

Cambridge University Press

978-1-107-01124-3 - Land Use and the Carbon Cycle: Advances in Integrated Science, Management, and Policy

Edited by Daniel G. Brown, Derek T. Robinson, Nancy H. F. French, and Bradley C. Reed

Table of Contents

[More information](#)

Contents

<i>Chapter Authors and Affiliations</i>	page ix
<i>Acknowledgments</i>	xix
<i>Acronyms</i>	xxi
I Introduction	
1. Linking Land Use and the Carbon Cycle	3
DEREK T. ROBINSON, DANIEL G. BROWN, NANCY H. F. FRENCH, AND BRADLEY C. REED	
2. An Introduction to Carbon Cycle Science	24
GALINA CHURKINA	
3. The Contribution of Land Use and Land-Use Change to the Carbon Cycle	52
R. A. HOUGHTON	
4. An Economic Analysis of the Effect of Land Use on Terrestrial Carbon Storage	77
ROBERT MENDELSON	
II Measurement and Modeling	
5. Remote Sensing for Mapping and Modeling of Land-Based Carbon Flux and Storage	95
NANCY H. F. FRENCH, LAURA. L. BOURGEOU-CHAVEZ, MICHAEL J. FALKOWSKI, SCOTT J. GOETZ, LIZA K. JENKINS, PHILIP CAMILL III, COLLIN S. ROESLER, AND DANIEL G. BROWN	
6. Atmospheric Observations and Inverse Modeling Approaches for Identifying Geographical Sources and Sinks of Carbon	144
ANNA M. MICHALAK	

Cambridge University Press

978-1-107-01124-3 - Land Use and the Carbon Cycle: Advances in Integrated Science, Management, and Policy

Edited by Daniel G. Brown, Derek T. Robinson, Nancy H. F. French, and Bradley C. Reed

Table of Contents

[More information](#)

vi	<i>Contents</i>	
7.	Limitations, Challenges, and Solutions to Integrating Carbon Dynamics with Land-Use Models	178
	TOM P. EVANS, DEREK T. ROBINSON, AND MIKAELA SCHMITT-HARSH	
8.	Modeling for Integrating Science and Management	209
	VIRGINIA H. DALE AND KEITH L. KLINE	
III	Integrated Science and Research Applications	
9.	Carbon Emissions from Land-Use Change: Model Estimates Using Three Different Data Sets	241
	ATUL K. JAIN, PRASANTH MEIYAPPAN, AND TOSHA RICHARDSON	
10.	A System to Integrate Multiscaled Data Sources for Improving Terrestrial Carbon Balance Estimates	259
	JORDAN GOLINKOFF AND STEVEN W. RUNNING	
11.	Simulating Biogeochemical Impacts of Historical Land-Use Changes in the U.S. Great Plains from 1870 to 2003	287
	WILLIAM J. PARTON, MYRON P. GUTMANN, MELANNIE D. HARTMAN, EMILY R. MERCHANT, SUSAN M. LUTZ, AND STEPHEN J. DEL GROSSO	
12.	Carbon Signatures of Development Patterns along a Gradient of Urbanization	305
	MARINA ALBERTI AND LUCY R. HUTYRA	
IV	Land Policy, Management, and the Carbon Cycle	
13.	Managing Carbon: Ecological Limits and Constraints	331
	R. CÉSAR IZAURRALDE, WILFRED M. POST, AND TRISTRAM O. WEST	
14.	Effects of Wildland Fire Management on Forest Carbon Stores	359
	MATTHEW D. HURTEAU	
15.	Soil Carbon Dynamics in Agricultural Systems	381
	CYNTHIA A. CAMBARDELLA AND JERRY L. HATFIELD	
16.	U.S. Policies and Greenhouse Gas Mitigation in Agriculture	403
	CAROL ADAIRE JONES, CYNTHIA J. NICKERSON, AND NANCY CAVALLARO	
17.	Opportunities and Challenges for Offsetting Greenhouse Gas Emissions with Forests	431
	TIMOTHY PEARSON AND SANDRA BROWN	

Cambridge University Press

978-1-107-01124-3 - Land Use and the Carbon Cycle: Advances in Integrated Science, Management, and Policy

Edited by Daniel G. Brown, Derek T. Robinson, Nancy H. F. French, and Bradley C. Reed

Table of Contents

[More information](#)

	<i>Contents</i>	vii
18. Opportunities and Challenges for Carbon Management on U.S. Public Lands		455
LISA DILLING, RICHARD BIRDSEY, AND YUDE PAN		
19. Design and Planning of Residential Landscapes to Manage the Carbon Cycle: Invention and Variation in Land Use and Land Cover		477
LAUREN LESCH MARSHALL AND JOAN IVERSON NASSAUER		
V Synthesis and Future Directions		
20. Forests, Carbon, and the Global Environment: New Directions in Research		505
DAVID L. SKOLE, JAY H. SAMEK, WALTER CHOMENTOWSKI, AND MICHAEL SMALLIGAN		
21. Ecosystem Sustainability through Strategies of Integrated Carbon and Land-Use Management		523
DENNIS OJIMA, JOSEP G. CANADELL, RICHARD CONANT, CHRISTINE NEGRA, AND PETRA TSCHAKERT		
22. Perspectives on Land-Change Science and Carbon Management		539
DANIEL G. BROWN, DEREK T. ROBINSON, AND NANCY H. F. FRENCH		
<i>Index</i>		549
<i>Color plates can be found after page 358.</i>		