David L. Skole
Global Observatory for Ecosystem Services
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EDUCATION

Indiana University, Biological Science, A.B., 1977
Indiana University, Environmental Science, M.S., 1980
University of New Hampshire, Natural Resources, Ph.D., 1992

APPOINTMENTS

Director, Global Observatory for Ecosystem Services, Michigan State University, 2005-present
Professor, Department of Forestry, Michigan State University, 2005-present
Professor, Department of Geography, Michigan State University, 1997-2005
Director, Center for Global Change and Earth Observations, 2002-2005
Director, Basic Science and Remote Sensing Initiative, Michigan State University, 1997-2003
Research Professor, Institute for the Study of Earth, Oceans, and Space, University of New
        Hampshire, 1992-1997

BIOGRAPHICAL SKETCH

David L. Skole is Professor of Forestry. His research focuses on the role of forestry and agriculture in global climate change and the use of geographical information for sustainable development and natural resource management. His research involves new methods and applications of Earth Observations for global environmental change analytics. The current focus of his work is climate change mitigation and adaptation in international development, with a focus on carbon measurement and accounting for REDD+. He has more than 25 years of experience with research on forest ecosystems and carbon. His research program is situated in the Global Observatory for Ecosystem Services, which he directs. He was formally recognized for his climate change research as an official member of the United Nation's Intergovernmental Panel on Climate Change that shared the 2007 Nobel Peace Prize.

He was instrumental in constructing the first numerical carbon accounting model and has been spearheading the integration of satellite remote sensing measurements into carbon accounting models. He has more than 150 peer-reviewed publications on land use change and forestry issues related to forest and land cover carbon emissions and sequestration. He has been a leading expert on global environmental monitoring, having been instrumental in developing several international programs related to land use, carbon and climate change. In recent years he has been a leading authority on measurement, reporting and verification for forest carbon projects and has developed and published several protocols for A/R and REDD projects.

His work is now supporting international development programs of the US Government. He is group supports three major foreign assistance programs on REDD+ through USAID in India (Forest PLUS), Malawi (PERFORM) and Indonesia (LESTARI), and was senior investigator for the Carbon Benefits Program of UNEP and GEF. He is an advisor to the Forest Investment Program (World Bank Group) and led the development of its monitoring and reporting toolkit. He was a US delegate to the 14th Conference of the Parties for the Convention on Biodiversity in 2018. He was the charter Chair and current Chair of the United Nations Program on Global Observations of Forest Cover (GOFC), which is coordinating a monitoring program for forests worldwide. Dr. Skole is twice-Chair of the National Science Foundation Advisory Committee on Environmental Research and Education, a FACA Committee that led the creation of the Coupled Human Natural Systems program at NSF. He is also founding Chair of

the International Geosphere Biosphere Programme's Core Project on Land Use and Cover Change (LUCC). He has been a member of several committees of the National Academies including the Committee on Geographical Foundations of Agenda 21, and co-author of the report, *Down to Earth, the Geographic Information for Sustainable Development in Africa*, which was a key element of the U.S. position at the World Summit on Sustainable Development. He served on the Committee to Review the Climate Change Science Program Strategic Plan, the Committee on Geographic Sciences, and the Committee on Social and Behavioral Research Priorities for Environmental Decision making. Recently he served as a member of the Standing Committee on Earth Science Applications from Space.

He is now active in the emerging carbon financial markets and applications of his research to carbon sequestration and international climate change mitigation projects and programs. He has been active in developing methods for carbon offsets under cap-and-trade carbon regulations. He is currently supporting the California emissions mitigation programs through international forestry under the Governor's Climate and Forest Fund. He was a member of the Chicago Climate Exchange (CCX) and served as a member of its Offsets and Forestry Committee. Dr. Skole was part of the US Government Advisory Group on Carbon Accounting and a current Member of the USDA/USFS Advisory Committee on *Technical Guidelines for Quantifying Greenhouse Gas Sources and Sinks in the Forestry and Agriculture Sectors*, which developed US national forest and agriculture carbon measurement protocols and updates for 2022. He now advises the Michigan Department of Natural Resources on its forest carbon project in the Pigeon River Country, the first domestic public lands forest carbon project.

CURRICULUM VITAE

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ACADEMIC APPOINTMENTS

Professor, Department of Forestry, Michigan State University, 2005 - present
Professor, Department of Geography, Michigan State University, 1997 - 2005
Director, Center for Global Change and Earth Observations, Michigan State University, 2002 - 2005
Director, Basic Science and Remote Sensing Initiative, Michigan State University, 1997 - 2002
Research Professor, Institute for The Study of Earth Oceans and Space, University of New Hampshire. 1992-1997

EDUCATION

Ph.D., Natural Resources, University of New Hampshire, 1992
M.S., Environmental Science, Indiana University, 1980
A.B., Biological Science, Indiana University, 1977

MEMBERSHIP OF LEARNED SOCIETIES

American Association for the Advancement of Science
American Association of Geographers
American Society for Photogrammetry and Remote Sensing.

AWARDS AND RECOGNITION

Distinguished Service Recognition, National Science Foundation, 2016
Appointed, Committee on Earth Science and Applications from Space, National Academies, 2012
Classics in Physical Geography, paper award, 2008
Nobel Peace Prize (officially recognized recipient of the award to the IPCC lead authors), 2007
Certificate of appreciation for leadership, National Science Foundation, 2005
Recognition of achievement at the Centennial Meeting, American Association of Geographers, 2004
Appointed, Geographical Sciences Committee, The National Academies, 2004
Research achievement noted by the US Climate Change Science Program, 2004
Letter of commendation for outstanding work, The National Academies, 2002
Second most influential paper in the first decade of global change research, ISI
Research achievement recognized by John H. Gibbons, Director, OSTP, January 6,1995
Research achievement from President William Clinton, *Science in the National Interest*, 1994
Research results placed on exhibit at the National Air and Space Museum, 1994

PUBLICATIONS

Skole, D.L., Samek, J., Mehra, S., Bajaj, R., Tanmay, T., Suresh, S., Jindal, S. and Ndalowa, D., 2024. Measuring the extent of trees outside of forests: A nature-based solution for net zero emissions in South Asia. *Environmental Research Letters*, *19*(11), p.114092.

Skole, D.L., Samek, J.H., Mehra, S., Bajaj, R., Tamay, T. 2024. Monitoring the extent of trees outside of

forests in South Asia: nature-based solutions for climate change mitigation. In, *Remote Sensing of Land-Use and Cover Changes in South and Southeast Asia*, Vadrevu, K., Justice, C., Gutman, G. (eds), CRC Press, ISBN: 9781032499611

Dieng, M., Mbow, C., **Skole, D. L**., & Ba, B. 2023. Sustainable land management policy to address land degradation: linking old forest management practices in Senegal with new REDD+ requirements. *Frontiers in Environmental Science* 11: doi.org/10.3389/fenvs.2023.1088726 [1]

Reiner, F., Brandt, M., Tong, X., **Skole, D**..., 2023. More than one quarter of Africa's tree cover found outside areas 2 previously classified as forest, *Nature Communications*, *14*(1), p.2258. [28]

Kashongwe, H.B., Roy, D.P., **Skole, D.L**. 2023. Examination of the amount of GEDI data required to characterize central Africa tropical forest aboveground biomass at REDD+ project scale, *Science of Remote Sensing, 7*, p.100091.[1]

Salmona, Y.B., Matricardi, E.A.T, **Skole, D.L**., Silva, J., Coelho, O., Pedlowski, M.A., Sampaio, J., Castrillón, L., Brandão, R.A., Silva, A.L., Souza, S. 2023. A worrying future for river flows in the Brazilian Cerrado provoked by land use and climate changes, *Sustainability, 15(5), p.4251*. [13]

Mugabowindekwe, M., Brandt, M., Chave, J., Reiner, F., **Skole, D.L**. 2023. Nation-wide mapping of tree-level aboveground carbon stocks in Rwanda**,** *Nature Climate Change* 13:91-97. doi.org/10.1038/s41558-022-01544-w. [45]

Ojima, D.S., DeFries, R.S., Goward, S.N., Hansen, A., Hansen, M. Loveland, T., **Skole, D.L.,** Vogler, J. 2022. Landsat @ 50. *Frontiers in Ecology and the Environment*: 20(6): 340-342

Samek, J., Anhar, A., Maimunah, S., **Skole, D**. 2022. Measuring forest ecosystem services in Aceh Province for inclusion to local forest resource management plans. *APN Science Bulletin*. 2022. 91-102. 10.30852/sb.2022.1910.

Skole, D.L., Mbow, C., Mugabowindekwe, M., Brandt, M.S., Samek, J.H. 2021.Trees outside of forests as natural climate solutions. *Nature Climate Change*, 11(12): 1013–1016. [31]

Skole, D.L., Samek, J.H., Dieng, M., Mbow, C. 2021. The Contribution of trees outside of forests to landscape carbon and climate change mitigation in West Africa, *Forests*, *12*(12): 1652, doi.org/10.3390/f12121652 [8]

Skole, D.L., Samek, J.H., Mbow, C., Chirwa, M., Ndalowa, D., Tumeo, T., Kachamba, D., Kamoto, J., Chioza, A. and Kamangadazi, F., 2021. Direct Measurement of Forest Degradation Rates in Malawi: Toward a National Forest Monitoring System to Support REDD+. *Forests*, *12*(4): 426. [10]

Matricardi, E., **D. L. Skole***, O. B. Costa, M.A. Pedlowski, J. H. Samek, E.P. Miguel. 2020. Long term forest degradation surpasses deforestation in the Brazilian Amazon. *Science* 369(6509): 1378-1382. [253]

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Samek, J., **D. L. Skole**, R. Teguh, H. Segah, S. Maimunajh, 2020. Geography, E-Learning and a Course in Peatland Ecosystems and Climate Change Science. *Proceedings of the International Conference on Creative Economics, Tourism and Information Management (ICCETIM 2019) - Creativity and Innovation Developments for Global Competitiveness and Sustainability*, 91-97, ISBN: 978-989-758-451. Science and Technology Publications, Setúbal, Portugal. DOI: 10.5220/0009865300910097

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Species in Western Kenya. I*nternational Journal of Environment and Climate Change*, 8:295-307.

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David, E., S. Chhin, **D. Skole**. 2014. Dendrochronological potential and productivity of tropical tree species in wester Kenya. *Tree-Ring Research* 70(2):119-135

Samek, J. **D. L. Skole**, U. Klinhom,T. Laosuwan, P. Utterukand C. Butthep, 2014. Smallholders in Thailand and REDD+ and FLEGT linkages. *In*, Broekhoven, G. and Wit, M. (eds.), *Linking FLEGT and REDD+ to Improve Forest Governance*, European Tropical Forest Research Network, 55:134-144, Tropenbos International, Wageningen, Netherlands. 212 pp.

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Matricardi E.A.T., **D. L. Skole**, M. A. Pedlowski, and W. Chomentowski. 2013. Assessment of forest disturbances by selective logging and forest fires in the Brazilian Amazon using Landsat data, *International Journal of Remote Sensing*, 34(4):1057-1086.[81]

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Matricardi, E.A.T., **D. L. Skole**, M.A. Pedlowski, W.H. Chomentowski, and L.C. Fernades, 2010. Assessment of tropical forest degradation by selective logging and fires using Landsat imagery, *Remote Sensing of Environment*, 114:1117-1129. [231]

Skole, D.L. and B. M. Simpson. 2010. Climate change, land use, agriculture, and the emerging bioeconomy, In, *Linkages of Sustainability*, T. E. Graedel and Ester van der Voet (eds). 2010., MIT Press, Cambridge. ISBN: 0-262-01358-4

Seto, K.C. R. de Groot, S. Bringezu, K. Erb, T.E. Graedel, N. Ramankutty, A. Reenberg, O.J. Schmitz, D.L. Skole, 2009. Stocks, flows, and prospects of land, in Thomas E. Graedel, and Ester van der Voet (eds), *Linkages of Sustainability*, MIT Press Scholarship Cambridge. [35]

M. K. Steininger , M. Hansen , J. R. G. Townshend , C. J. Tucker , **D. Skole** , and R. DeFries, 2008. Convincing evidence of tropical forest decline, *PNAS* 2008 105 (24) E34 ; published ahead of print June 11, 2008, doi:10.1073/pnas.0803707105 [5]

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Matricardi, E., **D.L. Skole**, M.A. Cochrane, and W. H. Chometowski, 2007, Multi-temporal assessment of selective logging in the Brazilian Amazon using Landsat data, *International Journal of Remote Sensing,* 28(1)63-82 [57]

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Matricardi, E., **D.L. Skole**, M.A. Cochrane, J. Qi, and W. Chomentowski. 2005. Monitoring Selective Logging in Tropical Evergreen Forests Using Landsat: Multi-Temporal Regional Analyzes in Mato Grosso, Brazil. *Earth Interactions Journal*. 9(24), 1-24. [53]

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Skole, D.L., M.A. Cochrane, E. Matricardi, W.H. Chomentowski, M. Pedlowski, D. Kimble. 2004. Pattern to process in the Amazon region: measuring forest conversion, regeneration, and degradation, In, Gutman et al. (eds.), *Land Change Science: Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface, Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface, 77-95*, Kluwer Academic Publishers, 461pp [20]

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Cochrane, M.A., **D.L. Skole**, E.A.T. Matricardi, C. Barber and W. Chomentowski. 2004. Selective Logging, Forest Fragmentation and Fire Disturbance: Implications of Interaction and Synergy. In *Working Forests in the Tropics: Conservation through Sustainable Management?* D.J. Zarin, et al. (eds.) Columbia University Press, 416 pp. [34]

Moran E.F., **D.L. Skole**, and B.L. Turner. 2004. The development of the international land use and land cover change research program and its links to NASA's land cover and land use change initiative, In, Gutman et al. (eds.), 2004. *Land Change Science: Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface, Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface, 53-55,* Kluwer Academic Publishers, 461pp [55]

Townshend, J.R., C.O. Justice, **D.L. Skole**, A. Belward, A. Janetos, I. Gunawan, J. Goldammer, and B. Lee. 2004. Meeting the goals of GOFC: an evaluation of progress and steps for the future. In, Gutman et al. (eds.), 2004. *Land Change Science: Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface, Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface, 31-51*, Kluwer Academic Publishers,461pp. [20]

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GRADUATE STUDENTS

Htin Paw Pyae, MS. Current (Fulbright Fellow)
Tabitha Alimo, MS, current
Michael Chirwa, PhD., current, (USAID funded Malawi Fellowship Program)
Dan Ndalowa, PhD., current, (USAID funded Malawi Fellowship Program)

Tangu Tumeo, MS, 2019, (USAID funded Malawi Fellowship Program), *Socio-Economic Context for Participatory Forest Landscape Restoration Monitoring in Malawi*

Francis Kamangadazi, MS, 2019, (USAID funded Malawi Fellowship Program), *Analysis of Tree Community Composition, Diversity and Natural Regeneration in Miombo Woodlands of Malawi*

Daniel Zelenack, MS. 2018. *Developing Activity Data from Remote Sensing for REDD+ Monitoring in Tropical Miombo Woodlands*

Patrick Shults, MS. 2017. *Exploring the Benefits of Cover Crops to Agroforestry Tree Plantations: An Analysis of Direct and Indirect Nitrogen Transfer in Alley Cropping Systems*

Uy Pham, PhD. 2016*. Monitoring and Mapping of the Extent of Industrial Forests in Malaysia*

Yufuf Samsudin MS. 2016 *Policies, Drivers and Land-Use Trends in Industrial Forest Plantation Development in Indonesia*

Liborius Reinhardus, MS. 2016. Allometric Relationships of Tropical Tree Species in Indonesia and Senegal

Moussa Dieng, PhD. 2015. *Landscape Carbon Measurement in Systems of Trees Outside of Forests: The Case of Agroforestry Systems in Rural Savannas of Senegal*

Eric David, MS. 2012. *Effects of Climate on Productivity in Tropical Tree Species in Western Kenya*

Eraldo Matricardi, PhD. 2007. *Spatiotemporal Dynamics of Forest Degradation by Selective Logging and Forest Fire in the Brazilian Amazon*

Victorino Bata, MS. 2006. *Establishing an Open, Distributed GIS Data Archive System*

Cuizhen Wang. PhD. 2004. *Estimation of Tropical Forest Biophysical Attributes With Synergistic Use of Optical and Microwave Remote Sensing Techniques*

Yusuang Zhou, PhD. 2002**.** *Development of Integrated Prognostic Models of Land Use /Land Cover Change: Case Studies in Brazil And China*

Narumon Wiangwang, PhD. 2002. *Water clarity/trophic condition monitoring using satellite remote sensing data.*

William A. Salas, PhD. 2001 *Optical and Radar Remote Sensing of Land Use and Land Cover Change in the Tropics: an Assessment of Deforestation and Secondary Vegetation*

TESTIMONY AND OFFICIAL BRIEFS

Executive Office of the President

Carbon Offsets, invited briefing for the President's Council of Advisors on Science and Technology, 122 December 2009.

Patterns to Processes: Scientific Challenges for Water Research, invited briefing for the Director and Associate Director for Science, Office of Science and Technology Policy, 19 October 2004, Washington, D.C.

Scientific Challenges for Water Research, invited briefing for the National Science and Technology Council, Office of Science and Technology Policy, 16 December 2004, White Conference Center, Washington, D.C.

Advances in Land Cover and Land Use Change Research, invited briefing for the Assistant Director for Environment, Office of Science and Technology Policy, July 1999, White House Conference Center, Washington, D.C.

Congress

The Natural Environment and Indigenous People of Brazil, prepared statement as testimony before the House Foreign Affairs Committee, Subcommittee on Western Hemisphere Affairs, May 10, 1994. United States Foreign Assistance and Tropical Deforestation, In, *Tropical Deforestation, Hearings before the Subcommittee on International Organizations of the Committee on Foreign Affairs*, House of

Representatives, United States Congress.

Governor's Office

Michigan's Land Use Resource Project, invited testimony before the Governor's Land Use Leadership Council, 24 March, 2003, Senate Hearing Room, Lansing MI.

BOOKS

Gutman, G., A. Janetos, C. Justice, E, Moran, J. Mustard, R. Rindfuss, D. Skole, B. Turner (eds.) 2004. *Land Change Science: Observing, Monitoring, and Understanding Trajectories of Change on the Earth's Surface*. Kluwer Academic Publishers, Dordrecht, 459 pp.

Gever, J., R. Kaufmann, D.L. Skole and C.J. Vorosmarty, 1991. *Beyond Oil: The Threat to Food and Fuel in Coming Decades*, University Press of Colorado, 304 pp.

LEAD AUTHORSHIP ON SIGNIFICANT PEER REVIEWED REPORTS

Quantifying Greenhouse Gas Sources and Sinks in Managed Forest Systems. In, *Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory*. Technical Bulletin, Office of the Chief Economist, U.S. Department of Agriculture, Washington. DC., 2023.

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Complex Environmental Systems: pathways to the future, National Science Foundation, Washington, DC, 2005.

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Complex Environmental Systems: synthesis for Earth, life and society in the 21st century, National Science Foundation, Washington DC., 2003

Down to Earth: Geographic Information for Sustainable Development in Africa, National Academies Press, Washington, DC., 2002

Land Use, Land Use Change, and Forestry, special report to the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2000.

*Land Use and Cover Change Implementation Strate*gy, International Geosphere Biosphere Program report 48, Stockholm Sweden, 1999.

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NATIONAL ACADEMIES OF SCIENCES AND ADVISORY COMMITTEES MAJOR REPORTS

Review of the Draft Fifth National Climate Assessment. Washington, DC: The National Academies, 2023.

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FIP Monitoring and Reporting Toolkit (revised). Forest Investment Program, Climate Investment Funds, World Bank, Washington DC. 2020.
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Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory, Technical Bulletin 1939, Office of the Chief Economist Climate Change Program Office. July 2014
https://www.usda.gov/oce/energy-and-environment/climate/mitigation

Advancing Land Change Modeling Opportunities and Research Requirements, Committee on Needs and Research Requirements for Land Change Modeling, National Academies, 2014.
https://www.nap.edu/read/18385/chapter/1

Challenges and Prospects for REDD+ in Africa. International START Secretariat, Global Land Project

Report No. 3. GLP-IPO, Copenhagen, 2012
https://start.org/publication/challenges-and-prospects-for-redd-in-africa/

Satellite Observations to Benefit Science and Society: Recommended Missions for the Next Decade,
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https://www.nap.edu/read/11952/chapter/1#iii

Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond,
Committee on Earth Science and Applications from Space: A Community Assessment and Strategy for
the Future, National Academies, 2007
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Priorities for Geoint Research at the National Geospatial-Intelligence Agency, Committee on Basic and
Applied Research Priorities in Geospatial Science for the National Geospatial-Intelligence Agency,
National Academies, 2006.
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Complex Environmental Systems: Pathways for the Future. National Science Foundation, Advisory
Committee for Environmental Research and Education, March 2005.
https://www.nsf.gov/ere/ereweb/ac-ere/acere_pathways.pdf

Decision Making for the Environment: Social and Behavioral Science Research Priorities
Panel on Social and Behavioral Science Research Priorities for Environmental Decision Making
https://www.nap.edu/read/11186/chapter/1#ii

*Implementing Climate and Global Change Research: A Review of the Final U.S. Climate Change Science
Program Strategic Plan,* Committee to Review the U.S. Climate Change Science Program Strategic Plan,
National Academies, 2004
https://www.nap.edu/read/10635/chapter/1

*Planning Climate and Global Change Research a Review of the U.S. Climate Change Science Program
Strategic Plan*, Committee to Review the U.S. Climate Change Science Program Strategic Plan, National
Academies, 2003.
https://www.nap.edu/read/11565/chapter/1

Complex Environmental Systems: Synthesis for Earth, Life, and Society in the 21st Century, Decadal
Outlook, National Science Foundation Advisory Committee for Environmental Research and Education,
January 2003.
https://www.nsf.gov/ere/ereweb/ac-ere/acere_synthesis_rpt_full.pdf

Down to Earth: Geographic Information for Sustainable Development in Africa, Committee on the
Geographic Foundation for Agenda 21, National Academies, 2002.
https://www.nap.edu/read/10455/chapter/1#ii

EDITORIAL BOARDS

Remote Sensing in Earth System Science, Founding Editor, Section Editor for Ecology and Carbon
Cycle, subject matter editor, Springer (present)

Remote Sensing, Editorial Board, MDPI (present)

Land, Special Editor, Special edition on REDD+, MDPI (completed)

Regional Environmental Change, Springer, Editorial Board member (completed)

COMMITTEES OF THE NATIONAL ACADEMIES

Committee to Review the 5ᵗʰ National Climate Assessment, Board on Atmospheric Sciences and Climate, 2022-2023.

Committee on the Decadal Survey of Earth Science and Applications from Space, Space Studies Board, 2016-2018

Standing Committee on Earth Science and Applications from Space, Space Studies Board, 2012 - 2019

Standing Committee on Geographical Sciences, Board on Earth Sciences and Resources, 2004 – 2010

Committee to Review the U.S. Climate Change Science Program, Division on Earth and Life Studies Division on Engineering and Physical Sciences, and Division of Behavioral and Social Sciences and Education, 2002 – 2004

Committee on Social and Behavioral Science Research Priorities for Environmental Decision Making, Division of Behavioral and Social Sciences and Education, 2003 - 2005

Committee on Ecological Impacts of Road Density, Division on Earth and Life Studies Transportation Research Board, 2002 – 2003.

*Committee on Geographical Foundations of Agenda 2*1, Division on Earth and Life Sciences, 2001- 2002.

FEDERAL ADVISORY COMMITTEES

Member, USDA/USFS Forestry Committee, Technical Guidelines for Quantifying Greenhouse Gas Sources and Sinks for Climate Smart Agriculture and Forestry.

Member, SilvaCarbon, OSTP and US Government Advisory Group on Carbon Accounting

Member, USDA/USFS Forestry Working Group, Advisory Committee on Technical Guidelines for Quantifying Greenhouse Gas Sources and Sinks in the Forestry and Agriculture Sectors

Chair, Advisory Committee for Environmental Research and Education, National Science Foundation Strategic Roadmap Planning Committee, National Aeronautics and Space Administration

Land Use and Land Cover Change Steering Committee, U.S. Climate Change Science Program (interagency)

Advisory Committee, The Midwestern Regional Center of the National Institute for Global Environmental Change. US Department of Energy

Landsat 7 Science Team, National Aeronautics and Space Administration

Science Steering Committee, Large Scale Amazon Basin Experiment (LBA), 1997-2000, National Aeronautics and Space Administration

New Data and Information Systems Planning Committee, Earth Science and Applications, National Aeronautics and Space Administration.

INTERNATIONAL COMMITTEES AND PANELS

Chair, Forest Cover Characteristics and Change Implementation Team, Global Observation of Forest Cover program, United Nations Global Terrestrial Observing System.

Chair, Fine Resolution Remote Sensing Design Team, Global Observations of Forest Cover Project, Committee on Earth Observation Satellites

Chair, Core Project on Land Use and Cover Change, International Geosphere Biosphere Program (IGBP) and the International Human Dimensions Programme on Global Environmental Change (IHDP), Barcelona, Spain.

Scientific Committee of the International Geosphere-Biosphere Programme, International Council of Scientific Unions, Stockholm, Sweden.

Steering Committee of the International Human Dimensions Programme on Global Environmental Change, International Council of Scientific Unions, Bonn, Germany.

Standing Committee for the International Geosphere-Biosphere Program's Data and Information System Office, Toulouse, France.

Science Advisory Panel for the Southeast Asian Regional Committee for START (governing body of the World Bank/GEF/UNDP sponsored activity of the IGBP, IHDP, and World Climate Research Program), Bangkok, Thailand.

Lead Author, *Intergovernmental Panel on Climate Change Special Report on Land Use, Land Use Change and Forestry*, Intergovernmental Panel on Climate Change, Framework Convention on Climate Change, United Nations.

CORPORATE ADVISORY BOARDS

Academic Advisory Council, Spot Image, Inc., Reston Virginia, USA.

Forestry Committee, Chicago Climate Exchange

Offset Committee, Chicago Climate Exchange

RECENT PRIVATE SECTOR CONSULTING

Forest Investment Program, the World Bank Chemonics International, for REDD+ in Panama

ICF International for support to USDA carbon accounting guidelines

The Boeing Company, Seattle, WA, for their Resource 21 Program.

Raytheon Company, Electronic Systems Division, Lexington, MA. for their Wide Area Monitoring and Surveillance Programs

Hughes Applied Information Systems, for development of Environmental Information Systems.

National Information Infrastructure Testbed Consortium, for development of the Earth Data System prototype.

SELECTED GRANTS AND CONTRACTS

PI, *Monitoring and Measuring Carbon Stocks in Trees Outside of Forests in Africa for TerraFund*, World Resources Institute, 2022-2023. $809,409

PI, *South Asian smallholder forests and other tree-based systems: synthesizing LCLUC data and approaches to foster a natural climate solution that improves livelihoods*, NASA, 2022-2025, $2,100,003

Co-I, *NASA Land Cover Land Use Change (LCLUC) community support and GOFC*, NASA, 2022-2027, $2,954,306

PI, *Monitoring New Trends in Carbon Sequestration in Systems of Trees Outside of Forests*, NASA, 2021-2024, $612,136

PI, *New Transitions in Small Holder Agricultural Systems than Promote Trees Outside of Forests*, NASA, 2020 – 2023, $690,044

PI, *LESTARI project in Indonesia*, USAID, 2014-2018 $640,000

PI, *Malawi Fellowship Program,* USAID, 2015-2018, $265,000

PI, *Protecting Ecosystems and Restoring Forests in Malaw*i, USAID, 2014-2018 $629,000

PI, *Monitoring and Mapping the Area, Extent and Shifting Geographies of Industrial Forests in the Tropics*, NASA, 2014-2017, $541,938

PI, *India Forest PLUS*, USAID, 2012-2017, $1,675,000

PI, *Strengthening Indonesian Capacity for Developing National Forest Carbon Inventory, Mapping and MRV Technical Systems*, California Governor's Climate and Forest Fund, 2013-2014, $138,000

PI, *Carbon, Climate and Livelihoods*, UNEP, 2009-2012, $968,808

PI, *Developing Small-Holder Agro-forestry Carbon Offset Protocols for Carbon Financial Markets*, Asia Pacific Network Japan, 2009-2010, $40,000

Co-I, *Financial Analysis Tools for Small Holder Agro-forestry Carbon Sequestration Projects*, World Agro Forestry Center, Nairobi, Kenya, 2009-2011, $59,932

PI, *Enhancing Global Scale Observations And Information on Tropical Forest Change Using Landsat Global Data Remote Sensing*, NASA, 2008-2010, $682,168.

PI, *Pilot Project for Reduced Emissions from Deforestation in the Peruvian Amazon*, WWF, 2009- 2010, $64,303

PI, *What is The Global Rate And Extent of Tropical Deforestation; Forest Regeneration; Selective Logging; And Fragmentation*? NASA, 2004-2007, $592,000

Co-I (with D. Clay), Famine Early Warning System Network, USAID/Chemonics, 2005 – 2010 , $1,520,127

PI, *Global Tropical Rain Forest Information Center 2*, NASA, 2004 – 2008, $4,167,000 PI, *Tropical Rain*

Forest Information Center, NASA, 1997 – 2003, $4,832,000

PI, *Water: Challenges at the Intersection of Human and Natural Systems*, NSF, 2004-2005, $72,000

Co-I (with J. Bartholic), *Development of the Great Lakes Natural Resource Gateway*, National Park Service, 2003-2005, $178,000

PI, *Spatial Data and Information for Land Use and Forest Assessment and Management*, Asia Pacific Network for Global Change Research, 2001- 2005, $192,000

PI, *Remote Sensing Component of the Michigan Department of Environmental Quality's Lake Water Quality Assessment Monitoring Program*, USGS, 2001 – 2002, $40,000

PI, *Regional, multi-scaled, multi-temporal land use and land cover data to support global change research.* Asia Pacific Network for Global Change Research, 2003 - 2005, $131,960

Co-I (with R. Walker), *Pattern to Process: Research and Applications for Understanding Multiple Interactions and Feedbacks on Land Cover Change*, NASA, 2000 – 2004, $641,675

Co-I (with S. Batzli), *Land Use Study Component - US31 Location Project*, Michigan DOT, 2000- 2001, $282,791

Co-I (with S. Gage), *Designing an Assessment Tool to Characterize the Impact of Changes in Land Use to Key Michigan Natural Resource Based Industries*, Public Sector Consultants, 2000- 2001, $136,500

Co-I (with J. Qi), *GOFC Data and Information for Tropical Forest Assessment and Management*, NASA, 2000 – 2003, $374,000

PI, *SIVAM*, Raytheon Company, 1999 – 2008, $839,370

Co-I (with D. Brown), *Upper Great Lakes Regional Earth Science Applications Center*, NASA, 1999 – 2003, $400,000

PI, *Human Dimensions of Deforestation And Regrowth In The Brazilian Amazonia*, NASA, 1998– 2000, $195,000

PI, *Measurement and Modeling of the Inter-Annual Dynamics of Deforestation and Regrowth in the Brazilian Amazon*, NASA, 1998 – 2003, $1,224,163

PI, *Acquisition and Analysis of Large Quantities of Landsat 7 Data for Measuring Tropical Land Change*, NASA, 1997– 2000, $631,000

PI, *Landsat Pathfinder - Humid Tropical Forest Project*, NASA, 1997 – 1999, $318,000

PI, *Michigan State University Center of Excellence in Applications of Remote Sensing to Regional and Global Integrated Environmental Change*, NASA, 1997 – 2000, $392,000

PI, *Use of SAR for Monitoring Deforestation and Secondary Growth in the Tropics*, NASA, 1998, $47,000

PI, *Case Studies and Diagnostic Models of the Inter-Annual Dynamics of Deforestation in Southeast Asia: is the Missing Sink for Carbon in Land Use Change?, NASA*, 1997 – 2001, $460,000