GRUAN and WMO Observing Networks

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> (f) UNEP

- ICSU





GRUAN initial and potential candidate sites

GRUAN part of a tiered network



WMO Global Observing System – Radiosondes



The upper-air (radiosonde) observing network of the WMO Global Observing System (GOS) (Status April 2008)

GCOS Upper-Air Network of Radiosondes



Status January 2009 – a subset of the WMO GOS



GRUAN vs WMO Networks

Commonalities

- Collocations (also with GAW, NDACC, BSRN, SHADOZ)
- Global
- In support of climate (monitoring, research)
- Sustained operations
- Governance/Expertise/Support (GCOS sponsored by WMO, WMO TCs, country support)
- Part of 'tiered' structure (GCOS-112)

Differences

- GRUAN heterogeneous (sites, instruments)
- Some sites outside 'WMO' realm
- GRUAN specifically for climate, with implications to data



GRUAN Implementation and WMO



- Implementation of GRUAN in close partnership with WMO
- Building on existing observing systems (augmenting sites, infrastructure etc.)
- Drawing on existing experience and manuals/guides (see discussion item 7)
- WMO CBS/CIMO/Sec indicated their full support to GRUAN if
 - GRUAN "part of/reference backbone of GUAN"
 - GRUAN data policy to follow minimum WMO requirements (it already does!)
 - GRUAN community regularly reports to WMO commissions and bodies through dedicated channel, as a "WIGOS Pilot Project"
 - GRUAN, or part thereof, be recognized/designated a "WIGOS Pilot Project"



WIGOS



WIGOS = WMO Integrated Global Observing System

- benefit society through enhanced availability and integration of global weather, climate and water observations contributed by constituent systems under the umbrella of the GOS.
- create an organizational, programmatic, procedural and governance structure that will significantly improve the availability of observational data and products and which will provide a <u>single focus</u> for the operational and management functions of all WMO observing systems as well as a <u>mechanism for interactions</u> with WMO co-sponsored observing systems

Areas of integration: Standardization of instruments and methods of observation; WMO Information System infrastructure; end product QA

WIGOS Pilot Projects: To demonstrate value of enhanced integration of observing systems, including lessons learned

Current WIGOS Pilot Projects (more by John Nash under 8.3):

- Building largely on existing, operational systems
- Need to demonstrate value of enhanced integration of observing systems
- Need to deliver results by June 2010
- Can be defined in a flexible manner by community
- Can expect some support for meeting and consultants

GRUAN and WIGOS Pilot Projects



Pros:

- Expertise by WMO bodies needed
- Support to carry out GRUAN work plan items
- Demonstration of collaboration with sponsor WMO, leading to higher visibility and support at the level of WMO constituent bodies, Technical Commissions (CBS, CIMO) and their expert teams
- Reporting mechanism and formal link of GRUAN implementation to WMO structure (visibility, acceptance); so far only to AOPC and via GCOS Sec into the WMO framework
- GRUAN community retains full ownership and governance over the implementation and operation of GRUAN
- No implications on data policy/dissemination beyond current GRUAN data policy, since (WIGOS Concept of Operations states explicitly that WIGOS "respects data sharing policies of its components, including those for real, near-real time and delayed modes")





GRUAN vs WMO Networks



Cons:

- Not immediately clear if benefits (direct and in-kind support) at least match overhead
- GRUAN is in its initial stage of implementation and cannot promise too much in the next two years
- WIGOS concept and implementation are themselves in a development stage and therefore not particularly specific
- Some WMO funds are available for WIGOS, but no guarantee for availability in support of GRUAN
- Additional administrative workload and meeting time on GRUAN Lead Centre, GCOS Secretariat, Chair WG ARO, others in GRUAN community
- Specification of a WIGOS Pilot Project could possible be done at a later stage, once the GRUAN has constituted itself and made real progress in implementation



WIGOS PPs- Comments



- Not overly ambitious
- Report largely on activities planned anyway
- New project can be initialized until June 2009 (Project Template (Appendix 2 of ICM-1/Doc 8.1)
- Help by WIGOS Planning Office (Igor Zahumensky, WMO)
- Reporting by summer 2011 at the lastest
- In a teleconference in August 2008 (GRUAN Lead Centre (Holger), WG ARO Chair (Peter), GCOS Sec (Stephan), CBS Rapporteur on GCOS Matters (Matt Menne, NCDC), it was decided to discuss this issue at this meeting







Thank you

For more information about the GCOS programme please visit our website

http://gcos.wmo.int

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lo.	Station Name and Country	Conf'd?	GUAN	BSRN	NDACC	SHADOZ	GAW
nitial	GRUAN Sites			Donit		CLOR	GCOS
	Darwin, Australia		X (94120 ^[1])	x	- 2 - 2	AL CIT	
:	Xilinhot, China	Y					TE OBSE
;	Sodankylä, Finland	Y	X (2836)		x	1.980	X (G)
L I	Lindenberg, Germany	Y	X (10393)	x			x
5	Potenza, Italy	Y					
6	Cabauw, Netherlands	Y		x		12.00	
7	Lauder, New Zealand			x	X (P)	24	X (G)
3	Payerne, Switzerland	Y	X (6610)	X	x		x
Ð	Barrow, AK, USA		X (70026)	x		Jone VI	X (G)
10	Beltsville, MD, USA			Two BSRN close by (Chesapeake Lt., USA; Rock Springs, PA, USA)			x
11	Boulder, CO, USA			×	Si alt.		x
2	Lamont, Southern Great Plains, OK, USA		X (72451 Dodge City/Mun., KS, USA)	x			x

Possible WIGOS PPs in GRUAN work plan



Area 1: Standardization of instruments and methods of observation •item 4: Planned radiosonde intercomparison campaign in 2010 •item 5: Development of a GRUAN manual of operational practices

Area 2: WMO Information Systems Infrastructure •item 11: Development of GRUAN data dissemination practices

Area 3: End product quality assurance •Item 3: Development of a strategy to detect change in quality at GRUAN sites;

•item 8: Resolve QC/QA procedures

Country-specific projects ("WIGOS Demonstration Projects") only activities at 1 GRUAN site





GRUAN part a tiered network

- WMO Technical Regulations « Basic law » to be followed by all Member countries
- Annex to WMO Basic Documents (Convention etc)
- The Manual is designed:
- (a) To facilitate cooperation in observations
- between Members;
- (b) To specify obligations of Members in the
- implementation of the World Weather Watch
- (WWW) Global Observing System (GOS);
- (c) To ensure adequate uniformity and standardization
- in the practices and procedures employed
- in achieving (a) and (b) above.



- The Manual is composed of Volumes I
- and II, which contain the regulatory material for the
- global and regional aspects, respectively. The regulatory
- material stems from recommendations of the
- Commission for Basic Systems (CBS) and resolutions
- of regional associations, as well as from decisions
- taken by Congress (Cg) and the Executive Council
- (EC).



- In essence, the Manual specifi es what is
- to be observed where and when in order to meet the
- relevant observational requirements of Members. The
- Guide on the Global Observing System (WMO-No. 488)
- provides detailed guidance on how to establish,
- operate and manage networks of stations to make
- these observations. While some regulatory material
- concerning instruments and methods of observation
- is contained in a special short section of the Manual,
- a full description of how and with what observations
- are made is contained in the Guide to Meteorological
- Instruments and Methods of Observation (WMO-No. 8).



- Are those practices and procedures which it is
- necessary that Members follow or implement;
- and therefore
- (b) Have the status of requirements in a technical
- resolution in respect of which Article 9(b) of
- the Convention is applicable;





- 2.1.2.4 Members should implement the Global
- Climate Observing System (GCOS) Surface Network
- (GSN) the global reference network of some
- 1 000 selected surface observing stations established
- to monitor daily global and large-scale climate
- variability.
- 2.1.2.5 Members should implement the GCOS
- Upper-air Network (GUAN) the global baseline
- network of about 150 selected upper-air stations established
- with relatively homogenous distribution to
- meet requirements of GCOS.



Specifics on GSN, GUAN

 GCMPs, continuity, data formats, exchange, instrument maintenance, obs requirements (e.g., 30 hPa for GUAN, 5 hPa if possible)



