

## **ISPRS Report to WGCV20**

### **Introduction**

During 2003 ISPRS has been holding the mid term symposia of the seven Technical Commissions. These have been very successful and, in several of these, issues relating to CEOS, and to WGCV in particular, have been addressed. The most important of these issues has been the ISPRS/CEOS Task Force on Radiometric and Geometric Calibration. Other major issues have been assessment of SPOT HRS data, and issues of standards. ISPRS has also been concerned with restructuring its Commission structure and its relationship with other international organisations.

### **Joint Task Force of Radiometric and Geometric Calibration**

A kick-off meeting of the Task Force was held on November 11 at the ISPRS Commission I Symposium in Denver. 24 people attended representing the space agencies (NASA, NOAA, CNES), government agencies (CCRS, NIMA, NPL), industry and academia. The two-hour meeting was lively and varied. Most discussion focused on the scope and content of the task force. While there was consensus that a joint task force would be a highly desirable union of global talent, it was also agreed that leadership would require resources that no one in the room could commit. Attendees representing the cal/val team at Stennis Space Center (SSC) (Bruce Davis, Vicki Zandoni) agreed to approach NASA management about a possible SSC leadership role. Attendees from both JPL (Veljko Jovanovic) and GSFC (Vincent Salomonson) have also lent their support in principle, subject to NASA Headquarters approval.

On January 22, 2003 Dr. Ghassem Asrar, Associate Administrator for NASA's Earth Science Enterprise, endorsed the appointment of Dr. Davis as Chair of the Task Force, and enthusiastically approved the concept for an international workshop at SSC. The aims of the workshop will be to review NASA, other U.S. Federal Agency, and international contributions to sensor calibration technology; stress the need for standardizing international "best practices" for radiometric and geometric calibration; benchmark the calibration process used by the Joint Agency for Commercial Imagery Evaluation (JACIE) and promote the adoption of this process as an initial step toward standardization.

Notes on the discussion at the meeting are appended. There are some issues on which the Task Force would like some feedback from WGCV:

1. How many WGCV people would like to serve on the Task Force? Names and addresses should be sent to Bruce Davis, [bdavis@ssc.nasa.gov]. [At WGCV19 the following names were put forward:  
Manuel Martin-Neira (MS SG and ESA),  
Raju Datla (NIST),  
Nigel Fox (NPL),  
(Michael Rast – if necessary),  
SAR SG – Gordon Keyte will raise at London workshop.]
2. How many WGCV people would attend an international workshop at Stennis Space Center in late 2003 or early 2004? Knowing a ballpark figure would help in planning for the event.

### **The HRS Scientific Assessment Program (HRS SAP)**

ISPRS has reached an agreement with CNES to jointly organise an assessment of the DEM products from the SPOT 5 HRS sensor. This programme will be jointly organized by ISPRS and CNES within an "HRS Study Team". This Study Team is open to ISPRS Working Group members (and especially to participants of WG I/2 activities on "Sensor Calibration and Testing") who are accepting its rules and obligations. The Study Team is managed by a Secretariat, co-chaired by Manfred Schroeder (ISPRS Chair WG I/2) and Alain Baudoin (CNES). Members of the Study Team are either Principal Investigators if they can provide to the Study Team, reference data (Ground Control Points, accurate DEM,) on a test area, or Co-Investigators if they work on the same data of a PI. The WGCV Terrain Mapping Group has been involved in the discussion to set up the HRS SAP.

### **ISPRS work on transfer standards.**

During the past 12 months the WG II/4, whose topic is image data standards, primarily functioned as a link between the ISPRS and various standardization committees throughout the remote sensing and photogrammetry community. The most important committee among them is the ISO/TC211 "Geographic information – geomatics". Its working group 6 "Imagery" covers the aspects related to ISPRS. The WG II/4 has also established or keeps regular contacts to ISPRS commission I, to CEOS (Committee on Earth Observation Satellites), to EuroSDR (formerly OEEPE), and to the OpenGISConsortium. WG II/4 will be involved in the ISPRS and CEOS Joint Task Force Group on Radiometric and Geometric Calibration/Standards. Although the international standards for imagery are still under discussion and development, WG II/4 has become an expert group of ISPRS on standardization. Questions on standardization have risen with increasing intensity.

### **Restructuring of ISPRS Technical Commissions**

ISPRS has been carrying out a consultation process to determine whether the current definition of the ISPRS Technical Commissions is appropriate to enable the Society to adequately and effectively cover existing and expected developments in the photogrammetry, remote sensing and spatial information sciences. To ensure that participants continued to be attracted into ISPRS, the needs of the photogrammetry, remote sensing and SIS communities must be addressed. The discussions generally concluded that the current Commissions do not satisfy these communities, especially the remote sensing and GIS communities. One comment was that the Commissions should be more user oriented, acting as 'Portals to various user communities'.

Current plans are that issues of calibration would be grouped together under one commission and validation would come under a new Commission called Thematic Processing, Modelling and Analyses of Remotely Sensed Data. The proposals will be put on the ISPRS web page ([www.isprs.org](http://www.isprs.org)) for discussion.

### **Future Meetings**

2-6 June 2003, International Symposium on Spectral Sensing Research (ISSSR 2003), Santa Barbara, California, <http://www.issr2003.com/>

6-8 Oct 2003, High Resolution Mapping from Space 2003, Hannover, Germany.  
<http://www.ipi.uni-hannover.de/html/aktuelles/tagungen.htm>

12-23 July 2004, XXth ISPRS Congress -- Geo-Imagery Bridging Continents, Istanbul, Turkey  
[www.isprs2004-istanbul.com](http://www.isprs2004-istanbul.com)

## APPENDIX

**Joint Task Force Meeting  
 Calibration/Validation  
 ISPRS Mid-Term Symposium  
 Denver, CO USA  
 November 11, 2002**

*DRAFT Minutes*

Attending:

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Opening remarks: Manfred welcomed everyone and gave a short background on the efforts to establish the Task Force. Stan also welcomed attendees and gave a short statement on high level goals for the evening's proceedings. Round the table introductions followed. Representation includes ISPRS members, ASPRS Lidar Committee, CEOS WGCV, industry, and US Federal agencies.

Ian presented the ideas for formulating a joint Task Force between ISPRS and CEOS. Two objectives include (1) sensor specific calibration and validation, and (2) geophysical validation. Resolution recommends a task force be established with ISPRS to formulate plans for standardization. Draft terms of reference have been established (see notes from Manfred's WG report). Issues arising from working group include:

- The Task Force needs to be careful to avoid duplication with other work and must not get bogged down in detail
- Needs to the user (general EO scientists rather than systems designers)
- On completion the Task Force needs to consider how to enforce the proposals
- Good interaction with satellite designers and operators is needed

Question arises as to whether or not passive microwave sensors are included in considerations of the Task Force. Also whether or not airborne sensors are included.

A draft profile of the Task Force developed by Manfred and Stan was developed in early 2001. The draft attempts to identify elements of radiometric and geometric calibration and validation, primarily for optical sensors. How do the efforts of the Task Force differ from those that Commission II has been addressing? This Task Force intends to look at the issues addressed by CII in greater detail. There is a relationship that should be explored. CII is dealing with transfer standards....there is an overlap, but the emphasis is different. CII work serves as a good starting point for the Task Force. Question: should scientists be comparing data or should they be comparing sensors? The task force is concerned with the raw data produced by the sensor. Standards are concerned more with the products produced from the data. Stan asks how does the Joint Agency Committee on Image Evaluation (JACIE) team fit into the interests of the Task Force? The team has characterized systems and has tried to leverage on expertise of various federal agencies (NIMA, USGS, NASA). They began by understanding a given dataset and in course began to consider standards as well. Civil NIIRS (national imagery interpretability rating scale) is a NIMA document that the Task Force should consider. One of the first tasks of the Task Force is to look at all related efforts and documents as a basis for moving forward in terms of addressing calibration and validation issues. It would be sensible to look at inter-product issues as an initial step. Looking at product first is the message. A suggested function of the Task Force is to standardize or define parameters that are necessary for a world-class calibration test site. In the remaining years of the current term of Commission I the goal should be to lay the groundwork for the Task Force for continuation by subsequent Commission I members. Procedures and protocols should be in place for traceability of the process, not just on products. All steps in the chain must be compared and inter-compared. There is a need to recognize the official differences of the methodologies to cross-compare and normalize the calibration processes. This is in reference to radiometric calibration, but is not necessarily the case for geometric calibrations. This is a product level comparison. There is an international semantics issue where people are calling different products by the same name.

What is the expected outcome of the Task Force? Who will use the findings/results and why? Originates from CEOS, but that is at a higher level and they don't understand the uses and needs of the science users. CEOS is looking for input. Expect a document that defines sensor product parameters that can be used by

the community. The goal is to work with colleagues at a technical level to develop a framework and detail to assist CEOS in understanding the calibration/validation needs of the community. The idea is to agree on a standard set of terms. The goal is to unveil a working document at the Congress in 2004. The intent is for widespread circulation for input and comment. Caution is given that the effort should be bounded so that progress can be achieved. An initial set of terms addressing sensors and products would be identified for use by CEOS. How large is the community that would be surveyed for input? To start, a group of 10-12 people can initiate the process. A small group can work for a year or two to develop a report, which then can be released to a wider audience for comment. The problem needs to be identified at a level so that individuals will be willing to commit time to the Task Force. Recommendation from Bruce Davis is to define the scope of the Task Force so that resources can be committed to the effort. Manfred suggests that the leadership of the Task Force be given first crack at defining the scope. This is not easily done in a large group. This will be an evolutionary process. The ISO 19130 Standard for Geographic Information – Sensor and Data Models for Imagery and Gridded Data can serve as a model for the goals of the Task Force for presentation at the 2004 Congress. In the short term the next CEOS WGCV is in Feb 2003 (Hobart, Tasmania) and it provides a good opportunity to review what CEOS is expecting in terms of CV. A white paper produced by George Joseph would be a good starting point. A suggestion is for Bruce to develop a scope for the Task Force and to present it to the larger group (contingent upon blessing of his management). A suggestion is to begin with the standard addressed by JACIE, and to also look at commercial standards for rms, etc. Both of these standards could be starting points for developing the scope. Can these be used or not? Stan proposes that Bruce be interim chair and that Veljko serve as co-chair (given his interest in geometric calibration), contingent upon agreement by their respective managements. Manfred can provide a mailing list of individual who are interested in the Task Force and who can contribute to its efforts. The two components for consideration are the sensors and the products. Both should be considered in the work of the Task Force.