WMO/IOC/UNEP/ICSU
GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)

Doc. 3.2
(24.II.09)

1st GRUAN Implementation-Coordination Meeting (ICM-1)
Norman, Oklahoma, USA
2-4 March 2009

Item 3

Pre-deployment Calibration/Validation: Establishing Traceability and Comparability for GRUAN Measurements

(Submitted by T. Gardiner)

Summary and Purpose of Document

The document contains an outline of a talk which will discuss the important aspects for establishing traceability and comparability across the GRUAN network, including relevant case studies and examples.

Establishing Traceability and Comparability for GRUAN Measurements

The talk will be divided into five sections which will look at different aspects of traceability and data quality. Each section will include relevant case studies and examples.

Concepts and Definitions

There are many different terms used in relation to measurement traceability and uncertainty. The International Vocabulary of Basic and General Terms in Metrology (VIM) provides the reference definitions for all of the key concepts in this area, so the talk will begin with a summary of these to try and establish a common terminology.

Quality Assurance Strategy within CEOS

The QA4EO initiative provides a Quality Assurance Framework for Earth Observation and presents the guiding principles and key guidelines of the three themes: Data Quality (DQ), Data Policy (DP) and Communication and Education (CE). This framework has been approved by CEOS for the space element of GEO, and is likely to be extended across all of the GEO areas in the future.

Following the QA4EO framework, where appropriate, would provide the GRUAN data with a recognised quality assurance level, and hopefully address from the start something that may become a requirement later on. The talk will therefore review the parts of QA4EO that are relevant to GRUAN, focussing mainly on the Data Quality theme.

Intercomparisons

One of the main routes for establishing and maintaining measurement traceability and uncertainty is through intercomparisons. The talk will review the different types of intercomparisons, run through the typical structure of a formal metrology intercomparison, and highlight the difference between a formal intercomparison and a scientific experiment to compare instrument performance.

Instrumental Type Testing and Proficiency Testing Schemes

One area where NPL has a significant amount of experience is in type-testing environmental sensors and proficiency testing schemes for instruments and operators. The purpose of these exercises is to establish the suitability of a measurement capability to meet a particular environmental sensing objective – as will be required for GRUAN. Examples will be given of these schemes, with a focus on the typical instrumental (and operator) performance issues that need to be addressed.

Summary and Discussion

The talk will finish with a summary of issues raised above, including a discussion on what aspects will be important for establishing traceability and comparability across the GRUAN network.