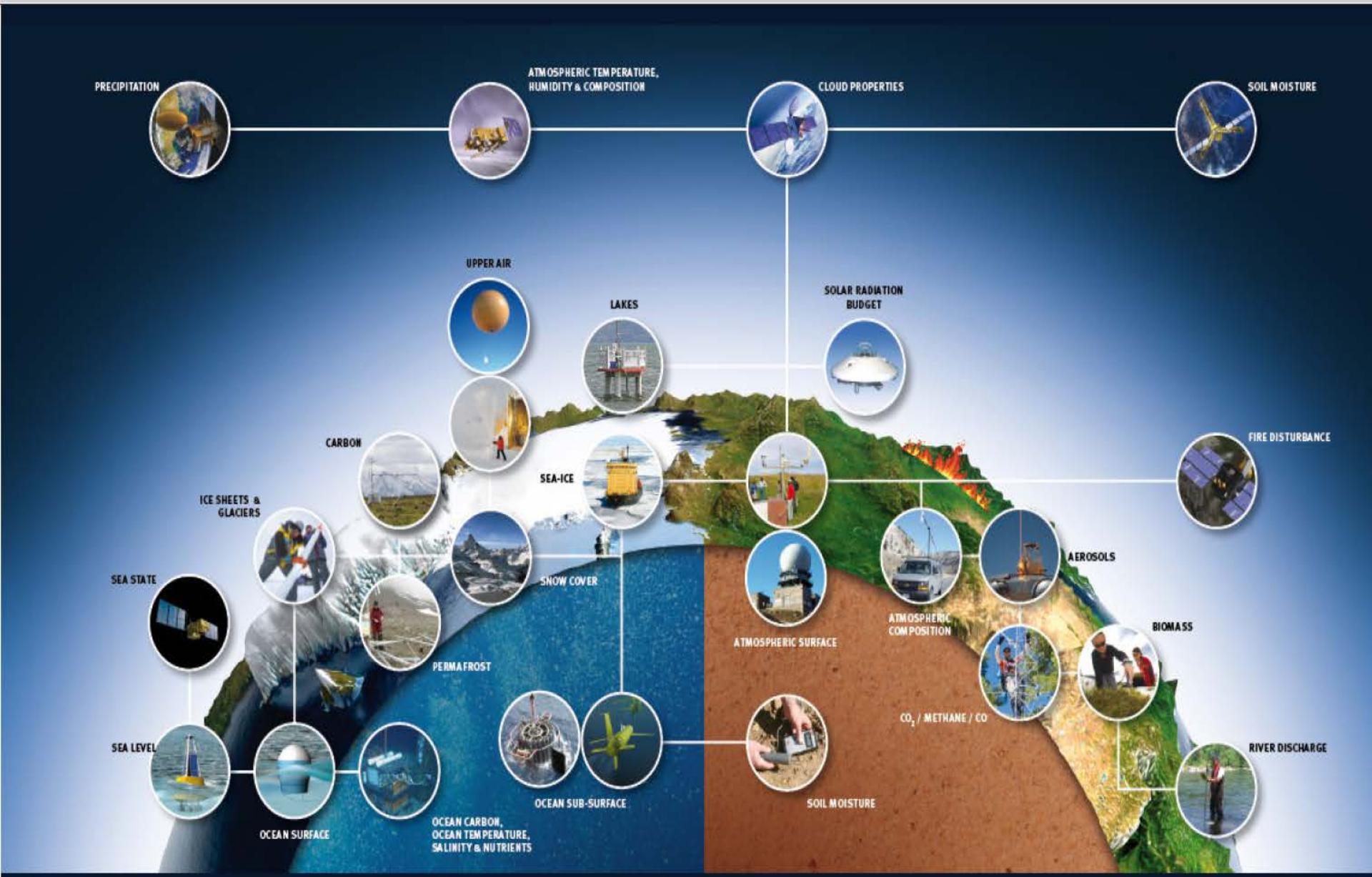
GRUAN & GUAN

GRUAN ICM-7
Matera, Italy 23rd – 27th February, 2015

Tim Oakley, GCOS Network Manager

GCOS Vision

The vision of GCOS is that all users have **access** to the climate observations, data records and information which they require to address pressing climate-related concerns. GCOS users include individuals, national and international organizations, institutions and agencies. The role of GCOS is to work with partners to ensure the **sustained** provision of **reliable** physical, chemical and biological observations and data records for the total climate system – across the atmospheric, oceanic and terrestrial domains, including hydrological and carbon cycles and the cryosphere.

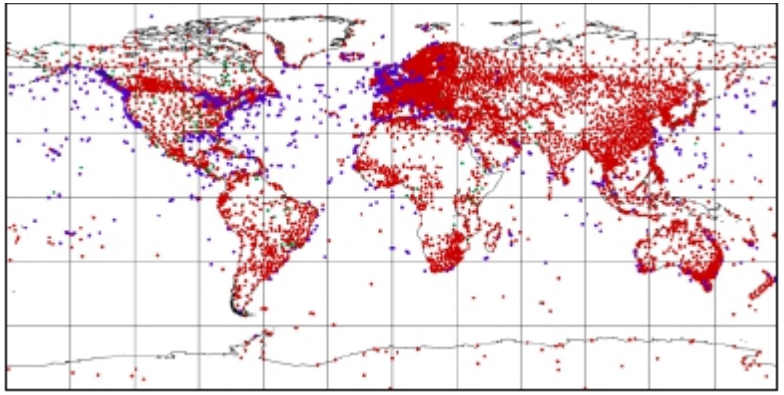


AOPC Atmospheric Observations Panel for Climate
GCOS · GOOS · WCRP

TOPC Terrestrial Observations Panel for Climate
GCOS · GTOS · WCRP

GCOS · GOOS · WCRP
OOPC Atmospheric Observations Panel for Climate

GCOS is concerned with …



The observations:

- what is measured, how is it measured, where is it measured, how is the measurement sustained, etc.

Data transmission:

- what is transmitted, with what time delay, in what code

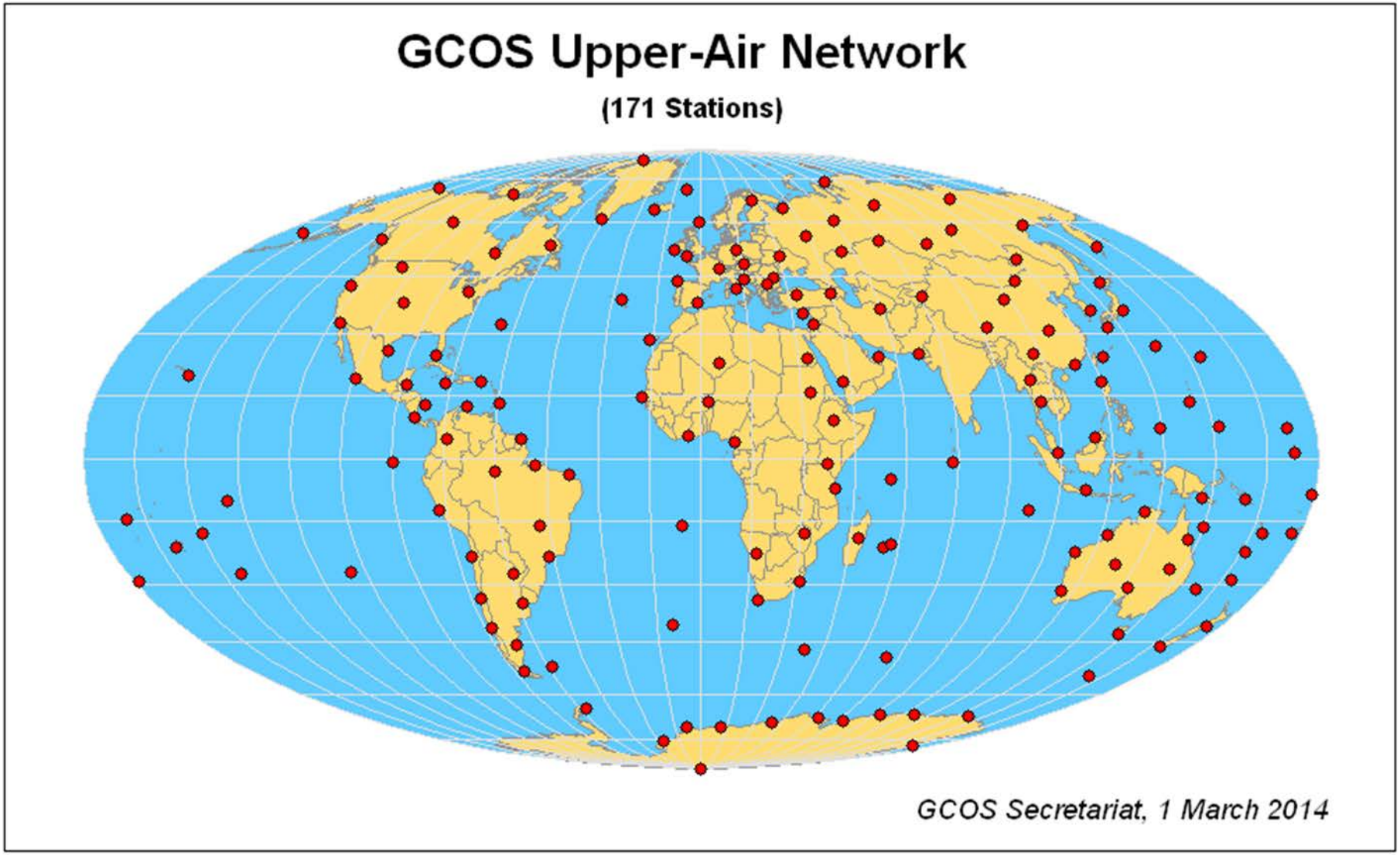
Data management (including data rescue):

- archiving and access to raw data, metadata, and data products
- recovery and rehabilitation of past data

Data and products:

- Fundamental records, including recalibration and homogenisation
- Satellite retrievals, gridded fields from *in situ* and remotely-sensed measurements, etc.

GUAN Network



GCOS
GLOBAL CLIMATE OBSERVING SYSTEM

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International Council for Science

GCOS Minimum Requirements (GUAN)

- **Temperature up to 30hPa**
- **Humidity up to tropopause**
- **Wind direction/speed to 30hPa**
- **1 report - 25 days each month**
- **TEMP message**

- ***BUFR & 100hPa OB-FG (Monthly) criteria***

http://www.wmo.int/pages/prog/gcos/Publications/GCOS-144_en.pdf

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Quality Monitoring and Incident Management (GCOS)

Requirements

WMO Members (Owners)

Owners/Operators of the Station

- **Met Services with own procedures**
- **Commitment**
- **Requirements**
- **Guidance documents**
- **Technical Regulations**

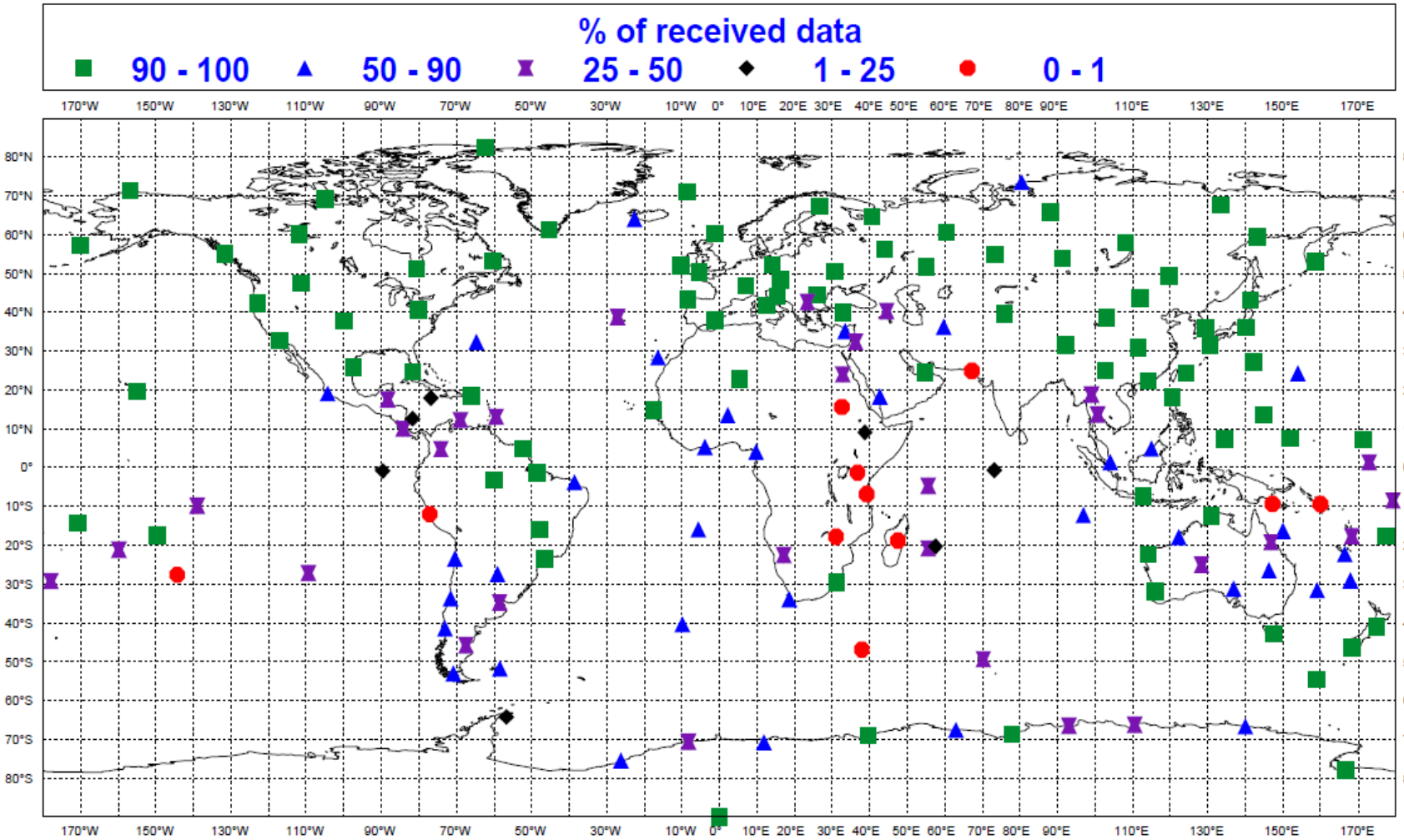
Quality Monitoring and Incident Management (GCOS)

Requirements

WMO Members (Owners)

Monitoring Centres

GUAN STATIONS Nov 2014
Frequency of Reception data at ECMWF
Level: 100 hPa Temperature SUMMARY 00/12 UTC



ECMWF

Quality Monitoring and Incident Management (GCOS)

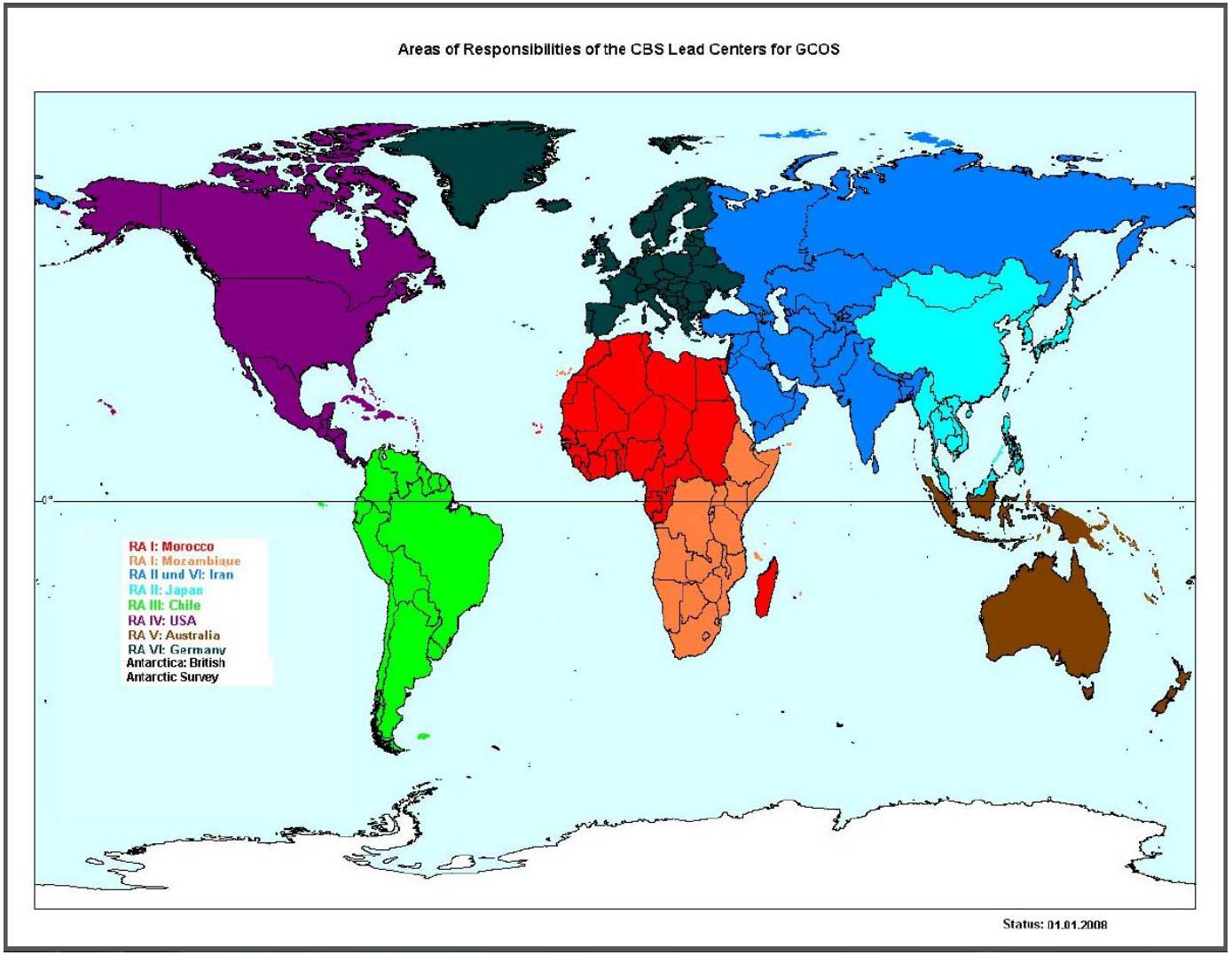
Requirements

WMO Members (Owners)

Monitoring Centres

Lead Centres (CBS for GCOS)

Lead Centres



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Quality Monitoring and Incident Management (GCOS)

Requirements

WMO Members (Owners)

Monitoring Centres

Lead Centres (CBS for GCOS)

Network Manager

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Network Manager

- **Communication, throughout the QM chain**
- **Resolving more complex incidents**
- **Reporting back to GCOS and Sponsors**
- **Direct engagement with station staff and managers**
- **Network improvement projects**
- **Introducing improvements in QM process**
- **Interface to Expert teams, Projects, Regional Assoc, Sponsors…..**
- **And ….**

GUAN Performance 2014 (2011 – 13)

Minimum requirement of 25 daily soundings each month to at least 30hPa.
(Based on NCEP monitoring)

Region	Number of GUAN stations	% meeting minimum GCOS requirements in 2014 (% for 2013, 2012 and 2011)
RA-I	23	**39%** (46%, 48%, 57%)
RA-II	32	**87%** (87%, 87%, 87%)
RA-III	18	**72%** (67%, 89%, 78%)
RA-IV	24	**83%** (75%, 83%, 87%)
RA-V	38	**76%** (74%, 84%, 87%)
RA-VI	24	**87%** (83%, 92%, 87%)
Antarctica	12	**58%** (58%, 83%, 83%)

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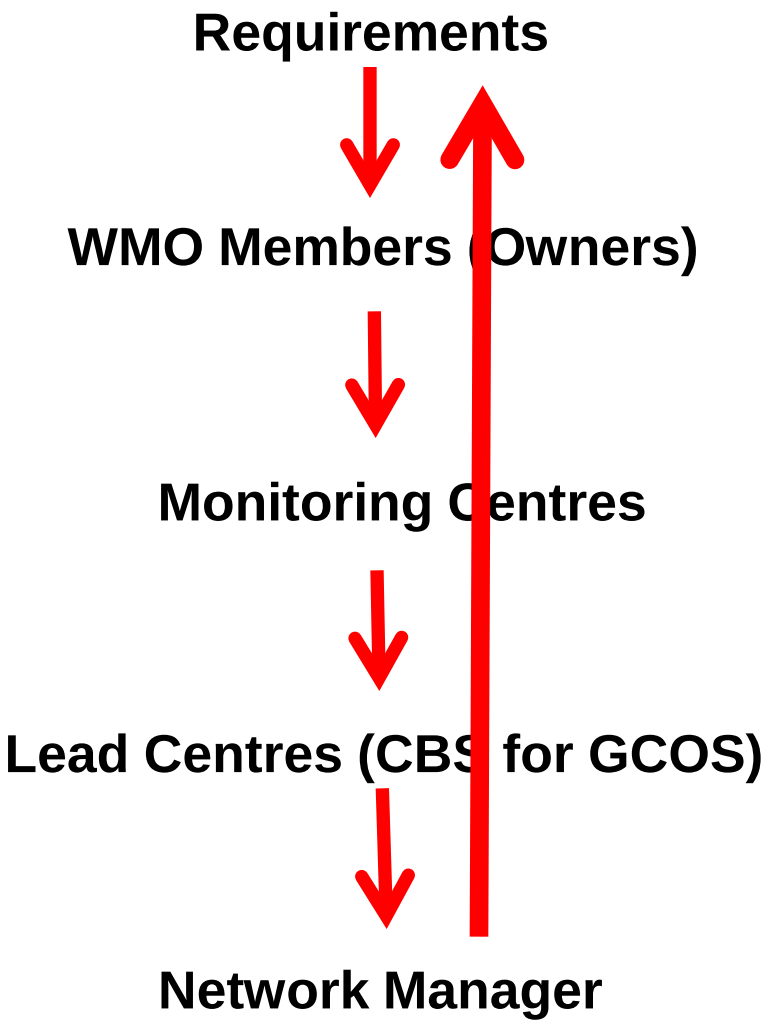
Region	WMO No	SITE	Country	Total	1	2	3	4	5	6	7	8	9	10	11	12	AVG	[2013]	Q
1	60018	Tenerife-Guimar	Canary Is.	710	240	204	232	224	232	240	228	244	236	232	204	244	230	218	
1	61641	Dakar/Yoff	Senegal	658	228	196	216	124	240	148	96	184	208	224	196	180	187	196	
1	68592	King Shaka AP	South Africa	676	180	148	216	132	180	208	192	184	156	208	196	208	184	147	
1	60680	Tamanrasset	Algeria	681	200	112	188	176	228	212	184	208	140	192	180	128	179	159	
1	68906	Gough Is	South Africa	564	220	200	232	216	204	184	188	72	124	136	152	124	171	78	
1	65578	Abidjan	Cote d'Ivoire	700	200	184	212	176	180	188	168	164	168	168	120	80	167	152	
1	61052	Niamey-Aero	Niger	544	216	176	80	20	180	172	140	160	156	20	108	152	132	170	
1	61901	St. Helena	St Helena Is.	357	104	112	120	112	124	120	124	120	120	120	120	124	118	109	
1	61980	Saint-Denis/Gillot	Reunion	363	100	108	104	112	100	116	120	100	116	112	100	100	107	110	
1	68816	Cape Town AP	South Africa	467	8	12	8	16	124	140	136	108	108	180	116	196	96	110	
1	62414	Asswan	Egypt	312	44	48	96	80	108	184	48	16	100	88	92	100	84	129	
1	61998	Port aux Francais	Kerguelen Is.	356	72	88	104	88	32	48	40	52	44	76	64	96	67	46	
1	63985	Seyschelles	IAP	226	0	0	8	76	64	76	52	100	104	80	84	40	57	58	
1	63741	Nairobi	Kenya	209	68	44	76	104	96	92	104	56	0	0	0	0	53	60	
1	63450	Addis Ababa	Ethiopia	207	80	52	64	68	60	48	92	64	64	20	8	8	52	28	
1	64910	Douala	Cameroon	314	0	0	0	80	128	48	0	100	20	40	88	92	50	30	
1	68110	Windhoek	Namibia	241	76	88	68	92	84	0	0	4	4	60	72	48	50	72	
1	67083	Antananarivo/Ivato	Madagascar	135	156	128	96	8	0	0	0	0	0	0	0	0	32	187	
1	62721	Khartoum	Sudan	87	36	56	88	60	0	0	0	0	0	0	0	0	20	23	
1	61995	Vacoas,	Mauritius	110	16	12	16	16	12	12	4	16	4	4	4	4	10	14	
1	67774	Harare,	Zimbabwe	16	0	0	36	8	0	0	0	0	0	0	0	0	4	3	
1	63894	Dar es Salaam	Tanzania	15	0	0	0	0	0	0	0	0	24	4	0	0	2	40	
1	68994	Marion Is	South Africa	27	0	0	0	20	0	0	0	0	0	0	0	0	2	14	

Quality Monitoring and Incident Management (GCOS)



Challenges

- **Complex communication chain (Global) & at times requires a good technical knowledge of the end to end process**
- **Reliant on a number of centres who do this work as an added task (no additional resources)**
- **Passive management**
- **No real-time monitoring/action, both for station operators and/or network managers. (Something like the EUMETNET portal would be of + benefit)**
- **Much of the monitoring does not work with BUFR**

GCOS working with WIGOS to improve this for the future

GUAN & GRUAN

- **Needs a clear link (documented and agreed) - not just the G!**
- **Benefit and Resources needs to be explained and made available to Station & Network Managers and Met Services.**
- **Active management. Membership – Joining and Ongoing.**
- **GRUAN needs WMO (CBS) recognition through WIGOS.**
- **GRUAN can provide the scientific lead and guidance to WMO Members (and WMO commissions)**

WIGOS Observing Network Design Principles

- **Members should follow the following principles when designing and evolving their observing system networks : (12 in total)....**
- **1..... 2..... 3..... 4.... 5.... 6.... 8..... 9.... 11.... 12....**
- **7. DESIGNING THROUGH A TIERED APPROACH - Observing network design should use a tiered structure, through which information from reference observations of high quality can be transferred to and used to improve the quality and utility of other observations.**
- **10. PROVIDING INFORMATION SO THAT THE OBSERVATIONS CAN BE INTERPRETED - Observing networks should be designed and operated in such a way that the details and history of instruments, their environments and operating conditions, their data processing procedures and other factors pertinent to the understanding and interpretation of the observational data (i.e. metadata) are documented and treated with the same care as the data themselves.**

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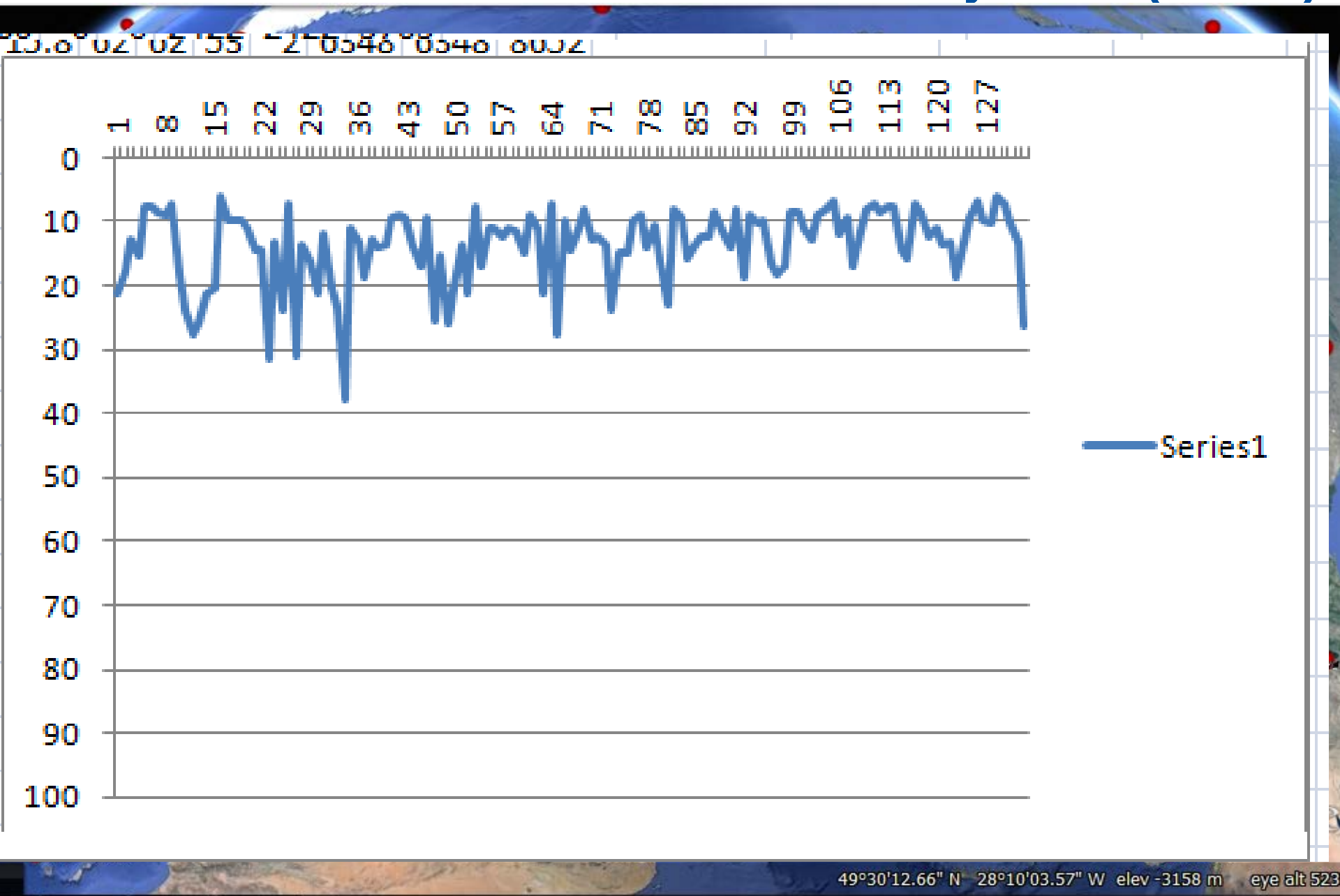
What should we do?

Manual v Autosonde systems (GUAN)



THANKYOU