

# TRISTRAM O. WEST

Environmental Sciences Division  
Oak Ridge National Laboratory  
P.O. Box 2008, Oak Ridge, TN 37831-6335  
Phone: 865-574-7322, Fax: 865-574-2232  
Email: westto@ornl.gov

## POSITIONS

*Oak Ridge National Laboratory*, Environmental Sciences Division, Oak Ridge, Tennessee.  
Associate Research Scientist, 2002-present.  
Postdoctoral Research Associate, 1999-2002.

*University of Tennessee*, Biosystems Engineering and Soil Science Dept., Knoxville, Tennessee.  
Adjunct Professor, 2004-present.

*The Ohio State University*, School of Natural Resources, Columbus, Ohio.  
Graduate Research Fellow (U.S. Department of Defense Fellowship), 1996-1999.  
Graduate Research Associate, 1995-1996.  
Graduate Teaching Associate, 1994-1995.

## EDUCATION

*Ph.D., Agronomy*, The Ohio State University, 1999.  
Concentrations: Landscape Ecology and Ecological Modeling  
*M.S., Natural Resources*, The Ohio State University, 1996.  
Concentrations: Ecosystem Rehabilitation and Ecological Modeling  
*B.S., Agriculture*, University of Kentucky, 1994.  
Curriculum: Natural Resources Conservation and Management

## PRIMARY RESEARCH INTERESTS

- Effects of land management on biogeochemical cycling in terrestrial ecosystems
- Quantitative modeling of the impacts of carbon sequestration strategies and other climate change mitigation options on net greenhouse gas emissions to the atmosphere
- Use of remote sensing and geographic information systems to quantify soil attributes and biogeochemical cycling
- Integrated assessment of climate change impacts and mitigation
- Environmental effects of policies intended to reduce greenhouse gas emissions

## PROFESSIONAL SERVICE

- Elected member to the North American Carbon Program, Mid-Continent Intensive Campaign Task Force, 2005-present.
- GIS Working Group lead for DOE/SGI Regional Feedstock Partnership, 2007-present.
- Associate Editor, Soil Science Society of America Journal, 2007-present.
- Reviewed manuscripts for over 21 professional research journals, several federal agency reports on greenhouse gas mitigation and carbon sequestration, and IPCC assessments and special reports, 2000-present.

## PROFESSIONAL AFFILIATIONS

- American Society of Agronomy
- American Geophysical Union
- Ecological Society of America
- Soil Science Society of America

## STUDENT SUPERVISION AND INSTRUCTION

- 2003: Brooke Ilene Chichakly (undergraduate), Allen McBride (undergraduate),  
Xiaojuan Yang (Ph.D. candidate)
- 2005: Adam Roddy (undergraduate; co-supervised with Stan Wullschleger), Maithilee Kunda  
(undergraduate; co-supervised with Gregg Marland)
- 2006: Maithilee Kunda (post-bachelor), Aarthy Sabesan (post-masters; co-supervised with  
Budhendra Bhaduri)
- 2006: Instructor for fall semester course at University of Tennessee:  
ESS 593, Special Problems in Plant and Soil Sciences

## GRANTS AWARDED

- Modeling and Mapping Land Management and Net Carbon Emissions: Decision Support for Biofuels and Carbon Management on US Agricultural Lands. Funded by NASA, 2008-2011.
- Development of a Framework and Modeling Tool for Spatially-Explicit Full Carbon and Greenhouse Gas Accounting at the Regional to National Scale: Estimating Net C-equivalent Flux from U.S. Agriculture. Funded by NASA, 2005-2008.
- Lateral and Temporal Displacement of Terrestrial Carbon by Humans. Funded by NOAA, 2005-2007.

## PUBLICATIONS

- West, T.O., N. Singh, G. Marland, B.L. Bhaduri, A. Roddy. 2008. The human carbon budget: spatial estimates of carbon consumption and release in the United States. *Global Change Biology* (submitted).
- West, T.O., C.C. Brandt, B.S. Wilson, C.M. Hellwinckel, D.D. Tyler, G. Marland, D.G. De La Torre Ugarte, J.A. Larson, R. Nelson. 2008. Estimating regional changes in soil carbon with high spatial resolution. *Soil Science Society of America Journal* 72: 285-294.
- West, T.O. and J. Six. 2007. Considering the influence of sequestration duration and carbon saturation on estimates of soil carbon capacity. *Climatic Change* 80:25-41, DOI 10.1007/s10584-006-9173-8.
- Jain, A.K., T.O. West, X. Yang, and W.M. Post. 2005. Assessing the impact of changes in climate and CO<sub>2</sub> on potential carbon sequestration in agricultural soils. *Geophysical Research Letters* 32, L19711, doi:10.1029/2005GL023922.
- West, T.O. and A.C. McBride. 2005. The contribution of agricultural lime to carbon dioxide emissions in the United States: dissolution, transport, and net emissions. *Agriculture, Ecosystems and Environment* 108:145-154.
- Post, W.M., R.C. Izzauralde, J.D. Jastrow, B.A. McCarl, J.E. Amonette, V.L. Bailey, P.M. Jardine, T.O. West, and J. Zhou. 2004. Enhancement of carbon sequestration in U.S. soils. *Bioscience* 54: 895-908.
- Marland, G., C.T. Garten, W.M. Post, and T.O. West. 2004. Studies on enhancing carbon sequestration in soils. *Energy* 29:1643-1650.
- West, T.O., G. Marland, A.W. King, W.M. Post, A.K. Jain, and K. Andrasko. 2004. Carbon management response curves: estimates of temporal soil carbon dynamics. *Environmental Management* 33: 507-518.
- West, T.O. and N. Peña. 2003. Determining thresholds for mandatory reporting of greenhouse gas emissions. *Environmental Science and Technology* 37:1057-1060.
- Marland, G., T.O. West, B. Schlamadinger, L. Canella. 2003. Managing soil organic carbon in agriculture: the net effect on greenhouse gas emissions. *Tellus B* 55: 613-622.
- West, T.O. and G. Marland. 2003. Net carbon flux from agriculture: Carbon emissions, carbon sequestration, crop yield, and land-use change. *Biogeochemistry* 6:73-83.
- West, T.O. and W.M. Post. 2002. Soil organic carbon sequestration rates by tillage and crop rotation:

- A global analysis. *Soil Science Society of America Journal* 66:1930-1946.
- West, T.O. and G. Marland. 2002. Net carbon flux from agricultural ecosystems: Methodology for full carbon cycle analyses. *Environmental Pollution* 116:437-442.
- West, T.O. and G. Marland. 2002. A synthesis of carbon sequestration, carbon emissions, and net carbon flux in agriculture: Comparing tillage practices in the United States. *Agriculture, Ecosystems, and Environment* 91:217-232.
- West, T.O. and M.K. Wali. 2002. Modeling regional carbon dynamics and soil erosion in disturbed and rehabilitated ecosystems as affected by land use and climate. *Water, Air and Soil Pollution* 138:141-164.
- Marland G., T.O. West, and J. Fenderson. 2001. Carbon emitted, carbon saved. CDIAC Communications Newsletter. Issue No. 28. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- Wali, M.K., F. Evrendilek, T.O. West, S. Watts, D. Pant, H. Gibbs, and B. McClead. 1999. Assessing terrestrial ecosystem sustainability: Usefulness of modeling regional carbon and nitrogen budgets. *Nature and Resources* 35: 21-33.
- West, T.O. and M.K. Wali. 1999. A model for estimating sediment yield from surface-mined lands. *International Journal for Surface Mining, Reclamation and Environment* 13: 103-109.

## PRESENTATIONS

- West, T.O., C. Brandt, H. Jager, R. Perlack, L. Baskaran, A. Shamey. 2007. GIS-based biomass resource sustainability analysis. Feedstock Platform Portfolio Peer Review, Washington, D.C.: 21, August, 2007.
- West, T.O. 2007. Regional agricultural inventory approaches: methods and applications. 2007 NCAR ASP Colloquium on Regional Biogeochemistry, Boulder, Colorado: 4-15 June, 2007.
- West, T.O. 2007. Potential for use of geographical information systems in feedstock resource assessments. University of Maryland, Adelphi, Maryland: 3 May, 2007.
- West, T.O. 2007. Combining remote sensing, inventory data, and economic modeling for spatial estimates of land management and carbon flux. Forestry and Agriculture Greenhouse Gas Modeling Forum. Shepherdstown, West Virginia: 5-8 March, 2007.
- West, T.O. 2007. Spatial modeling of biomass feedstocks in the United States. Sun Grant Initiative, Regional Feedstock Partnerships, and GIS Coordination Meeting, Oak Ridge, Tennessee: 6 February, 2007.
- West, T.O. 2007. Continental and regional observations and experiments: agricultural systems and land use. U.S. North American Carbon Program Investigators Meeting, Colorado Springs, Colorado: 22-27 January, 2007.
- West, T.O. 2006. Spatially explicit full carbon and greenhouse gas accounting for the Midwestern and continental US: Modeling and decision support for carbon management. American Geophysical Union, San Francisco, California: 11-15 December, 2006.
- West, T.O. 2006. Integration and analysis of spatial data for use in bioenergy projects. DOE EERE – Sun Grant Initiative meeting, Washington, D.C.: 5 December, 2006.
- West, T.O. 2006. Carbon management in agricultural systems: integration of field measurements, inventory data, remote sensing, and agricultural economics. NASA Joint Workshop on Biodiversity, Terrestrial Ecology, and Related Applied Sciences. University of Maryland, Adelphi, Maryland: 21-25 August, 2006.
- West, T.O., C.C. Brandt, B.S. Wilson, C.M. Hellwinckel, M. Mueller, D.D. Tyler, D.G. De La Torre Ugarte, J.A. Larson, R.G. Nelson, G. Marland 2006. Estimating regional changes in soil carbon with high spatial resolution: Integrating field measurements, inventory data, and remote sensing products. NASA Joint Workshop on Biodiversity, Terrestrial Ecology, and Related Applied Sciences, Adelphi, Maryland: 21-25 August, 2006 [poster]

- West, T.O. 2006. Developing bottom-up estimates of net carbon flux using inventory data, remote sensing, and economic modeling: A case study for agricultural lands in the US Mid-Continental Region. A workshop for the North American Carbon Program – Mid-Continental Intensive Campaign. Boulder, Colorado: 21-22 February 2006.
- Sabesan, A., West, T.O., Marland, G., Bhaduri, B. 2006. A spatial quantification of the lateral flow of carbon from U.S. agricultural lands. American Society for Photogrammetry and Remote Sensing, Reno Nevada, 1-5, May 2006.
- West, T.O. 2005. B25 Session: Regional Carbon Cycle Studies: Progress and Methods. Session Co-Chair. American Geophysical Union, San Francisco, California: 5-9 December, 2005.
- McBride, A.C. and T.O. West. 2005. Estimating net CO<sub>2</sub> emissions from agricultural lime applied to soils. American Geophysical Union, San Francisco, California, 5-9, December 2005 [poster].
- Sabesan, A., T.O. West, G. Marland, and B.L. Bhaduri. 2005. Lateral flow of carbon from U.S. agricultural lands: carbon uptake, consumption, and respiration. American Geophysical Union, San Francisco, California, 5-9, December 2005.
- West, T.O. , G. Marland, D. De La Torre Ugarte, J. Larson, C. Hellwinkle, and B. Wilson. 2005. Developing bottom-up estimates of net carbon flux using survey data and remote sensing: A case study of the U.S. mid-continental region. American Geophysical Union, San Francisco, California, 5-9, December 2005.
- West, T.O. 2004. Soil C steady state, interannual variation, and permanence: implications for a carbon sequestration implementation plan. Forestry and Agriculture Greenhouse Gas Modeling Forum. Sponsored by U.S. EPA, USDA-Forest Service, and Agri-Food Canada. National Conservation Training Center, Shepherdstown, West Virginia: 12-15 October, 2004.
- West, T.O. 2004. Agricultural modeling of C fluxes and full C accounting. AmeriFlux Annual Science Team Meeting. Boulder, Colorado: 5-7 October, 2004.
- West, T.O. 2004. Soil Carbon Sequestration: Capacity and Duration. NETL Third Annual Conference on Carbon Sequestration. Hilton Alexandria Mark Center, Alexandria, Virginia: 3-6 May 2004.
- West, T.O. 2004. Land Management and Soil Carbon Dynamics: Ecology of Terrestrial Carbon Sequestration. School of Natural Resources Winter 2004 Seminar Series, The Ohio State University, Columbus Ohio: 5 February, 2004.
- West, T.O. 2004. Capacity and Duration of Carbon Sequestration in Agricultural Soils. A CASMGs Forum on Agriculture and Energy Partnerships for Using Soil Carbon Sequestration to Offset Greenhouse Gases. The George H. Bush Presidential Library Conference Center, College Station, Texas: 20-22 January, 2004.
- West, T.O. 2003. Efficacy and Longevity of Varying Carbon Storage Practices. National Academies, Board on Agriculture and Natural Resources workshop on Direct and Indirect Human Contributions to Terrestrial Greenhouse Gas Fluxes. Keck Center of the National Academies, Washington, DC: 23-25 September, 2003.
- West, T.O., S.M. Ogle, W.M. Post, and K. Paustian. 2003. Estimates of Carbon Flux Following Changes in Land Management: Data Availability and Use. International Conference on Earth System Modelling. Hamburg, Germany: 15-19 September, 2003. [poster]
- West, T.O., G. Marland, and W.M. Post. Elements of a Credible Accounting System for Sequestering Carbon in Soil. ASA-CSSA-SSSA Annual Meeting. Indianapolis, Indiana: 10-14 November, 2002.
- West, T.O., W.M. Post, G. Marland, and A.W. King. Carbon Management Curves: Estimates of Temporal Soil Carbon Dynamics. USDA Symposium on Natural Resource Management to Offset Greenhouse Gas Emissions. Raleigh, North Carolina: 19-21 November, 2002.
- West, T.O. Soil Carbon Accounting: Options to Measure, Monitor, and Address Project-Level Issues. US EPA Forestry & Agriculture Greenhouse Gas Modeling Forum. Shephardstown, West Virginia: 8-11 October, 2002.

- West, T.O. and W.M. Post. Effects of Tillage and Crop Rotation on Carbon Sequestration Rates. ASA-CSSA-SSSA Annual Meeting. Charlotte, North Carolina: 21-25 October, 2001.
- West, T. O. Estimating the Overall Impact of A Change in Agricultural Practices on Net  $C_{eq}$  Flux to the Atmosphere. First National Conference on Carbon Sequestration. Washington, DC: 15-17 May, 2001.
- West, T. O. The Overall Impact of U.S. Agriculture on Atmospheric  $CO_2$ —Including a brief introduction to the Department of Energy Center for Enhancing Carbon Sequestration in Terrestrial Ecosystems (CSiTE). University of Kentucky, Soil Science Guest Seminar Series. Lexington, Kentucky: 2 April, 2001.
- West, T.O. and G. Marland. Full Carbon Cycle Analysis in Agriculture: Balancing Carbon Emissions, Carbon Sequestration, and Agricultural Productivity. American Geophysical Union 2000 Fall Meeting. San Francisco, California: December 15-19, 2000.
- West, T.O. Net Carbon Flux from Agricultural Ecosystems: Methodology for Full Carbon Cycle Analyses. Advances in Terrestrial Ecosystem Carbon Inventory, Measurements and Monitoring. Raleigh, North Carolina: 3-5 October, 2000.
- West, T.O. Net Carbon Sequestration in Agriculture: A National Assessment. Conference of the International Energy Foundation. Las Vegas, Nevada: 23-28 July, 2000.
- West, T. O. Carbon Sequestration in Terrestrial Ecosystems: Preliminary Results from Tasks 2.1 and 2.2. International Energy Agency, Zagreb, Croatia: 22-26 May, 2000.
- West, T.O. and M.K. Wali. The Usefulness of Soil Erosion Models in Ecosystem Rehabilitation. VII International Congress of Ecology INTECOL. Florence, Italy: 19-25 July, 1998.
- West, T.O., M.K. Wali, S.E. Watts, C. McDonald, and D. Pant. Modeling the Carbon and Nitrogen Budgets of Diverse Ohio Land Use Types. Growth and the Future: A Land Use Conference for all of Ohio. Columbus, Ohio: 25-26 March, 1997.