

Harmonisation of quality information

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- **Future Earth Observation products/services envisage the fusion of data acquired by several sensors/platforms. At the same time a single satellite will answer the requirements of different end-users.** (e.g. multi-mission cooperation scenarios are foreseen in the GMES Data Access Portfolio – introduction of the concept of Data Set)
- Such product/services require “*...a comprehensive understanding of the radiometric and geometric properties of each of the input data sets forming the composite because misinterpretation of the modelled results can carry critical social, economic, and political implications.*”
(2004_Morain_ISPRS_WGCV_task_force)

Need to establish an harmonised framework for QC, QA and Cal/Val activities across missions and applications

- **Have highlighted the great variability of**

ACTIVITIES & METHODOLOGIES

e.g. test sites, calibration (geometric, spectral and radiometric), pre- and post-launch, validation activities, image quality parameters, etc.

...applied to the various types of instruments: optical, SAR, RA, microwave radiometer, atmospheric instruments.

- **Have emphasized the need to**
 - Agree on compatible Quality Indicators/criteria/information
 - Establish a consensus on methodologies and best practice
 - Achieve more coordination across Cal/Val activities
 - Have the complete traceability of procedures
 - Agree on data access policies

*This applies to both the **Satellite data** and the **In-situ data** required for Calibration and Validation Activities*

Establish a consensus on both **technical procedures** and **policies** that would:

- **Brings benefits**

- increase confidence, reliability and effectiveness (quality of end product)
- encourage the application of EO data (new business/market and services)
- facilitate sharing and exchange
- develop cooperation
- assist interoperability

- **Without hurting research/competition**

- investigating new methodologies/instruments (Cal/Val is an evolving discipline!)
- avoid major administration costs

- **The harmonisation session addressed harmonisation issues related to:**
 - Quality Information definition
 - Presentation of Quality Information to end-users
 - Information flow
 - Algorithms and procedures to derive QIs
 - CEOS endorsement
- **The means to do this is achieved through the establishment of key Guidelines based on best practices**

Each process should be associated with Uncertainty Estimation and Quality Information

Platform – Sensors – Calibration – Validation – Processing Auxiliary data

- **Quality Indicators cover both following aspects**

- well defined quantities (definition, algorithm, ...etc...) that you can find in a “dictionary”

2005_NIST_terms_and_definitions

2001_ESA_ASAR_quality_measurements_definition

- coefficients giving more general information to the end user (e.g. confidence indices for level 3 products).

- It is important not only to harmonise the definition of the Quality Information but also the Procedure to derive these QI.

2001 ESA ASAR quality measurements definition

- Standard Definition of the QI

2004 Morain ISPRS WGCV task force

- With the growing number of products, challenges include data access and uniformity, product accuracy assessment, and understanding the relationship between the multiple products.

2006 Morisette MODIS Global vegetation

- Standardisation of in-situ measurements (e.g. AERONET-OC)

2006 Zibordi AERONET

- Cross-Calibration of various sensors over a set of representative sites

2007 Chander IRSP6 Landsat comparison

2007 Weiss CYCLOPES validation

- *Is there a need for improvement of the harmonisation of QI ?*
- *What would be the strategy to implement such harmonisation of QI ?*
- The need for a dictionary of definitions across the board to help drive interoperability and use across all areas was agreed.
- Action 7
- Communication and Education (A) Guideline 1

- Does the information flow have to be harmonised as well ? And how
- not all users need all data but, it was agreed, there should be full **traceability**.

- **Would this establish a sort of “accountability chain” (with or without an actual legal framework) ?**
 - It is about putting a “qualifier” with the product. If a product does not have a qualifier with it then there is a great risk.
 - There needs to be an uncertainty measure associated with each parameter to allow one to make a statement about what is being measured.
 - The measure of success is when data becomes more useable on a system and if we can have a quality stamp on that data and its products then people will have more confidence in using it.

- What level of Harmonisation, if any, is required in QC and QA methodologies ?
- Is there a need for an Harmonisation of Cal/Val methodologies ?
- In this context of Harmonisation, is CEOS guidelines enough or is there a need for:
 - a CEOS endorsement
 - a CEOS certification
 - How could this CEOS endorsement or certification be implemented?
- **Taskforce to address governance for Cal/Val processes / guidelines**
- **Implementation session**