

FOREWORD

In recent years a number of projects have attempted to link social science data at household and community levels to remotely sensed data on land-use and land-cover change. These projects have been funded by a variety of sources, which within the United States include the National Science Foundation, National Institutes of Health, National Aeronautics and Space Administration, and the MacArthur Foundation. These projects have been located primarily in the developing world, including Asia, Latin America, and Africa and have involved scientists from a variety of disciplines, including sociology, anthropology, demography, economics, public policy, geography, ecology, and remote sensing, which itself is broadly interdisciplinary. These projects have been largely independent of one another and even though there has been some *ad hoc* consulting among subgroups of investigators, there has not been any careful review of the methods used to link people and pixels (the land parcels they use) as well as the associated challenges and opportunities.

The book is a collection of papers presented at a workshop on "Human Actions and Land-Use/Land-Cover Change," held at the East-West Center in Honolulu, January 3-8, 2002. The workshop brought together members of international research teams that have conducted successful projects linking social science data at household and community levels with remotely sensed data. These teams represented research projects in China, Ecuador, Vietnam, Thailand, Mexico, Brazil, Kenya, and Cameroon. Each team prepared a paper detailing the methodological and practical issues involved in conducting their project. Before the workshop, the four coeditors prepared a background paper (included as the introductory chapter in this volume) and a list of key questions to help guide each team in preparing their papers.

This book is an attempt to carefully review how each research team linked household and community level social data with remotely sensed and other spatial data. Which approaches worked and which did not? To what extent are approaches developed in one region transferable to another region? What are the starting points: is land sampled and then households interviewed or are households sampled and subsequently linked to the land? What levels of precision are needed in the linkage to do meaningful change analysis? What types of modeling have been used and how successfully? What uncertainty exists in these data and what validation efforts are required? How might remote sensing inform social surveys and social surveys inform remote sensing? What are the spatial and temporal scale issues in studying the effects of human activity on land-use and land-cover change? What surprises were encountered and what were the lessons learned?

The book addresses a need for a comprehensive and rigorous treatment of linking across thematic domains (e.g., social, biophysical, and geographical) and across space and time scales for research and study within the context of human-environment interactions. The human dimensions research community, land-use and land-cover change programs, and human and landscape ecology communities collectively view landscapes within spatially-explicit perspectives, where people are viewed as agents of landscape change that shape and are shaped by the landscape, and where landscape form and functions are assessed within a space-time context. Current researchers and those following this early group of integrative scientists face challenges in conducting this type of research, but the potential rewards for insight are substantial. This volume is an effort in that direction.

The book is comprised of 11 chapters. Chapter 1 is based on a background paper that the coeditors wrote to identify some of the key issues in linking household and community data with remotely sensed data. Chapters 2-9 are based on selected case studies from Mexico, Brazil, Ecuador, Thailand, Kenya, Vietnam, Cameroon and Kenya, and China. Chapters 10-11 review the case studies presented in Chapters 2-9 from different disciplinary perspectives. Chapter 10 is written from an ecological perspective and Chapter 11 from a sociological perspective. The case studies presented in this volume represent a cross-section of approaches and methods for linking household and community level social data with remotely sensed spatial data.

SHORT BIOSKETCHES OF EDITORS

Jefferson Fox is a Senior Fellow and Coordinator of Environmental Studies at the East-West Center in Honolulu. Research interests include understanding land-use and land-cover change in Asia and the social context of spatial information technology especially when it is used to help local communities map their land claims as well as their land-use practices. He has been instrumental in establishing GIS/remote sensing laboratories in numerous universities and organizations across the Asia/Pacific region.

Ronald R. Rindfuss is a Professor in the Department of Sociology and a Fellow at the Carolina Population Center, University of North Carolina, Chapel Hill. His research interests include fertility, aspects of the life course, and population and the environment. He is currently working on projects in Thailand, Norway, Japan and the United States.

Stephen J. Walsh is a Professor in the Department of Geography and a Fellow at the Carolina Population Center, University of North Carolina, Chapel Hill. Research interests include GIS, remote sensing, spatial analysis, physical geography, and population-environment interactions. Ongoing

studies include research in Ecuador, Thailand, and North Carolina and Montana, USA.

Vinod Mishra is a Fellow in Population and Health Studies at the East-West Center, Honolulu. Dr. Mishra is broadly interested in population and environment interactions and his current research focuses on the human impacts on land-use and land-cover and on the effects of air pollution on health. Dr. Mishra has also worked on many reproductive and child health issues.

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