

Contents

1	Introduction	1
1.1	Case studies	5
1.2	Land cover mapping and OBIA	6
1.2.1	The need for scalable and automated segmentation	7
1.2.2	Using object height for increasing the thematic accuracy of building class	11
1.3	Mapping the urban land use at street block level	12
1.4	Improving the knowledge on intra-urban population distribution	14
1.4.1	Why population data is essential	14
1.4.2	The issues related to official population data	18
1.4.3	Population modeling to deal with imperfect official data	21
1.4.4	Limitation of available global databases for SSA urban areas	26
1.4.5	The potential of geoinformation derived from VHR	28
1.5	Toward open science in RS and GIS	31
1.6	Specific objectives and outline of this thesis	31
2	Land cover mapping framework	37
2.1	Open-source semi-automated processing chain for OBIA	37
2.2	Spatially partitioned USPO for scaling OBIA framework	59
3	Land use mapping framework	105
4	Assessing the contribution of VHRRS for dasymetric mapping	129
5	Conclusion	149
5.1	Summary of the outcomes	149
5.2	Limitations of the proposed solutions	151
5.3	Perspectives for future research	154