Remotely Sensed Cities

Edited by Victor Mesev
## Contents

*List of tables* ...................................................... ix
*List of figures* .................................................... xiii
*List of plates* ..................................................... xix
*List of contributors* ............................................ xxii
*Preface* ............................................................ xxiii

1 Remotely sensed cities: an introduction ........................................... 1
   VICTOR MESEV

PART I
High spatial resolution data ........................................... 21

2 Comparison of simulated IKONOS and SPOT HRV imagery for classifying urban areas ........................................... 23
   PAUL APLIN

3 Resolution convergence: a comparison of aerial photos, LIDAR and IKONOS for monitoring cities ........................................... 47
   EMMANUEL P. BALTSAVIAS AND ARMIN GRUEN

4 Determining urban land use through an analysis of the spatial composition of buildings identified in LIDAR and multispectral image data ........................................... 83
   MICHAEL J. BARNESLEY, ALAN M. STEEL AND STUART L. BARR

5 The use of wavelets for feature extraction of cities from satellite sensor images ........................................... 109
   SOE W. MYINT
PART II
Cities by day 135

6 Refining methods for dasymetric mapping using satellite remote sensing 137
MITCHEL LANGFORD

7 Zone-based estimation of population and housing units from satellite-generated land use/land cover maps 157
CHOR P. LO

8 Population estimation at the pixel level: developing the expectation maximization technique 181
JACK T. HARVEY

9 Urban land use uncertainty: Bayesian approaches to urban image classification 207
VICTOR MESEV

10 Population mapping by geodemographics and digital imagery 223
RICHARD HARRIS

11 GIS and remote sensing in urban heat islands in the Third World 243
JANET NICHOL

PART III
Cities by night 265

12 LandScan: a global population database for estimating populations at risk 267
JEROME E. DOBSON, EDWARD A. BRIGHT, PHILLIP R. COLEMAN AND BUDHENDRA L. BHADURI

13 Overview of DMSP OLS and scope of applications 281
CHRISTOPHER D. ELVIDGE, V. RUTH HOBSON, INGRID L. NELSON, JEFFREY M. SAFRAN, BENJAMIN T. TUTTLE, JOHN B. DIETZ AND KIMBERLY E. BAUGH

14 Estimation of human population parameters using night-time satellite imagery 301
PAUL C. SUTTON
15 Estimating non-population activities from night-time satellite imagery
CHRISTOPHER N. H. DOLL

16 Does night-time lighting deter crime? An analysis of remotely sensed imagery and crime data
JOHN R. WEEKS

Essential reading

Index