

# Contents

<i>List of colour plates</i>	viii
<i>List of contributors</i>	ix
<i>Introduction</i>	xiii
<b>1 Image acquisition. Physical aspects. Instruments</b>	<b>1</b>
<i>Introduction</i>	1
1.1 Mathematical model of the geometry of the aerial image YVES EGELS	2
1.2 Radiometric effects of the atmosphere and the optics MICHEL KASSER	16
1.3 Colorimetry YANNICK BERGIA, MICHEL KASSER	25
1.4 Geometry of aerial and spatial pictures MICHEL KASSER	34
1.5 Digital image acquisition with airborne CCD cameras MICHEL KASSER	39
1.6 Radar images in photogrammetry LAURENT POLIDORI	47
1.7 Use of airborne laser ranging systems for the determination of DSM MICHEL KASSER	53
1.8 Use of scanners for the digitization of aerial pictures MICHEL KASSER	58
1.9 Relations between radiometric and geometric precision in digital imagery CHRISTIAN THOM	63

<b>2</b>	<b>Techniques for plotting digital images</b>	<b>78</b>
	<i>Introduction</i>	78
2.1	Image improvements ALAIN DUPÉRET	79
2.2	Compression of digital images GILLES MOURY	100
2.3	Use of GPS in photogrammetry THIERRY DUQUESNOY, YVES EGELS, MICHEL KASSER	115
2.4	Automatization of aerotriangulation FRANCK JUNG, FRANK FUCHS, DIDIER BOLDO	124
2.5	Digital photogrammetric workstations RAPHAËLE HENO, YVES EGELS	145
<b>3</b>	<b>Generation of digital terrain and surface models</b>	<b>159</b>
	<i>Introduction</i>	159
3.1	Overview of digital surface models NICOLAS PAPANODITIS, LAURENT POLIDORI	159
3.2	DSM quality: internal and external validation LAURENT POLIDORI	164
3.3	3D data acquisition from visible images NICOLAS PAPANODITIS, OLIVIER DISSARD	168
3.4	From the digital surface model (DSM) to the digital terrain model (DTM) OLIVIER JAMET	221
3.5	DSM reconstruction GRÉGOIRE MAILLET, PATRICK JULIEN, NICOLAS PAPANODITIS	225
3.6	Extraction of characteristic lines of the relief ALAIN DUPÉRET, OLIVIER JAMET	253
3.7	From the aerial image to orthophotography: different levels of rectification MICHEL KASSER, LAURENT POLIDORI	282
3.8	Production of digital orthophotographies DIDIER BOLDO	288
3.9	Problems relating to orthophotography production DIDIER MOISSET	292

<b>4 Metrologic applications of digital photogrammetry</b>	<b>300</b>
<i>Introduction</i>	300
4.1 Architectural photogrammetry	300
PIERRE GRUSSENMEYER, KLAUS HANKE, ANDRÉ STREILEIN	
4.2 Photogrammetric metrology	340
MICHEL KASSER	
 <i>Index</i>	 349