Workshop on "Reference Upper Air Observations for the Global Climate Observing System: Potential Technologies and Networks"

Applied Physics Lab, University of Washington, Seattle, 22-24 May 2006

A workshop held under the auspices of the Global Climate Observing System and the National Oceanic and Atmospheric Administration.

Meeting Chair: David Goodrich, GCOS Secretariat

Meeting organizing committee: David Goodrich, Peter Thorne (UK Met Office), Junhong Wang (NCAR), Dian Seidel (NOAA ARL), Bill Murray (NOAA CPO), Howard Diamond (US GCOS Program Manager, NOAA/NCDC).

Meeting rationale

This meeting will consider and evaluate technological options to meet the requirements set out in the report from the February 2005 Boulder workshop on Climate Requirements for Upper-Air Observations. It is specifically focused on a reference network as articulated in the GCOS Implementation Plan, and adopted as the climate requirements of GEOSS. The goal of a reference network is full characterization of the atmospheric column characteristics for several decades into the future. This will require surface-based, radiosonde-based, and other instrumentation, of which much of the infrastructure already exists at current GUAN stations or in other networks (BSRN, ARM etc.). The workshop forms part of a series of events that will result in a fully costed and justified proposal to relevant governments and agencies for their consideration and implementation.

Meeting timetable

Monday, 22nd May		
0800 - 0830	Registration at the Applied Physics Lab	
Session 1: Introduction, Workshop I report and organization context (NOAA, GCOS) - Chair: David Goodrich		
0830	Welcome	Mike Wallace
0840	Workshop Goals and Agenda Overview	David Goodrich
0850	Introductions around the room	
0900	Reference Upper-Air observations for GCOS: Requirements, Processes and Plans.	Dian Seidel & Peter Thorn
0945	Reference networks: A NOAA perspective	Chet Koblinksy
1000 - 1030	Coffee Break	
Session 2: Capabilities and limitations of current instruments/technologies and networks - Co-chair: Peter Thorne and Bill Murray		
10:30 - 12:15	Talks (all 20-25 minutes) *Review of Results from the WMO Radiosonde Comparison Mauritius and Recommendations for Future Upper Air Climate Observing Systems.* John Nash UK Met Office *Use of the Consensus Reference Concept for Testing GCOS Radiosondes* Joe Facundo NOAA *Water Vapor Observations in the Upper Troposphere and Lower Stratosphere* Holger V?mel NOAA *Experience from ARM Sites: What Can It Tell Us?* Doug Sisterson ANL	

	Areas for discussion: • Lessons from WMO, regional, and national inter-comparison exercises. • Lessons from stations rich in instrumentation (such as ARM sites): how good is it? What are the problems? • Lessons from GUAN and other dedicated networks • Managing and synthesizing data from different sources • Calibration and validation practices and limitations • Parallel efforts for climate observations via remote sensing
1215 - 1315	Lunch
1315 - 1500	Session 2 Continued
1500 - 1515	Coffee Break
Session 3: Instruments, Platforms and deployment options - Co-chairs: Junhong Wang & Mike Hardesty	
1515 - 1700	Talks (all 30 minutes) *Reference Radiosonde Options* Hal Cole NCAR *Measurements of Temperature, Water Vapor, Clouds, and Winds Derived from Ground-Based Remote Sensors; Measurements of the Surface Radiation Balance* Jim Liljgren ANL *GPS Atmospheric Sensing* Chris Rocken NCAR Areas for discussion: • Existing, new, and planned instruments • Requirements ?? IT, hardware, infrastructure, operability • Deploying all instruments to all sites or instigating a tiered system? • Identification and prioritization of core and supplement instruments and operational data for redundancy and additional parameters.
1830 - 2000	Monday evening reception at the Wallingford Room in the Watertown Hotel (Hors d'oeurves and cash bar)

Tuesday, 23rd May	
0830 - 1000	Session 3 Continued
1000 - 1030	Coffee Break
1030 - 1200	Session 3 Continued
1200 - 1300	Lunch (on your own)
Session 4: Candidate network operating strategies - Co-chairs: Tom Peterson & Frank Schmidlin	
1300 - 1445	Talks (all 20 minutes) *Climate Considerations for Network Operating Strategies* Kevin Trenberth, NCAR *Spatial and Temporal Aspects of Network Design* Betsy Weatherhead, NOAA/GMD *Stratospheric Considerations for Network Operating Strategies* Geir Braathen, WMO

	Operating Strategies for Synergy with the Baseline Surface Radiation Network Ellsworth Dutton, NOAA/GMD *Network Operating Strategies to Maximize Improvements to Operational Satellites* Tony Reale, NOAA/NESDIS *Experience of Upgrading Radiosonde Stations in Developing Countries* Richard K. Thigpen, GCOS Office Areas for discussion: • Identification and prioritization of candidate sites. • Potential launch strategies for radiosondes and any other expendable instrumentation. (perhaps aircraft monitoring too). • Reporting over the GTS and / or direct to dedicated archiving centre? • Archiving of collocations with satellite overpass ?? management and coordination issues.
1445 - 1515	Coffee Break
1515 - 1700	Session 4 Continued
	Tuesday evening meal for all session co-chairs (location TBD)

Wednesday, 24th May	
0830 - 1000	Session 4 Continued
1000 - 1030	Coffee Break
Session 5: Wrap-up - Co-chairs: David Goodrich & Dian Seidel	
1030 - 1300	• Way Forward. • Schedule for producing the report from Workshop II. • Planning for and scoping of remaining necessary steps in the process.
1300	Close of main workshop Wednesday afternoon Co-chairs meet to undertake initial draft of report. Thursday am (optional) further draft writing efforts.