

**INTERNATIONAL ARCHIVES OF PHOTOGRA MMETRY
AND REMOTE SENSING**

**ARCHIVES INTERNATIONALES DE PHOTOGRA MMETRIE
ET DE TELEDETECTION**

**INTERNATIONALES ARCHIV FÜR PHOTOGRA MMETRIE
UND FERNERKUNDUNG**

VOLUME

VOLUME

BAND

XXIX

PART

TOME

TEIL

B2

COMMISSION

COMMISSION

KOMMISSION



Edited by:

Lawrence W. Fritz, Congress Director

James R. Lucas, Technical Program Chairman

1988-1992 ISPRS COUNCIL

President	Kennert Torlegard (Sweden)
Secretary General	Shunji Murai (Japan)
Congress Director	Lawrence W. Fritz (USA)
Treasurer	Keith Atkinson (UK)
First Vice President	Gottfried Konecny (Germany)
Second Vice President	Ivan S. Katzarsky (Bulgaria)

1988-1992 TECHNICAL COMMISSION PRESIDENTS

Commission I -	Primary Data Acquisition Marcio N. Barbosa (Brazil)
Commission II -	Systems for Data Processing and Analysis Klaus Szangolies (Germany)
Commission III -	Mathematical Analysis of Data Li Deren (P.R. China)
Commission IV -	Cartographic and Data Base Applications of Photogrammetry and Remote Sensing Takeshi Hirai (Japan)
Commission V -	Close Range Photogrammetry and Machine Vision Armin Gruen (Switzerland)
Commission VI -	Economic, Professional and Educational Aspects of Photogrammetry and Remote Sensing John Badekas (Greece)
Commission VII -	Interpretation of Photographic and Remote Sensing Data Frank Hegyi (Canada)

VOLUME XXIX PART B

Produced by the American Society for Photogrammetry and Remote Sensing through the efforts of:

L.W. Fritz, Congress Director

J.R. Lucas, Technical Program Chairman

L.H. Perry, Technical Program Data Base

D.F. Hemenway, Jr., Publication

Copies of individual volumes and complete sets of the ISPRS *Volume XXIX, International Archives of Photogrammetry and Remote Sensing* may be obtained from:

American Society for Photogrammetry and Remote Sensing

5410 Grosvenor Lane, Suite 210

Bethesda, MD 20814-2160

USA

Phone: +1-301-493-0290

FAX: +1-301-493-0208

TABLE OF CONTENTS

VOLUME XXIX, PART B2
THE INTERNATIONAL ARCHIVES OF PHOTOGRAHMETRY AND REMOTE SENSING
ISPRS COMMISSION II - SYSTEMS FOR DATA PROCESSING AND ANALYSIS

Numerical Mapping	
<i>Kousuke Tsuru (JAPAN), et al.</i>	- 1
On the Interactive Photogrammetric System Achievements	
<i>Georghe Corcodel (ROMANIA)</i>	- 7
Orthomap: A Softcopy System for Orthoimages Production and Monocompilation	
<i>E. Muciaccia (ITALY)</i>	- 11
Digitization and Rectification of Transparencies with the Analytical Plotter P3	
<i>Claudia Fuchs (GERMANY), et al.</i>	- 18
A Low Cost Scanner for Small Format Transparent Material	
<i>Gerrit C. Huurneman (NETHERLANDS)</i>	- 25
Entry Level Digital Photogrammetry: Latest Developments of the DVP	
<i>Jaap Klaver (SWITZERLAND), et al.</i>	- 31
Testing Geometric Accuracy of SPOT Imageries	
<i>Maarouf A. M. Diefallah (QATAR)</i>	- 38
Topographic Correction of the Remote Sensing Data	
<i>Beata Hejmanowska (GERMANY)</i>	- 43
Knowledge-Based Interpretation of SAR Imagery	
<i>Axel Popella (GERMANY), et al.</i>	- 52
A Knowledge-Based System for Unsupervised Classification of High Resolution Multispectral Satellite Images	
<i>Andrea Baraldi (ITALY)</i>	- 59
Development of a Multimedia Spatial Information System	
<i>Qiming Zhou (AUSTRALIA), et al.</i>	- 67
Advanced Development in ARIES-III Image Analysis Softwares and Its Application in Remote Sensing Geology	
<i>Ji Shi Dong (CHINA), et al.</i>	- 72
New Interpretation Instruments from Carl Zeiss Jena	
<i>Rolf-Peter Mark (GERMANY), et al.</i>	- 75
Suitability of the Sharp JX-600 Desktop Scanner for the Digitization of Aerial Color Photographs	
<i>Tapani T. Sarjakoski (FINLAND)</i>	- 79
A Line of High Performance Digital Photogrammetric Workstations - The Synergy of General Dynamics, Helava Associates, and Leica	
<i>S. B. Miller (SWITZERLAND), et al.</i>	- 87
Nonlinear Array Algebra in Digital Photogrammetry	
<i>Urho A. Rauhala (USA)</i>	- 95
Introduction to the A P Y System Version 4e	
<i>Henk Yzerman (SWITZERLAND)</i>	- 103
A New Approach to Photogrammetric Plotting	
<i>Humberto Rosas (COLOMBIA)</i>	- 106
A New Method of Calibration for Analytical Photogrammetric Workstations	
<i>Wilfried Müller (SWITZERLAND), et al.</i>	- 113
Upgrade Kit for KERN DSR's Based on the Concept of the Leica Photogrammetric Workstation	
<i>Alain Chapuis (SWITZERLAND)</i>	- 120
New Hardware Features of the Leica SD Line Analytical Workstations	
<i>Alain Chapuis (SWITZERLAND), et al.</i>	- 122
Analytical Stereorestitution Instrument (ASTRI)	
<i>Efthimios Stambouloglou (GREECE)</i>	- 124
Digital Stereoplottting Using the PC-SVGA Monitor	
<i>Jósef Jachimski (POLAND), et al.</i>	- 127
Software for Data Acquisition for Leica Photogrammetric Workstations	
<i>Ulf Almroth (SWITZERLAND), et al.</i>	- 132

Advances in the Development of Analytical Stereoplotters. Working Group II/1 Report for 1988 - 1992(IP)	-	138
<i>Morris L. McKenzie (USA)</i>	-	
Real Time Processing of MOMS-02 Linear Array Imagery for Analytical Stereo Restitution	-	140
<i>Ludwig Hoch (GERMANY), et al.</i>	-	
Progress in Point Marking for Aerial Triangulation	-	145
<i>Eugene I. Marley (USA)</i>	-	
A CCD Eyepiece for Analytical Instruments	-	148
<i>Michael H. Elfick (AUSTRALIA)</i>	-	
Possibilities and Prospects of Development of Aerospace Measuring Test Site in Kalmykia	-	151
<i>Vladimir V. Kiselev (RUSSIA), et al.</i>	-	
Weltraumphotographie - stand und Entwicklungstendenzen(IP)	-	157
<i>K.-H. Marek (GERMANY), et al.</i>	-	
Advantages and Disadvantages of Different Space Images for Mapping	-	162
<i>Karsten Jacobsen (GERMANY)</i>	-	
Remote Sensing from Space - Acquisition and Use of Space Photographic Data, Case Study : Syrian Volcanic Phenomena	-	169
<i>Moutaz M. Dalati (SYRIA)</i>	-	
Integrations of Structured Query Language with Geographic Information System Processing: GeoServer tm	-	178
<i>Matthew Heric (USA), et al.</i>	-	
Object Oriented Feature Extraction from Aero-Imagery	-	184
<i>Lin Zongjian (CHINA), et al.</i>	-	
Study on Personal Computer System for the Comprehensive Analysis of Thermal Image and Geographic Information	-	188
<i>Kazutoshi Masuda (JAPAN), et al.</i>	-	
Cluster Analysis of Landsat TM Data	-	196
<i>Masatoshi Mori (JAPAN), et al.</i>	-	
A Digital Stereophotogrammetric System in a GIS Environment	-	199
<i>Gerhard Koenig (GERMANY), et al.</i>	-	
Joint Methods Provided in Remote Sensing for Investigating the Land	-	203
<i>Vladimir E. Nekos (UKRAINE)</i>	-	
Orientation Theory for Satellite CCD Line-Scanner Imageries of Mountainous Terrains	-	205
<i>Atsushi Okamoto (JAPAN), et al.</i>	-	
TM LANDSAT Image Refinement Using Straight Feature as Control	-	210
<i>Maria I. C. de Freitas Viadana (BRAZIL), et al.</i>	-	
Orientation Theory for Satellite CCD Line-Scanner Imageries of Hilly Terrains	-	217
<i>Atsushi Okamoto (JAPAN), et al.</i>	-	
GEOCOMP, A NOAA AVHRR Data Geocoding and Compositing System	-	223
<i>Brian Robertson (CANADA), et al.</i>	-	
Integration of R.S. & Geophysical Data: An Approach for Geological Studies in the Tropical Rainforest of the Eastern Amazonia	-	229
<i>Silvia B. A. Rolim (BRAZIL)</i>	-	
Development of Supercomputer Image Processing Software with X-Window User-Interface for the Processing of the Remotely Sensed Data	-	235
<i>Young-Kyu Yang (SOUTH KOREA), et al.</i>	-	
A GIS Workstation Based Analytical Plotter	-	240
<i>Charles K. Toth (USA), et al.</i>	-	
Electron Beam Recording of Remote Sensor Imagery in Brazil	-	245
<i>Patrick F. Grosso (USA), et al.</i>	-	
SPRING: Object-Oriented Geoprocessing	-	251
<i>R. C. M. de Souza (BRAZIL), et al.</i>	-	
Systems for the Integration of Remote Sensing and GIS(IP)	-	255
<i>Jeffrey L. Star (USA), et al.</i>	-	
Geographic Information Systems and Remote Sensing Future Computing Environment - An Update(IP)	-	258
<i>Nickolas L. Faust (USA)</i>	-	
Requirements of a Stereo Workstation for GIS Environment	-	266
<i>Tapani T. Sarjakoski (FINLAND), et al.</i>	-	
An Automated System for Sub-Pixel Correction and Geocoding of Multi-Spectral and Multi-Look Aerial Imagery	-	275
<i>David Allison (UNITED KINGDOM), et al.</i>	-	

The Evolution of Operational Satellite Image Geocoding in Canada	-	286
<i>B. Guindon (CANADA), et al.</i>		
Image Processing in a Network Environment	-	289
<i>R. Müller (GERMANY), et al.</i>		
Results on On-line Analytical aerial Triangulation Using a Dicomometer Coupled to a PC Microcomputer	-	294
<i>Stefan Corcodel (ROMANIA)</i>		
Digital Photogrammetry at the Survey Department	-	297
<i>Chung S. Han (NETHERLANDS)</i>		
Noise and Object Elimination from Automatic Correlation Data Using a Spline Function	-	
<i>Irineu da Silva (BRAZIL)</i>	-	303
The Performance of DIPS qImage Processing System	-	
<i>Othman Alhusain (HUNGARY)</i>	-	311
ZI-EDAS: A Fast Elevation Data Acquisition System	-	
<i>Qian Zeng-Bo (CHINA), et al.</i>	-	316
Development of a PC-Based Digital Photogrammetric System	-	
<i>Nobuhiko Mori (JAPAN), et al.</i>	-	319
Improvement of Digital Image Resolution by Oversampling	-	
<i>Håkan B. Wiman (SWEDEN)</i>	-	323
Robust Estimation by Using Linear Sequential Algebra	-	
<i>B. Bucciarelli (ITALY), et al.</i>	-	328
Design and Implementation of an Object-Oriented Photogrammetric Toolkit	-	
<i>Chris McGlone (USA)</i>	-	334
PC-Based Integrated Digital Pugging and Measurements for Block Adjustments	-	
<i>Jean-Paul Agnard (CANADA), et al.</i>	-	339
Image Binarization by Back Propagation Algorithm	-	
<i>Tao Chen (JAPAN), et al.</i>	-	345
A Multi-Resolution Approach to Parallel Stereo Matching of Airborne Imagery	-	
<i>Mohamed J. Zemerly (UNITED KINGDOM), et al.</i>	-	350
Photogrammetric Scanning with a Square Array CCD Camera	-	
<i>Franz W. Leberl (USA), et al.</i>	-	358
Image Processing in Photogrammetry: The Digital Rectifier Approach	-	
<i>Petros Patias (GREECE)</i>	-	364
Importance of Modern Mathematical Methods for the Digital Photogrammetry	-	
<i>Erhard Pross (GERMANY)</i>	-	369
Galileo Siscam Approach to Digital Photogrammetry	-	
<i>F. Flamigni (ITALY), et al.</i>	-	374
Design and Algorithmic Aspects of Digital Photogrammetric Systems.	-	
Intercommission Working Group II/III Report to Commissions II & III(IP)	-	
<i>Heinrich Ebner (GERMANY), et al.</i>	-	380
Design Alternatives for Digital Photogrammetric Systems(IP)	-	
<i>Franz Leberl (USA)</i>	-	384
Quality of Photogrammetric Products from Digitized Frame Photography	-	
<i>Edward M. Mikhail (USA)</i>	-	390
Digital Photogrammetry - Options and Opportunities	-	
<i>John E. Farrow (UNITED KINGDOM), et al.</i>	-	397
A Digital Photogrammetric Workstation for the Evaluation of Space Data	-	
<i>Eckhard Siebe (GERMANY), et al.</i>	-	404
A Knowledge Based Approach to Reconstruct Buildings in Digital Aerial Imagery	-	
<i>Eberhard Gülich (SWEDEN)</i>	-	410
Report on ISPRS WG II/3	-	
<i>Fred C. Billingsley (USA)</i>	-	418
Film Recorders for the Receipt, Processing and Archiving Remote Sensing Data	-	
<i>John P. Whitley (USA), et al.</i>	-	420
Recent Advances in Electron Beam Image Recording for Remote Sensing Data Processing and Analysis	-	
<i>Patrick F. Grosso (USA), et al.</i>	-	424

Long-Term Monitoring of the Dynamics of Landslides by Aerial Photogrammetry	-	431
<i>Ivan Katzarsky (BULGARIA), et al.</i>	-	431
Remote Pavement Weather Sensing and Applications for the Transportation Industry	-	435
<i>Joe R. Kelley (USA)</i>	-	435
Infrared Image Enhancement with Nonlinear Spatio-Temporal Filtering	-	439
<i>Wilhelm Meier (GERMANY), et al.</i>	-	439
Fast and Accurate Geometric Correction of NOAA AVHRR Imagery	-	445
<i>Toshiaki Hashimoto (JAPAN), et al.</i>	-	445
Design and Research on the Fast Statistical and Analytical System for Earthquake Disaster	-	451
<i>Yang Delin (CHINA), et al.</i>	-	451
Compression of Digital Color Images by the JPEG	-	456
<i>Jussi T. Lammi (FINLAND), et al.</i>	-	456
The Spatial Data Transfer Standard : Status and Plans for Implementation	-	461
<i>Kathryn Neff (USA)</i>	-	461
A Product Exchange Format for the Defense Mapping Agency's Vector Products	-	464
<i>David M. Danko (USA), et al.</i>	-	464
Earth Observation Concept Involving Portable Data Receiving and Processing Equipments, WOM-8 System	-	469
<i>Décio C. Ceballos (BRAZIL)</i>	-	469
The Moment-Preserving Pyramid for Progressive Image Transmission	-	474
<i>Jeng-Jong Pan (USA), et al.</i>	-	474
Compression of Satellite Images for Remote Sensing Applications	-	479
<i>Paulo R. R. L. Nunes (BRAZIL), et al.</i>	-	479
A Survey of Digital and Optical Small Media for Storage of Landsat Data	-	484
<i>Bill P. Clark (USA)</i>	-	484
Automatic Mosaicing of Satellite Images Using Global Re-Navigation	-	489
<i>Athula Mandanayake (UNITED KINGDOM), et al.</i>	-	489
Object Space Reconstruction for ERS-1 Stereo SAR and for Perspective Images	-	497
<i>Volker Sasse (GERMANY)</i>	-	497
Operational Geocoding of ERS-1 SAR Imagery	-	503
<i>Detlev Kosmann (GERMANY), et al.</i>	-	503
Mapping on the Analytical Stereoplotter Using SAR Images	-	509
<i>Zhu Cai-Ying (CHINA), et al.</i>	-	509
SAR-Optical Image Fusion with Landsat, Seasat, Almaz and ERS-1 Satellite Data	-	512
<i>David G. Tilley (USA)</i>	-	512
The Image Processing System for JERS-1 OPS	-	520
<i>Seiichi Kawase (JAPAN), et al.</i>	-	520
An Architecture for Efficient Time Domain SAR Processing	-	527
<i>Giorgio Franceschetti (ITALY), et al.</i>	-	527
Stereo Radargrammetry with Digital Side-Looking Radar Images	-	533
<i>Joe Wu (CHINA-TAIPEI), et al.</i>	-	533
On Calibration of SC SAR Images	-	537
<i>Paolo Corona (ITALY), et al.</i>	-	537
Progress and Problems in Microwave Radiometric Remote Sensing of Soil Moisture (Instruments and Application)(IP)	-	543
<i>H. Weichelt (GERMANY), et al.</i>	-	543
SIR-C Ground Data System and Processing Algorithm Design	-	549
<i>C. Y. Chang (USA), et al.</i>	-	549
Multisensor Mapping Using SAR in Conjunction with Optical Data	-	556
<i>Johannes Raggam (AUSTRIA), et al.</i>	-	556
A Compilers Observation Concerning the Implementation of IDPF	-	564
<i>Ted M. Doyle (USA)</i>	-	564
Real-Time Mapping Technology	-	569
<i>Kurt Novak (USA)</i>	-	569
Development of a PC-Based Modular Photogrammetric System	-	576
<i>Bernd Pollak (GERMANY), et al.</i>	-	576
Integrated Photogrammetric Systems: Status and Outlook(IP)	-	582
<i>Branko Makarovic (NETHERLANDS)</i>	-	582

Integration of the Kern DSR-11 Analytical Plotter into a GIS	-	590
<i>Wolfgang Faig (CANADA), et al.</i>		
The Concept of a Photogrammetric Workstation Outlined by the Example of the LEICA SD2000	-	596
<i>Luis Cogan (SWITZERLAND), et al.</i>		
Popularization of Photogrammetry	-	601
<i>Otto Kölbl (SWITZERLAND)</i>		
Introducing New Technology - A Manager's Prospective	-	608
<i>Lewis A. Lapine (USA)</i>		
Considerations on Image Matching - An Engineering Perspective	-	613
<i>Branko Makarovic (NETHERLANDS)</i>		
Parallel Processing - The Example of Automatic Relative Orientation	-	623
<i>Beate Müller (GERMANY), et al.</i>		
Digital Production System	-	631
<i>Lee R. Warren (USA)</i>		
AUTHORS and COAUTHORS INDEX - ISPRS COMMISSION II	-	637
KEYWORDS INDEX - Volume XXIX, Part B2 - ISPRS COMMISSION II	-	639