

PROCESS TO NOMINATE AND IMPLEMENT A PILOT GCOS SURFACE REFERENCE NETWORK (GSRN)

Possible future sibling of GRUAN

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World Meteorological Organization
Organisation météorologique mondiale



A GCOS Surface Reference Network (GSRN)



Improved long-term accuracy, stability and comparability of observations.

- To achieve simultaneous high-quality observations of many Essential Climate Variables (ECVs)
- GSRN to be recognized as a reference network for surface observations within the WMO tiered system (like GRUAN for upper air)
- GSRN will provide reference data with full traceability and defined and quantified uncertainties
- All measurements need to be documented in accessible literature including a complete metadata description
- GSRN could/should be a subset of stations in existing networks (e.g. GSN, GBON), but is open to include new stations (e.g. scientific stations)



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10 year goals for GSRN

The **full implementation** of all goals named in GCOS-226, based on the experience of implementing GRUAN, **will take decades**. The TT-GSRN has therefore agreed to define the following goals, to be achieved in a 10-year timeframe, within the initial GSRN:

10-year goals

1. Provide sustained reference quality observations, with full traceability and defined and quantified uncertainties, on a global scale (on land) for at least the ECVs **surface temperature and precipitation**, in order to quantify their variability, long-term change and inform on extremes
2. Deliver an implementation plan for the **inclusion of additional ECVs**
3. Be a recognized reference network within the WMO tiered system which primarily supports the climate community in quantifying climate change
4. Publish operational procedures and practices for knowledge transfer and capacity development
5. Ensure a free and open access archive of accredited GSRN data products
6. Identify GSRN affiliated research facilities delivering scientific advances in measurement techniques and improving knowledge on climate reference data and instrumentation

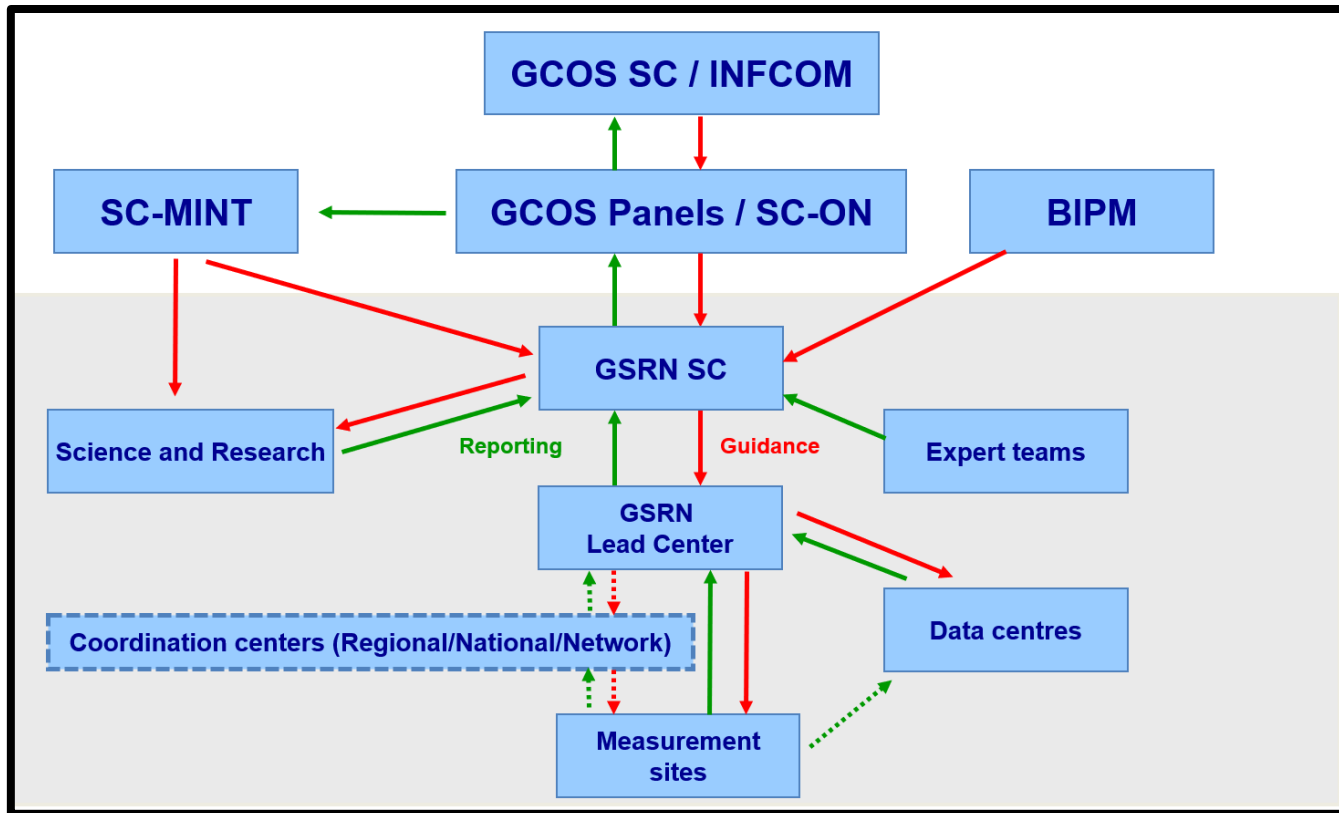


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Governance structure



Reasons for a Pilot GSRN

- Generate first GSRN products (e.g. daily mean air temperature near surface) considering all uncertainty components (using measurements of AQI)
- Gather experience dealing with different instrumentation at stations in member states and climate regions
- Implement procedures on how to manage, process and archive data
- Implement data quality assessment methods (QA / QC)
- Generate certification process for stations

➤ Proof of concept of GSRN



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Requirements for mandatory variables

	Air Temperature	Precipitation
Siting	<ul style="list-style-type: none"> Siting must be classified by the Siting Classification for Surface Observing Stations on Land in GIMO, Volume I, Annex 1.D (WMO-No. 8) Siting should meet Class 1, if this cannot be achieved, all possible efforts should be made to improve the classification or at least to ensure that classification level does not deteriorate. 	
General	<ul style="list-style-type: none"> GIMO, Volume I, Chapter 2 (Measurement of temperature) must be regarded (WMO-No. 8) 	<ul style="list-style-type: none"> GIMO, Volume I, Chapter 6 (Measurement of precipitation) must be regarded (WMO-No. 8)
Shielding	<ul style="list-style-type: none"> artificially or natural ventilated screens (depending on climate region and experience) 	<ul style="list-style-type: none"> Natural or artificially protected against wind
Number of parallel instruments:	<ul style="list-style-type: none"> Threshold: 2 Recommended: 3 	<ul style="list-style-type: none"> Recommended: 2 (not necessarily of the same type)
Target system uncertainty:	<ul style="list-style-type: none"> corresponds to Class A of the Measurement Quality Classification (MQC) (INFCOM 1, Decision 6) Class A is aligned with OSCAR/Requirements Goal. 	<ul style="list-style-type: none"> corresponds to Class A of the Measurement Quality Classification (MQC) Class A is aligned with OSCAR/Requirements Goal.
Associated quantities of influence	<ul style="list-style-type: none"> Precipitation (liquid and solid) Relative humidity Global solar radiation Reflected solar radiation Wind (speed and direction) 	<ul style="list-style-type: none"> Air Temperature Relative humidity Global solar radiation Wind (speed and direction, at the same height as orifice of gauge)



Process for the implementation of Pilot GSRN

1. Letter to all WMO Members inviting them to nominate Pilot GSRN stations
 - Stations should meet the requirements described in Annex A (of Annex to decision 6.1(6))
 - Submit the completed proforma (Annex B)
 - If requirements can (yet) not be met, give reasons
 - Stations in different climatological zones and their global distribution and uniqueness should be considered
2. WMO Members are encouraged to consider all potential sources for candidate GSRN Pilot stations within their jurisdiction.
3. GCOS Secretariat will manage the replies from WMO Members and address any questions/issues raised, in consultation (as required) with GSRN LC and TT-GSRN.
4. GCOS Secretariat and GSRN LC will review the responses, and additional technical information, and generate a draft list of stations for the Pilot GSRN.
5. Approval of the list by TT-GSRN and followed by SC-ON and GCOS-SC.



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Possible links with GRUAN

- Sharing of Best Practice and Knowledge (GRUAN to GSRN and vice-versa).
- Integrated sites.
- Consistent data products.
- Joint meetings and workshops.
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Thank you Merci

