The role of protocols and standards in hyperspectral data acquisition

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Introduction

- *INTA will coordinate HYRESSA-AM8 task entitled "Review and refinement protocols" (main participants are VITO, DLR, WU, ISBE-ASCR)*
- *Objective: To review and report on existing protocols and refinement of them in compliance with standards in the field of airborne remote sensing techniques.*
- *The speaker is in charge of Data Acquisition Airborne Team at INTA and co-representative at HYRESSA programme.*

Exploratory Workshop, Davos, March 14-15 2007
HYRESSA - HYperspectral REmote Sensing in Europe specific Support Actions

Introduction

PROTOCOL

- *Concept of protocol:*
  - *"Set of guidelines for use in various circumstances" and in particular, in Natural Sciences, protocol is "a predefined procedural method in the design and implementation of experiments" (Wikipedia)*
  - *"A detailed plan of a scientific or medical experiment, treatment, or procedure" (Merriam Webster's Dictionary)*
- *Protocols to be reviewed will be those dealing with hyperspectral data gathering operations, calibration, validation, distribution and archiving techniques.*

User requirements

- *Related outputs from SWOT[1]* workshop (AM5):
  - *Platform: an overview of available instrumentation and planned campaigns in Europe is demanded.*
  - *Lack of agreed standards, mainly in the calibration, processing and validation stages.*
  - *Demand of information of the methodology to calibrate and maintain the sensors.*
  - *Need of evaluating the product accuracy*.

GENERAL DEMAND OF STANDARDS & TRANSPARENCY

Conclusions of QUN[2] (AM6) and Exploratory meeting have emphasized this "perception", in particular QUN results have already provided hints to the operators of which information is missing and demanded

[1] ***SWOT*** *Strength-**W**eakness-**O**pportunity-**T**hreats*
[2] ***QUN*** *Questionnaire on **U**sers **N**eeds*

User requirements

Phases of a hyperspectral project to consider

1. *Calibration*
2. *Flight campaign planning*
3. *Flight campaign*
4. *Data processing*
5. *Distribution*
6. *Archiving*

Methodology

The methodology proposed in the "Description of Work" HYRESSA doc seems reasonable, feasible and, hopefully, effective.

***STEP 1**: SWOT + QUN, to get a picture of where we are and where the users want us to go.*
***STEP 2.1**: Identification and reviewing of existing protocols (carried out by an experienced operator)*
***STEP 2.2**: Identification of existing applicable standards (carried out by an experienced end-user)*
***STEP 3**: Refinement of existing protocols (coordinated by a different operator but with the collaboration of other operators and users)*

It is due to start on 2007.07.01 (Month 18)

Developments

What is happening around?

GEOSS,INSPIRE, driven by policy makers
EUFAR, driven by infrastructure owners/operators
ARGOS, AERONET,NEON infrastructures user-driven
ESA, MODIS, data providers initiatives
HyperTeach, HYPER-I-NET, education initiatives

Can give some ideas but not fully applicable to the European Airborne Hyperspectral Community needs

HYRESSA has the opportunity to be the reference

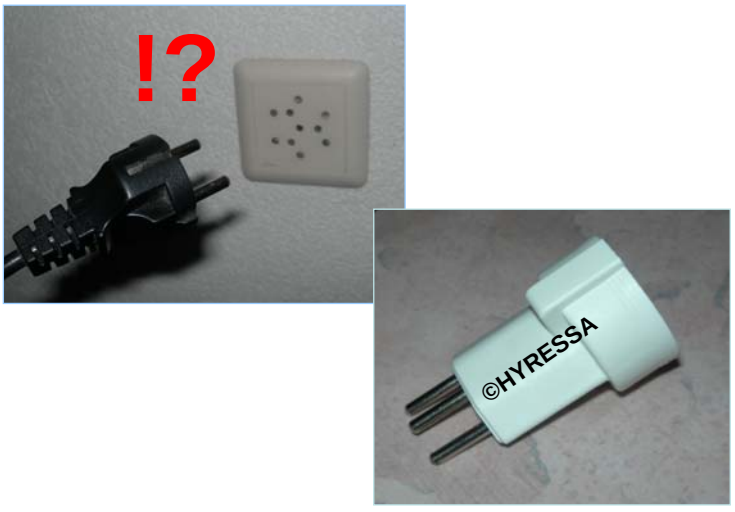
Benefits

- *It gives consistency to the data and allows comparison,*
- *It improves the efficiency of the use of the available facilities,*
- *It contributes to transparency and "good practices",*
- *It gives the guidelines for future developments (APEX, ARES, ENMAP, etc),*
- *It makes easier and more attractive the access to new potential users,*
- *It (can) reinforces the position of the hyperspectral community in front of funding institutions,*
- *It makes feasible "Trans-National Access"-TNA (or at least, "Trans-Institution Access") and the set up of a geographic distributed facility,*
- *Positive contribution to other "on the air" concepts: harmonization, integration, interoperability, etc…*

Discussion Points

- *Which activities/procedures should be "protocolized" and with what priority: Campaign management, sensor characterization, sensor calibration, data process, data quality, data validation, etc*
- *What information the users need and the operators can and want to provide*
- *Effort-Cost assessment*
- *Risk: loss of freedom (operator)-flexibility (all the actors)*
- *Will protocols reduce the costs of access to the infrastructures?*
- *Top-down approach,*
- *Opportunity factor of HYRESSA should be considered at this early stage,*
- *Etc..*

Thank you



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