellflower, CA

Citizenship: United States

EDUCATION

Ph.D. in Geography, Joint Doctoral Program in Geography **July 2005**

San Diego State University / University of California, Santa Barbara

Dissertation: “Effects of Spatial and Temporal Variability in Vegetation, Soil Moisture, and Depth of Thaw on Modeled Evaporation Estimates in Arctic Coastal Plain Ecosystems”

Committee: Allen Hope (Chair), Douglas Stow, and Christina Tague - SDSU, Joel Michaelsen and Oliver Chadwick - UCSB

M.A. in Geography, San Diego State University **May 2000**

Thesis: “The Relationship between the Normalized Difference Vegetation Index and the Priestley-Taylor Alpha Coefficient in Arctic Tundra Ecosystems”

Committee: Allen Hope (Chair, Geog.), Douglas Stow (Geog.), Arthur Getis (Geog.), and Walter Oechel (Biology)

B.A. in Geography and Political Science, Villanova University **May 1995**

Membership in Gamma Theta Upsilon Honor Society

WORK EXPERIENCE

Assistant Professor, Department of Geography **August 2005-Present**

George Washington University, Director of the Spatial Analysis Lab

Consultant, United States Census Bureau **September 2006–Present**

- Developing methods for distributing census data over space using multi-scale, optical remotely sensed data

Ph.D. Research Associate **May 2000-July 2005**

- Modification, parameterization, calibration/validation of a physically-based soil vegetation atmosphere model for investigating the impact of spatial and temporal variability on modeled evaporation rates in Arctic Ecosystems
- Development of C++ computer programs for data manipulation and model analysis
- Image processing and analysis of biophysical variables derived from AVHRR, TM, ASTER, and ADAR imagery
- Performed fieldwork including acquiring soil moisture, GPS, high resolution digital aerial imagery, and temperature data on the North Slope of Alaska
- Aided in the development of several grant proposals and Masters theses

M.A. Research Associate **May 1998-May 2000**

- Performed research on a NSF LAII ATLAS funded project
- Worked with a combination of satellite, eddy flux tower, and aircraft data.
- Utilized GIS and statistical software to develop an evaporation model

TEACHING EXPERIENCE

Instructor

Physical Geography **Fall 2009**
Department of Geography, George Washington University

Geospatial Techniques (Geog 221) **Spring 2008**
Department of Geography, George Washington University

Intermediate GIS (Geog 106) **Spring 2006, 07, 08**
Department of Geography, George Washington University

Field Methods in Geography (Geog 196) **Spring 2006, 07, 09**
Department of Geography, George Washington University

Water Resources (Geog 136) **Fall 2005, 06, 07, 08**
Department of Geography, George Washington University

Introduction to Remote Sensing (Geog 107) **Fall 05, 06, 07, 08, 09**
Department of Geography, George Washington University

Intermediate Remote Sensing of the Environment with Lab (Geog 588) **Spring 2004**
Department of Geography, San Diego State University

REFEREED JOURNAL PUBLICATIONS

Fu, L., Cowan, N., McLaren, R., **Engstrom, R.**, and Teach, S. (In Press) Is spatial accessibility to primary care providers associated with vaccination coverage among children with Medicaid insurance? *Pediatrics*

Engstrom, R.N., Hope, A.S., Kwon, H. and Stow, D. (2008) The Relationship between Soil Moisture and NDVI near Barrow, Alaska, *Physical Geography*. 29(1), pp. 38-53; DOI: 10.2747/0272-3646.29.1.38

Stow, D., Peterson, A., Hope, A., **Engstrom, R.** and Coulter L. (2007) Greenness Trends of Arctic Tundra Vegetation in the 1990s: Comparison of Two Normalized Difference Vegetation Index Data Sets from NOAA Advanced Very High Resolution Radiometer Systems *International Journal of Remote Sensing*. Vol. 28 Issue 21, p4807-4822, 16p; DOI: 10.1080/01431160701264284; (AN 27217146)

Sitch, S., McGuire, A. D., Kimball, J., Gedney, N., Gamon, J., **Engstrom, R.N.**, Wolf, A., Zhuang, Q. and Clein, J. (2007) Assessing the circumpolar carbon balance of arctic tundra with remote sensing and process-based modeling approaches. *Ecological Applications*. 17(1), pp. 213–234

Engstrom, R. N., Hope, A.S., Kwon, H., Harazano, Y., Oechel, W.C., and Mano, M (2006) Modeling evaporation in Arctic coastal plain ecosystems using a modified version of BIOME BGC. *Journal of Geophysical Research* - 111, G02021, doi:10.1029/2005JG000102

Engstrom, R. N., Hope, A.S., Kwon, H., Stow, D.A. and Zamolodchikov, D. (2005) Spatial distribution of near surface soil moisture and its relationship to microtopography in the Arctic coastal plain. *Nordic Hydrology*, 36 (3): 219-234.

Hope, A.S., **Engstrom, R.**, and Stow, D.A. (2005) Relationship between AVHRR surface temperature and NDVI in Arctic Tundra Ecosystems. *International Journal of Remote Sensing*, 26:8, p. 1771-1776.

Vourlitis, G.L., Verfaillie, J., Oechel, W.C., Hope, A.S., Stow, D.A. and **Engstrom, R.** (2003) Spatial variation in regional CO₂ exchange for the Kuparuk river basin, Alaska over the summer growing season. *Global Change Biology* 9, p. 930-941.

Engstrom, R. N., Hope, A. S., Stow, D.A., Vourlitis, G. L., and Oechel, W. C. (2002) Co-variability of the Priestley-Taylor alpha coefficient and regional NDVI in Arctic landscapes, *Journal of the American Water Resources Association (JAWRA)*, 38:6, p. 1647-1659.

FUNDED GRANTS, FELLOWSHIPS, and AWARDS

Co-PI (GWU PI), ROI Grant NIHCD 2007-2012
Health, Poverty and Place: Modeling Inequalities in Accra Using RS and GIS,
National Institute of Child Health and Human Development,
The project is a collaboration between GWU, Harvard, and San Diego State where John Weeks is the lead PI: Total Award \$3,000,000: GW portion: \$650,000

Academic Advisor, Ford Foundation 2008-2009
Leadership Institute on Creative Responses to Global Climate Change
This work is with Linda Yarr in the GWU PISA, SIGUR Center
Total Two year budget \$253,500

Data Award, GeoEye Foundation 2007
Estimating populations over space in Mozambique, Five High Resolution Satellite Images of different areas in Mozambique, M.A. Student Sarah Antos

Earth System Science Fellowship, NASA 2001-2004
Assessing the affects of variations in soil moisture on the surface energy balance and carbon balance of Arctic tundra ecosystems, Supervisor Allen Hope: \$73,000

Doctoral Dissertation Enhancement Grant, National Science Foundation 2002-2004
Effects of sub-grid spatial and temporal variability on modeled evaporation fluxes in Arctic coastal plain ecosystems, Supervisor Allen Hope: \$7,750

Ned H. Greenwood Award for Physical Geography SDSU 1999

CONFERENCE PRESENTATIONS

Ludlow, C., and **Engstrom R.** (2009) Flood Modeling in a Data-Poor Region: A Satellite Data-Supported Flood Model for Accra, Ghana Association of American Geographers Annual Meeting, Las Vegas, NV

Engstrom, R., and Ashcroft, E. (2009) Mapping Percent Shrub Cover across the North Slope of Alaska Using MODIS Data. Presentation: Association of American Geographers Annual Meeting, Las Vegas, NV

Azar, D. and **Engstrom R.** (2009) Linking remotely sensed impervious surface estimates and population distribution in Haiti. Presentation: Association of American Geographers Annual Meeting, Las Vegas, NV

Graesser, J., **Engstrom R.**, and, Azar, D. (2009) Mapping Impervious Surfaces in Haiti Using Landsat ETM+ Imagery Presentation: Association of American Geographers Annual Meeting, Las Vegas, NV

Engstrom, R.N. (2008) Invited. Global Climate Change and Anticipated Effects on Vietnam's Physical Geography and Climate, Leadership Institute on Creative Responses to Global Climate Change, Hanoi, Vietnam

Glickman, T., Evans, G., **Engstrom, R.**, Cowan, N. (2008) A Comparison of Safety and Security Factors on Alternative Rail Routes INFORMS Conference, Washington, D.C.

Engstrom, R.N. (2008) A Methodology for Using Optical Remotely Sensed Data for Distributing Populations at the Sub-National Level: A Case Study for Haiti. Presentation: Association of American Geographers Annual Meeting, Boston, MA

Leddy, R. Jr., and **Engstrom R.N.** (2008) Use of Remote Sensing Imagery to Distribute Populations to Inhabited Places in Haiti for Population-at-Risk Assessments Presentation: Association of American Geographers Annual Meeting, Boston, MA

Antos, S., and **Engstrom R.N.** (2008) Sizing up Population Distribution in Mozambique. Poster: Association of American Geographers Annual Meeting, Boston, MA

Nguyen, M., **Engstrom, R.** Cowan, N., and Fu, L. (2008) Mapping Immunization Rates in Washington, D.C. Poster: Pediatric Academic Societies Conference, Honolulu, HI

Engstrom, R.N. (2007) Simulating Carbon Fluxes in the Arctic Coastal Plain Using the Arctic BIOME BGC Model. Presentation: Association of American Geographers Annual Meeting. San Francisco, CA

Engstrom, R.N. and Hope, A. (2006) Simulating Evaporation at Two sites in the Arctic Coastal Plain Using the Arctic BIOME BGC Model. Presentation: Association of American Geographers Annual Meeting. Chicago, IL.

Engstrom, R.N., and Hope, A. (2005) Parameter Sensitivity of the Arctic BIOME BGC model for Estimating Evapotranspiration. Poster: American Geophysical Union Fall Meeting, San Francisco, CA.

Engstrom, R.N. and Hope, A. (2005) Equifinality and sensitivity of a modified BIOME BGC model for predictions of evapotranspiration in Arctic ecosystems. Presentation: Association of American Geographers Annual Meeting. Denver, CO.

Engstrom, R.N., Hope, A., Harazano, Y., Kwon, H., and Mano M. (2004) A comparison of measured evaporation at wet and mesic sites to modeled evaporation using BIOME BGC in the Arctic coastal plain. Poster: American Geophysical Union Spring Meeting, Montreal, Quebec, Canada.

Engstrom, R.N., Hope, A., Harazano, Y., Kwon, H., and Mano M. (2004) Modeling evaporation in Arctic coastal plain ecosystems using BIOME BGC. Presentation: Association of American Geographers Annual Meeting. Philadelphia, PA.

Engstrom, R. N., Hope, A.S., and Stow, D.A. (2003) Evaporation modeling with BIOME BGC and remote sensing. Presentation: Synthesis Workshop of current and future status of C storage and ecosystem-atmosphere exchange in the circumpolar North; Processes, Budgets and Projections. Skogar, Iceland.

Engstrom, R.N., Hope, A.S., Stow, D.A., Zulueta, R. Verfaillie, J., Kwon, H, and Oechel, W.C. (2003) Surface moisture-NDVI relationship in Arctic coastal plain tundra ecosystems: effects of scale and controlling factors. Presentation: Association of American Geographers Annual Meeting. New Orleans, LA.

Engstrom, R. N., Hope, A.S., Stow, D.A., and Kwon, H. (2002) Characteristics of the spatial distribution of surface moisture in an eddy flux tower footprint in Arctic coastal plain ecosystems. Poster: American Geophysical Union Fall Meeting. San Francisco, CA.

Vourlitis, G.L., Verfaillie, J., Oechel, W.C., **Engstrom, R.**, Hope, A.S., and Stow, D.A. (2002) Spatial variation in regional CO₂ exchange for the Kuparuk river basin, Alaska over the summer growing season. Poster: American Geophysical Union Fall Meeting. San Francisco, CA.

Engstrom, R.N., Hope, A.S., and Stow, D.A. (2002) Remote sensing – NOAA AVHRR time series and evaporation modeling –BIOME BGC. Presentation: IARC Circumpolar Carbon Balance Workshop, Fairbanks, Alaska.

Hope, A.S., **Engstrom, R.N.**, and Stow, D.A. (2002) Relationship between surface temperature and the normalized difference vegetation index in an Arctic tundra landscape, Presentation: Association of American Geographers Annual Meeting. Los Angeles, California.

Engstrom, R.N. (2002) Modeling regional evaporation: significance of landscape heterogeneity in Arctic coastal plain ecosystems using BIOME-BGC, Poster: NSF Land Atmosphere Ice Interactions (LAI), Seattle, Washington.

Engstrom, R.N., Hope, A.S., Stow, D. A., Vourlitis, G.L. Zulueta, R., Oechel, W.C., Hastings, S., and Brooks, S. (2000) Temporal and spatial variations in the Priestley-Taylor alpha coefficient in relation to the normalized difference vegetation index, Poster: California Geographical Society, San Diego, California.

Engstrom, R. N., Hope, A.S., and Stow, D. A. (1999) The Priestley-Taylor evaporation coefficient: Variability in Arctic landscapes. Presentation: Association of American Geographers Annual Meeting. Honolulu, Hawaii.

Hope, A. S., Boynton, W., Stow, D.A., **Engstrom, R. N.**, Daeschner, S.W., Douglas, D. and Drew, G. (1998) Remotely sensed inter-annual variations in Arctic vegetation productivity: relation to air temperature, carbon dioxide flux and stratospheric aerosol optical depth. Poster: American Geophysical Union Fall Meeting. San Francisco, CA.

Stow, D.A., Hope, A. S., Daeschner, S.W., **Engstrom, R.N.**, Oechel, W.C. and Douglas, D. (1998) Spatial-temporal trends of seasonally integrated NDVI as indicators of Arctic tundra primary productivity and carbon assimilation. Poster: AGU Fall Meeting. San Francisco, CA.

M.A. THESES SUPERVISED

Christianna, Ludlow (2009) Flood Modeling in a Data-Poor Region: A Satellite Data-Supported Flood Model for Accra, Ghana

Sarah Antos, (2008) Sizing up Settlements in Mozambique: A Technique for Estimating Population Distribution using Remote Sensing

Michael Fisherow, (2006). An Examination of Severe Weather and Its Relationship with Atmospheric and Oceanic Circulation Patterns along the Coast of the Mid-Atlantic United States

DEPARTMENTAL/UNIVERSITY SERVICE

Co-Director Center for Urban and Environmental Research (CUER)	Spring 08-Present
Director of the Spatial Analysis Lab-GWU, Department of Geography	Fall 05-Present
Undergraduate Advisor, GWU, Department of Geography	Fall 08-Present
Hiring Committee Member, GWU Geography	Fall 2008, 09
Speaker Series Coordinator-GWU, Department of Geography	Fall 07-Spring 08
Member of the Center for Urban and Environmental Research (CUER)	Fall 07-Spring 08

PROFESSIONAL SERVICE

Committee Member, CSIS Future of Earth Observations	Fall 2007-08
Student representative and Ph.D. group coordinator: SDSU Geography Dept.	1999-2000
Student Volunteer: California Geographical Society Annual Meeting, SDSU	May 2000
Peer Reviewer: Journal of Vegetation Science, Geojournal (2 Articles), Landscape Ecology Natural Environment Research Council of the UK (IPY), National Science Foundation (NSF) Arctic Natural Sciences, Blackwell Publishing Book Proposal, Civilian Research and Development Foundation (CRDF), Physical Geography, NSF Geography and Regional Science Program, Water Resources Research, International Journal of Remote Sensing	

MEMBERSHIPS

Association of American Geographers
Member: Remote Sensing and Climate Specialty Groups
American Geophysical Union