Contents

List of Contributors, vii
Preface, ix

1 Laser Scanning – Evolution of the Discipline, 1
   Andrew R.G. Large and George L. Heritage

2 Principles of 3D Laser Scanning, 21
   George L. Heritage and Andrew R.G. Large

3 Issues in Laser Scanning, 35
   Martin E. Charlton, Seamus J. Coveney and Timothy McCarthy

4 Airborne LiDAR: Instrumentation, Data Acquisition and Handling, 49
   Bernard Devereux and Gabriel Arnable

5 Geostatistical Analysis of LiDAR Data, 67
   Chris Brunsdon

6 Laser Scanning: Data Quality, Protocols and General Issues, 82
   David Hetherington

7 Terrestrial Laser Scanning to Derive Surface Grain Size Facies Character of Gravel Bars, 102
   Neil S. Entwistle and Ian C. Fuller

8 Airborne Laser Scanning: Methods for Processing and Automatic Feature Extraction for Natural Artificial objects, 115
   Christoph Straub, Yungsheng Wang and Octavian Iercan

9 Terrestrial Laser Scan-derived Topographic and Roughness Data for Hydraulic Modelling of Gravel-bed Rivers, 133
   David J. Milan

10 Airborne LiDAR Measurements to Quantify Change in Sandy Beaches, 147
    Michael J. Starek, K. Clint Slatton, Ramesh L. Shrestha and William E. Carter

11 LiDAR in the Environmental Sciences: Geological Applications, 165
    David Hodgetts

12 Using LiDAR in Archaeological Contexts: The English Heritage Experience and Lessons Learned, 180
    Simon Crutchley

13 Airborne and Terrestrial Laser Scanning for Measuring Vegetation Canopy Structure, 201
    F.M. Danson, F. Morsdorf and B. Koetz

14 Flood Modelling and Vegetation Mapping in Large River Systems, 220
    Ian C. Ovarton, Anders Siggins, John C. Gallant, David Penton and Guy Byrne

15 Laser Scanning Surveying of Linear Features: Considerations and Applications, 245
    Michael Lim, Jon Mills and Nicholas Rosser

16 Laser Scanning: The Future, 262
    Andrew R.G. Large, George L. Heritage and Martin E. Charlton

Index, 273
Color plates appear in between pages 150–151