

Contents

Preface xi

List of Participants xiii

Organizing Committees xvii

Part 1. Introduction

Opening Remarks 3
Hans J. Haubold

Remarks on the Effort to Preserve the Astronomical Sky 7
Robert P. Kraft (delivered by W. T. Sullivan, III)

History, Strategy and Status of IAU Actions 10
J. Andersen

International Action 23
D. McNally

Part 2. Threats to Optical Astronomy

Light Pollution: Changing the Situation to Everyone’s Advantage . . . 33
David L. Crawford

Controlling Light Pollution in Chile: A Status Report 39
Malcolm G. Smith

Light Pollution: How High-Performance Luminaires Can Reduce It . . . 49
*Christian Remande and members of the Lighting Applications
Department, R-Tech Company (delivered by M. Gillet)*

The International Commission on Illumination - CIE: What It Is and How
It Works 60
Christine Hermann

Recent CIE Activities on Minimizing Interference to Optical Observations 69
Duco A. Schreuder

Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations	77
<i>Nigel Pollard</i>	
Why Astronomy Needs Low-Pressure Sodium Lighting	81
<i>Christian B. Luginbuhl</i>	
Methods and Results of Estimating Light Pollution in the Flemish Region of Belgium	87
<i>J. Vandewalle, Dirk Knapen, Tim Polfliet and H. Dejonghe</i>	
The Artificial Sky Brightness in Europe Derived from DMSP Satellite Data	95
<i>P. Cinzano, F. Falchi, C. D. Elvidge and K. E. Baugh</i>	
Using DMSP Night-Time Imagery to Evaluate Lighting Practice in the American Southwest	103
<i>Christian B. Luginbuhl</i>	
Light Pollution and Energy Loss from Cairo	107
<i>A. I. I. Osman, S. Isobe, S. Nawar and A. B. Morcos</i>	
Local and National Regulations on Light Pollution in Italy	111
<i>Valentina Zitelli, Mario Di Sora and Federico Ferrini</i>	
Japanese Government Official Guideline for Reduction of Light Pollution	117
<i>Syuzo Isobe</i>	
Outdoor Lighting Ordinances: Tools to Preserve the Night Sky	120
<i>Donald R. Davis</i>	
Plan of the Modification of Public Lighting in Frosinone in Accordance with the Rule for the Limitation of Light-Pollution and Power Consumption	126
<i>M. Di Sora</i>	
Sky Glow Measurements in the Netherlands	130
<i>Duco A. Schreuder</i>	
Light Pollution in Quebec	134
<i>Yvan Dutil</i>	
Observing Conditions from 1988 to 1999 at Huairou Solar Observing Station	138
<i>Yuanyong Deng and Yihua Yan</i>	
The Situation of Light Pollution in Germany	142
<i>Andreas Hänel</i>	
Economic Imperative versus Efforts for Preserving an Astronomical Site	147
<i>Hakim L. Malasan, Moch. Arief Senja, Bambang Hidayat and Moedji Raharto</i>	
Work for the Reduction of Light Pollution in Turkey	151
<i>Z. Aslan</i>	

Astronomical Sites in the Ukraine: Current Status and Problems of Preservation	153
<i>I. B. Vavilova, V. G. Karetnikov, A. A. Konovalenko, O. O. Logvinenko, G. I. Pinigin, N. V. Steshenko, V. K. Tarady and Ya. S. Yatskiv</i>	
Chelmos (Aroania): a New European Telescope Site for the 2.3-m Telescope of the National Observatory of Athens	160
<i>D. Sinachopoulos, F. Maragoudaki, P. Hantzios, E. Kontizas and R. Korakitis</i>	
The Impact of Light Pollution on a Proposed Automatic Telescope Network (ATN) and Vice Versa	163
<i>John R. Mattox, Stefan Wagner, Gino Tosti and Kent Honeycutt</i>	
Bridges and Outdoor Lighting	166
<i>Arthur Upgren</i>	
Search for and Protection of Astronomical Sites in Developing Countries	170
<i>François R. Querci and Monique Querci</i>	
Aviation and Jet Contrails: Impact on Astronomy	173
<i>H. Pedersen</i>	
Part 3. Space Debris	
The Space Debris Environment - Past and Present	181
<i>W. Flury</i>	
UN Discussions of Space Debris Issues	185
<i>Luboš Perek</i>	
Impact of Space Debris and Space Reflectors on Ground-Based Astronomy	188
<i>D. McNally</i>	
Observations of Artificial Space Objects in Lviv Astronomical Observatory	193
<i>Jeva Vovchyk, Jaroslav Blagodyr and Olexandr Logvinenko</i>	
Part 4. Threats to Radio Astronomy	
The Future of Radio Astronomy: Options for Dealing with Human Generated Interference	199
<i>R. D. Ekers and J. F. Bell</i>	
Radio Astronomy and the International Telecommunications Regulations	209
<i>Brian Robinson</i>	
Radio Astronomy and the Radio Regulations	220
<i>R. J. Cohen</i>	
World Radio Conference WRC-2000	229
<i>Klaus Ruf</i>	
Radio Astronomy and Recent Telecommunications Trends	236
<i>Tomas E. Gergely</i>	

Protection of Millimetre-Wave Astronomy	245
<i>Masatoshi Ohishi</i>	
Utilization of the Radiofrequency Spectrum above 1 GHz by Passive Services.	255
<i>Juan R. Pardo, Pierre J. Encrenaz and Daniel Breton</i>	
Radio Astronomy in the European Regulatory Environment	264
<i>R. J. Cohen</i>	
Preserving Radio Astronomy in Developing Nations	270
<i>G. Swarup and C. R. Subramanya</i>	
Steps to Establish International Radio Quiet Zones	271
<i>Harvey Butcher</i>	
A Potential Site for the World's Largest Single Dish, FAST	272
<i>B. Peng, R. G. Strom and R. Nan</i>	
Techniques for Coping with Radio Frequency Interference	279
<i>J. R. Fisher</i>	
Radio Interference and Ejecting Techniques at Beijing Astronomical Observatory	288
<i>X. Zhang, T. Piao, B. Peng and X. Wang</i>	
Radio Interference Monitoring and Databases	292
<i>W. van Driel</i>	
Fixed and Mobile RFI Search Facilities at Medicina	297
<i>S. Montebugnoli, G. Tomassetti, C. Bortolotti and M. Roma</i>	
RFI Sentinel 2	301
<i>S. Montebugnoli, M. Cecchi, C. Bortolotti, M. Roma and S. Mariotti</i>	
Radio Interference in Astronomical Observatories of China	307
<i>B. Peng, R. Nan, T. Piao, D. Jiang, Y. Su, R. G. Strom, S. Wu, X. Zhang, L. Zhu and X. Liu</i>	
Measurements of Radio Interference at Solar Radio Stations in Beijing	311
<i>Yihua Yan, Qijun Fu, Yuying Liu and Zhijun Chen</i>	
Analysis of Solar Radio Observations and the Influence of Interference	315
<i>Yihua Yan, Huirong Ji, Qijun Fu, Yuying Liu and Zhijun Chen</i>	
GPS Satellite Interference in Hungary	319
<i>T. Borza and I. Fejes</i>	
Protecting Space-Based Radio Astronomy	324
<i>V. Altunin</i>	
Origin of Major L-Band Interference Received by the HALCA Space Radio Telescope	335
<i>S. Yu. Lioubtchenko, M. V. Popov, H. Hirabayashi and H. Kobayashi</i>	

Part 5. Outreach

Saving Our Skies: Communicating the Issues to the Media	343
<i>Richard West and Claus Madsen</i>	
Light Pollution: Education of Students, Teachers and the Public	353
<i>John R. Percy</i>	
The Light Pollution Programme in Greece	359
<i>M. Metaxa</i>	
Educating the Public about Light Pollution	363
<i>Syuzo Isobe, Shiomi Hamamura and Christopher D. Elvidge</i>	
The Cultural Value of Radio Astronomy	369
<i>Woodruff T. Sullivan, III</i>	
Educating the Public About Interference to Radio Observatories	377
<i>David G. Finley</i>	

Part 6. Outcomes

Optical Workshop Report: Statements Relative to Environmental Protection for Optical Astronomy	387
Radio Workshop Report: Technical Methods and Strategies for Mitigating Radio Frequency Interference (RFI)	389
<i>J. R. Fisher</i>	
Radio Workshop Report: Public Awareness of Radio Interference	391
<i>David G. Finley</i>	
Postscript	393
<i>R. J. Cohen</i>	
Appendix 1. S196 Proposal to UNISPACE III	397
Appendix 2. OECD Global Science Forum, Task Force on Radio Astronomy and the Radio Spectrum: Terms of Reference, March 2001	399
Appendix 3. Abbreviations	401
Author Index	405
Subject Index	407