

# Commission I Report 1998 - Addendum

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## Commission I: Sensors, Platforms and Imagery

President: George Joseph

Secretaries: A.K.S. Gopalan and V. Jayaraman

### State of Science and Technology in Commission I Topics

The launch of high resolution (~ 1 m.) system has been delayed. Current operational system which gives resolution better than 10 m. is the Indian Remote Sensing Satellites, IRS-1C & IRS-1D. MOMS-2P is now operational and has imaged large areas of the world in stereo mode. The 3 or more-line sensors, originally designed for space applications, are now operational from aircraft. Together with the strongly improved inertial measurement units (IMU) these systems can produce in a close to on-line process 3-D ground co-ordinates with an accuracy of up to +20 cm in all 3 components. In a co-operation between one of the scientific developers a commercial company will start with the production of such a camera in 2000. This will open the field for the direct digital data acquisition from aircraft. The improved IMU-systems, now available for a lower price, are starting to support not only scanners but also the film based aerial cameras. So in a combined block adjustment the number of required ground control points can be reduced also for single flight strips to a minimum.

The laser scanning became a standard procedure and in some areas it always has replaced the traditional photogrammetric height determination.

InSAR is becoming more important, with the coming shuttle RADAR mission optimal conditions will be available.

As far as the radiometric calibration is concerned, various calibration methods are in preparation for monitoring the radiometric stability of space sensors as well as for absolute radiometric calibration and inter-calibration of various sensors. Activities in this field carried out in North America are very well documented in a special issue of the Canadian Journal of Remote Sensing (Volume 32, No. 4), edited by Ph.M. Teillet.

The ocean observation in narrow bands is operationally now available from SeaStar. Required algorithms for chlorophyll retrieval are being refined. The IRS P4 ocean colour monitor with 360 m. resolution should be available for use by mid 1999.

To maximally exploit the capabilities of high resolution cameras the satellite platform capabilities are being improved in terms of attitude accuracy and agility. The high resolution imaging requires platforms with high agility to generate imageries in paint brush mode, so as to mosaic a number of small size images to form a reasonable frame size.

Various new technologies are being developed to achieve reduction in size and weight for cameras and satellite bus. NASA has planned the Earth Orbiter-1 mission which will fly three advanced land imaging instruments and seven revolutionary cross cutting spacecraft technologies. The three advanced imaging instruments will lead to a new

generation of lighter weight, higher performance and lower cost Landsat-type imaging instruments for the Earth Science Enterprise. Additionally the EO-1 mission will flight validate a number of cross-cutting spacecraft subsystem technologies which if successful will enable future Earth and Space Science missions to be conducted using smaller, lower weight and reduced power spacecraft buses.

### **Accomplishments of Commission I during 1998**

The ISPRS TC-I has organised the International Symposium on 'Earth Observation System for Sustainable Development' during February 25-27, 1998 at Hotel Atria, Bangalore, India.

The ISPRS TC-I symposium was inaugurated by Dr K. Kasturirangan, Chairman, Indian Space Research Organisation (ISRO), and Secretary, Department of Space (DOS), Government of India. Dr Lawrence W. Fritz, President, International Society of Photogrammetry and Remote Sensing (ISPRS) presided over the inaugural function. Dr George Joseph, President, TC-I welcomed the distinguished guests and gave brief outline of the TC-I activities. Dr D.P. Rao, President, ISRS appraised the delegates about Society's activities. Mr V. Jayaraman, Secretary, TC-I proposed the vote of thanks.

The 'Theme Session' on 'Earth Observation System for Sustainable Development' was chaired by Prof. G. Konecny, University of Hanover, Germany. The session had three invited talks by the three distinguished scientists, Prof. U.R. Rao, Dr Lawrence W. Fritz and Prof. Shunji Murai. They spoke on 'Sustainable Development: Data need', 'Earth Observation System for Sustainable Development needs' and 'Recent Advances of Data Integration, spatial analysis and modelling for sustainable development', respectively.

173 participants from 29 countries have participated in the deliberations. The country-wise participation is given in table 2. The delegates are mainly from space departments (98), industry (25) and academia (50).

### **Working Group Activities**

#### **WG I/3**

Sensor and Platforms for Topographic Survey

Chair: Dr K. Jacobsen

Co-chair: Dr T. Natarajan

#### **State of Science and Technology of WG Topics**

Since the availability of the very high resolution space systems has been delayed, the high resolution images of IRS-1C and 1D have a good chance of being in greater demand. With SPOT 4 this established system is continued. MOMS-2P is now operational and has imaged large areas of the world in a stereo mode.

The 3 or more-line sensors, originally designed for space applications, are now operational from aircraft. Together with the strongly improved inertial measurement units (IMU) these systems can produce in a close to on-line process 3-D ground coordinates with an accuracy of up to +20 cm in all 3 components. In a co-operation

between one of the scientific developers a commercial company will start with the production of such a camera in 2000. This will open the field for the direct digital data acquisition from aircraft. The improved IMU-systems, now available for a lower price, are starting to support not only scanners but also the film based aerial cameras. Soon in a combined block adjustment the number of required ground control points can be reduced also for single flight strips to a minimum.

#### WG News

A workshop 'Sensors and Mapping from Space 1999' is planned for the period from 27 up to 30 September 1999 in Hanover. This will be a common workshop together with the working groups I/3 'Sensor Parameter Standardisation and Calibration' and IV/4 'Mapping using High Resolution Satellite Imagery'.

The web-page of the working group <http://www.ipi.uni-hannover.de/isprs/wgI3/wgI3.htm> will be updated very soon.