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RESOLUTIONS OF THE XIX CONGRESS OF ISPRS IN AMSTERDAM 2000

The Resolutions Committee consisted of the following members
Shunji Murai Japan. First Vice President, Chairman
Bruce Forster Australia
Isabelle Veillet France
Hans-PeterBaehr Germany

The Resolutions Committee received 57 draft resolutions from Council. Technical Commissions and Delegates. Some of the proposed resolutions have been modified or edited.

Resolution G.1 Appreciation
The Congress
Noting
- the importance of the Congress for professionals in photogrammetry, remote sensing and spatial information sciences from academia, industry and government;

Recognizing
- the careful preparation and successful realization of the Congress;

Commends
- the Netherlands Society for Earth Observation and Geoinfortnatics, its president Professor Martien Molenaar, and Congress Director Klaas Jan Beek and the Congress Committee for excellent work which has resulted in a very successful Congress.

Resolution G.2 Commission correspondents
The Congress
Noting
- the ineffectiveness of the present system of Commission Correspondents compared with all other working mechanisms of ISPRS;

Recognizing
- the necessity for effective communication between Technical Commissions, their - Working Groups and other bodies within ISPRS on the one hand. and individuals and organizations in member countries and regions on the other hand;

Recommends
- that a set of guidelines governing this communication, through the medium of Commission Correspondents, be prepared and promulgated through the ISPRS Orange Book and web site.

Resolution G.3 Liaison with International Standard Organization (ISO)
The Congress
Noting
- that several Technical Commissions of ISPRS liaise with ISO;

Recognizing
- the need to strengthen standardization activity within ISPRS;

Recommends
- that ISPRS consider active liaison with ISO in appropriate technical committees.

Resolution G.4 Intercommission activities

The Congress

Noting
- the considerable overlap in recommendations from various Commissions;

Recognizing
- the importance of cooperation between Commissions;

Recommends
- that all new Technical Commission Presidents note carefully all recommendations and move to establish dialogue and joint activities where appropriate.

Resolution G.5 Digital Earth concept

The Congress

Noting
- the increasing availability of digital data about the environment;
- the increasing importance of the simultaneous use of multiple geo-spatial data sets to support scientific discovery, operational monitoring and decision making processes;
- the initiative to establish the concept of a Digital Earth which promotes the interoperability of georeferenced digital data resources for decision making, geoinformation management and knowledge evolution in support of global sustainability;

Recognizing
- that a Digital Earth concept is currently evolving to promote a framework for interoperability for geo-spatial data, accomplished through an international spirit of collaboration and cooperation;

Recommends
- the encouragement of strategies to further develop a Digital Earth concept.

Resolutions of Technical Commission I

Resolution I.1 Collaboration with CEOS

The Congress

Noting
- that the Committee on Earth Observation Satellites (CEOS) has accorded Affiliate Membership to ISPRS;
- that coordination of EO missions and allied activities (e.g. calibration /validation activities; application activities; EO information services activities: EO education and training activities etc) are the major aims of CEOS and ISPRS and that they could mutually gain by working together;

Recognizing
- the need to strengthen international coordination of EO missions;
- the need to bring together the government and private sector in various EO activities - space ground and utilization segments;

Recommends
- that ISPRS actively work with CEOS to achieve cooperation and coordination in EO R&D activities;
- ISPRS work with CEOS to foster public/private collaboration in EO R&D activities;
- ISPRS support and contribute to the EO education and training efforts worldwide and specifically focus on newer technology elements;
- Support and focus on the emergence of International Global Observation Strategy (IGOS) as a major international endeavour.

Resolution I.2 Standardization of sensor parameters
The Congress
Noting
- that a number of earth observation sensors with similar capabilities are available and planned by various space agencies/manufactures;
- that users will have to use data from more than one sensor for their specific applications.

Recognizing
- that such usage requires good understanding of the sensor parameters;
- that there is currently no uniform way of specifying sensor parameters.

Recommends
- the generation of a common set of parameters to be specified for each camera / sensor in conjunction with manufacturers.

Resolution I.3 Radiometric and geometric calibration
The Congress
Noting
- that the number of high resolution, multispectral and hyper-spectral imaging sensors in space is increasing;
- that radiometric calibration of data from these sensors is essential for quantitative environmental and ecological research with multispectral image data;
- that data from various sensors have to be used for long term observations and for change detection;
- that various test fields exist or are planned for calibration;
- that the accuracy potential of high resolution digital imaging systems in space is better than 10 m and thus appropriate to produce or update topographic (image) maps of scale 1:50,000 and larger;
- that accurate and reliable geometric calibration parameters of those digital imaging systems are a precondition to take full advantage of their accuracy potential to produce high quality photogrammetric products, such as DEM, orthoimages, etc.;

Recognizing
- that natural test sites have been successfully used for calibration of certain sensors;
- that high precision models for radiation transfer through the atmosphere exist;
- that the geometric laboratory calibrated parameters need to be confirmed or updated in orbit by infiight calibration methods using large area test sites with highly accurate ground truth;
- that highly accurate geometric calibration of digital imaging systems poses high demands on laboratory calibration equipment and that this task is costly and time consuming;

- that varying geometric calibration concepts for different digital imaging systems exist, which show different accuracy characteristics;

Recommends

- investigations of calibration and intercalibration of all digital imaging space sensors;
- that all existing and planned test fields be identified and their spatial, spectral and physical characteristics be inventoried;
- that collaboration be established with other bodies studying ground test fields with known spectral reflectance characteristics, which can be used for calibration.

Resolution I.4 Wide swath sensors

The Congress

Noting

- that wide swath systems, e.g. SPOT Vegetation, IRS, WiFS, Sea WiFS, MODIS etc. are now available with various spectral and spatial resolutions;
- that such systems' responses are subject to bi-directional reflectance factors, sun angle etc. due to the wide swath;

Recognizing

- that these data could be used to study long term changes especially in vegetative cover;

Recommends

- studies to understand the effect of viewing geometry on the radiometric accuracy of the products.

Resolution I.5 Sensors for DTM data generation

The Congress

Noting

- that a number of optical systems, specifically to generate DTMs, are planned for the future
- that interferometric SAR has proven its capability to generate DTMs - that airborne laser systems are operational;
- that substantial parts of the world still do not have topographic maps of desired scale and accuracy;

Recognizing

- that terrain height i slope is an important parameter for many applications Recommends;
- to intensify detailed study on the accuracy and cost effectiveness of various techniques;
- identification of standard sites for inter-comparison and evaluation of different methods.

Resolution I.6 Platform and orientation integration

The Congress

Noting

- the capability of current earth observation systems to provide high resolution images;
- the availability of modem technology such as differential GPS and high precision attitude sensing and orientation system;

Recognizing

- the potential use of high resolution image data in detailed field studies;
- the need for high precision locational accuracy of the data;

Recommends

- integration of attitude and position information with data processing software algorithms;
- standardization of data format, referencing systems and data archival and retrieval systems.

Resolution I.7 Electronic database of sensor and platform information

The Congress

Noting

- that there is an increasing number of sensor and platform designs;
- that there is a long history of sensor and platform designs for both aerial and satellite systems;

Recognizing

- the electronic (digital) information about the engineering designs, orbital parameters and sensor characteristics is distributed among many databases and Internet sources;
- that globally there is unequal access to sensor and platform information Recommends;
- that an electronic, searchable database of sensor and platform information, both retrospective, current and planned be created that provides equitable and accessible information from an updateable source.

Resolutions of Technical Commission II

Resolution II.1 Real-time systems

The Congress

Noting

- the rapid development of real-time mapping systems and the dependence of such systems on Global Positioning System (GPS) and Inertia Navigation System(INS) techniques;

Recognizing

- that future development depends on collaboration between experts in a range of technologies;

Recommends

- that work continues on real-time mapping technologies with closer links being developed between commissions, especially where GPS/INS is involved.

Resolution II.2 Use of Synthetic Aperture Radar (SAR) data

The Congress

Noting

- that advances have been made in the application of SAR data to topographic mapping, prediction and monitoring of disasters and environmental monitoring;

Recognizing

- that SAR is still not widely understood or applied that algorithms for processing SAR data are not widely available;

Recommends

- that increased efforts be made to use SAR data for production of geoinformation and to promote the use of SAR within the spatial information sciences.

Resolution II.3 Digital photogrammetric workstations

The Congress

Noting

- the rapid increase in the use of digital photogrammetric workstations (DPWs) and the increasing maturity of the algorithms used and the software available;

Recognizing
- that DPWs are likely to be a major tool of spatial information acquisition during the next decade;
- the variety and complexity of hardware and software options available and the lack of comprehensive advice on the selection, evaluation and optimum use of these systems;

Recommends
- the continued monitoring of developments in digital photogrammetric workstations and the creation of a wide range of tools for feature extraction;
- that measures be taken to increase knowledge and develop optimum use of digital photogrammetric workstations and the skills to evaluate and use them in collaboration with the vendors.

Resolution II.4 Procedures and tools for data integration

The Congress

Noting
- the new sources of data becoming available and the rapidly increasing number of applications for which these data might be used;

Recognizing
- that the combination and integration of such data offers new opportunities for solving problems;

Recommends
- that the development of procedures and tools for integration of data from a variety of sensors and databases be addressed. including the use of new data sources such as SAR and Laser Scanning and the increasing use of vector databases as well as expert systems.

Resolution II.5 Data transfer standards

The Congress

Noting
- the progress made by WGII/7 in collaborating with International Standard Organization (ISO) and Open GIS Consortium (OGC) during the past four years the desire for greater ease of transfer of data;

Recognizing
- that progress can only be made through international cooperation;

Recommends
- continued effort to develop standards for data transfer and collaboration with other organizations that are promoting standards such as ISO. CEOS. Institute of Electrical and Electronics Engineers (IEEE) and OGC.

Resolution II.6 Integration of information into GIS

The Congress

Noting
- the increasing need for up-to-date geospatial information and the lack of efficient, timely revision of such information in many areas;

Recognizing
- that multispectral and stereoscopic imagery can provide such information and is becoming increasingly important for use in geographic information systems (GIS);

Recommends
- that the integration of photogrammetric and remote sensing imagery and techniques into GIS for efficient acquisition and revision of geospatial information be strengthened.

Resolution II.7 End-to-end systems
The Congress
Noting
- the much increased use of geospatial information in all areas of public and commercial activity;

Recognizing
- the need for efficient processing and presentation of such data in a value added form;

Recommends
- the development and validation of end-to-end processing systems for specific;
- applications, making use of a range of imaging systems, a range of components from the spatial information sciences and paying particular attention to techniques for the delivery and presentation of information.

Resolutions of Technical Commission III

Resolution III.1 Surface reconstruction
The Congress
Noting
- the extensive use of automated surface reconstruction for mapping, image rectification and 3D modelling;
- the emergence of laser scanning technology as an additional information source about surfaces;
- the role of surface reconstruction in the general framework of object recognition and scene analysis;

Recognizing
- the need for further theoretical investigations into the automatic reconstruction of surfaces, including their segmentation, and of conducting reliability studies;

Recommends
- that research be continued on surface reconstruction techniques with emphasis on multiple sensor input.

Resolution III.2 Fusion
The Congress
Noting
- the increasing availability of new sensors and the use of multi-sensor, multi-resolution systems;

Recognizing
- the need for extending theories and developing algorithms for merging multi-sensor data;
- modelling of uncertainty in multisensor fusion;
- incorporating GIS information to support object recognition evaluating the efficiency and performance of multisensor fusion;

Recommends
- that fusion, at the data, feature and information levels, be promoted.

Resolution III.3 Object modelling
The Congress
Noting
- the importance of modelling 3D objects related to object recognition and image understanding;

Recognizing
- that further progress in the automatic recognition of objects relies on improved models;

Recommends
- that efforts be strengthened on developing generic models of objects, including their geometric and semantic properties. and interrelationships.

Resolution III.4 Combining classification methods and computer vision
The Congress
Noting
- the increased availability of multi-sensor, multi-spectral and hyper-spectral data;

Recognizing;
- the need for combining traditional classification methods of remote sensing with computer vision approaches for the automatic recognition of objects;

Recommends;
- that efforts be strengthened in combining classification methodologies and computer vision approaches into a common object recognition framework.

Resolution III.5 Performance and reliability of algorithms
The Congress
Noting
- the diversity of algorithms in photogrammetry, remote sensing and computer vision developed for the purpose of feature extraction and object recognition;

Recognizing
- the need for assessing the performance, reliability and availability of algorithms Recommends;
- that procedures for evaluating algorithms and for developing suitable test data sets be intensified and formulated.

Resolution III.6 Image understanding / object recognition
The Congress
Noting
- the importance of theoretical and conceptual investigations in object recognition and image understanding;

Recognizing
- that despite major efforts and good progress achieved from 1996 to 2000 there remain considerable gaps in the theory for automation of feature extraction and recognition;

Recommends
- that investigations in object recognition and image understanding be intensified, particularly in the areas of modelling and knowledge engineering;

- that cooperation with researchers in computer vision and cognitive science be also intensified.

Resolution III.7 Features as entities in orientation processes
The Congress
Noting
- that features play an important role in digital photogrammetry and computer vision;
Recognizing
- that algorithms for the basic image orientation processes and predominantly point-based;
Recommends
- that current mathematical models be extended to include features as entities in the image orientation processes.

Resolutions of Technical Commission IV

Resolution IV.1 Design of large and distributed spatial databases
The Congress
Noting
- that large spatial databases are established in an increasingly distributed environment to assist in decision-making processes;
Recognizing
- that an efficient collaboration with the Spatial Data Handling (SDH) experts group of International Geographic Union (IGU) has been initiated;
Recommends
- that the collaboration with SDH organizers be continued and strengthened;
- that research, developments and applications in the design of large and distributed spatial databases be continued.

Resolution IV.2 Spatial database revision and consistency
The Congress
Noting
- that value added services and decision making processes depend highly on revised and consistent spatial databases;
Recognizing
- that photogrammetry and remote sensing have further potential for database revision;
Recommends
- that the work on spatial database revision and consistency checking be continued and strengthened. The term 'consistency' is used here to include geometrical, topologically and thematic consistency as well.

Resolution IV.3 Multiscale, aggregation and generalization of spatial databases
The Congress
Noting
- the need for spatial data aggregation and generalization by linking existing spatial database that represent the same locations at different scales;
- that currently databases exist without any links between them;

Recognizing
- that besides ISPRS the International Cartographic Association (ICA) is also active in this field, especially in the area of generalization;

Recommends
- that ISPRS continue and strengthen the efforts in developing aggregation and generalization methods and cooperate with ICA in this field to deliver adequate algorithms to create multiple representations of spatial data.

Resolution IV.4 Generation of core spatial databases

The Congress

Noting
- the increasing need for core spatial data bases to be used and accessed for various applications (e.g. cadastre, topographic mapping, 3D city models, computer aided facility management);

Recognizing
- the contributions of ISPRS Commissions to large scale and topographic databases, to the provision of 3D city models, and to Computer Aided Facility Management;

Recommends
- that the worst on the generation of core spatial data bases using multi-source data be continued and strengthened;
- to combine outdoor and indoor locations of built features and facilities in one data stream.

Resolution IV.5 3D modelling, visualization and animation

The Congress

Noting
- an increasing need for fully 3D mapping, especially in urban areas. supplementing existing DTM databases, providing virtual walks through photorealistic scenes on stand-alone platforms and on the Internet;

Recognizing
- the rapid progress made in this field;
- that interfaces for linking outdoor and indoor space are still missing;

Recommends:
- that further contributions be encouraged to research, developments and applications in this field, especially to link 3D city models with Computer Facility Management Systems.

Resolution IV.6 Dynamic modelling

The Congress

Noting
- that spatio-temporal databases are on the verge of containing vector and image data;

Recognizing:
- that less efforts have been made in the recent past especially to integrate temporal models (kinematic, dynamic) into spatial databases;

Recommends
- that ISPRS strengthen research in this field to make more profit of the timely sensed image data that a cooperation with ICA be initiated.

Resolution IV.7 Data fusion for spatial information systems (Laser scanning, InSAR, stereo, high resolution satellite imagery, GIS data)

The Congress

Noting

- the growth in spatial data sets produced by complementary sensors and data collection systems, and therefore the need for data fusion algorithms for high quality feature extraction for geometric and thematic mapping applications;

Recognizing

- a lack in combing multi-source image data and existing GiS data for deriving high quality mapping products, and the need of using high resolution satellite imagery together with other complementary data sets to supplement the contents of spatial information systems;

Recommends

- that research, development and application in data fusion be further stimulated.

Resolution IV.8 Spatial data quality

The Congress

Noting

- that spatial data quality is a major issue;

Recognizing

- the progress made in the deriving vector data and thematic attributes from imagery;

Recommends

- the further stimulation of research describing data quality measures. and their implementation and integration into spatial databases and GIS analysis.

Resolution IV.9 Inter-operability

The Congress

Noting

- that web-based mapping processes access several databases at different locations, and therefore there is a need for inter-operable open spatial information systems to integrate data and algorithms;

Recognizing

- the efforts of industry and state authorities to create standards for an open platform for data and methods exchange, e.g. OGC and the ISO TC 211;

Recommends

- that ISPRS take responsibility for creating data standards especially for all types of image data cooperation with all institutions involved in spatial data standardization.

Resolution IV.10 Metadata and clearing houses

The Congress

Noting

- that spatial data clearing houses have evolved worldwide and are starting and improving the access to all types of high quality spatial data of all types, making meta data for data description necessary;

Recognizing

- ISPRS is a source of knowledge for spatial data and its con'esponding metadata;

Recommends

- that ISPRS contribute to the establishment and use of spatial data clearing houses.

Resolutions of Technical Commission V

Resolution V.1 Automation for vision metrology

The Congress

Noting

- the importance of automation in all phases of the close-range vision process, in particular real-time three dimensional measurement via machine vision;

Recognizing

- the need for new developments in algorithms and procedures for automated sensor orientation and solutions;
- the necessity of performance evaluation in theoretical and practical aspects;

Recommends

- that stand-alone measurement systems integrating one or more imaging sensors and CAD/CAM, along with innovations in laser scanning and projected light systems for off-line and on-line vision metrology, should be further studied;
- that target and feature extraction with special consideration of the multi-image correspondence problem be developed.

Resolution V.2 Scene modelling for visualization and virtual reality (VR)

The Congress

Noting

- the growing demand for the creation of real-world object and site models for visualization and virtual environment applications;

Recognizing

- the necessity for new developments in 3D modeling and knowledge- assisted 3D scene reconstruction;
- the need for integration of computer graphics and VR technology with close-range vision techniques;

Recommends

- that automatic image analysis techniques to extract models of objects and scenes for applications in visualization and virtual reality be further developed;
- that mechanisms be implemented for cooperation between ISPRS Commission V, computer graphics and computer vision groups.

Resolution V.3 Human motion and medical image analysis

The Congress

Noting

- the growing demand for medical imaging, medical VR, human motion studies. expression analysis and sports formulation analysis;

Recognizing

- the need for automated image understanding and real-time imaging systems in these areas
- the necessity for involvement of photogrammetrists in these research fields;
- the need for more interaction between related scientific communities;

Recommends

- that research and development in techniques and systems for medical imaging, human motion studies, expression analysis and sports analysis be continued and strengthened;

- that Commission V intensify cooperation and collaboration with the communities of medical/biomedical engineering, sports science and human/apparel engineering.

Resolution V.4 Integration of image analysis and spatial information systems for applications in world cultural heritage

The Congress

Noting

- the growing demand for applications of close-range vision techniques and spatial information systems for recording, mapping, 3D modelling and visualization of structures of architectural significance and objects of importance to the world cultural heritage;

Recognizing

- the need for innovative technologies for imaging, data processing, modelling, visualization, archiving and information management including Internet techniques;
- the need for integration of computer graphics with close-range vision techniques for digital archives or VR museums;

Recommends

- further development of integrating of close-range vision techniques and spatial information systems for 3D reconstruction and documentation of monuments and buildings for world cultural heritage
- the increased use of advanced, low cost and rapid techniques in documentation and monitoring of the world cultural heritage
- development of standard procedures and products in cooperation with related disciplines (e.g, urban planning or facility management)
- close cooperation with CIPA.

Resolution V. 5 Image sequence analysis

The Congress

Noting

- the potential and growing importance of temporal analysis, time-constrained solutions and dynamic analysis;
- the variety of systems and applications including mobile mapping, robot vision, machine vision, medical imaging, autonomous navigation, motion analysis, deformation analysis and data capture for virtual reality;

Recognizing

- the need for real-time image processing involving sensor fusion in the integration of image data with navigation sensor data;
- the need for the development of algorithms and associated computational processes for image sequence analysis;

Recommends

- that investigations of these topics be promoted, in close cooperation with Commission III and researchers, for example in engineering and computer vision;
- that investigations on algorithmic aspects and the development of computational systems for applications with special emphasis on time constrained solutions be conducted.

Resolution V.6 Vision and animation

The Congress

Noting

- the increasing demand for image-based animation in many applications in sports, medicine, biomechanics, security, the movie and TV industry, videogames, environmental simulation and interface technology;

Recognizing

- the need for involvement of photogrammetrists in this area;
- the potential of close-range vision techniques to be utilized in animation technology;

Recommends

- the development of image-based techniques for use in live figure and environment generation tasks;
- the study of methods and technologies to support the interaction of real and virtual objects and actors;
- that collaboration with the computer vision and animation communities be intensified.

Resolution V.7 Integration of ground-based vision techniques with aerial/space images

The Congress

Noting

- that the importance of integration of ground-based vision techniques with those of aerial and space imagery will inevitably increase for applications such as city modeling, urban and traffic planning, and environmental monitoring;

Recognizing

- the need to utilize high resolution satellite images or aerial images in an integrated fashion with ground-based imagery;

Recomends

- that new models and techniques for close – range and aerial/ space image integration be developed in cooperation with Commission IV. with a focus on aspects such as the combination of data from various sources, object extraction techniques, 3D modeling and texture mapping.

Resolutions of Technical Commission VI

Resolution VI.1 The Internet for ISPRS

The Congress

Noting

- that the Internet and the World Wide Web provide a super-highway for information access and transfer;
- the potential of the Internet as a support for research;
- the relevance of Internet search engines for information retrieval and sharing;

Recognizing

- the need for guidelines and recommendations regarding appropriate formats for Internet Web pages;
- the benefits of integrating the ISPRS journal, ISPRS Highlights, member reports. ISPRS web pages, commission and working group reports and newsletters, other relevant ISPRS

publications, and links to the web pages of education and research institutions, governmental institutions and private companies;
- that the Internet infrastructure has not yet become totally available in developing countries;

Recommends
- the investigation of the optimal use of the Internet for the benefit of the ISPRS community.

Resolution VI.2 Education for the developing world

The Congress

Noting
- the relevance of training and education for the ongoing development of photogrammetry. remote sensing and geo-information, especially in the developing world;
- the benefits of and the need for education networking and sharing of expertise and resources in the developing world;

Recognizing
- the lack of communication between educational institutions and individual educators in the developing world;

Recommends
- that Commission VI in cooperation with regional members of ISPRS and all sister societies endeavor to organize workshops for education in the developing world.

Resolution VI.3 Updating the ISPRS education data base

The Congress

Noting
- the growing concern regarding the lack of information on education and training institutions worldwide;
- that Commission VI has prepared an initial database on institutions of education and training.

Recognizing
- the relevance of communication between educators from different institutions and different parts of the world;
- the need to make information on educational facilities available to members of the ISPRS community and the general public;

Recommends
- that the ISPRS data base of education and training courses and institutions be maintained and updated at least annually.

Resolution VI.4 Computer Assisted Teaching and Learning (CAT/L)

The Congress

Noting
- that CAT/L systems offer new opportunities and benefits for the education and training processes;

Recognizing
- the increased interest in the potential of information technology as a tool for the support of education and training both, for on site and remote learning;

Recommends
- that the evaluation of existing and the development of new concepts of CAT/L and distance learning be addressed;

- that public domain educational software and web pages be designed and developed that available software and web pages be publicly disseminated at marginal cost - that the CAT Contest (CATCON) be continued.

Resolution VI.5 Technology transfer to and within the developing world

The Congress

Noting

- the shortage of qualified professional staff in the developing world as a result of limited resources against the background of rapidly developing technology;

Recognizing

- the need to enhance the theoretical, practical and management skills of individuals from the developing world;
- the relevance of quality of service with the increased globalization of professional activities;

Recommends

- that opportunities for technology transfer to and within the developing world be further investigated and expanded;
- that such technology transfer be initiated, encouraged and/or supported in cooperation with sister societies and international/regional organizations.

Resolution of Technical Commission VII

Resolution VII.1 Spectral signature research

The Congress

Noting

- the rapid development in spatial and spectral sensing technology;

Recognizing

- that spectral sensing research is essential for the use of remote sensing data;

Recommends

- that research on spectral signature especially in the areas of hyper-spectral and microwave sensing be continued;
- cooperation with institutions maintaining databases on spectral signatures;
- cooperation with International Symposium on Spectral Sensing Research (ISSSR) and National Center for Space Studies (CNES) International Conferences on Physical Measurements and Spectral Signatures in Remote Sensing.

Resolutions VII.2 Standardization for methodology of computer-aided interpretation

The Congress

Noting

- the increased importance of data accessibility of computer-aided interpretation and analysis of sensor data in setting up and using global databases in a standard form;

Recognizing

- the increasing demand for sharing information especially in the emerging countries and the need for unified guidance to ensure comprehensive data collection and use at the local, regional and global levels;

Recommends
- establishing quality measures for evaluation and validation of the output of remote sensing procedures;
- collaboration with CEOS Calibration and Validation Working Group (CVWG).

Resolution VII.3 Crop monitoring, yield estimation and policy issues
The Congress
Noting
- the substantial economic benefit of using remotely sensed data in agriculture to ensure food security and rural development;
- that remote sensing has been shown to be an effective operational tool in many countries;

Recognizing
- the achievements and proven technologies in the field of operational use in crop monitoring, yield estimation and facilitating agricultural policy implementation;

Recommends
- to refine current modelling methodologies for improvement of the operational use in crop monitoring, yield estimation and facilitating agricultural policy implementation using remote sensing and GIS technologies.

Resolution VII.4 Integrated monitoring systems
The Congress
Noting
- that advances have been made in geospatial and telecommunication technology;

Recognizing
- the synergy by integrating remote sensing data, in-situ measurements and other data in a GIS has sign-cant advantages both in technical and economical sense, as well as for interdisciplinary cooperation especially in integrated water and other natural resources management;

Recommends
- that integrating remote sensing data, in-situ measurements and other data in a GIS be encouraged for monitoring, modelling and management of the environment and resources.

Resolution VII.5 Disaster management
The Congress
Noting
- that remote sensing, GIS, satellite positioning and space communication have become effective tools for disaster monitoring, mitigation and assessment;

Recognizing
- that disaster management has been recognized as an urgent issue in the recommendations of UNISPACE III;

Recommends
- the development and applications of appropriate tools and methodologies for disaster management using remote sensing and GIS technologies;
- cooperation with various partners IGOS/CEOS etc.

Resolution VII.6 Generation and use of global databases

The Congress

Noting

- the increasing availability of global databases, data gathering methodology and the wide variety of remote sensing data sources and worldwide emerging infrastructures;

Recognizing

- that future developments need close co-operation in the field of global monitoring and modelling;
- that UNISPACE III supports worldwide actions related to Agenda 21 at the local, regional and global level, in close co-0peration with international scientific organizations and the appropriate institutions of the United Nations;

Recommends

- cooperation with Commission I and IV;
- the development of methodologies for generation and quality evaluation of global databases for global studies;
- compilation of existing and planned location and quality of global databases - development of algorithms for monitoring of global change;
- evolving strategies for assimilating remotely sensed data into global models.

Resolution VII.7 Supporting implementing of international policies and treaties

The Congress

Noting

- the increased political and societal significance of international policies and treaties, such as the Kyoto Protocol;

Recognizing

- the needs for objective, reliable, economic and timely implementation of the related international policies and treaties;
- investigations and development of thematic mapping using remote sensing data at national and international levels;

Recommends

- investigations and development of vegetation (especially forest), soil and other thematic mapping and using remote sensing data at national and international levels, with focus on carton fixing;
- coordination with International Global change Atmospheric Chemistry (IGAC) Programme.

Resolution VII.8 Urban management

The Congress

Noting

- that rapid and unplanned urbanization is a problem worldwide;

Recognizing

- the impact of growing urbanisation, increasing density of population;
- transmigration from n.~ral to urban areas as well as the impact on environment associated with pollution and global change, and the benefits of remotely sensed data in monitoring its impact;

Recommends

- provision of scientific and technological support;

- for actions as recommended by the HABITAT III Conference;
- for documentation, conservation, management and permanent control of Natural Heritage and Cultural Landscapes in co-operation with UNESCO/ICOMOS/CIPA;
- for actions to monitoring land use and land cover transformation, with special emphasis on urban growth.

Resolution VII.9 Imaging segment of information infrastructure

The Congress

Noting

- imaging represents an inevitable part of geospatial information;

Recognizing

- the growing needs for and ongoing activities in establishment of interoperable geospatial information infrastructure at the national, regional and global level to support assessments of environmental degradation, monitoring and modelling of global change and resource management;

Recommends

- that ISPRS represent the imaging sector using the synergy with its integration with GIS, satellite positioning and space communication in the national, regional and global spatial data infrastructure especially in applications of remote sensing and GIS for environmental studies and resource management.